

The Economist

SEPTEMBER 2ND-8TH 2017

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America's biggest private firm opens up

When Ponzi schemes make sense

Floods

How to deal with them





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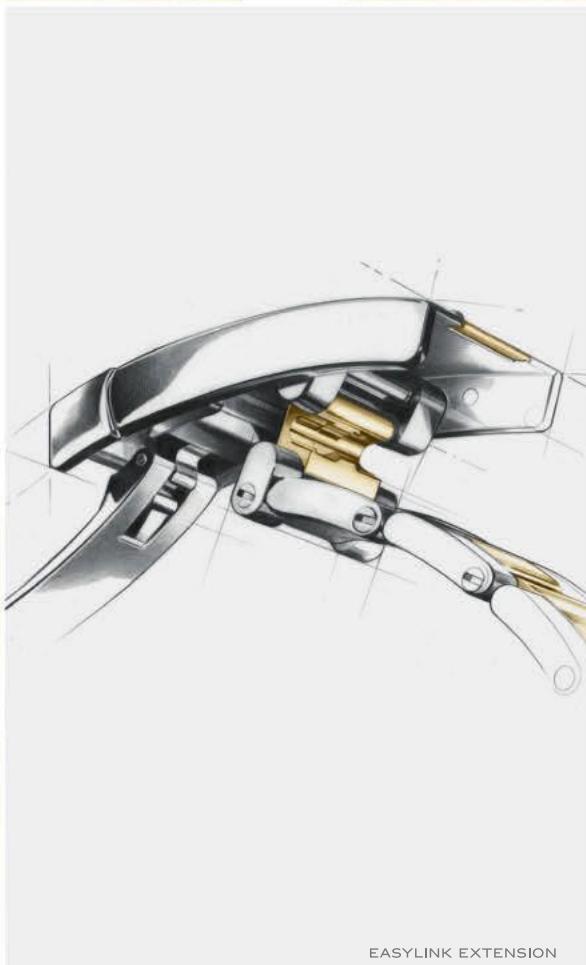


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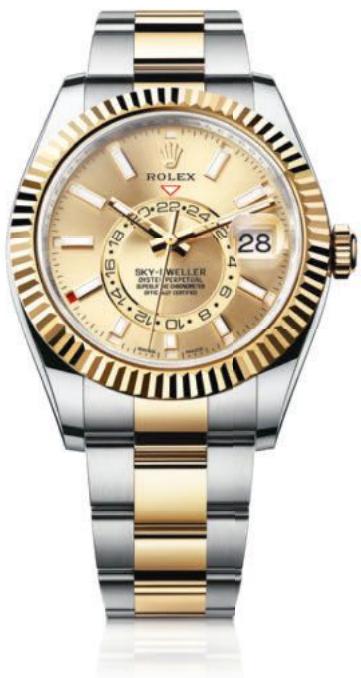
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The Economist

Volume 424 Number 9056

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

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Politics



Hurricane Harvey battered the coasts of Texas and Louisiana. Downgraded to a tropical storm, the incessant deluge broke records, with some places measuring over 1.3 metres of rainfall. Houston suffered severe flooding; the mayor imposed a curfew to deter looters. At least 38 people died in Texas; that figure is expected to rise when the waters recede. By one estimate the damage from the storm could cost as much as \$100bn.

The death toll from monsoon floods that have swept Bangladesh, India and Nepal rose above 1,200. Millions have been left homeless. Most of the destruction is in rural areas, though the rains caused Mumbai's transport network to come to a standstill.

Acting with abandon

North Korea launched an audacious missile test, firing an intermediate-range one over Japan and far into the Pacific. The Japanese government said the test was an “unprecedented, serious and grave threat” to the country’s security. North Korea’s state media described it as the “first step” of operations in the Pacific and a “prelude to containing Guam”, which houses American naval and air-force bases.

China and **India** ended a stand-off on their shared border with **Bhutan** in the Himalayas. The dispute began in June when China built a road in the Doklam area, which is claimed by China and Bhutan, India’s close ally. Both sides have now disengaged.

their forces, avoiding what could have been their most serious clash in decades.

A court in **India** convicted Gurmeet Ram Rahim Singh, the country’s most influential guru, of rape. As news of the verdict got out his devotees went on the rampage; at least 38 people died.

Yingluck Shinawatra, a former prime minister of **Thailand**, fled the country before a verdict could be announced in her trial for negligence in administering a rice-subsidy scheme. Ms Yingluck, who was toppled by a coup in 2014, says the charges are politically motivated.



After attacks on police stations that killed 12 officers, the security forces in **Myanmar** launched a crackdown on alleged Rohingya militants that left at least 110 people dead. More than 18,000 Rohingyas, a Muslim ethnic group persecuted by the Buddhist majority, fled across the border to Bangladesh.

Morales hazard

Guatemala’s president, Jimmy Morales, attempted to expel the head of a UN-backed anti-corruption body, after it announced plans to investigate whether he accepted illegal campaign donations. International organisations denounced Mr Morales and the constitutional court ruled against him.

Donald Trump signed an executive order prohibiting Americans from dealing in new debt and some existing bonds issued by **Venezuela**’s authoritarian government and by the state oil company. The sanctions stopped short of

banning oil imports from Venezuela. President Nicolás Maduro directed the constituent assembly, which has taken over the powers of the legislature, to prosecute “traitors” who support the sanctions.

Assessing the migrant crisis

Emmanuel Macron, the French president, hosted a **European-African summit** in Paris. The leaders of Chad, Libya and Niger met their counterparts from France, Germany, Italy and Spain and agreed to fight smuggling networks across borders and in the Mediterranean. The plan is an effort to co-ordinate policy following separate initiatives on Libya.

Mr Macron also presented a set of contentious reforms to **France**’s labour markets that the unions have vowed to fight. And he outlined his proposals for **euro-zone reforms**, including the creation of a budget and a finance minister for the currency bloc.

The **Polish** government dismissed the European Commission’s ultimatum to address its concerns over reforms to the country’s judiciary. Angela Merkel, Germany’s chancellor, said she had serious worries about the rule of law in Poland.

Michel Barnier, the European Union’s chief **Brexit** negotiator, told Britain to get serious and offer concrete proposals for a divorce bill. The third round of talks began without any noticeable progress.

Teresa May visited Japan, to discuss post-Brexit relations. The British prime minister confounded expectations—given her party’s dismal result in this year’s election—by saying she intends to stay in office to fight the next one.

Ever decreasing circles

The jihadists of **Islamic State** were squeezed on all sides. In Iraq, they lost their former stronghold of Tal Afar. In a deal with Hizbullah, its fighters on the Syria-Lebanon border agreed to retreat east, though they were blocked along the way by American forces. The

jihadists’ last redoubt is likely to be the city of Deir ez-Zor, in eastern Syria.

In order to reduce tension between the country’s Anglophone population and its Francophone majority, **Cameroon**’s president ordered that charges be dropped against three English-speaking activists over protests last year. But at the same time the government banned a popular English-language TV channel, based in South Africa, which has highlighted human-rights abuses in Cameroon, claiming it airs seditious programmes.



Nigeria’s president, Muhammadu Buhari, chaired his first cabinet meeting since returning from Britain, where he was treated for an undisclosed illness. He recently cancelled a similar meeting, magnifying concerns that the 74-year-old is not well enough to lead Africa’s most populous country.

Not any time soon

James Mattis, America’s defence secretary, established a process to work towards enforcing Donald Trump’s order to ban **transgender** people from serving in the armed forces. Mr Trump announced the idea in July and recently made it an official directive.

Mr Trump pardoned **Joe Arpaio**, “America’s toughest sheriff”, who, from his former perch in Arizona, led a crusade against illegal immigrants, among other controversies. Mr Arpaio had been convicted of contempt for failing to comply with a court order to halt racial profiling. A president has the power to pardon whomever he wants, but Mr Trump’s critics said this pardon would spur others to ignore the law. ➤

Business

In its search for a new chief executive **Uber** at last settled on Dara Khosrowshahi, who ran Expedia for 12 years. He takes up the reins at the ride-hailing firm after a run of bad publicity that led to the ousting of Travis Kalanick, Uber's co-founder. Mr Khosrowshahi's in-tray gets only fuller. It was reported this week that Uber is under investigation for allegedly contravening the Foreign Corrupt Practices Act. And in an address to staff, Mr Khosrowshahi said that an initial public offering could come in the next 18-36 months.

Using a new fund that allows the state to intervene in failing banks, Russia's central bank stepped in to rescue **Otkritie**, the country's largest private lender, after a run on its deposits. It is the first time that one of the country's financial institutions deemed "too big to fail" has needed a bail-out.

A dubious distinction

The first fine was imposed on a bank in the euro zone under the European Central Bank's **Single Supervisory Mechanism**. Permanent TSB, an Irish lender, is to pay €2.5m (\$3m) for breaching liquidity rules in 2015 and 2016. Created in 2014, the ssm is the "first pillar" of the euro zone's nascent banking union, overseeing the stability of its biggest banks.

America's economic growth rate in the second quarter was revised to 3% on an annualised basis, up from the 2.6% that was reported in an initial estimate. The more vigorous figure was explained by stronger investment and consumer spending.

In South Korea, Lee Jae-yong, the de facto head of **Samsung**, lodged an appeal against his conviction and five-year prison sentence for bribery. The verdict in the case, which is related to a scandal that brought down the country's previous president, did not have a big impact on the company's share price. But if his

conviction is upheld, Mr Lee is unlikely to be given a presidential pardon. Public anger with the *chaebol*, South Korea's conglomerates, makes such special treatment improbable.

Gilead Sciences struck a deal to buy **Kite Pharma** for \$11.9bn. Kite is one of several companies developing a pioneering treatment for fighting cancer known as **CAR-T**, which re-engineers a patient's white blood cells. The Food and Drug Administration this week gave its approval to a similar therapy from Novartis that will cost \$475,000 (cheaper than had been thought) for a course of treatment, marking the first time the FDA has made a gene therapy available in America.

Fleece me in St Louis

Workers in St Louis saw the \$10-an-hour **minimum wage** they secured in May cut back to \$7.70, as a state law came into effect barring local governments from paying more than Missouri's minimum rate. Other states have laws that prevent their cities from paying above an official benchmark, but St Louis is the biggest place where the minimum has been rolled back. Business groups lobbied for the cut, arguing that large wage rises hurt jobs.

India's central bank reported that 99% of the banknotes that were suddenly taken out of circulation last year under a demonetisation programme had been cashed in at banks for new tender. That somewhat undermined the government's claim that the scheme would leave forgers and tax dodgers holding piles of useless rupees.

CBS agreed to buy **Ten Network**, one of Australia's three main commercial stations (and broadcaster of "Neighbours", a long-running soap opera). The American media giant is Ten's biggest creditor through a licensing deal for its blockbuster TV dramas.

Toshiba missed a deadline to seal a deal to sell its chip business to Western Digital, its American partner in the unit. The troubled Japanese conglomerate is continuing talks with other parties, including Bain Capital, a private-equity firm, which has reportedly added **Apple** to the consortium it is heading.

In the latest push by carmakers into **electric vehicles**, Renault-Nissan announced that it would build a battery-powered car in China with Dongfeng Motor, its partner in the

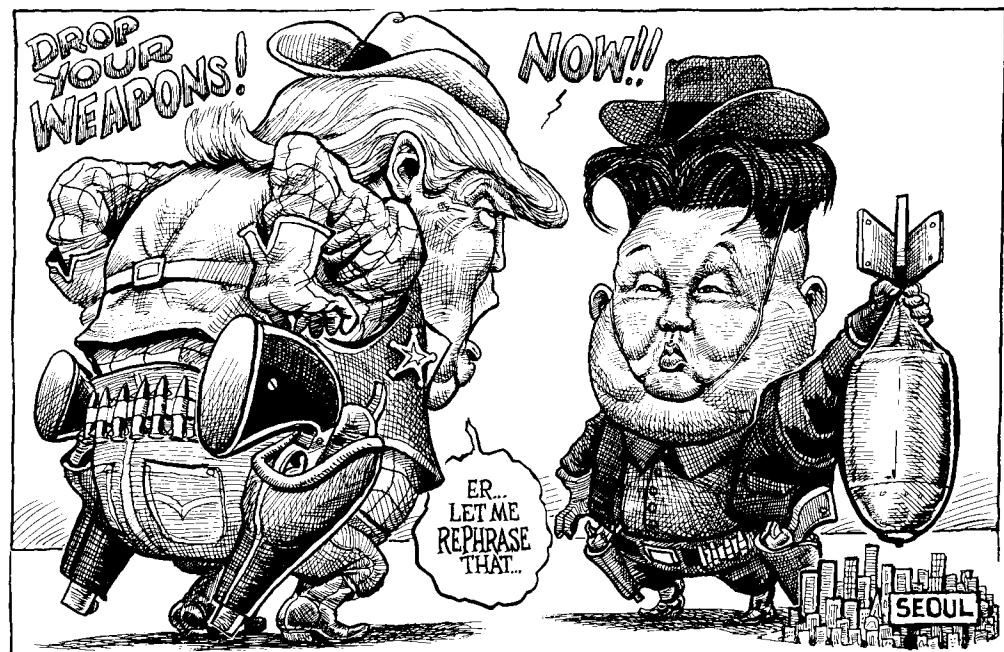
country for many years. Aston Martin, meanwhile, promised that all its vehicles would be able to run on batteries or would be "mild" hybrids (which use an engine but can also travel on battery power) by the mid-2020s.

Less dosh for posh nosh



Amazon struck fear into established supermarket retailers when it launched a price war on the day it took official ownership of **Whole Foods Market**. Prices for delicacies such as "responsibly farmed" salmon were cut by a third, and "animal-welfare-related" ground beef by 29%. Share prices in some of the biggest grocery chains swooned in response, but many think the industry is ripe for a round of price slashing.

Other economic data and news can be found on pages 68-69



How to cope with floods

The to-do list goes far beyond getting to grips with climate change



THE extent of the devastation will become clear only when the floodwater recedes, leaving ruined cars, filthy mud-choked houses and the bloated corpses of the drowned. But as we went to press, with the rain pounding South Texas for the sixth day, Hurricane Harvey had already set records as America's most severe deluge (see briefing). In Houston it drenched Harris County in over 4.5trn litres of water in just 100 hours—enough rainfall to cover an eight-year-old child.

The fate of America's fourth-largest city holds the world's attention, but it is hardly alone. In India, Bangladesh and Nepal, at least 1,200 people have died and millions have been left homeless by this year's monsoon floods. Last month torrential rains caused a mudslide in Sierra Leone that killed over 1,000—though the exact toll will never be known. Around the world, governments are grappling with the threat from floods. This will ultimately be about dealing with climate change. Just as important, is correcting short-sighted government policy and the perverse incentives that make flooding worse.

Judgment day

The overwhelming good news is that storms and flooding have caused far fewer deaths in recent decades, thanks to better warning systems and the construction of levees, ditches and shelters. The cyclone that struck Bangladesh in 1970 killed 300,000–500,000 people; the most recent severe one, in 2007, killed 4,234. The bad news is that storms and floods still account for almost three-quarters of weather-related disasters, and they are becoming more common. According to the Munich Re, a reinsurer, their number around the world has increased from about 200 in 1980 to over 600 last year. Harvey was the third "500-year" storm to strike Houston since 1979.

At the same time, floods and storms are also becoming more costly. By one estimate, three times as many people were living in houses threatened by hurricanes in 2010 as in 1970, and the number is expected to grow as still more people move to coastal cities. The UN reckons that, in the 20 years to 2015, storms and floods caused \$1.7trn of destruction; the World Health Organisation estimates that, in real terms, the global cost of hurricane damage is rising by 6% a year. Flood losses in Europe are predicted to increase fivefold by 2050.

One cause is global warming. The frequency and severity of hurricanes vary naturally—America has seen unusually few in the past decade. Yet the underlying global trend is what you would expect from climate change. Warmer seas evaporate faster and warmer air can hold more water vapour, which releases energy when it condenses inside a weather system, feeding the violence of storms and the intensity of deluges. Rising sea levels, predicted to be especially marked in the Gulf of Mexico, exacerbate storm surges, adding to the flooding. Harvey was unusually devastating because it suddenly gained strength before it made landfall on Friday; it then stayed put, dumping its rain on Houston before returning to the Gulf.

Again, that is consistent with models of a warmer world.

Poor planning bears even more blame. Houston, which has almost no restrictions on land-use, is an extreme example of what can go wrong. Although a light touch has enabled developers to cater to the city's rapid growth—1.8m extra inhabitants since 2000—it has also led to concrete being laid over vast areas of coastal prairie that used to absorb the rain. According to the *Texas Tribune* and ProPublica, a charity that finances investigative journalism, since 2010 Harris County has allowed more than 8,600 buildings to be put up inside 100-year floodplains, where floods have a 1% chance of occurring in any year. Developers are supposed to build ponds to hold run-off water that would have soaked into undeveloped land, but the rules are poorly enforced. Because the maps are not kept up to date, properties supposedly outside the 100-year floodplain are being flooded repeatedly.

Government failure adds to the harm. Developing countries are underinsured against natural disasters. Swiss Re, a re-insurer, says that of the \$50bn or so of losses to floods, cyclones and other disasters in Asia in 2014, only 8% were covered. The Bank of International Settlements calculates that the worst natural catastrophes typically permanently lower the afflicted country's GDP by almost 2%. America has the opposite problem—the federal government subsidises the insurance premiums of vulnerable houses. The National Flood Insurance Programme (NFIP) has been forced to borrow because it fails to charge enough to cover its risk of losses. Underpricing encourages the building of new houses and discourages existing owners from renovating or moving out. According to the Federal Emergency Management Agency, houses that repeatedly flood account for 1% of NFIP's properties but 25–30% of its claims. Five states, Texas among them, have more than 10,000 such households and, nationwide, their number has been going up by around 5,000 each year. Insurance is meant to provide a signal about risk; in this case, it stifles it.

Mend the roof while the sun shines

What to do? Flooding strengthens the case for minimising climate change, which threatens to make wet places wetter and storms stormier. Even those who doubt the science would do well to see action as an insurance policy that pays out if the case is proven. However, that will not happen fast, even if all countries, including America, sign up to international agreements. More immediately, therefore, politicians can learn from Houston. Cities need to protect flood defences and catchment areas, such as the wetlands around Kolkata and the lakes in and around Pokhara in Nepal, whose value is becoming clear. Flood maps need to be up to date. Civil engineers, often starved of funds and strangled by bureaucracy, should be building and reinforcing levees and reservoirs now, before it is too late. The NFIP should start to charge market premiums and developing countries should sell catastrophe bonds. All this is a test of government, of foresight and the ability to withstand the lobbying of homeowners and developers. But politicians and officials who fail the test need to realise that, sooner or later, they will wake up to a Hurricane Harvey of their own. ■

Corruption in Latin America

More tragedy than comedy

Guatemala's president is trying to thwart a UN-backed anti-corruption agency. It deserves a stout defence



“**N**EITHER corrupt nor a thief.” With that slogan Jimmy Morales, a comedian with almost no record in politics, won Guatemala's presidential election in October 2015. It is easy to see why that line, and that biography, persuaded voters. The election came just after the country's president and vice-president had been jailed on charges that they masterminded a scheme to bilk the customs authority of its revenues. That turned out to be one of several scams in which they allegedly took part. The detective work that led to their downfall was carried out by a UN-backed “commission against impunity” (CICIG) and Guatemala's chief prosecutor. It came after months of protests by tens of thousands of Guatemalans.

Mr Morales has let them down. CICIG is investigating claims that his party took illegal donations, including from drug-traffickers. It has asked congress to strip him of immunity from prosecution. In response he has declared the chief of the commission, Iván Velásquez, persona non grata and attempted to throw him out of the country (see page 33). The constitutional court blocked that order, but damage has been done. Mr Morales has made himself the enemy of the institution that Guatemalans trust most and has harmed his presidency.

Outsiders should worry, too. Guatemala is one of two countries in Latin America where corruption-fighters are having conspicuous success. The other is Brazil, where prosecutors have brought charges against scores of politicians, including the president, Michel Temer, in the vast *Lava Jato* (Car Wash) investigations. Across the region, judicial systems are being tested by revelations that Odebrecht, a Brazilian construction company at the centre of *Lava Jato*, bribed officials in a dozen countries. Their citizens want the sort of accountability that

CICIG has brought to Guatemala. If Mr Morales can shut it down, that will encourage other presidents tempted to stymie the graft-busters. Mr Temer charges his accusers with “sowing disorder”. In Mexico pro-government parties have blocked the appointment of a new anti-corruption prosecutor.

Mr Morales's defenders argue that the commission is overstepping its mandate and hurting investment by going after businessmen. A foreign agency, they say, has no business enforcing Guatemala's laws. None of these objections has merit. Under the UN's agreement with the government, CICIG can help prosecute crimes by “illegal security groups”, which in Guatemala means cabals of politicians, firms and organised-crime outfits. An economy purged of corruption will get more investment, not less. Mr Morales renewed CICIG's mandate and endorsed the organisation's work, until it threatened him.

Sense on CICIG

Critics say that it would be better for Guatemala's own courts and police to enforce the law. They are right, but part of CICIG's mandate is to strengthen those institutions. It has helped train police and create specialised courts for organised crime. Until such institutions mature, Guatemala's second-best solution is still needed. Neighbouring Honduras has adopted a version of it, backed by the Organisation of American States.

CICIG now needs stout support, both within and outside Guatemala. Mr Morales should withdraw the expulsion order and co-operate fully with the commission. The private sector should defend Mr Velásquez, rather than merely issue bland endorsements of the fight against corruption. The American government has been robust, but it could do more. It provides nearly \$150m a year in aid to Guatemala, some of it conditional on progress in fighting corruption. It should make clear that Mr Morales's war with CICIG is putting that money at risk. His Latin American peers will be watching. ■

North Korea's nuclear provocations

Stand by Japan

A missile flying over Japan shows why America must stand up for its allies



KIM JONG UN has shown what he thinks of President Donald Trump's promise in early August to respond with “fire and fury” to North Korea's growing nuclear threat. After pausing his missile tests just long enough for America's secretary of state, Rex Tillerson, to say that Mr Kim was showing “restraint”, and for Mr Trump himself to claim to have Mr Kim's “respect”, North Korea's dictator unleashed three short-range missiles into the Sea of Japan. Most provocatively, on August 29th, an intermediate-range missile flew over Japan's northern island

of Hokkaido. Japanese under the missile's path awoke to the sound of sirens, while the authorities urged them to seek shelter (see page 21). The missile crashed harmlessly into the Pacific 745 miles (1,200km) to the east, but Japan's prime minister, Shinzo Abe, was right to call it an “unprecedented, serious and grave threat”.

Only twice before, in 1998 and 2009, have North Korean missiles overflowed Japan, when the regime used satellite launches to develop its missile technology. With this attack, the Japanese were reminded more than ever of their vulnerability. The rocket is likely to have been a Hwasong-12, a design with which, along with its intercontinental counterpart, Mr Kim's scientists are making unexpectedly rapid progress. Pre-►

▶vious launches of these missiles have sent them high into space and back into the sea. This test, for the first time, sent a missile on the kind of trajectory it would follow if used in anger. With each test, the scientists glean valuable data. They may already have learned to shrink a nuclear weapon enough to fit it on a missile, though a warhead may not survive re-entry. At this rate, North Korea could soon threaten to nuke anywhere from Seoul to San Francisco.

Calibrated unpredictability

It appeared to be a calibrated provocation—one intended not to invite a military response. That is a relief. Mr Kim has repeatedly threatened to launch tests in the direction of Guam, an American territory and military base, most recently after this week's test. Mr Trump, who responded to the latest threat by appearing to rule out talks (and was immediately contradicted by his secretary of defence), remains open to military action. He should not be. A pre-emptive attack on the North's nuclear sites would risk a cataclysmic response. Mr Kim might see it as an attempt to overthrow his regime, and react by raining destruction on Seoul, only 50km away from his massed artillery batteries. It is striking that in Japan and South Korea, many fear Mr Trump's unpredictability even more than Mr Kim's.

So how should America do right by its two East Asian allies? First, Mr Trump needs to understand the North's plan, which is to drive a wedge between America and its friends in the region. Mr Kim's calculation is that if he can threaten mainland America, he would make America think twice about intervening to protect South Korea or Japan. Would Mr Trump,

whose slogan is “America First”, choose to sacrifice Seoul in the hope of saving San Francisco? Any hint of such thinking would undermine America's alliances. If Japan and South Korea were to stop trusting American security guarantees, they might feel compelled to develop nuclear weapons of their own, alarming China and hugely complicating an already fraught situation.

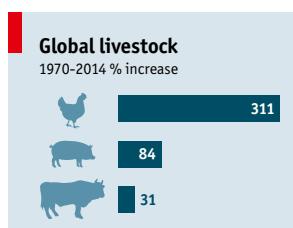
So America must reaffirm and strengthen its commitment to defend its allies. Mr Trump could start by helping both Mr Abe and President Moon Jae-in of South Korea with extra missile defences, such as the new Aegis Ashore system. Mr Abe has been right to interpret Japan's pacifist constitution more flexibly to enable him to help America. It would be better still for the alliance if Japan used its army like any other mature democracy, contributing fully to peacekeeping and joint-security operations. For now, public opposition to Japanese soldiers ever being shot at makes this hard. With luck, a future prime minister without the baggage of Mr Abe (whose grandfather, a hero of his, was accused of war crimes) could make it happen.

China and Russia, meanwhile, are not helping. Both countries have condemned Japan's plans to upgrade its missile defences. That is callous and misguided; Japan has every right to defend itself against Mr Kim. China must stop encouraging North Korea by failing to apply UN sanctions strictly. And America should make clear that any threat to Seoul or Tokyo will be treated as if it is a threat to American territory. The chance of Mr Kim using his nuclear weapons is much smaller if he understands that to do so would spell the end of his regime, and his life. ■

Protein-rich diets

Feed as well as food

As demand for protein grows, what people eat matters. So does what gets fed to animals



BETWEEN now and 2050 the planet's population is expected to rise by a third, from 7.6bn to 9.8bn. Those extra mouths will need feeding, and not just with staples. As people grow richer, their demand for protein rises, particularly for meat and fish. Beef consumption in Asia, for example, is expected to jump by 44% over the next decade alone.

Raising animals to be eaten already has huge effects on the world's environment. The number of farm animals soared during the 20th century. More than 20bn chickens, 1.5bn cattle and 1bn sheep are alive today. A quarter of the world's land is used for grazing them. They consume 30% of the world's crops. They guzzle water—you need about 15,000 litres of the stuff to produce a kilo of beef, compared with only 1,500 litres for a kilo of maize or wheat. And their eructations do nothing for the climate. Livestock are responsible for 14.5% of all anthropogenic greenhouse gases, according to the UN Food and Agriculture Organisation (FAO).

How then may the planet be fed sustainably? One set of answers revolves around convincing people to put different things on their plates. Vegetarians have the simplest solution of all, but try telling people in sub-Saharan Africa that they

should stick to cassava. Encouraging people to eat more fish rather than more meat is a better answer. Human consumption of fish has now overtaken that of beef, and aquaculture accounts for half of all the fish people eat. But almost 90% of wild stocks are fished either at or beyond their sustainable limits. And farmed fish, particularly salmon, are often fed on smaller fish that themselves are caught at sea. A fashionable idea is for Westerners to eat more insects, which contain up to three times as much protein as beef and already form an integral or supplementary part of up to 2bn people's diets, according to the FAO. But for that to happen, many will have to get over the “yuck” factor.

Another set of answers involves using technology to create artificial protein. Investors such as Bill Gates and Richard Branson have backed artificial-meat startups that grow beef and poultry from animal cells. Tyson Foods, a meat processor, is an unlikely fan of plant-based proteins. Scientists are also looking at genetic modifications to animals—to increase the muscle of cattle or to reduce infections among farmed fish.

Innovations such as these have enormous potential, if they can be industrialised and win over wary consumers. But changing what humans eat is not the only route to feeding a growing population more sustainably. Another, less obvious, approach is to alter what animals themselves eat. It is here that technology may have the biggest impact soonest. ►

► One source of improvement lies in the more efficient use of crops to feed animals. The proliferation of mills that process grain into feed is helping in places such as sub-Saharan Africa, for example. Data-intensive farming is helping improve agricultural yields of feed crops like soyabean by carefully monitoring the use of water and fertiliser.

Eat shit and diet

A more radical approach is to change animals' diets. Efforts to reduce the amount of fish meal used in aquaculture have already paid dividends. In 1990 90% of salmon feed used in Norway was fish meal, but by 2013 greater use of plant matter had reduced that figure to 30%. More can be done. At most 20% of protein in grains fed to animals is converted to edible protein;

the rest is turned into waste products. Cargill, an agricultural giant, broke ground this year on the world's largest gas-fermentation facility, in partnership with Calysta, a Californian firm that makes feed out of natural gas (see page 48). After feeding bacteria called methanotrophs with methane, they can be turned into protein pellets for fish and livestock. Insects are also an option. Flies and maggots can be raised on manure and organic waste, instead of grains, and then fed to cattle, chicken and fish.

The FAO has warned that by 2050 the planet will need to produce 70% more food than it did in 2009. The idea of chomping on more bugs and eating lab-grown meat may capture the imagination. But the path to food sustainability also runs through animals' stomachs. ■

Traditional Chinese medicine

State-sponsored quackery

China is ramping up promotion of its ancient medical practices. That is dangerous



playful hyperbole—even the Chinese Communist Party has no plans to supplant modern medical science with ancient and unproven forms of treatment. But the party is serious in its efforts to promote the use of such remedies (commonly known as TCM) globally, and to reinforce China's own extensive network of TCM hospitals and clinics.

In recent years, TCM has been enjoying rapid growth in China. The number of Chinese hospitals offering it rose from about 2,500 in 2003 to about 4,000 by the end of 2015. In the past six years, the number of licensed practitioners in China has increased by nearly 50%, to more than 450,000. Using its network of "Confucius Institutes", the Chinese government has been subsidising the teaching of TCM in America, Britain and other countries (see page 25). "Is the world entering a TCM era?" asks *China Daily*, another propaganda outfit, on its website. The government would be delighted if the answer were yes. Humankind, and the natural world that supplies TCM with its ingredients, would have less cause to rejoice.

Eating bitterness

TCM has not always enjoyed the status it has in China today. After the collapse of the country's last imperial dynasty in 1911, China's new leaders spurned it as superstition. TCM, after all, is about more than just acupuncture and concoctions of herbs and animal parts. There is often an element of mysticism, too—a belief in a force called *qi* that can affect the body's health. But Mao was an avowed fan of TCM. He knew it was popular among the peasants who had provided crucial support for his guerrilla movement. And if that's what they wanted, it had the advantage of being cheap. (In private, Mao confided to one of his doctors: "Even though I believe we should promote Chinese medicine, I personally do not believe in it.")

China's leader today, Xi Jinping, is even more of a champion of TCM. Last year his government issued a "white paper", setting out plans to promote it and noting its "positive impact on the progress of human civilisation". The document said the TCM industry was becoming a "new source of growth" for China's economy. In July a law came into effect that requires local governments to open TCM departments in all general hospitals, and to give "equal emphasis" to TCM and what China calls "Western medicine".

Mr Xi's efforts may bring some benefits. To the extent that TCM promotes a healthy diet and way of life, it is to be lauded. TCM practitioners who also have skills in conventional medicine may be able to fill gaps in China's woefully inadequate primary health-care system. But there are dangers, too. Devoting more resources to TCM could mean less money for health care that is based on science. Here TCM falls down. Most of its treatments are at best a placebo and at worst a harmful distraction from the task of curing people, or downright dangerous. In 2015 a Chinese pharmacologist, Tu Youyou, became the first scientist to win a Nobel prize for work carried out in China. She had isolated a chemical in TCM that could treat malaria. The Chinese government claimed this as evidence that TCM as a whole was effective. In fact, as the Nobel committee emphasised TCM provided only the inspiration for the research that led to her award. When a traditional medicine is proved to work, there is always an underlying medical mechanism.

Promoting TCM will only exacerbate the damage it is causing the environment and endangered species. On the Tibetan plateau, fortune-hunters destroy grassland searching for dead caterpillars; the fungus growing out of them is a TCM favourite (though not an officially approved one) that is worth much more than its weight in gold. There is no evidence of its libido-boosting properties. On the South African savannah, rhinos lie dead with their horns cut off; ground into a supposed arthritis-curing powder, the appendages fetch thousands of dollars per kilo in TCM's black market in China. The list goes grimly on.

Mr Xi's efforts are motivated in part by politics. He wants to be seen as an ardent patriot and champion of Chinese culture. Rather than subsidising quackery, he would do China more good by championing science. ■

Pride in what
we do also
comes from
pride in what
we do not do.

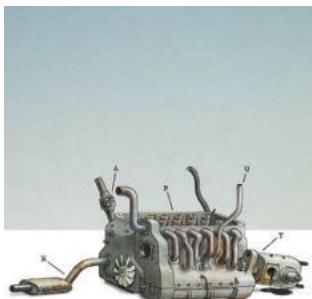
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Road bumps for electric cars



Mark Twain once observed that the report of his death was an exaggeration. The same holds for your prediction of the demise of the internal combustion engine ("Road-kill", August 12th). We agree that over the next few decades battery power will make deep inroads, replacing internal combustion engines in light vehicles. However, 40% of the greenhouse-gas emissions from global road traffic in 2015 came from freight, much of it from long-haul operations.

Successfully electrifying heavy trucks remains unlikely. In America, the average Class 8 truck travels between 300 to 600 miles a day. Shashank Sripad and Venkat Viswanathan have estimated that for a truck with a driving range of 300 miles, the lithium-ion battery system would cost roughly \$200,000. In addition, for a truck with a range of 600 miles, the battery pack would weigh over 16 tonnes and would cut the truck's maximum permitted freight capacity almost in half.

This casts doubt on the feasibility of Tesla's electric long-haul truck, which is to be unveiled shortly. The bottom line is that it is hard to beat the very high energy density of liquid fuels. In the future, fuels may be made in ways that release no net carbon dioxide into the atmosphere. Internal combustion engines will be with us in trucks for decades to come, unless batteries are radically improved or massive investments are made to create a zero-carbon hydrogen fueling infrastructure.

LYNN KAACK
M. GRANGER MORGAN
Carnegie Mellon University
Pittsburgh

We could not disagree more with your assessment of the death of the internal combustion engine (ICE). Electric vehicles that run on batteries are part of the future. However credible studies suggest that 90% of ground-transportation energy will continue to come from hydrocarbon-based fuels (both renewable and traditional sources) in 2040. Moreover, the electrical generation capacities we have at present do not come close to meeting the needs of an all-electric fleet. Nor is battery production emission free.

As well as road freight, vehicles used in agriculture and construction and for long-distance travel will continue to be powered by the ICE. There is little other choice. You also refer to a ban on new cars "reliant on ICES", yet many such vehicles will still contain an ICE as a hybrid.

Today's ICE is a modern machine; there have been huge leaps in technological innovation to increase its efficiency and decrease emissions. Further advances will enable near pollutant-free mobility; future fuels offer sustainable decarbonisation strategies. If we cease to invest in the ICE there is a danger that we will lose the opportunity to improve its technology, especially if electric cars do not meet expectations.

The demonisation of the internal combustion engine makes good politics, but poor engineering.

FELIX LEACH
Research fellow
Keble College
University of Oxford

Note: A full list of signatories to the letter is available online

China, India, the United States and the European Union have put forward ambitious goals for increasing the number of electric cars on the roads by 2025. Our research suggests that if these objectives are fulfilled, lithium demand for electric cars will absorb about 400,000 tonnes of lithium carbonate equivalent by 2025. However, this would require lithium production to grow by

20% each year from now until 2025, almost twice as fast as over the past decade. Although there is abundant supply, 54% of the lithium is extracted from Argentina, Bolivia and Chile, where the governments are notorious for protecting their lithium reserves. The extraction process is slow and laborious, which affects supply.

The actual scenario will be one where lithium is scarce, which will put the spread of electric cars at risk unless manufacturers develop more efficient electric batteries.

ALVARO GARCIA-MARIN
PETER HOEGLER
Universidad de Chile
Santiago

You mention that the energy density of petrol is 50 times greater than that of batteries ("Electrifying everything", August 12th). But batteries don't get lighter as they lose their charge. On the other hand, a petrol-powered vehicle that starts with a full tank and ends with an (almost) empty one must carry on average only half the weight of a full tank. Thus, for a proper comparison the energy density of petrol should be doubled.

MATTHIAS KISTLER
London

Jews in the Confederacy

There is a historical incongruity that illuminates the ignorance of white supremacists chanting anti-Semitic slogans while protesting against the removal of a statue of Robert E. Lee ("White fight", August 19th). Thousands of Jews fought for the Confederacy and they were treated with kindness and respect by General Lee. In contrast, Ulysses S. Grant, the commanding general on the Union side, issued an order in 1862 that expelled Jews from parts of Kentucky, Mississippi, and Tennessee in military districts under his command, an order that was revoked by Abraham Lincoln.

In fairness to Grant he subsequently apologised and his presidency was noteworthy for appointing Jews to official positions. He also opposed a proposed constitu-

tional amendment that would have, in effect, made the United States a Christian republic and spoke out against the persecution of Jews abroad.

ELLIOT WEISENBERG
Chicago

Perhaps William Faulkner said it best when he wrote in his novel, "Intruder in the Dust": "...no man can cause more grief than that one clinging blindly to the vices of his ancestors."

KEVIN DORAN
Galena, Illinois

We're feeling a bit sheepish

I was surprised that your review of a book on puns characterised ovine puns as "egg-specially eggs-cruciating" ("The quip and the dread", August 12th). I rather think of them as ewe-niquely lamb-entable.

GIACOMO PONZETTO
Barcelona

China's media regulators in 2014 brought in a no-pun policy, discouraging the alterations of idioms and the meaning of characters used in any form. Apparently, this was because puns cause "cultural and linguistic chaos".

ADITYA IYER
Chester, Cheshire

The protagonist in "Jokester", a short story by Isaac Asimov, posited that jokes are not original ("Multivac, the most complex computer ever built", comes up with the finding that aliens plant jokes in humans as a psychological experiment), but puns are the exception. Though you're not supposed to laugh at puns. "You groan. The better the pun, the louder the groan." Asimov considered puns to be uniquely down-to-earth humour.

JOHN CLARK HELZER
Longmont, Colorado ■

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Executive Focus



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Senior Adviser Financial Stability Institute Basel, Switzerland

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Submerged

AUSTIN, TEXAS

The unprecedented floods that Hurricane Harvey visited on Houston reflect a worldwide trend

THE images were disorienting, the reports were surreal. Vast swathes of Houston were underwater. The highways that encircle the city had become canals. Colonies of fire ants, having swarmed together, were floating around like rafts of live embers. Alligators appeared, seeking higher ground. At a nursing home southeast of the city, half a dozen women sat in several feet of water. A man caught a fish, by hand, inside his home.

Harvey was the first hurricane of category 3 or above (that is to say, one with wind speeds over 95 knots, or 176km per hour) to hit the United States since 2005, the year Katrina devastated New Orleans—a 12-year hiatus longer than any other in the historical record. It wrought most of its havoc, though, not through the strength of its winds but through the volume of its rains. “The breadth and intensity of this rainfall are beyond anything experienced before,” the National Weather Service (Nws) reported. Some weather gauges measured more than 50 inches (127cm) of rainfall between the evening of Thursday August 24th and the afternoon of Tuesday August 29th. If Harvey’s rain had been spread over the entire country it would have stood the best part of a centimetre deep.

The Houston floods make Harvey the

most damaging weather event America has experienced since Hurricane Sandy, which walloped New York and New Jersey in 2012. As *The Economist* went to press the number confirmed to have died due to Harvey was just 31, though it is sure to rise. Hurricane Ike, which hit Galveston in 2008, claimed 113. In terms of property damage Harvey could well exceed Ike’s \$30 billion.

Six crooked highways

A week before Harvey arrived on Texas’s Gulf Coast, it was a mere tropical wave—the spectral remains of a storm that had fizzled out in the Caribbean, en route to Mexico’s Yucatan Peninsula. But then it reorganised itself abruptly and turned north. Sucking energy from the warm waters of the Gulf, it became a fully fledged hurricane on August 24th.

The next day the Nws was warning, accurately, that “Harvey’s forecast path is slow and meandering, meaning a long duration flood threat with catastrophic results.” In Corpus Christi, the city closest to the hurricane’s projected point of landfall, the mayor, Joe McComb, encouraged residents to evacuate voluntarily. The mayor of Houston, Sylvester Turner, did not. That afternoon the governor of Texas, Greg Abbott, questioned the mayor’s decision.

Also in this section

18 A deadly monsoon

19 Ever more frequent

“Even if an evacuation order hasn’t been issued by your local official, if you’re in an area between Corpus Christi and Houston, you need to strongly consider evacuating,” he said at a news conference. “What you don’t know, and what nobody else knows right now, is the magnitude of flooding that will be coming.”

But that uncertainty was one of the reasons that local officials of both parties agreed with Mr Turner. For most of the cities in the path of the storm, including Houston, a sedentary stoicism seemed the most reasonable response. Two million people live within Houston’s city limits. More than 6m live in Harris County and the rest of the greater Houston metropolitan area. And by Friday afternoon, the storm was already bearing down on them. In 2005, when Hurricane Rita was hurtling towards Houston less than a month after Katrina had hit New Orleans, city leaders had ordered an evacuation on similarly short notice, with awful results. More than 100 people died in the attempted exodus and then the hurricane bypassed the city. That experience weighed heavily on the minds of Houston’s leaders, as did the fact that Harvey presented a different kind of risk. “We’ll have a lot of water,” said Ed Emmett, the Harris County Judge, on Friday afternoon. “But it’s not the kind of water that ➤

► we would ask people to evacuate from."

Hours later Harvey made landfall just north-east of Corpus Christi as a category 4 hurricane, with winds of over 110 knots. On Sunday morning Houston—the fourth-largest city in America, 300km away—woke up to catastrophe. The drama of the day was heightened by the fact that so many of the people affected turned to social media to send an SOS. Local officials and law-enforcement officers, similarly, used social media to co-ordinate their response. The tweets and Facebook posts that surfaced throughout the day asking for help were dispatches from a disaster that most Americans had not been expecting and struggled to imagine.

The city of Houston tweeted that emergency operators were overloaded: "If you shelter in place do so, a few inches in your home is not imminent danger. Only call if in imminent danger." The chief of police, Art Acevedo, warned people not to get trapped. "Have reports of people getting into attics to escape floodwater," he noted. "Do not do so unless you have an ax or means to break through onto your roof."

The sheriff of Harris County, Ed Gonzalez, relayed SOS messages between rescue attempts. "Got to use the kayak to pull out a family of 3 and their 4 cats," he reported at one point on Sunday afternoon. Mr Emmett, the judge, called on locals with boats to step up. With the roadways flooded, he explained, "We can't wait for assets to come from outside." Hundreds answered the call.

Their efforts proved crucial over the next few days, as Harvey, having arrived, stayed put. Houston is flat and low-lying; its long-standing opposition to zoning has encouraged development that sprawls over an area larger than several states and pays little heed to the need for drainage. As the rain came down the streets filled up. Water had to be released from the two reservoirs built to cope with such contingencies.

cies into the Buffalo Bayou that runs through the centre of the city. One of them, Addicks Reservoir, overflowed for the first time in its history.

On Tuesday, the sun emerged over Houston, as Harvey continued to meander up the Gulf Coast. City officials warned that the crisis was not yet over; the recovery, certainly, has not yet begun. Tens of thousands had been displaced, all along the Texas coast, to inland cities like Austin and San Antonio; thousands more were still sheltering in Houston, waiting for the waters to recede from their homes.

The damages will be immense, with implications far beyond the Gulf Coast: the ports of Houston, Corpus Christi and Beaumont are among the largest in the country and the region is the heart of the nation's oil and gas industry. By Wednesday morning, more than 3m barrels a day of refining capacity—roughly half of Texas's total—was offline, including America's biggest refinery, in Port Arthur. American petrol prices jumped. Antoine Halff of Columbia University's Centre on Global Energy Policy notes that when Katrina hit New Orleans it was flooding that did most of the lasting damage to refineries. Since then flood readiness has improved, but Harvey's extraordinary rainfall might overwhelm all such preparations.

As state and national officials have already recognised, the recovery from Harvey will take years rather than months. And while rebuilding, Texas will have to confront questions that its leaders have long preferred to avoid. The aftermath of the disaster will reveal whether the state's investments in infrastructure have been commensurate with its pell-mell growth, and whether it has taken appropriate precautions in response to the projected impacts of climate change.

In the meantime, there may be something to say for Houston's spontaneous and largely self-organised response to Har-

vey. The city's approach to disaster relief was, in some respects, alarmingly ad hoc. But thousands of people were rescued as a result. It looks a far cry from Katrina, which led, directly or indirectly, to the deaths of more than 1,800 people, mostly in Louisiana. Roughly a million were displaced; the damage was estimated at \$108bn. And some of its consequences were incalculable. No one was prepared for the levees surrounding New Orleans to break. For days, Americans watched helplessly as people drowned.

The deadliest hurricane in American history, though, was the one that hit Galveston in 1900, in effect wiping it out. Many of its survivors resettled in Houston, which was, at the time, more of a one-horse town. Their descendants, damp as they are, have fared much better. ■

India and Bangladesh

Hard hit

DELHI

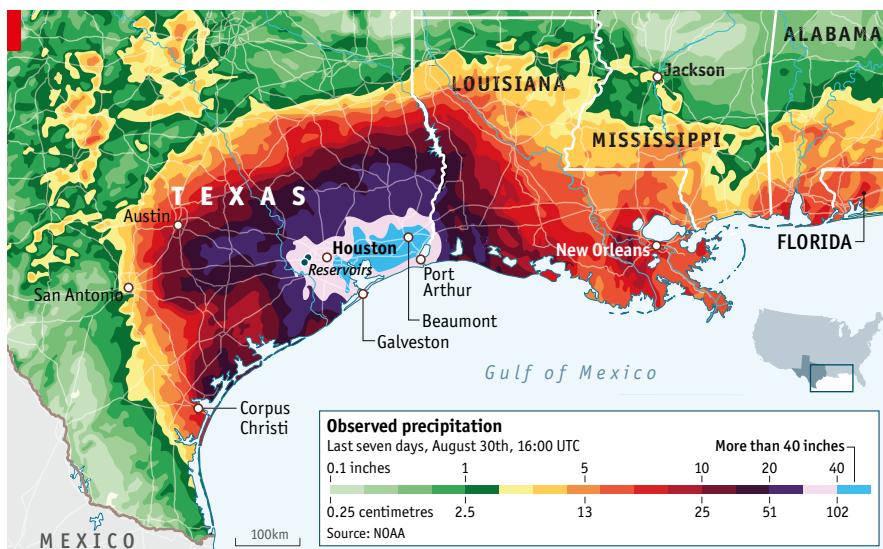
A below-average monsoon can still prove deadly

WITH the giant Himalayas caging its towering clouds, the great basin where the Brahmaputra merges with the Ganges and Meghna rivers is prone not only to heavy rainfall but also to sudden deluges. Bits of the Indian state of Meghalaya receive over 11 metres (36 feet) of rain a year, making them the wettest places on the planet. Where there is so much water plus so many people—the basin, which covers just 1% of the world's land area, is home to one in ten of its people—flooding is a perpetual hazard. In the thickening heat of every summer the locals greet the monsoon with both relief and trepidation.

This year's monsoon has seen as many as 1,000 Indians killed in floods, half of them in the country's poorest state, Bihar, where 12m people may have abandoned their homes. On August 29th 33cm of rain practically shut down Mumbai; on the 31st a building there collapsed.

In neighbouring Bangladesh, flooding killed more than 144 in August, with some 11m people affected. As much as a third of the country was briefly submerged when waters peaked late in the month. A similar number lost their lives in Nepal.

The region has seen worse. In 2007 floods killed 3,300 people in India and Bangladesh. In 2010 flooding killed 2,100 people in Pakistan, and in 2013 some 6,500 people died due to floods in India. Bangladesh saw catastrophic floods in 1974, 1987, 1988 and 1998, when the capital city, Dhaka, was inundated. In July 2005 Mumbai received almost a metre of rainfall in a single ►





Pushed to extremes

▶ 24-hour period.

But the death toll in this year's floods is still high—even though, according to the Indian Meteorological Department (IMD), this summer has been no wetter than the long-term average for rain across northern India. Despite floods in Assam in April, in Gujarat in July, in Bihar in August and most recently in Mumbai, this monsoon's rainfall is still some 3% below average.

This contrast is part of a pattern. In recent decades the volume of rain brought by the monsoon (which in a typical year provides 85% of all India's rainfall) has declined; this year's slightly sub-par affair is being greeted across most of the subcontinent as a welcome return to form after a couple of dry years. At the same time the incidence of short periods of sudden, torrential rain has been increasing, particularly in July and August. A paper published in *Nature Climate Change* in 2014 by researchers at Stanford states that the intensity of extremely wet spells and the frequency of extremely dry spells during the South Asian monsoon season have been increasing since 1980. "We are looking at rainfall extremes that only occur at most a few times a year, but can have very large impact," says Noah Diffenbaugh of the Stanford Woods Institute for the Environment.

His team found that central India's average July and August rainfall has fallen from 1cm a day to about 0.9cm a day over the past 60 years. However its day-to-day variability has increased. At some level, these stronger rains may be compensating for an overall weakening of the monsoon.

In Bangladesh, this year's floods are the most extensive since 1998, when two-thirds of the country was inundated, over 1,000 people died and 30m were affected. More than half a million houses have been destroyed; the overflowing Brahmaputra, locally known as the Jamuna, has washed away embankments and cut train links. Over 6,000 square kilometres of standing

crops have been damaged, and farmers in the north of the country will not be able to replant their paddies. (As ever, Dhaka's politicians have accused India of not giving them enough notice before releasing floodwater down the more than 50 rivers that flow from India to Bangladesh.)

But loss of life has been limited, in part because of investments in risk management. The defences around Dhaka have held, though the city's Flood Forecasting and Warning Centre says the level of the Brahmaputra is still threatening embankments south of the capital. Forecasting has improved. Text messages are now used to warn of disasters. The days when cyclones would leave hundreds of thousands dead seem now to be in the past.

The government is providing food assistance to 2.8m people. Sheikh Hasina, the prime minister, has reassured the public that there will be enough food. That she had to say so was disquieting. In usually food-self-sufficient Bangladesh, which is the world's fourth-largest rice producer, stocks are depleted. An earlier, unseasonal flood ruined rice crops in north-eastern Sylhet and sent rice prices spiralling. To lim-



it the political fallout, the government cut the duty on rice imports from 28% to 2% and ordered 1.5m tonnes from overseas. That should succour the displaced as they watch the monsoon tail off and the waters recede—and start to prepare for the challenges of the next year. ■

The chances of disaster

Frequency modulation

Centuries ain't what they used to be

IN 1979 it was Claudette; in 2001 it was Allison; now it is Harvey: in 50 years, the city of Houston has been hit by three separate "500-year floods". A 500-year flood does not have to happen only twice a millennium. But a run of three in one place does make it feel as if the past climate were no longer a reliable guide to the present—as if the climate itself were changing.

So, of course, it is. The world's average temperature is between 0.6 and 0.7°C (1.1–1.3°F) higher than it was in 1979. Scientists have understood since the 1850s that hotter air holds more water vapour; a law known as the Clausius-Clapeyron equation states that for every degree Celsius of warming, the atmosphere will hold 7% more moisture. In 1989 two Japanese researchers used computers to model this phenomenon and concluded that this wetter air would lead to more of the heaviest rains rather than, say, near-perpetual drizzle. It is thus no surprise that insurers see an increase in water-related disasters (see chart 1 on next page).

Other lines of evidence bear out the insurers' loss data. In 2015 researchers from the Potsdam Institute for Climate Impact Research in Germany compared computer

models of the atmosphere as it now is and as it used to be to see how much of an impact these effects might be having. They found that the planet Earth experienced 12% more record-breaking downpours between 1980 and 2010 than might have been expected had the climate not been changing (see chart 2 on next page). The same year Reto Knutti and Erich Fischer at ETH Zurich, a Swiss university, found that the warming recorded since pre-industrial times made new one-day records for rainfall over land 18% more likely. For 2°C of warming, the target below which countries vowed to keep global warming under the Paris agreement of 2015, the figure would rise to 40%.

Despite these general relationships, climate scientists have for the most part been cautious about blaming particular events on the climate change driven by the emission of greenhouse gases. Heavy storms, for example, result from a complex confluence of factors. What made Hurricane Harvey so unusual—and unusually destructive—is that it intensified very quickly in the 24 hours before it hit Texas, thanks to a particularly warm eddy of water in the Gulf, and it then stopped dead in its tracks, ►

held between two high-pressure systems as though in a vice.

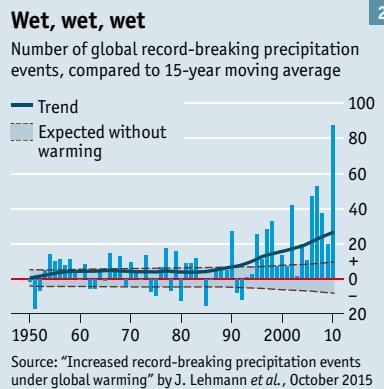
But the fact that severe storms, like Tolstoy's unhappy families, all differ in their details does not mean that there are no generalisations to be made about the chances that something will make a family unhappy, or a storm severe. By running climate models again and again under different conditions it is possible to get a sense of how much more likely a given event is under today's conditions versus yesterday's. "If climate change doubles the probability of an event, there is a sense in which half the blame is attributable to humans," argues Myles Allen of Oxford University.

Since 2012 the American Meteorological Society has published an annual bulletin entitled "Explaining Extreme Events from a Climate Perspective". Sometimes no link is found between specific meteorological anomalies and man-made climate change: that was the case with Britain's winter storms at the start of 2014 and the water shortages in south-east Brazil later that year. In other cases—droughts in Kenya in 2012, a Japanese heatwave in 2013, torrential downpours in south-west China two years later—signs of human exacerbation can be discerned.

Coming for some time

All this matters because the models engineers rely on to build resilience into roads, buildings, bridges, dams and levees have tended to presuppose that the climate of the recent past represents the climate of the foreseeable future. This opens them up to two sorts of surprise: that tomorrow's climate may be different; and that the day-before-yesterday's climate may have been more variable than their records suggest. The likelihood of calamities that fall beyond the range seen in the recorded data is determined by extrapolating what the "tails" of the sample distribution might look like. Those extrapolations, it now appears, have sometimes been conservative.

Victor Baker, a palaeohydrologist at the University of Arizona, studies floods far away in time and space (he is particularly renowned for his work on catastrophic tor-



rents in the distant past of Mars). The scars left by the biggest past events provide benchmarks for what might happen again: as Mr Baker puts it, "What has happened, can happen." In 2013 he and his colleagues analysed 44 ancient inundations of the Upper Colorado River, estimating the floods' intensity from the volume of sediment and establishing their age using a technique which reveals when quartz in those sediments was last exposed to daylight. Their analysis showed that the river's "500-year floods" were twice as severe as estimates based on modern records alone implied: what had been considered a once-a-millennium flood turns out to occur more than once a century.

Chinese hydrologists, prevented from setting up modern rain-gauge infrastructure in the 20th century by invasion, civil war and the Cultural Revolution, have long relied on ancient records, both geological and human, to inform the design of dams and canals. Although in the 1990s America's Bureau of Reclamation developed similar techniques to study the potential risks to large dams from very rare, extreme flooding, most Western hydrologists have tended to regard such things with scepticism, highlighting the difficulty of reliably interpreting the geological record. But interest in the field has grown. In September Mr Baker will give the keynote address at a big geologists' shindig in London and, a month later, another to the annual meet-

ing of the Geological Society of America.

A greater respect for the past will help people modelling hazards. So will better statistics. Advances in so-called "extreme-value analysis" have helped statisticians improve their projections of the undersampled tails in their data. And modellers can augment the real world with thousands of computer-simulated scenarios.

Besides supplementing real-world data for statistical purposes, generating virtual weather this way is handy for risk assessment. As Mr Allen remarks, "We are, almost by definition, harmed by events that haven't happened before." Lea Müller, a natural-hazards expert at Swiss Re, a reinsurance company, recalls how one north-Atlantic storm simulation had charted the curious path that Hurricane Sandy subsequently took when it buffeted New York in 2012. It was just one of many generated scenarios and came too late for the city to impose stricter building standards, say. But it shows that scrutiny of possible worlds may alert people to potential perils in much the same way Mr Baker's excavations can.

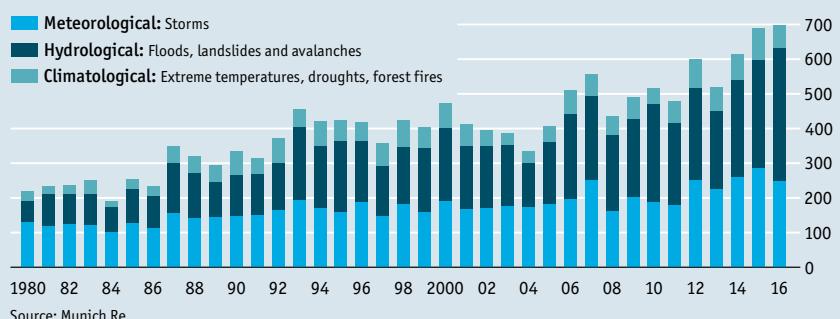
In 2015 the Federal Highway Administration asked the National Oceanic and Atmospheric Administration (NOAA) to assess how much the assumption of an unchanging climate affects "Atlas 14", NOAA's repository of flood-risk estimates. Sanja Perica, who led the project, says the idea was to see how greater weight could be given to more recent data, which are more indicative of what a hotter future may look like. "The project ended with more questions than answers," he admits. But his team soldiers on (though some fear that the flow of federal cash for such projects may dry up under President Donald Trump, whose budget has cut funding for various climate-change initiatives).

Understanding the risk of flooding in the future will demand pursuing many courses: statistics, simulations and sediment studies all have a role to play, says Peter Thorne of Maynooth University in Ireland, who contributed to the latest report of the Intergovernmental Panel on Climate Change and the current US Climate Assessment. The good news is that scientists are on the case. Sadly, engineers and their political taskmasters have been reluctant to embrace the advances they feel they can offer. They cling to "old data, poor data or no data at all," gripes Mr Thorne.

Perhaps, Mr Knutti ventures, they prefer what they know and understand. Swiss building standards have not been updated in 40 years. Updating NOAA's Atlas 14 may require a political decision, and given the lamentable stance of the administration support is far from assured, Harvey notwithstanding. What looks certain is that Houston, Mumbai and a host of other cities can expect more "hundred-year" floods before the century ends. ■

A rising tide

Natural-disaster loss events by cause





Japan and North Korea

Shooting over Japan's head

SENDAI AND TOKYO

A provocative missile test raises questions about Japan's civil-defence readiness and its pacifist constitution

WHEN the alarm sounded from loudspeakers in the streets and his mobile telephone around 6am on August 29th, Saburo Ito thought it was a warning about an earthquake. But when he read that a North Korean missile was passing overhead the 72-year-old taxi driver panicked and ran out into the garden. The instruction to "evacuate to a sturdy building or basement" was all but forgotten. "I had no idea what to do or where to go," he says.

Japanese have been oddly sanguine about military threats, even as China has grown more powerful and North Korea has tested ever more capable missiles and atom bombs. Japanese refer to this state of mind as *heiwaboke*, meaning roughly to take peace and security for granted.

Such complacency may have been shaken by the North Korean missile that passed over Hokkaido before crashing into the sea about 1,200km to the east. "North Korea's reckless action is an unprecedented, serious and grave threat to our nation," said the prime minister, Shinzo Abe.

It was not the first time that North Korea had fired over Japan; it had conducted similar tests four times previously (under the guise of satellite launches). But the latest shot was a surprise, not least because recent tensions over North Korea's testing of long-range missiles had appeared to ease of late. America has grown increasingly alarmed that its bases in Guam, or perhaps America's western seaboard, could soon be threatened by the regime of Kim Jong

Un. Japan has long lived under the shadow of his rockets. What is more alarming is the consensus among analysts that his engineers have probably mastered the technology of making a nuclear warhead small enough to fit on a missile.

The latest test is raising questions about the preparedness of Japan's civil defences and the ability of its anti-missile systems to keep the country safe. It is also heightening the debate over whether Japan should amend its pacifist constitution.

Over the past year the government has tried to reassure citizens of its ability to protect them. It has published guidelines for how to respond to a missile strike: in short, take cover; and, in the event of a nuclear attack, pull a jacket over your head. Twelve towns have held drills for a North Korean missile attack. They have involved children having to curl up under their desks. For some Japanese such measures are not enough. A very small but increasing number have been building nuclear bunkers and buying air purifiers to protect against radiation in case of nuclear attack.

Japan enacted civil-defence legislation only in 2004, almost three decades after South Korea. J-Alert, the emergency public-information system, failed to work in some places. Suguru Arai of the disaster-prevention bureau in the town of Erimo, which was under the missile's trajectory, points to a flaw in the advice for citizens to take cover: "There are no basements and only a few strong concrete buildings in the town."

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Chains of command were inadequate in 2011 when an earthquake and tsunami caused a meltdown at the Fukushima Daiichi nuclear power plant.

Japan has a double-layer of missile defences: destroyers with Aegis missile-defence systems cover the whole country; land-based Patriot batteries (pictured on exercise, after the latest North Korean missile flew over) provide "point defence" for smaller areas. "But just as the threat grows, our defence capabilities must grow," says Narushige Michishita, an analyst.

Raising the shield

Yet there are growing doubts about whether this is enough. The defence ministry wants to upgrade the Aegis systems on the destroyers and to acquire a land-based version, Aegis Ashore. Some members of the ruling Liberal Democratic Party are urging the government to use its budget reserves to speed up the acquisition, rather than wait for an increased defence budget next year. The government is unlikely to add a third layer of missile protection, the Terminal High Altitude Area Defence missile shield that America operates in South Korea, on the grounds that it is too costly. Noboru Yamaguchi, a former lieutenant-general in the Self-Defence Forces (SDF), Japan's army, says Japan should also raise the number of crews to man Aegis destroyers to relieve overstretched personnel.

Japan is trying to improve other capabilities too, for instance by buying F-35 jets. But it lacks the wherewithal to strike at North Korean launch sites if it detects signs of imminent attack—something some officials, including the defence minister, Itsunori Onodera, would like to have. Japan's military strength will remain limited for as long as it spends less than 1% of GDP on defence (South Korea and America spend 2.6% and 3.3% of GDP respectively).

Mr Abe has long thought that Japan ►

► should become a normal military power. In 2015 he pushed through legislation reinterpreting the constitution to allow the SDF to play a more forceful role in missions such as peacekeeping. This year he announced plans to rewrite the constitution's pacifist clause by 2020. That will require approval in both houses of parliament, and a referendum. Mr Abe no doubt hopes the outcry over the latest missile shot will make his task easier. Even so, he would have to overcome great public resistance. And his popularity has been slumping of late amid reported scandals.

Over the years some in Japan have asked whether the country needs its own nuclear deterrent. Such talk may begin anew, amid growing doubts about America's commitment to its allies. Mr Michishita, no hawk, says Japan must have a proper debate about the defence capabilities it needs: "Currently we are like a boxer that does not punch." ■

Myanmar's Rohingyas

Gory days

YANGON

Militancy is on the rise in Rakhine state

ALONG the grassy banks of the Naf river, tearful families wait with bags and bundles as they attempt to flee Myanmar into neighbouring Bangladesh. They are scared to return to their homes in the western state of Rakhine after Muslim militants attacked 30 police posts and a military base on August 25th. They fear the army will butcher Muslim Rohingyas in return.

Hostility to Rohingyas, a minority in largely Buddhist Myanmar, has repeatedly led to bloodshed in recent years. People of several faiths have died in the turmoil. The emergence of a new, sophisticated group of Rohingya militants is likely to exacerbate the violence. More than 100 people have been killed in just a few grisly days as troops have hunted for the insurgents.

The 1m Rohingyas who live in Rakhine have long suffered persecution. Most are denied citizenship and therefore have little access to education or health care. They are the world's largest community of stateless people. Strict laws govern their movement and where they can live: some 120,000 live in squalid camps as a result of past conflicts. The government points to 19th-century records drawn up by Britain, the former colonial power, as evidence that the Rohingyas were immigrant labourers, not indigenous. In reality they arrived centuries earlier.

Most Rohingyas have remained remarkably pacific in the face of extraordi-

nary provocation. But smouldering grievances have encouraged the emergence of small, mostly home-grown, militant groups. One of these, the Arakan Rohingya Salvation Army (ARSA), led the attacks on August 25th. According to the International Crisis Group, a charity, ARSA was formed after savage violence in 2012. It staged its first known co-ordinated assault last October, on border-guard posts in Rakhine.

The recent incident, involving multiple assailants wielding hand-held explosives and machetes in synchronised attacks, was larger. The organisation has gathered strength fast. Its leadership includes a committee of Rohingya émigrés in Saudi Arabia. Some of ARSA's members have reportedly been living alongside their brethren in Rakhine for months, trying to drum up support. ARSA's foreign connection may help it raise funds abroad.

The group is successfully tapping into local desperation. "We are dying, let's put up a fight!" is the way some Rohingyas feel," says one Muslim leader who works to achieve reconciliation among religious groups in Rakhine. But ARSA's strategy is reckless. The attack last October triggered months of brutal military reprisals against civilians and the flight of some 87,000 Rohingyas. Security analysts speculate that ARSA deliberately provoked the army, knowing its tendency towards indiscriminate retaliation and hoping that this would attract international attention. The government of Myanmar recently designated ARSA a terrorist organisation.

In the information war that is being waged in parallel with the battle on the ground, each side is trying to present the other in the worst possible light. Vivid images on social media show mutilated and charred bodies; comments heap abuse on the supposed perpetrators. Verifying when and where atrocities took place, and who committed them, is tricky. Using satellite photographs to spot the smoke from burning buildings, a method previously used to monitor the extent of violence in Rakhine, is difficult when, as now, the area is covered by clouds.

The government's response has fuelled



animosity. When Aung San Suu Kyi, Myanmar's de facto leader, took office in 2016, she vowed to end the country's many civil wars. But she has consistently failed to acknowledge the plight of the Rohingyas, apparently for fear of alienating Buddhist voters and the army, which still holds enormous sway. For the same reason, newly published proposals for calming Rakhine, the product of a year-long study led by Kofi Annan, a former head of the UN, are unlikely to be fully implemented. These include revising a citizenship law which is used to justify the denial of birth certificates to Rohingyas born in Myanmar.

International agencies find it hard to influence the government. The authorities claim that a photograph circulating online, in which a carton of biscuits from the World Food Programme, a UN body, is visible inside a militants' training camp, is evidence that insurgents are in cahoots with aid workers. The government says it is investigating claims that landmines laid by militants were made from materials imported by humanitarian groups, such as steel pipes and ammonia. It denounces what it describes as foreign meddling in the conflict (there is indeed a risk that it could attract foreign fighters). In June the government indicated that it would refuse visas to a UN human-rights team. Allowing such delegates to visit would suggest Myanmar has nothing to hide. Sadly, it is keeping much under wraps. ■

Law in India

Courage in their convictions

DELHI

Indian justice is improving, though many still complain

THE wheel of Indian justice is famously slow and wobbly. It also rolls in odd directions. In the 1970s the Supreme Court, which is meant to uphold India's constitution, endorsed emergency laws that denied citizens any recourse against unlawful arrest. Last year it anachronistically ordered cinemas to play the national anthem before every screening, and moviegoers to stand to attention each time. Yet in recent weeks Indian courts have delivered a series of important judgments that, taken together, push the country firmly in a more liberal direction.

Most dramatically, on August 28th a judge in the northern state of Haryana sentenced Gurmeet Ram Rahim Singh, a flamboyant guru-cum-action-star, to 20 years in prison for the rape of two female acolytes. Such "godmen" often seem to be beyond the reach of the law, with their wealth, devoted followings and close ties to politi-

cians. Mr Singh had been openly wooed by senior figures in the ruling Bharatiya Janata Party. They donated money to his organisation and were photographed kissing his feet. Tens of thousands of his followers besieged the town where his trial was held: despite a massive police presence, 38 died in riots after his conviction. But in a country where the powerful often find ways to "turn" witnesses and influence judges, his punishment was widely seen as a victory for justice.

Another ruling also cheered Indian liberals. On August 22nd the Supreme Court banned "triple talaq", a practice whereby Muslim men could annul their marriage simply by pronouncing the Arabic word for divorce three times. Nearly all Muslim-majority countries long ago outlawed such instant divorce (Pakistan did so in 1961), but politicians in Hindu-majority India had used the issue as a vote-getting inducement to Muslim ultra-conservatives. The ban is good news for Muslim women, for those who want secular laws to supersede religious ones, and for critics of such "vote-bank" politics.

Setting a precedent of arguably greater long-term significance, nine Supreme Court judges unanimously ruled on August 24th that privacy is an intrinsic part of the right to life and liberty as guaranteed by India's constitution. The brief ruling came in response to a case challenging the government's right to oblige all citizens to have their biometric data stored in a national database. More important even than the decision itself were the sweeping arguments used to justify it. The judges resoundingly rejected the state's contention that privacy is not a fundamental right. They also extended the meaning and implications of privacy to include such matters as personal choice in questions of religion, diet or sexual preference. DY Chandrachud, one of the judges, said that privacy was "a constitutional value which straddles across the spectrum of fundamental rights".

Madhav Khosla, an expert on the Indian constitution at Harvard University, describes the ruling as a heartening step in the country's legal evolution. He says it should create "an inviolable distinction between the private and the public". Mr Khosla points out, however, that it remains to be seen how lower courts will implement the Supreme Court's ruling on privacy. They have a patchy record when it comes to upholding lofty principles in their own judgments.

There are other reasons to worry. Satisfying though the jailing of Mr Singh was for many Indians, his trial had dragged on for well over a decade: the rapes for which he was convicted occurred between 1999 and 2001. Police say several other victims had initially come forward, but later retracted their accusations, apparently fearing retria-

Thai politics

Another coup for the generals

SINGAPORE

A former prime minister's flight bolsters the junta

WHEN Yingluck Shinawatra, a former prime minister of Thailand, fled the country a few days ago, she left more than an empty chair in the Supreme Court behind. On August 25th she had been due to hear the verdict in a case against her for negligence in a rice-subsidy scheme she ran while in office that cost the government around \$16bn. Though she was ousted in a coup in 2014, Ms Yingluck had remained a symbolic figure for opponents of the junta. The generals will not be sorry she has gone.

The scene at the courthouse—and Ms Yingluck's absence from it—epitomised the shambles that Thai politics has descended into. When she failed to turn up, the judge said he did not believe her lawyer's claim that she was ill and demanded her arrest. Despite Ms Yingluck's poor record in office, and a very heavy police presence, many thousands of her fans turned up at the courthouse hoping to catch a glimpse of her (one of them is pictured, after hearing news of the escape of her hero whose face is on her shirt).

Ms Yingluck fled to Dubai, where her billionaire brother Thaksin Shinawatra,

who was prime minister between 2001 and 2006, himself fled 11 years ago before the conclusion of a graft case. The family's influence reflects the narrowness of the country's political class. Since 2001 the Shinawatra clan has won every election held in the country that the generals have permitted to take place. Critics of Ms Yingluck claim that her brother continued to pull the strings from his self-imposed exile during his sister's rule. Like him, she pursued populist policies, such as the rice scheme, which pleased their largely rural supporters, known as "red shirts", and angered royalist rivals, or "yellow shirts".

A thrice-delayed general election is due to be held next year. But Ms Yingluck's departure bodes ill for any hope of renewing Thailand's democracy. Without her, the red shirts have no political figurehead, says Michael Montesano of the Institute of South-East Asian Studies, a think-tank in Singapore. Her flight will further demoralise the already weak Pheu Thai party she heads.

Without Ms Yingluck, the ruling junta may find it easier to maintain a tight grip. It has dodged the dilemma of imprisoning a much-loved politician, or freeing her and undermining its own authority. Corruption, such as that which plagued the rice scheme on Ms Yingluck's watch, was cited by the junta as one justification for its coup. (On the day of Ms Yingluck's no-show, Thailand's generals had the satisfaction of seeing a 42-year sentence imposed by the Supreme Court on her former commerce minister for offences related to those that she was alleged to have committed.)

But there are potential troubles ahead for the junta. In just two months the cremation will take place of the country's much loved king, Bhumibol Adulyadej, who died in 2016. He was succeeded by his less popular son, Maha Vajiralongkorn. More drama from the Shinawatra clan could disrupt the careful choreography of the event.



Cheers for a distant idol

bution. And in contrast to its thunderous ruling on privacy, the Supreme Court's decision on triple talaq was, more typically, obscure and timid. Only three in a panel of five judges ruled in favour of a ban: one did so by arguing that instant divorce contravened not India's constitution but Islamic law. "Despite a 397-page judgment from the highest court in the land, 'somehow' is the best answer we have to the question of

why triple talaq is no longer law," wrote Prashant Iyengar, a lawyer, in the *Hindu*, a daily newspaper.

Encouraging though such rulings may be, dealings with India's lower courts are likely to remain as frustrating as ever. With a backlog of some 25m cases and fewer than 20,000 judges to handle them, it will still take years for most complainants to have a chance of obtaining justice. ■

Banyan | An American wrecking-ball?

Donald Trump is undermining Asia's American-led order. But it may outlast him



IF AMERICA is the biggest loser from the election of Donald Trump, can Asia not claim at least second place? Many policy-makers and Asia hands argue so. In just seven months Mr Trump has swung "a wrecking-ball into the complex and long-standing machinery" of America's relations with the Asia-Pacific region, writes T.J. Pempel of the University of California, Berkeley. Such a view is widely shared across Asia: that American leadership, which has underpinned the regional order since the second world war, is in peril under Mr Trump.

The list of concerns is long. Not only is the American president unpredictable. He lacks intellectual engagement in foreign policy and disdains diplomacy itself, except when it is conducted via bombastic tweets. He has ended America's commitment to multilateral trade in Asia, pulling it out of negotiations for a 12-country Trans-Pacific Partnership, a free-trade grouping encompassing two-fifths of world trade. Economists say this deal would have made all parties richer; Mr Trump dismissed it as "an attack on American business". He was also quick to accuse old allies such as Japan and South Korea of unfair trade practices as well as of freeriding on American security guarantees.

Admittedly, Mr Trump has changed his tune as the nuclear threat from North Korea has become ever scarier. But his promise in early August to unleash "fire and fury" if Kim Jong Un's regime continued its threats seems neither to have reassured South Korea and Japan, nor deterred the North from its frantic pace of missile development. On August 29th it launched an intermediate-range missile, thought capable of carrying a nuclear warhead, that streaked over northern Japan before crashing into the Pacific, causing jitters under its flight path.

After this latest provocation, the Trump administration avowed that it stood firmly behind both Japan's prime minister, Shinzo Abe, and President Moon Jae-in of South Korea. Many of America's friends in the region give a prayer of thanks for the "grown-ups" in his government: the supposedly steady hands of Rex Tillerson, the secretary of state; James Mattis, the defence secretary; and H.R. McMaster, the president's national security adviser. Yet others are nervous. There are growing signs of mutual disgruntlement between Mr Trump and these lieutenants. The diplomatic machinery that drives America's day-to-day relations

in Asia is also creaking. Mr Trump has yet to fill swathes of senior positions in the State Department, including the key position of assistant secretary of state for East Asia. The accomplished official keeping the seat warm, Susan Thornton, cannot hope to have the clout of a political appointee. The morale of American diplomats slumps as their advice is dismissed and steep budget cuts loom.

With the grown-ups' attention distracted by old quagmires such as those in the Middle East and Afghanistan (areas they are far better acquainted with than East Asia), it all adds up to a relegation of East Asia in American priorities, say the severest critics of the Trump administration in the region. The North Korean threat and trade frictions with China, they say, are the only problems in this part of the world that Mr Trump has time for. Mr Trump's approach indeed contrasts with the "pivot" to Asia espoused by his predecessor, Barack Obama: the reassurance of allies through trade, diplomacy, defence ties and the encouragement of representative politics. It involved a policy towards China that both hedged against and engaged with America's biggest trade partner and strategic rival. The strategy did not make a huge difference, but what little substance it had, except perhaps in the military domain, is now gone (and thuggish leadership from Thailand to the Philippines goes uncriticised). Mr Trump's principle is to despise anything that Mr Obama held dear.

American prestige in Asia is suffering. A recent poll conducted by the Pew Research Centre in Washington found that, among Japanese, confidence in America to do the right thing in world affairs was 54 percentage points lower than it was when Mr Obama was president. Among Australians it had fallen by 55 points and among South Koreans by 71 points. In no Asian country surveyed did America's image come close to improving.

The China factor

But this does not amount to the end of the American-centred order in Asia. For a start, who would take America's place? Certainly not members of the BRICS, a club comprising Brazil, Russia, India, China and South Africa. Its leaders meet next week in the Chinese city of Xiamen with a sense, among some of them, that the strategic advantage is now theirs. Yet its two most populous members, China and India, defused a months-long stand-off between their soldiers along their high Himalayan frontier only days before it would have spoiled the love-in. The fact that both sides claimed victory suggests the matter is far from over. Bilahari Kausikan, a Singaporean diplomat, dismisses BRICS as "more a slogan than a geopolitical concept".

China would disagree. It likes to think of forums such as BRICS and the Shanghai Co-operation Organisation—a grouping mainly of Central Asian countries as well as China, Russia and India—as the building blocks of a new China-led order in Asia. But China is reluctant to push this idea too hard. It has been the most striking beneficiary to date of Pax Americana, which has provided a stable environment for spectacular growth across the region. Even China's chief geostrategic initiative, its "belt-and-road" effort to foster infrastructure links in Asia and beyond, is no rival to the current order but is expressly built atop it. Meanwhile, its bullying behaviour in the region simply reinforces the desire of many Asian countries for greater American protection.

Despite Mr Trump's wrecking-ball, America's presence in Asia has foundations that are too deep to be destroyed in a single presidential term. Mr Kausikan says the edifice is stronger than it appears. China knows it, or at least so its neighbours hope. ■



Traditional Chinese medicine

Health care with Chinese characteristics

BOZHOU, ANHUI PROVINCE

Traditional medicine is booming in China. But is it good for public health?

FANG YUAN gazes around his crowded shop and says happily that business is booming. He has a reliable supplier in Russia and hospitals and pharmaceutical companies are queuing up to buy what he sells: antlers. Tangles of them lie in huge meshes on the floor. Thousands more, sliced into discs, fill glass boxes. They are used to treat breast disease in traditional Chinese medicine (TCM). The shop looks a bit like a Scottish baronial hall. Deer-head trophies gaze down from the walls, as does a red-fronted gazelle with black horns like scimitars. "I don't sell those," he says hastily. "Endangered list."

Mr Fang is a trader at the world's largest market for TCM, a system of diagnosis and treatment that goes back 2,500 years. The scale of the business is staggering. The small town where the market is located, Bozhou, is three hours drive from the nearest railway station. Yet the main market (pictured) is the size of a football stadium. Mr Fang is one of almost 10,000 traders—four times as many as there are shops in the colossal Mall of America in Bloomington, Minnesota.

They sell every medicinal ingredient imaginable. There are chips of agarwood, smoke from which is said to clean the lungs. There are dried frogs, geckos and deer penis which, dissolved in alcohol,

supposedly aids recovery from athletic injuries. And there are boxes of Tibetan caterpillar fungus or "the Viagra of the Himalayas", a gram of which can sell for more than the same weight of gold. This is the market that sets prices for Chinese herbal medicine throughout the country. Before 9am its sampling room is overflowing with wholesale buyers.

The market in Bozhou is both a symbol of an extraordinary boom in TCM, and a consequence of it. The number of hospitals offering TCM in the country of its birth (either by itself or in combination with regular medicine) grew from roughly 2,500 in 2003 to 4,000 at the end of 2015. Since 2011 the number of licensed practitioners has increased almost 50% to 452,000. Around 60,000 TCM medicines have been approved by the government's food and drug regulator. These account for almost a third of China's pharmaceutical market, the world's second largest. In 2015 patients made 910m visits to TCM hospitals and doctors, which, the government said, accounted for 16% of total medical care, up from 14% in 2011.

It has been a stunning resurgence for a practice that was rejected as superstitious after the fall of the Qing dynasty in 1911. TCM is still regarded with deep suspicion by Western-trained doctors and scientists.

It has developed partly because of huge demand for preventive medicines that people believe will help avoid the need for more expensive treatment in hospital. And for some, acquiring the costliest TCM products such as caterpillar fungus has become a status symbol. "In the past few years," says Li Ning of Kang Mei Medicine, a large health-care company, "there has been wider recognition [of TCM] because people have more money in their pocket and care more about their well-being."

TCM has also benefited from the attention paid to it by Xi Jinping, China's president. Mr Xi calls it "the gem of Chinese traditional science" and says he uses it. "TCM is in its golden age," he claims. He urges practitioners to "push for TCM to step onto the world stage". Since 2012, the year Mr Xi came to power, the Communist Party has been insisting that traditional medicine be made equal in status to what China calls "Western medicine" (ie, the modern form). Since then, the government has issued a stream of plans, policies and instructions aiming to make it readily available to everyone in China by 2020.

More doses of one's own medicine

Early in 2016 the government published a blueprint for developing TCM over the next 15 years. Traditional medicine, it said, should have equal status in law with modern medicine; it should also be regulated like other types. A "white paper" issued at the end of last year said TCM would play a big role in reforming the health-care system because of its relatively low cost.

Then, in July, came China's first TCM law, which lays down safety standards for TCM drugs and the ingredients that go into them. It imposes controls on farms which ➤

► grow medicinal herbs (banning certain fertilisers, for instance) and on medical manufacturers which produce TCM pills. It also loosens some professional requirements. In the past, TCM doctors had to qualify as conventional doctors first and then be licensed for traditional medicine. The new law makes it possible to become a licensed TCM doctor by passing local exams in practical skills and getting recommendations from two others with licences. Some health professionals worry that this opens the door to more quackery.

Its proponents respond that TCM can improve both public health and the health-care system. Traditional medicine relies on herbal and other natural remedies, not expensive diagnostic machines. According to the white paper, average in-patient expenses per visit at public TCM hospitals were 24% lower than at general public hospitals; outpatient expenses were 12% lower. If TCM is as effective as Western medicine—a big if—then it would appear to be an efficient means of improving health.

If only there were proof

But evidence that TCM works is scanty. Clinical trials in scientific journals have reported some examples of effective TCM treatments, for example against migraines and obesity. They have found some cases where TCM works well in combination with Western medicine, for example, in treating schizophrenia. However, the overall record is poor.

America's National Institutes of Health looked at 70 systematic reviews of TCM treatments. In 41 of them, the trials were too small or badly designed to be of use. In 29, the studies showed possible benefits but problems with sample sizes and other flaws meant the results were inconclusive. Shu-chuen Li of Newcastle University in Australia found that only a quarter of the studies he looked at showed some benefits, but most of these were marginal.

One aspect of TCM that may be of some help is its focus on prevention rather than cure, says Martin Taylor of the World Health Organisation's mission in Beijing. TCM doctors aim to see their patients often, partly because the remedies they offer are supposed to be tailored to the individual and need fine-tuning. An axiom of TCM is that good doctors cure diseases before they appear.

As a result, more attention to traditional medicine implies more attention to primary health care, which is best able to monitor the progress of patients with lifestyle-related ailments (such as obesity) and the diseases of ageing. Though a middle-income country, China has the disease burden of a rich one: non-communicable diseases such as heart disease and diabetes cause 85% of all deaths. If TCM doctors can suggest better diets or persuade the half of adult men who smoke to give up, then they

could make a big difference.

A government document called Healthy China 2030 says that without better primary services, the health-care system will not be able to keep up with the demands of the ageing population. But an acute shortage of general practitioners is a huge impediment. Even a patient with a minor ailment usually goes to see a specialist. This adds both to costs, since consultations with such doctors are expensive, and to horrible overcrowding in hospitals. The government would like more people to visit local clinics instead. But many people are reluctant to see GPs, regarding them as inferior to specialists. They might, however, be willing to go to a TCM clinic. Opening more of them could offer some relief to the hospital system.

When administered with caution, TCM can sometimes help people, at least as a placebo. But China's efforts to promote it as an equal of conventional medicine are fraught with danger. They could result in even more patients with serious illnesses shunning regular treatments in favour of traditional ones. They could also pose an even greater threat to rare species that are often—despite bans on their use—turned into TCM drugs. To reduce such risks, big reforms are needed in the way China manages TCM.

Far tighter controls on the use of animals and plants are needed. According to Meng Zhibin of the Institute of Zoology in Beijing, 22% of the 112 most commonly used natural ingredients for TCM are on various endangered-species lists. Some are from herbs that can be grown on farms, but some are from rare animals that are usually captured and smuggled into the country. Trade in pangolin, an anteater, is banned worldwide. But Wang Weiquan of the Chinese Medicine Association says smuggling continues because domestic pangolin farms are not big enough. TCM proponents do not seem to care. They worry about the

future of traditional medicine itself. Wen Jianmin of the Wangjiang TCM hospital in Beijing says the ban on the use of some animals has already led to the extinction of some famous traditional remedies. "If we don't protect TCM better, Chinese medicine will exist only in name," he says.

The government also needs to improve safety standards. One example: a genus of plants called aristolochia, used against arthritis, turns out to be carcinogenic. But the government's desire to improve safety implies more standardisation, and that contradicts the TCM belief that each treatment should be custom made. In 2016 the food and drug regulator revoked 81 licences of TCM makers. Yan Xijun, of Tasly group, a medical firm, says that of TCM pharmaceutical companies that do have licences, "it's fair to say 50-60% of them more or less have problems that need solving."

Training TCM doctors in modern medicine would also be a huge help. The government says that traditional medicine should complement the normal kind. That will require doctors who are skilled in both types and who can advise patients when they should be using modern methods of treatment. However, few TCM doctors in China can straddle the two disciplines. The new law, which relaxes requirements that they understand medical science, is a step in the wrong direction.

The long-term goal should be to establish a health-care system that relies on modern medicine and that provides the kind of preventive treatment that TCM claims to offer. The government is exaggerating TCM's effectiveness. Use of it is so widespread in China partly because few are willing to challenge the science behind it. TCM is distinctly Chinese—to question it is often construed as unpatriotic. Striving for modernity while clinging to tradition is a familiar struggle in China. As the problems of TCM show, achieving the right balance is harder than it looks. ■



Keeping up tradition on a street in Shanghai



The new political term

Back to school

WASHINGTON, DC

Congress reconvenes for a brutal, fractious September

HURRICANE HARVEY was a test for President Donald Trump. Another hurricane, Katrina, had battered the presidency of George W. Bush in 2005, when the combination of an inept response on the ground and tone-deaf comments by the president created an impression of incompetent and unfeeling government. As *The Economist* went to press, though, Mr Trump seemed to be weathering the storm. Harvey remains dangerous for the people of Texas and Louisiana. But it now seems less politically menacing for Mr Trump than what awaits in Washington.

On September 5th Congress will return from a month-long break to face a devilish cavalcade of necessary legislation and a White House pushing for the big policy victory that has eluded it for eight bumbling months. What happens this autumn will lay the ground on which next year's mid-term elections will be fought, and those, in turn, will determine whether Mr Trump has a Republican or Democratic Congress for his term's last two years.

By the end of September, without congressional action, funding will expire for the Federal Aviation Administration (FAA), which oversees civil aviation; the Children's Health Insurance Programme (CHIP); and the National Flood Insurance Programme (NFIP), which subsidises and underwrites flood insurance. CHIP has broad but shallow bipartisan support, but the other programmes are contentious. Mr

Trump proposed privatising air-traffic control, currently an FAA responsibility, but that appears unlikely. His proposed budget cut NFIP funding to help pay for a border wall; Harvey might save the programme for now, rickety as it is. Disaster relief for Texas and Louisiana may also prove contentious, as it did for New York and New Jersey after Hurricane Sandy in 2012.

Before Congress proceeds to ordinary squabbling, however, it must work out how to finance the government and pay its bills. The current round of federal funding runs out on September 30th. Congress and the White House will almost certainly fail to agree on a long-term budget by then; to avoid a shutdown, Congress will therefore have to pass another continuing resolution, a short-term measure that maintains current spending levels.

Unless Congress raises the debt ceiling, allowing the government to raise the money it needs to pay its bills, America will lack funds to service its existing debt by early October. The consequences of a default would be grave. Financial markets would be roiled, America's borrowing costs would rise and the world might start to move away from the dollar as a reserve currency and American Treasury bonds as a haven.

These usually pro-forma measures can turn contentious when Congress and the White House are controlled by different parties. In 1995, 1996 and 2013 Republican

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legislators and Democratic presidents could not agree on spending priorities, so the federal government briefly shut down. America came close to breaching the debt ceiling in 2011 and 2013, when congressional Republicans demanded spending cuts from Barack Obama.

Today Republicans control both Congress and the White House. But, as their efforts to reform health care have shown, legislators who once battled Mr Obama have taken to tussling among themselves and with the president. The White House would like Congress to simply and cleanly raise the debt ceiling. Fiscal conservatives in the House of Representatives may refuse. Jim Jordan, a congressman from Ohio who founded and led the right-wing Freedom Caucus, suggests attaching mandatory spending or regulatory cuts. Paul Ryan, the House Speaker, could probably pass a clean debt-ceiling lift with moderate Republican and Democratic votes. But that would imperil him (the Freedom Caucus pushed Mr Ryan's predecessor, John Boehner, into retirement) and leave lawmakers wounded and vindictive.

Worse, Mr Trump has threatened to shut down the government unless the continuing resolution includes funding for a border wall—the same wall that he once promised Mexico would pay for. That could get through the House, which last July approved a spending bill allocating \$1.6bn for the wall (a fraction of its ultimate cost). But Democrats in the Senate would filibuster to block it. Mr Trump would have to decide whether to sign a funding bill without money for his wall to keep government functioning, or veto it and risk being blamed for the resulting havoc.

Finally, Mr Trump is pushing Congress to take up tax reform. On August 30th, at an industrial-fan factory in south-western Missouri, Mr Trump argued that cutting ►

▶ corporate taxes, simplifying the tax code and making repatriation of overseas profits easier was key to “unleashing America’s full potential.” America’s Byzantine tax system last saw a major reform in 1986. Many believe it needs another.

But getting from that belief to a bill that adds up and can pass is a mighty challenge. In April Mr Trump’s administration proposed a “business tax rate” of 15% (the current corporate rate is 35%); consolidating

the number of individual brackets from seven to three; doubling the standard deduction to \$12,700 for individuals and \$25,400 for married couples; repealing the alternative-minimum and estate (inheritance) taxes; and the vague but laudable goals of providing “tax relief for families with child- and dependent-care expenses” and getting rid of “targeted tax breaks that mainly benefit the wealthiest taxpayers”.

Steven Mnuchin, the treasury secretary,

claims to have 100 staffers working on tax reform. Quite what they are doing remains a mystery. Mr Trump’s administration seems content to rely on congressional committees to translate its wish-list into policy—a task easier ordered than done.

Some are optimistic. Grover Norquist, a veteran anti-tax crusader, says that congressional Republicans “are determined to get this done, and to make it as pro-growth as possible”, to carry them towards the mid-term elections. But not everyone is so sanguine. Mr Jordan says that Freedom Caucus members want to see specifics before committing their support.

The White House says it wants to get tax reform passed by the end of the year. That makes Mr Trump’s habit of publicly feuding with congressional Republican leaders, whose support he will need to advance his priorities and keep their caucuses in line, all the more baffling. Perhaps, as his approval ratings remain dismal, he has decided to pander exclusively to his base, which seems to prize his antic belligerence above legislative achievement. ■

Lobbyists

Washington wizards

WASHINGTON, DC

Their disappearance is more apparent than real

ON A rainy afternoon, two sharply dressed men talk business and clink \$40 glasses of wine at the Trump International Hotel, a few blocks from the White House. The recently opened hotel, which offers \$65 steaks and a \$100 cocktail made with raw oysters and caviar, has become popular among cabinet members, lobbyists and curious journalists. It would seem the swamp monsters, whom President Donald Trump once pledged to purge, are not doing too badly.

Lobbying expenses for the first six months of the year amounted to \$1.67bn—the most since 2012—according to the Centre for Responsive Politics (CRP), a watchdog. The figure might have been even higher if Republicans had managed to convert their undivided control of Congress and the White House into legislative accomplishments. Instead, repeated attempts to reform Obamacare ran into the sand and the prospects for tax reform are uncertain.

Yet, strangely, the number of registered lobbyists has fallen sharply. In the second quarter of 2017 there were just 9,791—a third fewer than the 15,000 milling about K Street and other lobbyist haunts ten years ago. The number of dollars spent per registered lobbyist increases every year. Either the price of persuasion has shot up, or people are not being counted properly.

The answer is almost certainly the latter, and the man to blame is Barack Obama. The last president, who had promised to “take the blinders off the White House”, instituted strict rules limiting lobbyists from serving in his administration. Some influencers went underground, dodging registration requirements by not spending more than 20% of their time working for any single client. By one estimate, the official rolls capture only one in two lobbyists. Of the 2,100 lobbyists in 2016 who did not register in the first quarter of 2017, 58% stayed at the same company, according to the

CRP. Many still seemed to be working to influence federal policy.

Purging lobbyists may be as hard as eradicating illegal drugs, and for the same reason: strong demand. So argue Lee Drutman and Steven Teles, two academics, who reason that Congress is increasingly incapable of creating policies. The number of workers in the Congressional Research Service, Congressional Budget Office and Government Accountability Office, the internal information services that provide unbiased reports to members, has dropped by 40% since 1979 even as legislation has grown more complex. Paid influencers, including those without the word “lobbyist” on their business cards, fill the gap.

Since Congress is unlikely to hire many more wonks, the Trump International Hotel will continue to sell fishy cocktails and pricey rooms. Mr Trump’s company had expected to sustain \$2m in losses after opening the posh project in the first four months of 2017. Instead, it turned a \$2m profit.



Nothing to see here

The states and Obamacare

Over to you

WASHINGTON, DC

Several states are trying to fix failing insurance markets

NOT long ago, America’s health-insurance markets seemed to be drying up. In June 49 counties lacked any willing providers for the “individual market”, which serves 18m Americans who are not covered by an employer or the government. The Affordable Care Act, Barack Obama’s health-care law, seemed to have failed these places. Frantic efforts by state officials have filled the gaps: Nevada’s governor claims to have interrupted a hiking trip with his daughter to broker a deal covering most of his state. The last empty market, in Ohio, gained an insurer on August 24th. But failure has not yet been averted. With health reform stalled in Congress, several states are rushing to patch things up themselves before insurance for 2018 goes on sale in November.

Obamacare’s markets were always likely to limp on rather than collapse utterly, because they have a blank cheque from the federal government. The law caps premiums for buyers who earn less than four times the poverty line (this year the cut-off is \$48,240 for an individual). No matter how high premiums rise and how many healthy people leave the market, some subsidised enrollees, who have already reached their premium caps, will keep buying. The only surprise is that it has tak-



It's happening, sort of

▶ en so much cajoling to get insurers to run monopolies in markets buttressed by such generous government support.

Yet rising premiums are a big problem for many of the 9m Americans who buy insurance for themselves without any government help. In Iowa about 28,000 people are on the hook, according to Doug Ommen, the state's insurance commissioner. As things stand, only one firm, Medica, will sell policies there next year. Already-high premiums will rise by 44%—more, if President Donald Trump cuts off some subsidies for insurers, as he has threatened to do. A hypothetical couple of 55-year-olds together earning just under \$67,000 would face an annual bill of nearly \$33,000 for coverage. Faced with such prices, Mr Ommen reckons that between 18,000 and 22,000 Iowans will drop their coverage in 2018. So on August 22nd Iowa formally asked the Trump administration for permission to overhaul Obamacare at a local level.

It is not alone. Minnesota and Oklahoma have also submitted reform proposals, and others may follow. Each state wants to provide “reinsurance”—jargon for assuming some of insurers’ risks themselves. For instance, Minnesota proposes to foot the bill for 80% of enrollees’ medical costs between \$50,000 and \$250,000. The model is tried and tested: the federal government provided reinsurance for the first three years of Obamacare. This year Alaskan taxpayers began footing the bill for people suffering from 33 costly medical conditions, including HIV. This kept premium rises down to 7%—low by national standards—and in 2018 they are set to fall by over a fifth.

Reinsurance is bad for taxpayers. But it is fairer than the current set-up. As it stands, Obamacare guarantees coverage for the ill

Health-care costs

How to twist an arm

Politicians are largely to blame for raising the cost of health care

IN AMERICA nearly one in every five dollars spent is on health care, a larger share than in any other country. Many of the culprits are well-known. Americans have more procedures, pay more for them, and face exorbitant administrative costs. One driver of rising costs has often been overlooked, however: politicians.

So Zack Cooper of Yale University and three other researchers argue in a paper to be published on September 4th. They studied reforms passed in 2003 that allowed over-65s to obtain prescription drugs through Medicare for the first time—the biggest expansion in the scheme’s history, costing some \$400bn over the next decade. The legislation had a rough ride. President George W. Bush wanted to sign a law before running for re-election in 2004, but many Republican congressmen opposed it. In the end enough self-styled fiscal conservatives changed their minds, and the House of Representatives approved the bill by 220 votes to 215.

Mr Cooper and his colleagues studied the necessary arm-twisting and its effects. To do so, they looked at the use of an obscure rule. Section 508 allows the federal government to waive the standard amount hospitals are paid by Medicare, which normally follows a tariff designed by technocrats. Typically, the waiver is used to pay hospitals more in places where labour is expensive. It seems to be handy for persuading wavering politicians, too.

Hospitals in districts where a Republican congressman supported the Medicare Modernisation Act were five times more likely to receive a waiver than those in ones where a Republican lawmaker

and funds their care through inflated premiums only in the individual market. The 155m Americans who get coverage from their employers escape the costs. Spreading the bill across all taxpayers makes more sense. The thinking is similar to that behind “high-risk pools”, an idea small-government conservatives like.

Yet the states have differing ideas about precisely which taxpayers should pay. All want the federal government to hand over the cash it will save on subsidies for the poor when premiums fall. (Alaska, which fully funded its programme this year, has had a similar request approved.) Minnesota and Oklahoma would make up the remainder themselves. But Iowa does not want to stump up any cash. Instead, Mr

voted against. Those hospitals spent 25% more than they otherwise would have in the seven years after the law, according to the researchers. Between 2005 and 2010 the 29 hospitals that received the most lucrative waivers spent an average of \$1.25bn more than if they had not received one.

Some of the windfall went on equipment and staff. The average hospital to benefit from a waiver increased its number of nurses by 16% per year from 2006 to 2010. But the splurge seems not to have improved care. No changes were registered as a result in the mortality rate for patients admitted to hospitals with a heart attack, or in the time taken to discharge those who survive one—two standard measures of quality.

Chief executives fared well, though. The average bump in bosses’ pay in the sample of hospitals benefiting most from the waiver was 81% over the same period, equating to a pay rise of about \$428,000 per year above that received by bosses of similar hospitals with no waiver. Politicians benefited indirectly. Legislators with hospitals granted waivers in their district saw a 22% overall increase in campaign contributions after the act. Donations from individuals in the health industry in their state increased by 65%.

Section 508 is just one example of how deals to pass legislation raise costs. By some measures, no industry spends more on lobbying Congress than health-care providers. The Affordable Care Act, better known as Obamacare, was replete with sweetheart deals. For that reason, it is perhaps fortunate that Republican lawmakers were too divided to write and pass a health-care law of their own.

Ommen proposes to repurpose some of the federal money for poorer buyers. Fixed dollar subsidies would replace premium caps. Those who currently get help with their out-of-pocket costs would instead face a \$7,350 deductible.

The plan risks running foul of the law, which forbids states from experimenting in ways that make coverage less affordable. But the Trump administration has some leeway to interpret the rules so that Iowa’s plan becomes permissible, says Jennifer Tolbert of the Kaiser Family Foundation, a think-tank. The state says it consulted the administration while writing its proposal.

If, as seems likely, the plan is approved, other states may put forward still more radical ideas. Oklahoma is contemplating ask-▶

▶ing permission to rewrite the rules governing what insurers must cover, an idea popular with Republicans. Elsewhere, Democrats seek to make government-provided insurance—a “public option”—available to all. (In June, Nevada’s governor vetoed such a proposal.) For now, simply averting disaster should be the goal. The individual health-insurance market is vital for states’ economies; without it, entrepreneurs would have to risk their health as well as their capital. Self-employed business owners may flee states where premiums are exorbitant.

There is still time for Congress to pass a bipartisan fix. On August 28th Governors John Kasich of Ohio and John Hickenlooper of Colorado said they were on the brink of releasing such a plan. It might include federal reinsurance. But if lawmakers in Washington cannot agree, states will have to fill the void. ■

Arizona politics

Beg your pardon

PHOENIX

Donald Trump embarrasses Arizona Republicans

“DO THE people in this room like Sheriff Joe?” asked President Donald Trump during a raucous rally in Phoenix on August 22nd. The people did. Three days later Mr Trump pardoned 85-year-old Joe Arpaio, who was convicted of criminal contempt just a month ago. But if the president had asked Arizona’s Republican politicians for their views, he would have got a less straightforward answer.

Mr Arpaio ran the Maricopa County Sheriff’s Department (which polices Phoenix and nearby suburban cities) from 1993 to 2016. He earned local popularity and national notoriety for his harsh treatment of prisoners and zealous pursuit of illegal immigrants. Mr Arpaio housed inmates in

tents even as temperatures inside soared to 54 degrees Celsius, serving them meals of green-tinged bologna and vegetarian slop. He directed his deputies to stop anyone they thought might be in the country illegally, even if they were not suspected of a crime. Mr Arpaio said he was enforcing the law; the courts called it racial profiling, and convicted the former sheriff of flouting an order to stop.

Until recently Republicans scrambled for Mr Arpaio’s endorsement. According to the *Arizona Republic*, a newspaper, one candidate for governor in 2014 sent him a rum cake. Another, Doug Ducey, who formerly ran Cold Stone Creamery, sent ice cream. Mr Ducey won Mr Arpaio’s support, and eventually the top job.

In November 2016, though, Mr Arpaio lost the sheriff’s job to a Democrat, Paul Penzone, who defeated him by a margin of 13%. “His problem was not so much with Hispanics, who were always against him,” says David Berman, a professor of political science at Arizona State University. “It was with business-minded Republicans who decided that his radical approach to immigration was not good for Arizona’s reputation.” A sense that he squandered taxpayers’ money did not help. At the most recent count, Mr Arpaio’s legal bills to fight the racial-profiling case amounted to \$70m.

An opinion poll by OH Predictive Insights finds that just 21% of Arizonans support the pardon, while 50% oppose it. This puts Jeff Flake, a Republican senator in Arizona who faces re-election next year, in a particular quandary. Mr Flake has enraged the president by publishing a book critical of Trumpism. As payback, Mr Trump is campaigning against him. At the rally in Phoenix, Mr Trump slammed Mr Flake. He has praised Kelli Ward, an extremely conservative doctor who will challenge him in the Republican primary.

To triumph over Ms Ward, Mr Flake cannot alienate the small core of Arizonans who still adore Mr Arpaio. But to succeed in the general election he must not drive away those voters who revile the sheriff and oppose his pardoning. Mr Flake’s tepid statement, which he released on Twitter, reflects this tension: “Regarding the Arpaio pardon, I would have preferred that the president honour the judicial process and let it take its course.”

The pardon infuriates many Latinos in Arizona, which could spell trouble for the Republican Party eventually (see chart). A report by Arizona State University’s Morrison Institute for Public Policy suggests that the Hispanic share of the electorate will grow from 15% in 2010 to 25% by 2030—a hefty block despite their low turnout. Republicans in California tried whipping up fears of illegal immigrants in the 1990s. It worked, but Hispanics and many whites did not forgive the party, and it is now a sad remnant in the Golden State. ■



Police militarisation

Arms race

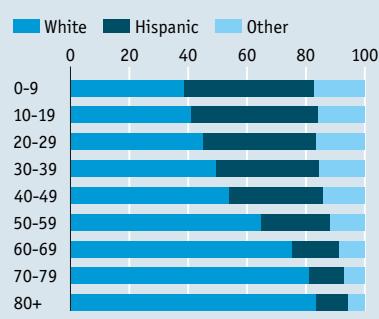
Military kit helps cops—especially the non-injurious kind

IT SOUNDS like an inventory for war: 126 tracked armoured vehicles, 138 grenade-launchers, some 1,600 bayonets. That is a sample of items given to police departments by the military as part of America’s “1033” military equipment programme. Since 2001 fully \$5bn of surplus army gear has been transferred to cops for nothing.

Military-style kit has long been associated with excessive police force. After riots in Ferguson in 2014, Barack Obama worried that the police resembled an occupying force rather than a crime-fighting one. The president signed an executive order that, by April 2016, requisitioned police stocks of tanks, grenade-launchers and bayonets and provided for closer scrutiny of federal procurement programmes. ▶

Agequake

United States, Arizona, race/ethnicity by age group, mid-2016 estimates, %



Copping a deal

US military equipment transferred to America’s police departments under 1033 programme
Original military acquisition value, \$bn



Sources: Department of Defense; *The Economist*

► On August 28th the White House rescinded that order, giving officers renewed access to the most controversial equipment. Jeff Sessions, the attorney-general, announced the change at a gathering of the Fraternal Order of Police, who had lobbied hard to overturn the restrictions. Is this wise? Two new papers published in the *American Economic Journal* provide some useful clues.

The first one, by Vincenzo Bove of the University of Warwick and Evelina Gavrilova of the Norwegian School of Economics in Bergen, finds that a 10% increase in the value of military equipment transferred to police in one year reduces offending by 5.9 crimes per 100,000 people the next year. A second paper, by Matthew Harris of the University of Tennessee and others, corroborates those results. It also finds that militarisation reduces assaults on officers and complaints against them.

The overall impact on crime seems slight given that there are, on average, 2,500 crimes per 100,000 people. But the effect on property crimes, especially robberies and car theft, seems more dramatic. The first study estimates that these fall by about 1% for every 10% increase in army gear that is deployed. A back-of-the-envelope calculation shows that for every \$5,800 of army capital employed by police forces, society saves \$12,000 in reduced property crime.

If this conjures up images of toolled-up cops intimidating muggers, however, it should not. Mr Bove and Mrs Gavrilova find that back-office equipment, including such things as air-conditioners, which accounts for about two-fifths of the total value of the 1033 programme, is much more effective than vehicles and tactical gear. They find no evidence that military weapons cut crime. Perhaps office equipment makes cops more efficient, or frees up money for hiring new ones.

Mr Sessions also contends that military equipment keeps officers safe. A Kevlar helmet saved the life of one officer during the Pulse nightclub shooting in Florida last year. But this equipment was not prohibited under Mr Obama's rules, nor was it procured through the 1033 programme. And despite Mr Sessions's depiction of police under siege, serving officers have seldom been safer. On average, between 1987 and 1991, 16 out of every 100 officers were assaulted and 18 in every 100,000 died on active duty. Over the past five years those figures have fallen to ten assaults per 100 officers and nine deaths per 100,000.

Other evidence suggests that the 1033 programme could benefit from more oversight. In July the Government Accountability Office reported that investigators were able to acquire restricted military equipment by masquerading as a police agency using a faked website and dodgy credentials. Hopefully no villains noticed. ■

Government statistics

Count down

With three years to go, America's next census is far off-track

NO MATTER how divided, America comes together every ten years for the census. It is the single event in which everyone, regardless of creed, colour or even citizenship, is supposed to take part. Few government agencies could boast that their mandate was enshrined in the constitution, as the Census Bureau can, thanks to the impassioned arguments of James Madison, who thought that future legislators should "rest their arguments on facts, instead of assertions and conjectures". But that noble mission may be jeopardised by inadequate preparations for the next census, due in 2020.

Spending usually rises greatly in the years before a census, to pay for testing and technology. But pending legislation would appropriate only \$1.5bn for the 2018 fiscal year, nearly \$300m less than needed, according to Terri Ann Lowenthal, a census expert. The Government Accountability Office (GAO) has placed the 2020 census on its list of high-risk projects. Lack of funding has already caused the bureau to cancel two of its three "end-to-end" tests, as dress rehearsals are called. John Thompson, the agency's director, unexpectedly left in June; President Donald Trump has yet to nominate his replacement.

America's census is an astounding, ex-

pensive event. In 2010 the Census Bureau amassed 550,000 temporary employees and spent \$12.3bn trying to count every American resident. The GAO notes that costs have increased from \$16 per household in 1970 to \$92 in 2010. If an accurate tally is costly, though, an inaccurate one is probably more so.

Census counts determine the number of congressional representatives, as well as the boundaries of districts. Nearly \$600bn of federal funding is allocated on the basis of census data each year, according to recent estimates by Andrew Reamer of George Washington University. Businesses rely on the numbers to identify stocks of skilled labour and latent demand for new branches. Target, a big retailer, uses the data to decide which items to stock on its shelves.

Because Congress has directed the bureau not to spend more than it did in 2010, it is planning to run the first high-tech census. The bureau wants to blend administrative data held by state agencies, use online maps and push internet response at an unprecedented rate. Those changes would save \$5bn compared with the old methods, but must be rigorously tested in advance to ensure that the data are of high quality and secure. If that is not done, the bureau will be forced to default to older, more expensive methods.

Missing persons

Mr Thompson is more sanguine about the bureau's challenges than others. What does worry him, though, is funding for the bureau's outreach efforts. "You can't get an accurate census without advertising," he says. The bureau's partnerships with community leaders, such as Baptist ministers in the rural South and Indian chiefs, help shore up response rates among groups sceptical of government. Civil-rights groups worry that many Latinos and Muslims will sit out the census, and lose political clout and public services as a result.

America's other statistical agencies are also under strain. Stagnant funding for the Bureau of Labour Statistics (BLS), which produces market-moving numbers such as the unemployment and inflation rates, is making mistakes much more likely, says Erica Groshen, the BLS commissioner until January 2017. One error, caught at the last minute after a large retailer changed its reporting software, would have moved the consumer price index estimate by 0.2 percentage points. At that level, Social Security payments would have been wrong by \$1.9bn per year. Because of flat funding, the BLS has suspended programmes tracking mass lay-offs and green jobs. Smaller statistical agencies like the Bureau of Economic Analysis, which produces GDP estimates, are also at risk. As Robert Groves, who led the Census Bureau in the last count, puts it, "They're cutting into bone." ■



Happy beneficiary of the old system

Lexington | Mr Trump's history lessons

The president is stirring up divisions with deep roots. His opponents should not copy him



BAD history is potent stuff, as Lexington saw when he recently took a teenage son to Gettysburg. When war memories were still fresh, that Pennsylvania town was a shrine to Union suffering. Confederate troops under Robert E. Lee invaded Pennsylvania to bring terror to Union territory. They seized farmers' property and—in a monstrous touch—kidnapped free blacks and escaped slaves, sending scores southward into captivity. The war was still raging when Abraham Lincoln gave his Gettysburg address to dedicate a Union cemetery there, months after the pivotal battle outside town. So eager were locals for martyrs that Virginia "Jennie" Wade, a young seamstress shot by a stray bullet while baking for Union soldiers and the only civilian casualty of the battle, was pressed into service. The Senate granted her mother a war pension, and in 1900 an elaborate monument to her was erected, largely funded by the Women's Relief Corps of Iowa, a Union state not represented at the battle.

Yet today, gazing at tourist shops full of Confederate battle flags, replica guns and souvenir T-shirts with slogans like "If At First You Don't Secede, Try, Try, Again", visitors to Gettysburg might suppose that the Confederates won. The same shops are piled high with Donald Trump hats and shirts, while Trump-stickered pick-up trucks and Harley-Davidsons rumble along the town's narrow streets. The Jennie Wade House and gift shop flog Confederate knick-knacks, and—in an attempt at neutrality—tour guides stress the young woman's friendship with Wesley Culp, a local youth who moved to Virginia and fought for the South. Merchants are following the market: in Trump-voting bits of white America, such as rural Pennsylvania, affection for the Confederacy has floated free of ancestral loyalties. Today the rebel cause stands for a chin-jutting, screw-you sort of conservatism. This extends to modern-day Iowa, home to a Republican congressman and anti-immigrant zealot, Steve King, who for a while kept a Confederate flag on his desk (later removed after a Confederate flag-waver shot two Iowa cops). The rebel flag means different things to different people, says a historian with the National Park Service in Gettysburg, tactfully. For all that, he understands, and quietly worries, if it makes black visitors uncomfortable.

President Donald Trump seems bent on testing whether bad history makes for good politics. Consider his speech in Phoenix,

Arizona, on August 22nd, denouncing "weak" political leaders for trying "to take away our culture...our history" when they bow to campaigners calling for Confederate memorials to be removed from display. In fact, the vast majority of Confederate memorials were built between the 1890s and 1950s, long after the civil war. The aim was less to mourn the dead than to intimidate, as states enforced racial segregation with laws and violence.

Trump critics hear more than historical befuddlement. They believe that the president panders to white racial resentment, and think they heard a similar appeal when, shortly after his trip to Arizona, Mr Trump pardoned Joe Arpaio, the 85-year-old former sheriff of the county around Phoenix. Mr Arpaio was convicted for defying court orders to halt police raids and immigration sweeps which, judges found, relied on unconstitutional racial profiling. Mr Trump did not just show clemency to "Sheriff Joe", an authoritarian showman. He called him a "patriot" who kept Arizona safe, signalling that checks and balances against race-based policing are so much politically correct nonsense.

Those same critics fear that, especially when race is involved, it is bad politics to cleave to more accurate versions of history, or to conventional views of the law. Steve Bannon, the populist nationalist who ran Mr Trump's campaign and then became his chief strategist in the White House, loves to stoke such fears. Mr Bannon tauntingly urges Trump opponents to keep accusing the president of racism, and to continue toppling statues. "If the left is focused on race and identity, and we go with economic nationalism, we can crush the Democrats," Mr Bannon told the *American Prospect*, a leftist journal, shortly before he left the White House. That prediction is echoed by some on the left, including Mark Lilla, a professor at Columbia University and self-styled "blue-collar Democrat" brought up in a gritty corner of Michigan. In a much-discussed new book, "The Once and Future Liberal: After Identity Politics", Mr Lilla implores Democrats to talk less about racial, gender or sexual differences, and more about class and economics. Rustbelt Democrats with national ambitions, such as Representative Tim Ryan of Ohio, say that an excess of identity politics can make their party "toxic" to working-class voters.

The president of Rebel America

Yet the past offers a further lesson, one worrying for those on the left who are sure that the way back to power is to compete with Mr Trump's fiery economic populism, while shunning his taste for racial controversies. For American history teaches that, once stoked, racial, ethnic and economic grievances are perilously hard to keep apart. In his fine history of the civil war, "Battle Cry of Freedom", James McPherson records that many whites in Union states like Ohio, Illinois or Indiana were hostile to elites, bankers and blacks in roughly equal measure. Lots of unskilled workers, notably Irish and German Catholics, resented New England grandees for asking them to fight to free the slaves, and suspected that wealthy Yankees saw emancipation as a source of cheap black labour. Populists hated highfalutin newspapers as much as Mr Trump claims to today. In 1863 the *New York Times* borrowed three Gatling guns from the army to guard its head office as rioters protested against a military draft, yelling "Down with the rich!" and looking to lynch blacks.

Mr Trump, a man with a hazy, self-regarding sense of history, grasps that Them-against-Us rage has deep American roots. Opponents are free to hope that his ploys backfire. But for non-bigsots, meeting him in any sort of populist anger contest is a trap. ■



Corruption in Guatemala

If you elect a clown, expect a circus

GUATEMALA CITY

As the country's scandals multiply, opposition hardens to the investigators who are uncovering them

BEFORE he ran to be president of Guatemala two years ago, Jimmy Morales pretended to be a presidential candidate in a television sitcom called "Moralejas" ("Cautionary Tales"). Neto, the bumbling office-seeker, clad in a white suit, red bandanna and cowboy hat, decides that after telling "a boatload of lies" he will withdraw from the race. He offers the remaining (fictional) candidates some parting wisdom: "Haven't you realised that people aren't dumb? That people see how you go to sleep poor and wake up rich?"

In the real-life election of 2015 Mr Morales levelled the same sort of accusations at his rivals. It came soon after the country's president, Otto Pérez Molina, and vice-president, Roxana Baldetti, were arrested on corruption charges. Running as an outsider with no connection to the discredited political class, Mr Morales won 67% of the vote in a run-off that October.

Now Guatemalans are feeling duped. Mr Morales soon showed Neto-like ineptitude in exercising the powers of his office. Worse, many voters now see him as beholden to the system he ran against. On August 27th he ordered the expulsion from the country of Iván Velásquez, the Colombian head of the International Commission against Impunity in Guatemala (CICIG), a UN-backed body that has been investigating corruption for more than a decade and helped bring down Mr Pérez and Ms Baldetti. Mr Morales's order came less than two days after Mr Velásquez sought to strip him of immunity from prosecution, alleging that he had failed to dis-

close \$900,000 in contributions to his presidential campaign.

Foreign groups, including the UN and the United States, condemned Mr Morales's order. The constitutional court has now blocked it, so Mr Velásquez can continue his work. But the confrontation has shown that the accused can strike back at their accusers. And it leaves the country in a political limbo; the president has lost his moral authority, but no alternative leader commands widespread respect. The next national elections, due in 2019, are unlikely to provide one.

Things have got worse since the heady days of 2015, when perhaps 100,000 Guatemalans filled the streets to demand the removal of Mr Pérez and Ms Baldetti from office. Then, ordinary citizens and much of the country's elite were united in disgust at the alleged wrongdoing that CICIG, working with the country's attorney-general, Thelma Aldana, had uncovered. The two politicians were implicated in a scandal called La Línea, which involved taking bribes from businesses to let them avoid paying customs duties. Few Guatemalans were sorry to see them go.

Nasty networks

Since then, the scope of CICIG's investigations has widened. One probe revealed that Mr Pérez's Patriotic Party had set up shell companies for the sole purpose of soliciting donations from banks, oil firms and other companies in exchange for favours after they were elected. Such scandals have implicated dozens of businessmen. A

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fifth of congressmen are under investigation. Many of these have links to Guatemala's vast underworld: more than two-thirds of the cocaine that enters the United States passes through the country. It is these networks, which have their origins in the country's 36-year civil war, that CICIG was set up to investigate. A report by CICIG estimates that a quarter of campaign money comes from organised-crime groups.

Now it is going after Mr Morales's National Convergence Front (FCN), which was founded in 2008 by former army officers and became a political home for legislators from Mr Pérez's defunct Patriotic Party. Keeping such company has damaged Mr Morales's reputation. Some of his advisers have been accused of committing atrocities during the war. A recent cartoon in a local newspaper portrayed Mr Morales as a puppet whose strings are pulled by generals. Although no one accuses Mr Morales of enriching himself, this year his son and brother were charged with issuing false invoices to the state property agency.

As CICIG's investigations have expanded, opposition to it, and support for Mr Morales, have hardened. "There's a climate of fear," admits Fernando Linares Beltranena, an ultra-conservative congressman. He disparages Mr Velásquez, Ms Aldana and Todd Robinson, the American ambassador, as *la trinca* ("the trio"), a left-wing triumvirate that is plotting against the government. Why isn't CICIG targeting street gangs?, the right wonders. The association of mayors has endorsed Mr Morales.

Businesspeople claim that CICIG's in- ►

▶vestigations are driving away investment. That is hurting GDP growth, which is around 3% a year but is expected to slow. "Jimmy had the right to do what he did," says one businesswoman. "The feeling [among Guatemala's elites] now is, 'Let's protect ourselves, we're all in the same boat,'" says Juan Alberto Fuentes Knight, a reformist former finance minister.

Just who will win the tussle between the frightened establishment and the 80% of Guatemalans who back CICIG is not clear. "If you elect a clown, expect a circus," read banners carried by CICIG supporters at its headquarters in Guatemala City. But

they encountered bigger groups of Morales backers, who blocked diplomatic cars from leaving. "I signed the peace accords but I can also make war," said Álvaro Arzú, a former Guatemalan president who is now mayor of Guatemala City. To some, that sounded like a call for a crackdown on anti-Morales protesters. The national police cancelled leave for its officers.

The commission has few friends in congress, where a two-thirds majority is needed to remove Mr Morales's immunity. Congress has so far thwarted reforms backed by CICIG, such as extending judges' terms from five years to 12 and shifting responsi-

bility for administering the judicial system from the constitutional court to an independent council.

The next election may not bring much change. All the three main political blocs have been implicated in one scandal or another. Starting new parties is not easy: proto-parties have to collect 23,000 signatures, and a government commission wants to raise that number. A group of young activists called Movimiento Semilla ("Seed Movement") hopes to put forward a presidential candidate in 2019 but has yet to choose one. The seed of renewal in Guatemala may take years to flower. ■

Bello | A human scrapheap

Latin America's little-noticed skills crisis

In 1961 a 16-year-old youngster, with only primary schooling and experience as a shoe-shiner and warehouse assistant, enrolled to train as a lathe operator on a course at Brazil's National Industrial Training Service (known as SENAI). For Luiz Inácio Lula da Silva, it proved to be a life-changing step: subsequent jobs at metal-bashing companies led to him becoming a trade-union leader and eventually his country's president.

Half a century ago, SENAI and its counterparts across Latin America offered the poorer and less educated a route to upward social mobility, while providing the skills that new industries demanded. Now the region faces a little-noticed skills crisis. New technology is changing work everywhere. In Latin America a lack of people who know how to harness that technology is slowing its diffusion, says a new report by the Inter-American Development Bank (IDB). In surveys, a growing number of employers complain that they can't find qualified workers. Already hampered by slower productivity growth than in East Asia, the region risks falling further behind.

It has made big strides in expanding education. Today, primary schooling is almost universal, and three out of four children are enrolled in both pre- and secondary school. Over 40% of the relevant age group get some higher education. Unfortunately, Latin American students don't learn enough: international tests show that many can't perform basic maths and language tasks.

These shortcomings—and the need to fix them with better teachers and a longer school day—have become a staple of the policy debate in the region. Yet focusing just on education leaves out most Latin Americans who are adults and are already in the workforce. Sadly, most have

little chance to acquire the skills they lack.

Latin America's labour markets are characterised by high job turnover, low pay and meagre investment in skills both by firms and workers, according to the IDB. Manufacturing firms in the region are as likely to train their workers as those in East Asia. Yet overall, only around 10% of Latin American workers receive some training each year, compared with around half in developed countries, according to a study last year by the Inter-American Dialogue, a think-tank, and Laureate International Universities. Most workers are in small service businesses, such as restaurants, that have little incentive to train them.

All this means that a young adult's future can be determined shortly after leaving school: a study in Chile found that workers with secondary education saw their wages rise by almost 20% over seven years if they were employed in a large manufacturing firm, while in a small service firm they rose by only 6%.

Not surprisingly, those with less education tend to be in worse jobs, often in the informal economy. So the deficiencies of the education system and lack of opportu-

nities for training interact to reinforce inequality and low productivity. Yet governments are doing little to prevent many of their citizens from being thrown on this human scrapheap.

Skills training in the region is an ill-thought-out patchwork. National training institutes, such as SENAI, continue to exist in many countries. They are financed by payroll taxes (to the tune of 0.3% of GDP in Colombia, Jamaica and Panama, for example). They mostly train workers at large firms. Many private training centres do a similar job.

Several countries have youth-training programmes involving subsidised internships at firms. These seem to work, but are limited in scope. Less common are apprenticeship schemes. A shining exception is Weg, a Brazilian company that is one of the world's biggest makers of electric motors. Its training school at its biggest factory, at Jaraguá do Sul, takes on some 200 young people for a course of up to two years that combines daytime shop-floor exposure to mechanics and electronics with night school. They are paid a wage and are guaranteed a job. The payoff for Weg is that its workers stay an average of seven to eight years.

Apprenticeships apart, when it comes to training, policymakers have much less evidence than in education as to what works and what doesn't, says Julián Messina of the IDB. Few training programmes have been evaluated. Rectifying that is a first step. The second is to draw up a comprehensive skills-development system, in close collaboration with employers, perhaps borrowing some ideas from Germany. For those who need to, such a scheme should include more incentives to return to school. It should never be too late for Latin Americans to acquire the skills they lack.





Islamic State

Lowering the black flag

BEIRUT

The jihadists of Islamic State are fighting for their survival

IT IS less a chaotic rout than a tactical retreat, but suddenly Islamic State (is) is losing ground quite fast. At both ends of its self-proclaimed caliphate, the jihadist group is ceding territory. It quietly withdrew from Tal Afar, the largest Iraqi city still under its control, on August 27th.

Simultaneously, hundreds of is fighters and their families emerged from their caves in the Qalamoun mountains, astride Lebanon's border with Syria, and boarded buses heading east. Trapped between Syrian and Lebanese forces on the ground, and Russian bombardment from the air, they gave up after a weeklong battle.

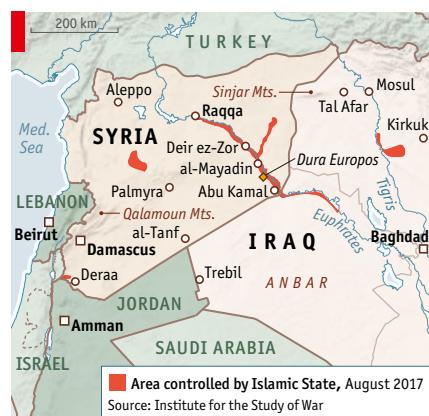
Increasingly, the jihadists are being squeezed into a ribbon along the Euphrates valley. Having lost the Iraqi city of Mosul, and on the retreat in the Syrian city of Raqqa, their last redoubt is likely to be the city of Deir ez-Zor, in eastern Syria. But here, too, they are vulnerable: the Syrian army retains control of two enclaves on the western edge of the city.

The acceleration of the jihadists' retreat has taken everyone by surprise. Tal Afar had served as the garrison linking Raqqa, the caliphate's putative capital, with Iraq. Several of its leaders were Sunni Turkmen from the city—two were deputies of Abu Bakr al-Baghdadi, the self-declared caliph. Many of its feared religious police, the *hisbah*, were also from Tal Afar. They led a massacre of the Yazidi minority below the

nearby mountain of Sinjar and helped run is's ghastly trade in sex slaves.

Iraq's army, therefore, expected to face fierce resistance from 2,000 or so jihadists in Tal Afar. Instead it met far fewer. The contrast with Mosul, where nine months of street-by-street combat left the city in ruins, is stark. Observers who entered Tal Afar after the battle found few dead bodies. The city centre was largely unscathed. Fewer than 100 Iraqi soldiers died in the fighting, says an official, compared with many thousands in Mosul.

This is partly because of topography. In Tal Afar, Iraq's soldiers did not have to squeeze through tight alleyways, as they did in the old city of Mosul. They also of-



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fered the jihadists escape routes. Hundreds of fighters are said to have passed through the lines of the Iraqi army and Kurdish forces, known as the Peshmerga. "The borders are simply too porous," said an Iraqi official. In Lebanon, is fighters negotiated with Hezbollah, a Shia militia, to arrange a safe passage eastward out of their mountain redoubt, in exchange for returning the corpses of Lebanese soldiers. American forces have blocked them from joining up with their comrades in Deir ez-Zor.

But even where there are no such exit routes, is is giving up ground. The Syrian Democratic Forces, a joint Kurdish and Arab force trained and armed by America, have taken two-thirds of Raqqa since launching an assault on the city in June. is affiliates are in retreat in southern Syria, around Deraa, too.

The jihadists can still tap into seething sectarian resentment. Displaced Sunnis lament the levelling of the old cities of Mosul and Raqqa, and say Tal Afar was spared only because it has many Shias. Over 700 civilians have been killed by American air strikes and artillery shells in Raqqa, according to Airwars, a monitoring group based in London. Some 20,000 civilians are said to be holed up with as many as 2,500 jihadists in the old city.

is still has some strength to counter-attack. On August 29th it captured a tank and heavy artillery in Raqqa. It appears to be making a stand in the town of al-Ayadiya, outside Tal Afar. And it can always resort to terrorism: Karrada Dakhil, a favourite shopping street in Baghdad, has again been closed to cars for fear of bombs.

But as a territorial state is appears spent. The administration and provision of services, of which it once boasted, have all but collapsed in much of the territory still under its control. Electricity and run- ►

ning water have vanished. Food stocks are thin. Medical care in Raqqa is reserved for fighters. "IS does not treat civilians," says an anti-IS activist in the city. "They die of their injuries." Families flee, defying the group's orders. They must dodge jihadist snipers and avoid landmines laid to keep them hostage. Still, Iraqi soldiers pushing into Tal Afar found most homes empty.

Fighting on many fronts, IS finds itself stretched. In one district of Deir ez-Zor the group has cut the number of religious policemen as it diverts men to the battlefield. It has also sharply reduced its suicide-bombings in and around Raqqa. For the first time it is enforcing military conscription on men between 20 and 30 in Deir ez-Zor. The pullout from Lebanon and Tal Afar should bring reinforcements to IS in Syria, but internal discipline seems to be

ebbing, too. Local IS fighters are complaining more loudly that foreigners still enjoy free food and health care, whereas they face wage cuts. "On the front line fighters don't obey the rules any more," says a former militant, who notes that many smoke. Religious zeal is no longer enough to spur the jihadists into action. In the caves IS abandoned in Qalamoun, Lebanese soldiers found Captagon pills, a stimulant often taken before battle.

Months of fighting may yet lie ahead, but the trajectory is clear. As its forces advance, Iraq recently reopened its border with Jordan at Trebil. Syrian government forces are pushing east from Palmyra towards Deir ez-Zor. IS's leaders are probably hiding in riverine towns such as Abu Kamal and al-Mayadin, as they prepare for their last stand. ■

After the caliphate

The next scramble

BEIRUT

As Islamic State withers, the alliance against it is fraying

DOWN the Euphrates river, halfway between Deir ez-Zor and Syria's border with Iraq, lies Dura Europos, an ancient metropolis where the Parthians of Persia sparred with the Roman Empire for control of the Middle East. History, it seems, is repeating itself. As Islamic State (IS) withers, America's coalition is racing to secure the same stretch of river, before Iran and its allies.

Never have America and its allies had such a hold on Syrian territory. In the north, America has worked with the Kurds to carve out a self-governing region. From there it provides support for Kurdish and Arab forces pushing down the northern bank of the river. Its Syrian proxies have fanned out in pockets around the border with Jordan, from Deraa to north of al-Tanf, a coalition base.

But like their Parthian forebears, Iran and its allies have the upper hand. The Syrian army, backed by Iran's Quds Force, and Shia and tribal militias are pressing on Deir ez-Zor, with the help of Russian air cover. In the north, they have reached the southern bank of the Euphrates.

Soldiers coming from Palmyra have crossed over 100 miles of desert. In the south, they have reached Iraq's border.

Iran's gains are even more striking elsewhere. Hezbollah, its Lebanese Shia militia, is basking in plaudits for expelling IS from Lebanon (though some have criticised the deal it cut with the jihadists, which allowed them to retreat). In northwest Iraq, the Iranian-backed Hashid al-Shabi, or Popular Mobilisation Units (PMU), are ascendant. They have retaken Tal Afar and will keep it, says Mowaffaq

Rubaie, an Iraqi former security adviser. If so, they will help Iran increase its influence by forming a quasi-border guard and creating a buffer against the Kurds.

Farther south, America's hopes of stemming Iran's advances through Anbar province have been frustrated, too. A contract won by Olive Group, a subsidiary of Constellis, an American security company, to patrol the Baghdad-to-Amman highway is "not proceeding", says an adviser to Iraq's prime minister. Instead, he says, the PMU and Iraq's army will take the lead.

America and Iran are not about to start fighting each other directly. After years of rivalry over Syria, the Americans have agreed to "zones of de-confliction" with the Russians. And in Iraq, America and Iran have largely co-ordinated their anti-IS campaigns. Brett McGurk, an American official, has often met Hadi al-Amari, perhaps the most powerful and pro-Iranian PMU leader. Defying predictions, flare-ups between the parties fighting IS have been rare.

That could change once they lose their common enemy. "As long as we're at war with IS, it doesn't matter whether the Iraqi army, the Peshmerga or the Hashid holds territory, as long as it isn't IS," says an Iraqi official. "But once we declare mission accomplished, that will change." Kurdish leaders in Iraq are planning a referendum on independence in September, to be held not just in the three provinces that form their autonomous region, but in disputed territories taken in the war, such as the city of Kirkuk. PMU leaders say that won't happen.

Oman and the Qatar crisis

A port in the storm

MUSCAT

The tiny sultanate is making the best of a bad situation

THE Omani port of Sohar usually slows down during the summer. But this year it is buzzing. According to a government official, cargo volumes are up by 30% in the past few months, as more ships arrive carrying goods bound for Qatar. Such is the level of traffic that the Qatari ambassador to Oman hails the sultanate's ports as the new gateway to his country, supplanting the port of Jebel Ali in Dubai, which is part of the United Arab Emirates (UAE).

Oman sits at the entrance to the Persian Gulf, but beyond the Strait of Hormuz there is discord. On the western and southern shores lie Bahrain, Saudi Arabia and the UAE, which have cut diplomatic and commercial ties to Qatar, their neighbour, over its alleged support for extremists and ties to Iran. Oman has stayed out of the dispute. It is helping Qatar to bypass the siege and quietly benefiting from the crisis.

Oman has often acted as a mediator of squabbles in the region. But early in the current crisis, the sultanate showed where its sympathies lie. When Qatar Airways, the national airline, was barred from Saudi airspace in June, Omani aeroplanes (rented by Qatar) ferried stranded passengers from Jeddah to Doha. Since then, ties between the sheikhdoms have strengthened. Nearly 150 Qatari investors showed up for a recent event in Muscat to promote investment in Oman. Only 20 were expected. "A lot of deals were inked," says an Omani businessman.

"We benefit [from the standoff], but we don't want to be seen to benefit," says an Omani official, wary of irritating Saudi Arabia. Oman has a well-earned reputation for pushing back against Saudi dominance in the Gulf. Its ageing ruler, Sultan Qaboos, has stymied big regional initia-



tives, including efforts to create a single currency. Like Qatar, Oman also has good ties with Iran. So it sees a cautionary tale in the crisis. If Qatar can be punished for its independent outlook, who is to say Oman won't be next?

Oman's response has been quietly to reduce its reliance on its closest neighbours. As well as enhancing its ties with Qatar, it has forged new trade links with Iran. A \$3.6bn loan from China, signed in early August, helped Oman to fund government spending for the year. In the past, the sultanate turned to Saudi Arabia or the UAE for cash. China is also investing heavily in the port and industrial zone of Duqm, which an analyst describes as "like a Chinese economic city".

The bullying of Qatar has set the whole region on edge. Mediation efforts by America, Germany and Kuwait have failed to resolve the dispute. Qatar's decision on August 23rd to re-establish full diplomatic ties with Iran seems to indicate a hardening of its position. For now Oman benefits. But if the feuding continues to undermine the stability of the one part of the Middle East that has been largely free of turmoil, that will not be good for anyone. ■

Angola and Congo

A tale of two kleptocracies

KINSHASA

Why Angola meddles so much in Congo

IN THE nightclubs of Kinshasa, the raucous capital of the Democratic Republic of Congo, adverts are everywhere for Congolese beer. From Primus, one of the biggest brands, with its label in the colours of the national flag, to Mützig, a German-themed lager, there is a choice that would be enviable in other African countries. The brews are typically served in intimidating 750ml bottles. Yet these days, ask for a beer and you are as likely to be given a can of Cuca, a less appealing Angolan fizz. It is not just beer: walk through a Kinois supermarket and every other product seems to be from Angola.

For over a year Angolan goods have flooded into Congo—so much so that on August 28th the government announced that it would try to ban the imports. Congolese businessmen complain that they cannot compete with Angolan traders, because their aim is not to make a profit, but to acquire dollars (access to which is restricted in Angola). Yet it is not just Angolan economic policy that affects Congo; so too do its politics. Of the country's nine neighbours, none matters more. The presidency of Joseph Kabila, in power since 2001, de-



Dokolo, a man with a manifesto

pends in part on Angolan support. But as Angola inaugurates a new president, to replace José Eduardo Dos Santos, its egregious dictator for the past 38 years, relations between the two countries may be tested.

Angola and Congo are intimately linked by geography. First, there is oil—the mainstay of Angola's economy. Cabinda, the enclave where much of Angola's oil is produced, is separated from the mainland by a strip of Congo. Much of Angola's offshore oil production happens in Congolese waters. Second is the 2,600km border between the two countries. During the long civil war in Angola, enemies of the MPLA, its ruling party, found in Congo a useful hiding place. That has put the country "at the top of Angola's foreign-policy priorities" for the past 20 years, says Stephanie Wolters of the Institute for Security Studies, a think-tank in South Africa.

Of the many countries that have meddled in Congo since the end of the cold war, Angola has arguably wielded the strongest influence. During the second Congo war in 1998, when Rwanda and Uganda attempted to depose Laurent Kabila, Joseph's father and president at the time, it was Angolan (and Zimbabwean) troops who stopped the advance. In 2001, as the war raged on, Laurent Kabila was assassinated. Angola was one of several suspects, and helped engineer the succession of his son.

Angola has backed Mr Kabila, but its support is limited. When he refused to give up power at the end of his second term last year, as mandated by the constitution, Angola pressed him to negotiate with the opposition. He did, leading to a power-sharing deal that allows him to stay in office for one more year while elections are organised. But that deal is in tatters. The opposition has split and Mr Kabila still claims that insecurity makes holding elections impos-

sible. In the past year, a dispute over the succession of a traditional chief in Kasai, a region on the Angolan border, has turned into a bloody insurgency against the government. Over 1m people have been displaced, tens of thousands of whom have flooded into Angola. A series of prison breaks, including one involving 4,000 detainees in Kinshasa, has put even peaceful parts of the country on edge.

The Southern African Development Community, of which Congo and Angola are members, has accepted Mr Kabila's delays in organising elections. But that will not last. On August 19th Sindika Dokolo, an art-collecting Congolese businessman who is the son-in-law of Mr Dos Santos, and other Congolese activists published a "manifesto" telling Mr Kabila to step down and calling for civil disobedience if he does not by the end of the year. Mr Dokolo, who surely has the backing of his father-in-law, has also met Moïse Katumbi, another wealthy Congolese exile, who aspires to replace Mr Kabila. Mr Dokolo's activism has clearly unnerved the Congolese. In July, a court sentenced him in absentia to a year in prison for real-estate fraud.

Mr Dos Santos, who retains vast influence in Angola, fears chaos in Congo. He also wants to be on the right side of whoever succeeds Mr Kabila. (He has painful memories of a predecessor, Mobutu Sese Seko, who was openly hostile.) Mr Kabila is clinging tightly to his throne, but if he starts to lose control, his southern neighbours may well give him an extra shove. ■

Public housing in Ethiopia

Not for the poor anymore

ADDIS ABABA

Ethiopia is struggling to make housing affordable

ELEVEN years ago Elsa, a middle-aged widow, won the lottery. The prize was not cash, but the deed to a spacious, three-bedroom flat in Addis Ababa, the capital of Ethiopia. Today she lives there with her four adult children. The deed, now laminated, hangs proudly on her wall.

Elsa is a beneficiary of Ethiopia's public-housing scheme, one of the most ambitious in Africa. Since it began in 2006, some 250,000 flats have been built and transferred to people in Addis Ababa and other towns. Like Elsa, they are nearly all winners of a computerised lottery, which allocates flats as they become available. The government aims to build 50,000 a year in the capital over the next decade.

In theory, the programme should just about pay for itself. All land in Ethiopia is state-owned, which reduces upfront costs. ►

► Beneficiaries make a down payment to the government ranging from 10% to 40% of the price of the flat, which is set by the state. They then pay off the rest over a ten- to 20-year period. A state-owned bank holds the mortgage, providing generous terms.

But the prices charged by the government were too low to sustain the programme. So it has had to hike them. Now poor Ethiopians cannot afford the down payments for even the most subsidised units. Those who can often struggle to pay their mortgages. Many opt to rent out the flats and move elsewhere.

In the face of this fiscal reality, the government has changed its focus. In 2013 it introduced a scheme explicitly aimed at the middle class—those who could afford down payments of 40%—and announced that people who had saved the whole price of the property would skip the lottery and head to the front of the queue. While waiting, applicants have to keep putting money into a savings account. If they stop, they are tossed off the list, further weeding out the poor.

Ethiopia is not alone in its struggles. Public-housing programmes have a long history of failure in Africa. They have often focused on large-scale developments on the edges of cities—and proven unaffordable. A recent project on the outskirts of Luanda, the capital of Angola, offers flats starting at \$84,000 in a country where the per capita income is just over \$6,000 and the median is far lower. In Cameroon the government's flagship housing programme is out of reach for 80% of the population, says the World Bank. South Africa has built some 3m houses since 1994, which are doled out free of charge, but most are in poor shape.

Officials in Ethiopia talk of moving away from public provision and of allowing foreign firms to participate in the housing scheme. To aid the poor, analysts recommend that the government give them land and help them to build their own homes. Boosting the amount of land available to private developers might also help. Because the government keeps a tight grip on supply, the price of land is steep. In the commercial centre of Addis Ababa a lease can now cost as much as \$15,000 per square metre.

Despite the high prices, demand for public housing continues to rise. When a second round of registration for the homes opened in 2013 over 1m people, including Elsa's 25-year-old daughter, Miqnay, signed up. But many have given up hope. Elsa doesn't expect Miqnay to receive a flat within the next decade. Thousands who registered back in 2005 are still waiting. "Twelve years really is a joke," says an exasperated employee at the official centre for commerce in Addis Ababa. "Everybody has concluded that the government cannot do it anymore." ■

Grasscutters

The challenge of raising rats

KUMASI

A large rodent shows why it is hard to stop bushmeat hunting in Africa

THE cane rat, a large, blunt-nosed version of its urban cousin, looks docile enough. But it has a taste for fingers. "You need skill to be able to handle them," says Francis Ababio, who teaches students how to rear the rodents, also known as grasscutters, at Kwadaso Agricultural College in Kumasi, Ghana's second city. Grasscutter meat is a delicacy in the country's cities and a part of rural diets. Digested grass found in its stomach is also said to make delicious soups.

Most grasscutter meat still comes from the wild. But conservationists and officials are trying to curtail bushmeat hunting because of concerns that it is wrecking the environment and upending food chains. The Ebola outbreak in 2014 dented demand, but some 579m forest mammals, from monkeys to porcupines, are eaten every year in central Africa, according to the UN. A study by Goethe University Frankfurt found that 39% of forests in the Congo Basin are under severe pressure from hunting.

So governments are trying to domesticate wild animals. Take the grasscutter. Since at least the mid-1980s, officials across Africa have urged people to farm it. A decade ago a study by Germany's development agency counted more than 1,500 such farmers in Ghana. But the rodents are difficult to raise. A project by the University of Ghana and Kyoto University has handed out 183 grasscutters to 49 farmers in Ghana since 2014. Those have produced more than 200 babies,

but nearly half of them have died. Some could not tolerate the cold harmattan winds that blow down from the Sahara. Others got stressed and rammed their heads into cage walls.

The academics are now trying to sequence the grasscutter's genome, in the hope of breeding more docile animals. But farmers already consider the rodent an expensive investment. Rabbits are pregnant for just one month and can be sold for meat when they are two to six months old. Grasscutters, by contrast, take up to 13 months to mature and five months before they give birth. Farmers are also undercut at the market. In the crowded centre of Kumasi women selling the hairless carcasses of wild grasscutters quote prices between 30 and 55 cedis (\$7-12). Mr Ababio says the cage-raised sort are sold for 80-120 cedis.

Grasscutter connoisseurs also claim that the wild animals, because they eat a wider variety of grasses, are both tastier and better for you. "Why would someone pick an animal God has created to be wild...and feel that they can cater for them?" asks Afia Ajyeman, who has been selling grasscutters in Kumasi for 60 years. She refuses to buy from farmers.

So it is no wonder that efforts to push bushmeat hunters into other livelihoods seem to be making little headway. A review of such projects by the International Union for Conservation of Nature concluded bluntly: "In short, we do not know how effective they are."



The irresistible allure of rat on a platter



Turks in Europe

Home and away

COLOGNE

How a large diaspora complicates Europe's relations with Turkey

EUROPE'S relations with Turkey have long been coloured by mutual fascination, dependence and mistrust. Spellbound after visiting Constantinople in 1898, Kaiser Wilhelm II of Germany wrote to his friend Tsar Nicholas II, "If I had come there without any religion at all, I certainly would have turned Mahometan!" But if today's Europeans rely on this awkward partner to keep refugees away and share intelligence on terrorists, Turkey's slide into paranoid authoritarianism under President Recep Tayyip Erdogan makes it a far less enticing partner. Jean-Claude Juncker, president of the European Commission, said this week that Turkey is leaving Europe with "giant steps".

The relationship is complicated by the economic and military ties that bind Turkey and Europe, but above all by the large number of Turks, and their descendants, living in Europe. The Turkish diaspora numbers over 6m, most of them in western Europe. For years Mr Erdogan has delivered rousing speeches to vast rallies in cities like Cologne, urging European Turks to make their way in their adopted homes but to reject attempts at assimilation—and hinting that the triumphs he has brought Turkey are theirs to share. Mr Erdogan is the first Turkish leader to take the diaspora seriously, and it shows. In a referendum in April 59% of diaspora Turks backed his controversial proposals to extend presidential

powers, compared with just over half at home. Mr Erdogan has three aims in attending to the diaspora, says Sinan Ulgen, an analyst in Istanbul: to advance Turkish interests abroad, to seduce nationalists at home, and to stack up votes in his deeply polarised country.

Some European politicians have long bristled at Mr Erdogan's electioneering in their cities. But their number has increased as Turkey's relations with European governments, especially Germany's, have crumbled amid Mr Erdogan's obsession with rooting out supporters of Fethullah Gulen, an exiled cleric, following last year's failed coup. In July Turkish police arrested six human-rights activists, including a German citizen. A furious Sigmar Gabriel, Germany's foreign minister, issued a travel warning and threatened to cut off credit guarantees to firms investing in Turkey. Mr Erdogan has also sharpened his rhetoric. Before his referendum he accused the Dutch and German governments of "Nazi" tactics after they barred his ministers from campaigning. He has urged European Turks to have at least five children in order to counter the EU's "vulgarity". His government and its proxies have stepped up complaints about Islamophobia in Europe, and delight in highlighting instances of hypocrisy among Europe's governments, such as allowing Kurdish terrorist groups to demonstrate.

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Charlemagne is away

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Relations between Turkey and the EU democracies have degenerated further in the run-up to Germany's election on September 24th. Mr Erdogan has called on Turkish Germans to shun both parties in the ruling coalition, as well as the Greens, for showing "enmity" to Turkey. German politicians these days seem to be competing to criticise Mr Erdogan's government. Germany now wants the EU to consider cutting budgetary support to Turkey worth billions of euros, and to suspend customs talks.

The modern era of German-Turkish relations began with a guest-worker treaty signed in 1961, one of several agreed upon by West Germany after the Berlin Wall starved its booming economy of eastern European labour. The Turkish workers were meant to leave after two years, but this rotation clause was removed at the request of employers who liked the hard-working immigrants. Yet for decades West German governments maintained the fiction that the workers would one day go home, even as they imported their families and sent their children to local schools.

A troubled history

The debate eventually moved on; in 2000 legal changes made it much easier for Turks to acquire German nationality. But discrimination persists. "I can understand people supporting Erdogan," says Kemal Dikec, a Turkish-German from Cologne who distrusts the president. "They think, 'I'm not on my own any more.'"

Plenty of Turks in Europe take little interest in their motherland. In Germany turnout for the referendum was only 49%, and the 800,000 who are citizens only of Germany were not eligible to vote. Yet politicians remain disturbed by Mr Erdogan's success in harvesting diaspora votes. "It's a ➤

► disaster that people who grew up in a free democratic land voted for Erdogan's constitutional changes," says Serap Güler, state secretary for integration in North Rhine-Westphalia, Germany's most populous state and home to a third of its Turks.

Ms Güler, herself of Turkish extraction, considers this the "bill" for Germany's years of failed integration policies, but for others the referendum revived old concerns about split loyalties. Turkey's shoddy treatment of some dual citizens, such as Deniz Yücel, *Die Welt*'s Turkey correspondent, detained in Istanbul since February, has given German sceptics of liberal citizenship rules a fresh argument. In the Netherlands, which started thinking about integration many years before Germany, Turkey's behaviour nonetheless feeds a touchy debate about the role of Muslim minorities. Nearly three-quarters of Dutch Turks backed Mr Erdogan's referendum (see chart 1).

German anxieties are fuelled by long-standing concerns over "parallel societies". The phrase can feel relevant in neighbourhoods like Mülheim in Cologne, where televisions blare with Turkish news and cafés hum with gossip from Istanbul and Ankara. But the data tell a more complex story. Three-quarters of second- and third-generation Turkish-Germans have regular contact with other Germans, compared with less than half of the first generation (who still account for around 50% of Germany's Turkish population). Surveys find German Turks growing less attached to conservative ideas like confining women to the home. Some are forging identities apparently grounded in beliefs they associate with Turkey, even as their behaviour points elsewhere: they are less likely than their forefathers to attend mosque, but more likely to say they are religious.

Detlef Pollack, a sociologist who studies Germany's Turkish population, interprets support for Mr Erdogan not as a rejection of democracy but as an expression of defiance, identity and perhaps resentment. "The message [of the vote] is: please take us seriously," he says. "We are democrats, but not on your terms."

Yet problems are legion. Surveys by the Essen-based Foundation for Turkish Studies find that Turkish-Germans in North Rhine-Westphalia are increasingly likely to consider Turkey "home" (see chart 2); ever fewer say the same for Germany. Socio-economic indicators are especially bleak. Reiner Klingholz at the Berlin Institute for Population and Development, a research outfit, lists a few: among migrant groups in Germany Turks have the highest share of people without schooling, the lowest rate of university attendance and, at 50%, the highest rate of women staying at home. The gap is closing, especially for girls, but far too slowly.

Analysts tend to pin much of this on the

Erdogan's overseas assets

Turkish voters abroad, total votes cast in April 2017 constitutional referendum, '000



background of the guest workers. Over two-thirds of adult Turks who arrived in the 1960s and 1970s, many originally from poor and conservative parts of eastern Anatolia, had no qualifications. Their children often floundered in German schools, which sort by ability early and struggle to provide opportunities to pupils from poor backgrounds. Studies from the OECD put Germany near the bottom of the table in getting migrant-origin children into decent schools, although its apprenticeship system is good at finding them work. Germany's migrant communities by and large lack the aura of helplessness that can afflict parts of French or Belgian cities.

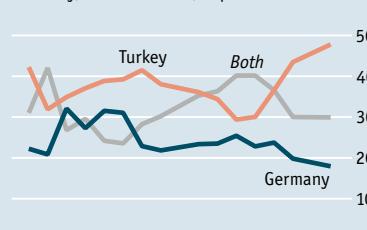
DITIB of the spear

European countries fear not just support for Mr Erdogan among their Turkish populations, but the import of Turkey's pathologies. Since the attempted coup in July 2016, Turkish-German businesses suspected of Gulenist sympathies have been boycotted and their owners harassed. Turks in Germany lower their voices when asked about politics, and political scientists report difficulties in finding Turkish interviewees. "People are increasingly unable to look into each other's eyes," says Cahit Basar, a Kurdish activist from Cologne.

Such clefts have been aggravated, German officials charge, by organisations such as DITIB—the German branch of Diyanet, the religious arm of the Turkish state—which was established by secular Turkish

Less at home

Country that Turks in North Rhine-Westphalia, Germany, consider home, % polled



governments in the 1980s as a counter to more conservative outfits. Observers accuse DITIB of replicating Diyanet's politicisation of religion; some imams have been recalled from Germany by Diyanet after allegations that they had spied on their own congregations. German ministers have suggested that the Cologne-based DITIB should sever its ties with the Turkish state. (Ayse Aydin, a spokeswoman, says it is unfair to treat a handful of the 800 imams it employs as representative.) Other countries have had difficulties: in Belgium, Flemish authorities withdrew official recognition from one of the country's biggest mosques over spying allegations.

DITIB is no stranger to controversy. It has built a striking mosque, Germany's largest, in Cologne, spooking locals who disliked the visible intrusion of Islam into this traditionally Catholic city. The prayer room, flooded with light from huge windows designed to foster "transparency", recently opened to worshippers; a mini-mall downstairs aims, as Ms Aydin puts it, to "lower fear and contact barriers" for non-Muslims, who will be invited to patronise the (halal) outlets when they open later this year. It speaks of a newly confident German Islam even as it serves the needs of a less assured generation. "I can't think of Germany as home," says Recep, a middle-aged mechanic brought to Cologne as a child by his Anatolian parents, as head-scarfed teenagers cheerfully pose for selfies before the mosque's soaring minarets.

DITIB's efforts in Cologne are impressive, but face stiff hurdles. Fully 60% of Germans believe that Islam does not belong in their country. A virulent anti-Muslim group, PEGIDA, was at one point in 2015 attracting thousands of people to rallies, though it has since faded. Rows between governments affect everyday interactions, too. Many Turkish-Germans say they feel that they must demonstrate opposition to Mr Erdogan to earn the trust of their compatriots; last year Mrs Merkel urged them to "develop a high degree of loyalty to Germany". Non-partisan organisations struggle to position themselves between their commitments to human rights and what they see as exploitation of the referendum by German politicians.

But Angela Merkel's government also faces a difficult balancing act: it must stand up to Turkey's current excesses without alienating Germany's considerable pro-Erdogan element. Mr Gabriel recently published an open letter assuring Germany's 3m-plus Turks that they belonged in the country. But for many of them it came too late. Mr Erdogan's supporters in Germany are more interested in his successes than the endless Turkey-bashing they hear at home. "Europe wants to keep Turkey small," says Ari Ihsan, a fan of the president encountered in Mülheim. "Why shouldn't we live like Europeans?" ■



Germany's Free Democrats

Return of the yuppies

FRANKFURT

Germany's pro-business party may be heading back into government

NEW posters across Germany seem to be promoting a men's perfume. Closer inspection reveals that they are advertising the Free Democrats (FDP), a pro-business political party. Slogans such as "impatience is a virtue too" bespangle black-and-white photos of a bestubbled man in an open-necked shirt. Corny they may be, but these images of Christian Lindner tell of a political renewal.

For decades the third force of German politics, the party won a record 14.6% of the national vote in 2009. But over four years in coalition with Angela Merkel's Christian Democrats (CDU) it achieved little. Its promised tax cuts went missing. At the election in 2013 its support fell to 4.8%, meaning that it was ejected from the Bundestag (parliament) for failing to reach the required 5% threshold. Mr Lindner, then 34, inherited a party on the verge of dissolution. Today it is preparing for power once more. How did he do it?

He started by sharpening the party's identity with the slogan "German courage", a hideous pink-blue-yellow colour scheme and a tilt away from the CDU, the FDP's traditional coalition partner. Then the youthful Mr Lindner made himself the party's face: giving energetic, sharp appearances on television and filling adverts with moody shots from his daily life. Finally he embraced a series of eye-catching and often polarising policies. At the Berlin state election in 2016 the FDP campaigned against the closure of Tegel airport, for ex-

ample. In the federal election it is lambasting the government over Germany's poor digital infrastructure.

This quest for distinctiveness revived the FDP while balancing its two wings: the party now does well in the conservative suburbs of prosperous cities and among younger, city-centre voters. At the Goethe University in Frankfurt students recently packed a lecture hall to hear Mr Lindner accuse Brexiteers and Donald Trump of "hate, exclusion and resentment". Freedom, he insisted, is threatened both by the left's obsession with economic equality and the right's obsession with cultural homogeneity. At the Berlin state election a year ago the FDP went from no seats to 12. In North Rhine-Westphalia, Germany's most populous state, it hit a record vote-share in May and joined the government. It is on around 9% nationally, up from 6% in January. It might well form a new federal coalition with Mrs Merkel, either alone or in a three-party alliance with the Greens.

To many fans and critics an FDP return to government would rein in the CDU's most pro-European instincts. It criticises Emmanuel Macron's proposals to integrate the euro zone, acknowledges Russia's annexation of the Crimea as a fact and wants a pragmatic deal with Britain in Brexit talks. Mr Lindner's view that Greece should leave the euro would be especially relevant next summer, when the current bail-out expires. At home, meanwhile, the FDP demands hefty tax cuts, education reforms and fast progress on digitisation.

Yet the party's radicalism can be overstated. Mr Lindner specifies that Russia's intervention "violates international law and is unacceptable", that his party "emphatically supports" a number of Mr Macron's ideas; and that his demand for more pragmatism on Brexit is directed at London, not Berlin and Brussels. In any case, he might opt to lead his party in the Bundestag, to keep it distinctive, leaving the post of foreign minister (traditionally held by the junior coalition partner) to a more keenly Europhile FDP figure such as Alexander Graf Lambsdorff, currently an MEP.

Meanwhile the party's proposals for domestic reform are often merely bolder versions of CDU ones. Whereas Mrs Merkel wants to use some of Germany's budget surplus for tax cuts, Mr Lindner would use more of it that way. The FDP wants a digitisation ministry; the CDU wants to bundle digitisation responsibilities in one existing ministry. Other Free Democratic policies such as raising education standards and liberalising planning are already priorities in the chancellery too.

More significant than the policies is the temperament that the FDP would bring to government. Some around Mrs Merkel fret

that the FDP is these days a one-man show: its years in the wilderness at state and federal level have left it with few experienced figures who could run ministries. But to Mr Lindner this has advantages: "Now we can also bring new personalities from the business, science, culture and media worlds into politics." Moreover, the FDP would bring a much-needed restless attitude into government: "Germany takes its current strength for granted," he rightly observes. This trait would contrast more than any policy with Mrs Merkel's unambitious, sleepy administration. And that would be no bad thing. ■

Dutch families

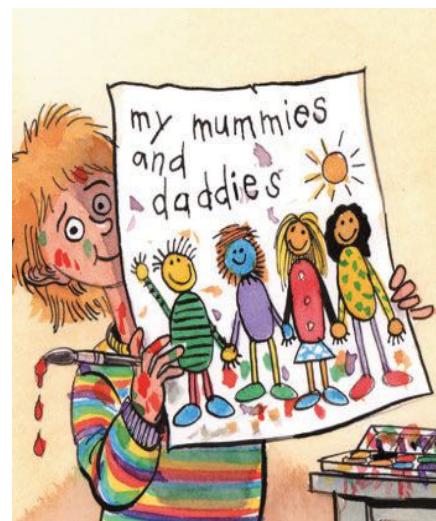
Three's company

AMSTERDAM

The Netherlands may let children have more than two legal parents

FOUR years ago Pepijn Zwanenberg, a club DJ and a city-council member for the GreenLeft party in Utrecht, sat down with his boyfriend Ivo and their friend Janette to plan having a child together. They wrote a letter agreeing to make medical decisions by consensus, to live within cycling distance of each other and to enter mediation in case of quarrels. "Straight people often have kids by accident, or take it for granted. We thought about it much more seriously," says Mr Zwanenberg. Two years later Janette gave birth to their daughter Keet. All three consider themselves Keet's parents. But Ivo, who is not her biological father, has no legal connection to her. In the Netherlands, as almost everywhere else in the world, a child can have only two parents in the eyes of the law.

Dutch gay-rights groups and advocates for non-traditional families say this "rule" ➤



Footnote: Our full interview with Christian Lindner is here: www.economist.com/lindner

► of two" does not match the realities of modern-day parenting, and that the country should allow *meervoudig ouderschap*, or "multiple parentage". Until recently, they seemed to be making progress. In December a government commission recommended that children be allowed up to four legal parents, in up to two households. Most of the major parties, including the governing Liberals, quickly signed on.

But multiple parentage has since fallen victim to the country's four-party coalition negotiations, which have been dragging on since an election in March. The centre-right Liberals and the left-liberal D66 party support the reform, but the Christian Democrats are wary. More important, the Christian Union, an economically leftish and culturally conservative party, is strongly opposed. The negotiations are secret, but leaks suggest the parties intend to put off a decision by calling for more research.

That has frustrated those who hoped that the Netherlands, the first country to legalise gay marriage in 2001, could become the first to pass a national multiple-parentage law. The issue is a global one, affecting not just gay parents but those in fused households following remarriage, or raising children from other relationships. Parents who lack legal status may be unable to check their children into a hospital, enroll them in school, take them abroad or speak for them with the police. They can generally get court orders or permission letters to do so; but it is a hassle. Worse, if their relations with the legal parents sour, they have no automatic right to a share of custody or even to visit their children.

The lack of legislation governing complex families often obliges courts to step in. In some American states, judges have granted legal status to a third parent when they deemed it to be in the child's best interest. Although multiple parentage is often seen as a gay-rights issue, many cases in America are unrelated to same-sex marriage: the first, in Louisiana in 1985, involved an out-of-wedlock conception, and a recent New York case involved a *ménage à trois*. California passed a law in 2013 allowing judges to designate third parents; in Canada the provinces of British Columbia and Ontario allow more than two people to register as parents. But no country has adopted the practice nationwide.

Multiple parentage has its critics. Some worry that groups of three or more parents are more likely to break up, leading to unpleasant custody battles. "The more adults have legal rights, the more complicated the primary parent's and the child's lives are," cautions Joanna Grossman, a family-law professor at Southern Methodist University. Similar concerns lie behind the Christian Democrats' hesitation. The Christian Union's arguments are more old-fashioned: the party's leader, Gert-Jan Segers, has said that recognising more than two

Rural France

Into the trees

LOZÈRE

Despite fires, and fears of wolves, forests are spreading fast in France

THE wolf must be taken in hand," said a retired shoemaker to nods from farmers and officials gathered in a village hall. Francis Palombi, an aspiring parliamentarian, turned often to fears of the old predator while campaigning in Lozère, a densely forested department in southern France, early this summer.

Wolves were eradicated from France before the second world war, but have appeared in growing numbers since the early 1990s in the south and east, after a few sneaked in from Italy. Between 300 and 400 are thought to wander forests and mountainsides. For city folk, their return sounds charming. Mr Palombi twigs that those who care for grazing animals think otherwise.

Drive the winding roads that cross Lozère and complaints about wolves and other rural problems are legion. Phone connections are poor in the tiny, hillside communes. Youngsters leave for jobs elsewhere. "Lozère is one of the most forested departments in France; we should use the biomass," says the politician. "We have enormous potential in our forests for energy. Why don't we use them?" grumbles one voter.

Historically, the French did indeed

make great use of woodland. Many large forests have enjoyed state protection, notably after an ordinance in 1669 created a forest code. After the revolution, hunting previously restricted to nobles was permitted for all. By the mid-to-late 20th century over 2m hunters spent winter weekends plodding after boars and birds. But fewer do so now, a consequence of rural depopulation and the lure of video games. The Fédération Nationale des Chasseurs, the national body, claims 1.1m still hold hunting licences; animal-rights activists say the real figure is lower.

Yet recent decades have brought about a striking trend. Forest cover grew rapidly in France in the quarter of a century to 2015, going up by an average of 102,000 hectares a year, as fields were given back to trees. Almost a third of France is now covered by woodland of some sort. Even so, the area damaged by forest fires has fallen by two-thirds since the 1980s. That does not stop the grumblers, however. Lozère's farmers also dismiss statistics that indicate that only a few wolves prowl their forests. But its voters rejected Mr Palombi in the election. Perhaps they doubted he had what it takes to tackle the wolf.

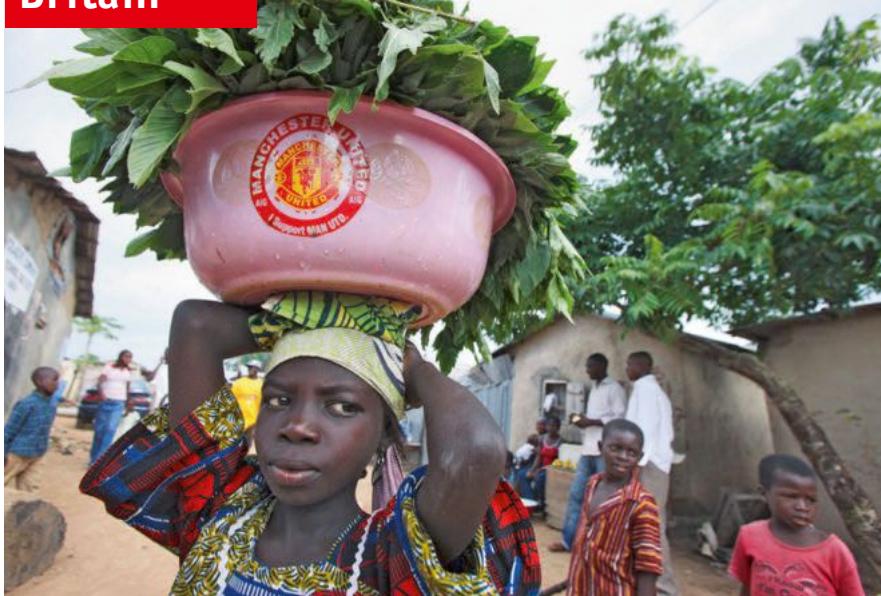


Where the old enemy lurks

parents is contrary to "biological reality".

Yet in the Netherlands, the main obstacle to reform is not ideology but political fragmentation. The probable coalition will have a bare one-vote majority in parliament, and will be split between two liberal and two Christian parties. They are unlikely to reach an accord before the end of September. (The caretaker government nearly collapsed in the interim, before a last-mi-

nute deal met a Labour demand to raise teachers' salaries.) A more stable government would probably move quickly to let Mr Zwanenberg's boyfriend, and other de facto parents, make their status official. As Ard van der Steur, then the Liberals' justice minister, said after the government report came out in December: "There is nothing wrong with making regulations for the way the Netherlands actually is." ■



Football

A league of their own

The English are bad at playing football but brilliant at selling it. What is the secret of their success?

MOPEDS emblazoned with Manchester United's crest drone through the streets of Bangkok. Fans in Okene, Nigeria, dance in red and white kits on the town's annual Arsenal Day. Official supporters' groups exist in Macedonia, Mongolia and Mexico, some of the 180-plus countries to which matches are broadcast. In the 25 years since it was first contested, the English Premier League, which kicked off a new season last month, has become the most lucrative product in the world's most popular sport. Its clubs earned £4.5bn (\$5.8bn) in the 2015-16 season, almost twice as much as any other football league, according to Deloitte, a consultancy.

The puzzle is that the game's most renowned domestic competition is not very good. ClubElo.com, which rates teams according to the opponents they beat, calculates that eight years ago four of the world's five top sides were English. Today none is. An English club last reached the final of the Champions League, Europe's most prestigious knockout competition, in 2012. A Premier League star last made the top five in the Ballon d'Or, an award for the world's best player, in 2011. Spain, Germany, Italy and France, the other members of Europe's "big five", now dominate. England's lower-ranked teams are worse than their equivalents in Spain and Germany, too. Yet as the standard of English football has dived, it has only become richer (see chart). Why are such a mediocre bunch so popular?

Two bits of good luck and one dreadful

tragedy laid the groundwork. The English language is no guarantee of success (France has the wealthiest rugby competition, for instance) but it makes the chatter between managers, pundits and players more accessible than in Germany or Italy, say. And being in a European time-zone means that early risers in the Americas and night owls in Asia can tune in to matches—something that England makes easier with its after-

Against the run of play

Number of English teams at each stage in the European Champions League



Revenues by top-tier national league, €bn



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noon kickoffs, which are handier for Asian fans than Spain's evening fixtures.

The Hillsborough tragedy of 1989, in which a crush killed 96 Liverpool supporters, led to the removal of standing sections in stadiums around the country. Over the next decade clubs spent £500m on renovations, which meant higher ticket prices and richer fans—the "prawn sandwich" brigade, in the words of Roy Keane, a Manchester United captain. At the same time, money flooded into the league from a television deal with BSkyB, a satellite broadcaster, which more than trebled the fee that the previous broadcaster, ITV, had paid.

The biggest change, however, has been in the Premier League's openness to foreign managers, players and owners. When Arsène Wenger became Arsenal's manager in 1996 he was only the fourth appointee from outside Britain and Ireland in English history. Today he is one of 13, making the Premier League the only big-five division with a majority of foreigners in the dugout. And whereas on its first weekend in 1992 only 13 of those players who appeared were foreign, last season 69% of squad members were, 12 percentage points more than any other European league.

The expanding circus of international stars has broadened the league's appeal. South Koreans tune in to watch Tottenham Hotspur's Heung-Min Son; Senegalese to follow Liverpool's Sadio Mané. Such players have been acquired partly thanks to injections of foreign capital. Led by Roman Abramovich, a Russian magnate who bought Chelsea in 2003, the Premier League has become a playground for foreign tycoons. They now have controlling stakes in 12 clubs, including smaller ones such as West Bromwich Albion and Swansea City.

English teams have also been quicker than others to market themselves abroad. Manchester United began making regular ➤

► pre-season trips to Asia in 1995, whereas Real Madrid did so only in 2003. This summer English teams entertained crowds everywhere from Houston to Hong Kong. And they are expanding with business ventures in new corners of the globe. Manchester City owns clubs in New York, Melbourne, Yokohama and Montevideo. With its three African sponsors, Arsenal has as many as continental Europe's five richest teams put together.

The Premier League has some features which have the effect of lowering its standard but making it more exciting to watch. Its teams bargain collectively for television deals and share the booty more equally than other leagues, which has made for a more competitive division. Real Madrid, Juventus and Bayern Munich take a greater share of their leagues' profits—indeed, each Spanish team negotiated its own television deal until 2015—allowing them to maintain their boringly dominant positions. In 2016, while the German, French and Italian leagues endured a fourth consecutive year with the same champion, lowly Leicester lifted the title in England—the fourth club in as many years to do so.

And whereas continental teams sensibly pour resources into developing talented youngsters, English teams splurge on ageing stars, who draw in crowds but do less to win matches, according to the 21st Club, a football consultancy. Six of the Real Madrid side that won this year's Champions League final joined as teenagers. By contrast in recent years a number of English sides have spent club-record sums on older players who are at the peak of their fame but have ended up spending half their time on the bench. Manchester United's signing of Ángel Di María, a £59.7m flop, is one recent example. The constant hiring and firing of title-winning managers in England similarly makes for great drama, though bad results.

Can this export success story survive Brexit? The pound's slide has made it more expensive for English clubs to sign and pay foreign players. But given that much of clubs' earnings are denominated in foreign currencies, sterling's weakness is manageable. The bigger worry concerns migration. After Brexit, Europeans may face the same immigration rules as everyone else. Star players will have no trouble clearing these hurdles, but lesser-known talent may be excluded. N'Golo Kanté, a young Frenchman who helped Leicester win their league title, had never played for his country and thus would have struggled to get permission to work in Britain had it not been for the EU's free-movement rules.

There is another problem. Although English clubs have the money to acquire foreign stars, the inability to win big titles is off-putting. Stars such as Robert Lewandowski know that they are more or less guaranteed to win some silverware when

they sign for Bayern Munich. A move to Manchester is less likely to lead to glory, even if the wages are as good. This calculation has already lost the Premier League some of its best players, such as Luis Suárez and Gareth Bale.

If it cannot attract football's megastars, that will limit the Premier League's appeal to fans. For the time being, clever marketing and a competitive, dramatic league have been enough to keep the world glued to England's competition. But if they want to keep selling football, English clubs will have to get better at playing it, too. ■

Higher education

A costly mistake

A wild overestimate of illegal migration led to a needless crackdown

In 2015 Sir James Dyson, an inventor and businessman, attacked Theresa May, then home secretary, over her plans to make it harder for foreign students to stay in Britain after finishing their studies. "Train 'em up. Kick 'em out. It's a bit shortsighted, isn't it?" he wrote. Not so, replied Mrs May. After all, the "latest surveys" showed that tens of thousands more students arrived than left each year. The implication: Britain already had more than enough foreign graduates hanging around.

It is now clear that Mrs May's argument was nonsense. Her numbers came from the International Passenger Survey, a poll introduced half a century ago to measure tourism. On August 24th it emerged that the number of students illegally overstaying their visas was a small fraction of previous estimates. Figures from the Office for National Statistics had suggested there could have been more than 90,000 overstayers per year. New data showed that there were at most 4,617 in 2016-17.

Some have questioned why it took so

long for the information to come out. One former Downing Street official admits to having been briefed on an earlier version of the data in autumn 2015. Universities have nevertheless welcomed the release, grateful for a new way to make the case for international students. They have not had much luck in recent years. During Mrs May's time at the Home Office she introduced a range of policies to deter foreign students, often justified by the number overstaying their visas.

Perhaps most damagingly, in 2012 the government scrapped a visa that allowed graduates to remain in the country for two years without a job offer. Other changes include stricter limits on bringing over family members, making it harder to move from one type of study to another, tougher language requirements and uncompromising "credibility interviews".

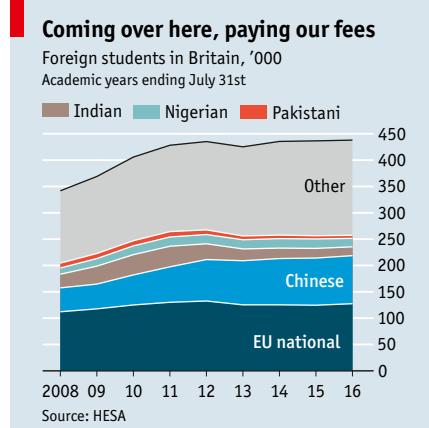
While Britain was making life harder for foreign students, other countries wooed them. As a result, British institutions now have a smaller share of a larger market. International student numbers have continued to rise at Britain's top universities, but the rest have found recruitment difficult. The number coming from India and Pakistan has more than halved since 2011, and although a big rise in Chinese students has made up the difference, growth has been slower than in America.

The economy has suffered as a result. The Department for Education found that higher-education exports were worth £12.4bn (\$20.6bn) in 2014. In 2000-10 the number of foreign students at British universities almost doubled, helping to finance a big expansion in education for home students. Whereas students from Britain and other EU countries have their fees limited to £9,250 a year, no such cap exists for the rest.

Other benefits are harder to measure. According to the Higher Education Policy Institute, more heads of state and government have been educated in Britain than anywhere else. Benazir Bhutto, a future prime minister of Pakistan, introduced Mrs May to her husband at Oxford.

Liberals in the cabinet may now be gaining the upper hand. The government has dropped plans to link visa conditions to the quality of education provided by universities. Amber Rudd, the home secretary, has commissioned the official Migration Advisory Committee to analyse the economic impact of foreign students and is expected to push for softer rules.

One change would be to remove students from the government's target to limit net migration to under 100,000 a year. Another would be to extend the time graduates are allowed to spend hunting for a job in Britain. Either would be welcome. But a more sensible government would look at how to recruit more foreign students, not just refrain from turning them away. ■



Bagehot | May v the managers

Britain's problem is not that it has too many fat cats but that it has too few good bosses



IN HER barnstorming speech to announce her candidacy for the leadership of the Conservative Party, delivered in Birmingham on July 11th 2016, Theresa May promised nothing less than to fix capitalism. The gap between workers' and bosses' pay was "irrational, unhealthy and growing", she said. Managers were rigging the system so that they were unaccountable to all but themselves and their doppelgängers. British productivity was dismal. Mrs May said she had heard, in the Brexit vote, a cry for reform. She invoked a long line of Tory leaders, from Robert Peel to Margaret Thatcher, who had taken on the powerful in the name of the people, and suggested that she was considering radical measures, from putting workers on boards to tightening takeover rules.

Thirteen tumultuous months later Mrs May has finally got around to addressing Britain's "irrational" and "unhealthy" pay gap. Listed companies will publish the ratio of bosses' pay to average workers' pay, the government declares. Remuneration committees will consider the wages of ordinary workers when they set executives' salaries. Companies will have to nominate a director for the workforce or create an employees' advisory council. Firms that suffer a shareholder rebellion of more than 20% when setting executives' pay will have their names entered in a shaming public register.

These proposals were immediately rubbished, not just by the left but also by Tories who had been persuaded by Mrs May's argument that if capitalism's friends do not reform the system, its enemies will do it for them. The government's proposals repeatedly invoked the two greatest weasel words in the modern lexicon: "transparency" and "accountability". They suggested risible penalties such as having your company's name inscribed in a book. Frances O'Grady, the head of the Trades Union Congress, accused Mrs May of backing down from her promise to tackle corporate excess and put workers on boards. Robert Colvile, the editor of a right-leaning website, CapX, said that by defining executive pay as a problem then producing such a feeble solution, Mrs May had simply whetted the appetite for Corbynism.

This is unfair. In a world where people habitually call for "radical" overhauls, the green paper should be praised for its moderation. Mrs May's proposals comply with the most important rule of policymaking: first do no harm. She has dropped ideas that,

though eye-catching, might easily have proved damaging, such as mandating workers' representatives on boards (which could be hijacked by trade unions) or providing shareholders with an automatic veto over executive pay (which again could be taken over by a minority of noisy activists).

There is no solid evidence that Britain's bosses are "overpaid" as a class. Heads of FTSE 100 companies earn more on average than their continental counterparts but they also earn between a third and a half less than their American equivalents. Inequality has been declining in Britain since 2007. Nor is there firm evidence that bosses are freeloading. The government has tightened up the rules governing corporate behaviour in the light of two pieces of American legislation: the Sarbanes-Oxley reforms which followed the Enron scandal and the Dodd-Frank reforms which followed the global financial crisis. Boards are more likely to sack underperforming bosses than they have ever been.

The real problem with Britain is not an excess of fat cats but a shortage of cream. And the real problem with Mrs May's reforms is that she is focusing on bosses' pay rather than the performance of the economy. Britain no longer punches above its weight in producing world-class companies. Though Rolls-Royce and HSBC still play in the global premier league, BP and AstraZeneca have fallen into the second division. Britain also continues to struggle to produce successful middle-sized companies. Whereas Germany has a "fat middle", with thousands of smallish global champions, Britain has a bimodal economy with a handful of gazelles at the top and a mass of zombies at the bottom. McKinsey calculates that 66% of British workers work for "low-productivity" companies, compared with 55% of Germans.

The result is an underperforming economy. In 2015 Britain ranked third from the bottom in the G7 for productivity, above Canada and Japan. French workers, whom the British like to dismiss as holiday-hogging sluggards, are more productive than the British. Moreover, Britain is falling farther behind. As long as this continues, its economy will remain stagnant and its polity will continue to be convulsed by anger and resentment.

Fixing Wernham Hogg

There is a great deal of painstaking academic work exploring the reasons for Brito-sclerosis. The OECD says that management innovations are increasingly being stuck in a handful of global super-companies, rather than diffusing through the economy. Stickiness is worse in Britain than other advanced countries. The London School of Economics has documented that good management is the key to productivity growth and that Britain has a long tail of poorly managed firms. A third of British companies have seen no rise in productivity since the turn of the century.

These all point to the same conclusion: the real enemy is David Brent. Britain has far too many second-rate, sloppy, oafish managers of the sort caricatured by Ricky Gervais in "The Office". There are some good ideas for addressing Brentism. Charlie Mayfield, the chairman of John Lewis and head of a government-appointed Productivity Commission, has suggested creating a mentoring system which would allow successful companies to teach smaller ones (particularly their suppliers) the art of management. The government is thinking of freeing up funding for management training, rather than just technical training. But improving British management will require a lot of hard slog and unspectacular work. Bashing the fat cats is far more satisfying than engaging in serious reform. ■



Indentured labour

100 years since servitude

PORT LOUIS, MAURITIUS

A century after India stopped sending migrants to work in European colonies, how have their descendants fared?

DOOKHEE GUNGAH, born of Indian migrants, began life in 1867 in a shed in Mauritius and worked as a child cutting sugar cane. By his death in 1944, he was one of the island's richest businessmen. He is a notable example of how some indentured labourers prospered against the odds.

Between the 1830s and 1917 around 2m migrants signed up for ten-year terms (later cut to five) in European colonies (see chart on next page). Most were from India, with smaller shares from China, South-East Asia and elsewhere. Some "coolies" were fleeing poverty and hunger; others were coerced or deceived. In British colonies from 1834, and in French and Dutch ones from later, they replaced freed African slaves on sugar and coffee plantations.

"Slavery under a different name" is how The British and Foreign Anti-Slavery Society described the indenture system in 1839. It had a point. Many migrants died en route, and at first plantation owners, used to slaves, treated their new workers hardly any better. But conditions gradually improved. When the Indian Legislative Council finally ended indenture, a century ago, it did so because of pressure from Indian nationalists and declining profitability, rather than from humanitarian concerns.

The indentured labourers' fortunes varied from place to place, according to their numbers, who else lived there, and laws about land tenure and race. But a shared

post-colonial identity is now emerging, combining pride in India's economic rise, religious and cultural traditions—and, increasingly, commemoration of their ancestors' struggles to establish themselves.

Indo-Mauritians are among the richest and most politically powerful of those descendants. As a British colony, Mauritius took the greatest share of indentured migrants: some 450,000. Their descendants are now two-thirds of the island's 1.26m inhabitants. Many of the largest businesses are owned by Franco-Mauritians whose ancestors dated from the earlier French colonisation, though they make up just 2% of the population. But Indo-Mauritians dominate the public sector.

Local legend has it that Dookhee (pictured with family, third man from left, around 1912) owed his meteoric rise to finding buried treasure. The true story, says his great-grandson, Swetam Gungah, is that "whatever little he had, he would put it aside." Unlike slaves, indentured labourers were paid, and since most were unable to leave their plantations, they spent little. Aged 21 Dookhee bought land and started growing sugar cane. "He was savvy enough to diversify. He planted an orchard, started a bakery and much more," says Mr Gungah. When the price of sugar plummeted in the 1880s most plantation-owners went broke. Dookhee got richer. Other former indentured labourers were

also able to buy broke colonists out. By 1933 Indo-Mauritians owned almost two-fifths of all land planted with sugar cane.

Land also gave indentured labourers a start in South Africa, where many were granted plots after their servitude. Koshir Kassie's great-grandfather arrived in the province of Natal and worked on a plantation and then in a gold mine. He saved enough to pay his employer to end his contract early, and bought land. But under apartheid many Indian South Africans, including Mr Kassie's family, were forced off their land and into Indian townships. "After indenture, Indians built themselves up," says Mr Kassie. "Then came apartheid and they had to start again."

Many managed to rebuild. Today, Indian South Africans' average income is three times higher than that of black South Africans, and they are nearly twice as likely to have finished high school. But these days they are politically marginalised. In the first democratic elections, in 1994, two-thirds voted for the National Party, which had previously defended apartheid. Those with less education particularly resent South Africa's new system of racial preferences in jobs and education for blacks.

Seeds in fertile ground

Indentured labourers in Trinidad and Guyana (formerly British Guiana) were also granted land. That was less generous than it seems: much of it was ill-suited to growing sugar cane. The Indians, however, discovered it was perfect for rice. Many prospered. But in both places, though people of Indian origin are the largest ethnic group (35% and 40% respectively), they have struggled to gain the level of influence that Indo-Mauritians have.

In Mauritius the departing British colonists regarded Indians as the heirs to pow- ►

In Trinidad, however, the mantle was passed to Afro-Trinidadians, who were settled decades before the indentured labourers arrived. Politics and the public sector operated through a patronage system, which kept Afro-Trinidadians in charge. Even after independence in 1962, Indo-Trinidadians were largely excluded from government and public-sector jobs.

Today, politics is still divided on ethnic lines, with the People's National Movement supported by Afro-Trinidadians and the People's Partnership coalition supported by Indo-Trinidadians. But socially, the groups are mingling more—and increasingly intermarrying. Nearly a quarter of the population identifies as mixed-race.

In Guyana ethnic divisions cut much deeper. Compared with Trinidad, its sheer size meant ethnic groups formed more segregated communities. A fragile inter-ethnic harmony, nonetheless, prevailed for the first half of the 20th century. That ended in 1964, when a pre-election conflict broke out between the largely Afro-Guyanese People's National Congress and the largely Indo-Guyanese People's Progressive Party. "I had Hindu friends, African, Portuguese, Chinese friends," says Khalil Ali, a Muslim Indo-Guyanese novelist, of growing up in the 1950s and 1960s. "Then suddenly my black friends stopped speaking to me and I stopped speaking to them." The resulting violence led to hundreds of deaths and thousands fleeing abroad.

Ethnic divisions persisted after independence in 1966, and were worsened by economic hardship. Even as Trinidad boomed because of oil, disastrous left-wing policies reduced resource-rich Guyana to one of South America's poorest countries. But in 2015 a multi-racial coalition came to power, promising unity. Although change is slow—the government is still mostly Afro-Guyanese and Mr Ali says Indo-Guyanese who joined the coalition have been called traitors—elections in 2020 offer another glimmer of hope. Younger Guyanese are further distanced from the events of the 1960s. The mixed-race population, now around 20%, is growing.

Indentured workers' descendants have done least well where their ancestors could not own land, as in Fiji. Its indigenous population resented the new arrivals, and the British made promises about land ownership to their tribal chiefs. Many Indo-Fijians became tenant farmers, and for part of the 20th century did quite well, says Crispin Bates, who leads a project funded by the British Arts and Humanities Research Council entitled "Becoming Coolies". But when their leases came to an end, starting in the 1980s, their status declined.

Sporadic attempts to improve their position after independence in 1970 ended with a coup in 1987. A new constitution reserved majorities for ethnic Fijians in both houses of parliament. Over 10,000 Indo-Fi-

jians left the island as a result. Two further coups centred on their rights. Finally, in 2013 Indo-Fijians were given equal status in the constitution. And, in 2014, in free elections, Frank Bainimarama (who led the most recent coup, in 2006) won with an anti-racist message. His task is considerable: though land has been made easier to lease, holdings by ethnic Fijians still cannot be sold. Indo-Fijians are still excluded—and ethnic Fijians are newly aggrieved. Anti-Indian sentiment is rampant.

Pride and prejudice

In most places that took indentured labourers, racial animus persists. Their arrival was "a real trauma" for indigenous and former-slave populations, says Mr Bates. In Trinidad and Guyana "coolie" is used as a slur (and the Indo-Guyanese and Indo-Trinidadians have plenty of racist terms for their compatriots of African origin). In Fiji and the French Caribbean "z'Indiens" are stereotyped as money-grubbing, and mocked in expressions such as "faib con an coolie" ("weak as a coolie" in Guadeloupean creole). In the 1970s a Fijian politician, Sakesai Butadroka, said in parliament that "people of Indian origin" should be "repatriated back to India". As recently as 2014 a popular song by the Zulu band, AmaCde, called on black South Africans to confront Indians and "send them home".

Strangers in strange lands, indentured labourers and their descendants preserved some traditions, from caste practices to recipes. From the 1880s the Arya Samaj, a religious group, attempted to reinstate Hindu culture in the diaspora—which rallied, in turn, behind Gandhi's Indian nationalist movement in the 1920s and 1930s. During periods of ethnic strife in the 20th century hyphenated-Indian communities turned inwards for self-protection.

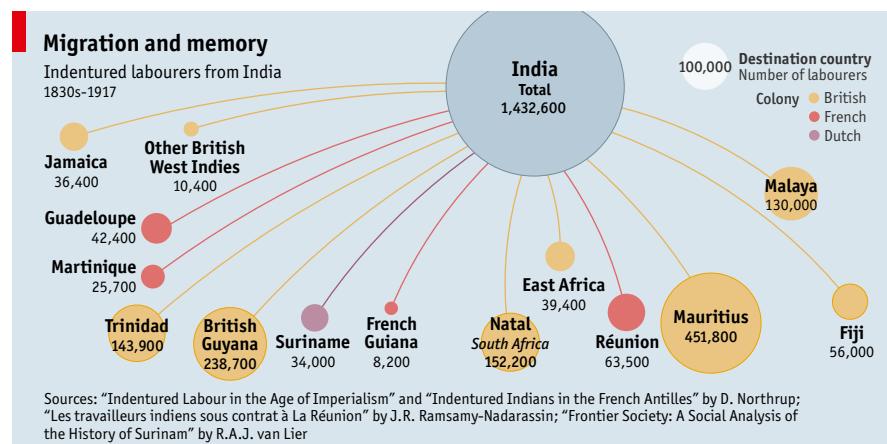
In recent years, though, a new kind of "Indian pride" has begun to take form. Mauritius has had strong links with India since post-independence tax and trade deals. But of a recent visit to Mauritius, Ashutosh Kumar, the author of a new book about indenture, "Coolies of the Empire",

says "the way Mauritians were discussing Indian politics: it was like I was back home in India." In Trinidad, which got its first Indo-Trinidadian prime minister in 1995, there is "a new sense of Indian cultural pride", says Andil Gosine, an Indo-Trinidadian academic in Canada. "When I go back now I see loads of people wearing saris, which they wouldn't have done before."

This cultural revivalism is, to some extent, the work of Hindu nationalists, particularly the Vishwa Hindu Parishad (World Hindu Council). It has recently devoted more attention to the diaspora—and stirred up tensions between Hindus and Muslims. More is due to India's rise as an economic power. Diaspora Indians are seeking to "bask in the reflected glory of their motherland", says Mr Kumar.

Khal Torabully, a Mauritian poet of mixed Indian descent, has coined the word "coolitude" for a new identity, which mixes heritage from India and the other sending countries with a century of history in racially diverse former colonies. Acknowledging their ancestors' servitude as part of that can be uncomfortable. Indian South Africans are "proud to be Indian", says Mr Cassie, but "don't like to talk about indenture much". Mr Gosine recalls his grandfather describing his own grandfather: "A Brahmin, riding around the plantation on a horse, dressed all in white. But then my grandmother chipped in: 'What on earth are you talking about?'"

Making sense of displacement and difference, struggle and success, is also a work in progress for host countries. But some have started to weave the history of indentured labourers into their national narratives. In 2006 Aapravasi Ghat, where they first arrived in Mauritius, was recognised as a UNESCO world heritage site. In the same year the Indian Caribbean Museum opened in Waterloo, Trinidad. Last year the 1860 Indian Museum, dedicated to indenture, opened in Durban. "We still have a lot of problems to think of ourselves as Mauritians," says Mr Torabully. "But remembering indenture, just as we remember slavery, is at the heart of that identity." ■





Cargill

Middleman to the world

DIRDAL

Can the privately held epitome of Big Agriculture satisfy a public hungry for more information about food?

ANGLERS love a record catch. Fish farmers, too. So when a salmon bred and raised near this village at the head of a Norwegian fjord was pulled out of captivity earlier this year weighing a sumo-sized 17kg, it was cause for jubilation. "It was fantastic," says Einar Wathne, head of aquaculture at Cargill, the world's biggest food-trading firm. Not only was it produced in 15 months, one-fifth faster than usual, it also looked and tasted good. Mr Wathne's Norwegian colleagues celebrated by eating it sashimi-style shortly after its slaughter.

Cargill is a company usually associated with big boots rather than waders. America's largest private company has built a reputation after 152 years of existence as middleman to the world, connecting farmers with buyers of human and animal food everywhere. Through a trading network that spans 70 countries (and that includes scores of ports, terminals, grain and meat-processing plants and cargo ships), it supplies information and finance to farmers, influences what they produce based on the needs of its food-industry customers, and connects the two.

Its purchase of EWOS, a Norwegian fish-food company, in 2015 for \$1.5bn was its first big foray into aquaculture. It was the second-biggest acquisition in Cargill's history. That made it quite a splash for David MacLennan, Cargill's chief executive since 2013, who took over the company just as a dozen fat years in the agriculture industry had drawn to a close. He is now fishing for future sources of growth.

The firm's foray into the salmon business should help in two ways. First, it is part of Cargill's attempt to expand into higher-value markets. One of its traditional mainstays, the trading of bulk agricultural commodities, has struggled since the end, in around 2013, of a China-led commodities supercycle. The firm has also suffered from a recent slump in demand for grains for biofuels. Consumption of farmed fish across the world has boomed, meanwhile, partly at the expense of beef, pork and other meats. Fish feed is its highest-cost component, and more efficient ways of feeding are key to the salmon industry's growth.

Second, Cargill can learn via the salmon-on-feeding business how to deal with increasingly picky consumers. Mr Wathne notes that salmon is a "premium" product, so consumers want to know not just where

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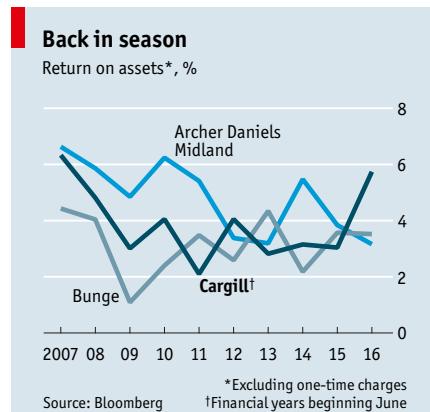
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it came from, but where what it is fed on comes from. Fishermen of wild salmon, a well-connected bunch, are keen to turn public opinion against the farmed kind. That battle could make Cargill better at handling traceability in more established parts of its food business, such as meats.

Cargill faces a particularly hard task building trust with increasingly information-hungry consumers. To its critics the company epitomises the faceless character of "Big Agriculture", with boots that trample on the environment, animal welfare, and on small farmers. "I recognise that we are big, and because we are privately owned and because we are primarily business-to-business...it is harder to have that transparency," says Mr MacLennan. "We want to be more well known."

Some of his eight predecessors would have spluttered over his idea of more disclosure, which involves wider use of social media, more interviews and more engagement with NGOs. Since generations of Cargill and MacMillan families built the company up from a regional grain trader, born in Iowa in 1865, into a global giant, it has kept out of the limelight, preferring to leave that to the customers whose branded products it provides ingredients for, such as McDonald's Chicken McNuggets and Danone's baby formula. Its taste for privacy has not always served it well; the title of a book published in 1995, "Invisible Giant", sums up Cargill's sinister reputation in the eyes of anti-globalists. "In the absence of information people will make up their ➤



own story," Mr MacLennan says.

Private ownership has given Cargill room to take a long-term view, but had also enabled management to get away with subpar performance in a business with 150,000 employees and revenues of \$110bn. Before Mr MacLennan and his finance chief, Marcel Smits, launched a management reshuffle and streamlined the company in 2015, its weak returns would have been a red rag to an activist investor had it been a public company, says Bill Densmore of Fitch, a ratings agency.

The cost-cutting that has ensued, and a recent upswing in demand for American meat that particularly favoured Cargill, has pushed returns higher than those of its main listed rivals, Archer Daniels Midland and Bunge (see chart on previous page). Yet Craig Pirrong, an expert on trading companies at the University of Houston, says private ownership constrains Cargill's ability to raise capital to invest in fixed assets as it expands and moves upmarket. Mr MacLennan says he has sought since 2013 to introduce "a bit of more of a public-company culture". He stresses, though, that there is "no intention of going public".

The big traders largely squandered the commodities boom of the past decade. Returns languished despite an unprecedented surge in demand for agricultural products, such as cereals, chicken and fish. In that time, Mr MacLennan says, farmers invested in new soil-mapping technologies to improve yields, better seeds and more storage facilities. An ability to hold on to grain until market conditions are favourable has given farmers clout in their relationship with the traders. New entrants, such as China's own trading powerhouse, COFCO, and Glencore, an Anglo-Swiss firm, are also making the competition more cut-throat. Meanwhile, a series of bountiful harvests in North and South America in recent years has produced record stocks of grain, reducing prices.

To diversify Cargill's sources of revenue, Mr MacLennan has sold \$2bn-worth of assets since 2015, such as a second-tier American pork business, and invested \$3.5bn in more value-added products, such as cooked meats, branded chicken, animal nutrition and food ingredients. Some current and former Cargill employees think such investments may be opportunistic, rather than enduring. If supply disruptions—bad weather, say, or a trade war between America and China—raised the volatility of food prices again, they expect Cargill to pour its capital back into bulk commodities. Though remaining committed to agriculture, Mr MacLennan rejects that idea. "If we were to do that, it would be a failure," he says.

Moving closer to the consumer brings new sources of complexity. These include understanding widespread public rejection of genetically modified organisms

(GMOs). Though Cargill handles huge cargoes of GM corn and soyabean, it has recently had some of its non-GM ingredients certified by an NGO which verifies that food is not bioengineered. This has angered the pro-GMO farmers that it serves.

Cargill is also making bets on early-stage technology. In August it took a share in a "meatless-meat" company, Memphis Meats, that produces beef, chicken and duck out of the cells of living animals, rather than from carcasses. This represents a potential insurgency against the conventional meat industry. Cargill is also co-investing with Calysta, a Silicon Valley startup, in a factory costing up to \$500m that will produce up to 200,000 tonnes of fish food, known as FeedKind, made out of

bacteria fed on methane. It is a novel approach to reducing the amount of freshly caught seafood, such as anchovies, in fish food, but is untested at scale.

Like counterparts facing upheaval in other industries, Cargill worries that the supply of food from farm to table is being disrupted. As Richard Payne of Accenture, a consultancy, puts it, the threat for traders is that farmers at one end of the supply chain use more technology to handle their own pricing, financing and logistics, and retailers at the other end of the chain, under pressure from tech-led firms such as Amazon, squeeze food manufacturers and their suppliers. Still, one-and-a-half centuries of business has taught Cargill not to get caught in the middle. ■

Uber's next chapter

Self-driving no longer

SAN FRANCISCO

Dara Khosrowshahi must tackle losses, lawsuits and preparations for an IPO

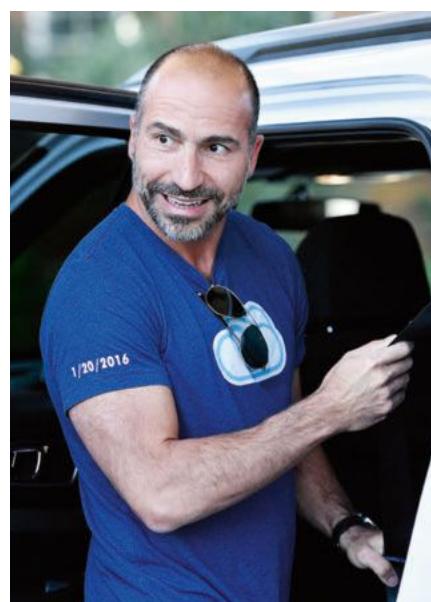
A LEADER is a dealer in hope," said Napoleon. For much of this year Uber, a ride-hailing firm, has lacked both leadership and optimism. But on August 27th news leaked that Uber had poached as its new chief executive Dara Khosrowshahi, the boss of Expedia, an online travel company. Mr Khosrowshahi is seen as an astute dealmaker and a canny manager. In his 12 years at the helm of Expedia, the gross value of its hotel and other travel bookings more than quadrupled and its pre-tax earnings more than doubled.

Can he rally the troops? Uber is fast-growing and was last year valued privately by investors at around \$68bn, but has suffered a host of setbacks, which led to the ousting of Travis Kalanick, its co-founder and boss, in June. The firm faces a criminal probe by America's Department of Justice into a covert software feature that showed regulators different versions of its app, as well as a new investigation into whether it may have violated America's Foreign Corrupt Practices Act by bribing officials abroad. It must also contend with multiple lawsuits and allegations that it encouraged a sexist culture.

Mr Khosrowshahi is less well-known than two other finalists for the job—Jeff Immelt, who until recently was CEO of General Electric, and Meg Whitman, who runs Hewlett Packard Enterprise. But he is widely admired. He moved to America from Iran as a child (and has been an outspoken critic of President Donald Trump's restrictive policy on immigration). On his watch Expedia acquired Orbitz and Travelocity, two competitors, and successfully integrat-

ed them. That is proof he can build a healthy corporate culture, says Erik Blachford, who used to be the CEO of Expedia and is now at TCV, a venture-capital firm.

Mr Khosrowshahi's finance skills will be just as valuable. He served as a chief financial officer at IAC, an internet conglomerate owned by Barry Diller, and as a former dealmaker at Allen & Co, an investment bank. "More New York than Silicon Valley" is how one entrepreneur describes him (although for more than a decade he has lived in the Seattle area, where Expedia is headquartered). Finan-



Into the hot seat

cial acumen will be helpful when Uber embarks on an initial public offering. In his first meeting with employees on August 30th he suggested that the firm will go public as soon as 18 months from now, which should boost morale.

His priority before then will be to fill out Uber's executive ranks. Techies like telling the joke that Uber is the first fully autonomous company, because almost all its key positions, including a chief financial officer and chief operating officer, have been vacant. An upcoming IPO will also affect how much to favour international expansion in the face of huge losses. Uber is growing quickly but bleeding money: in the first half of 2017 it lost around \$1.4bn. It has retrenched in China and Russia, but has to choose between spending heavily to attract customers and drivers or steering towards profitability more quickly.

Two lawsuits will also demand his attention. One was filed earlier this year by Waymo, a self-driving car company owned by Google's parent firm, Alphabet. It accuses Uber of knowingly buying a self-driving-car startup called Ottomotto which had stolen Waymo's intellectual property. The affair is scheduled to go to trial in October, but Mr Khosrowshahi might decide that a better course would be to settle the lawsuit.

The other suit involves Benchmark Capital, an early investor in Uber and a former ally of Mr Kalanick, who remains on the company's board and, along with his co-founder and another early executive, controls the majority of super-voting shares. Benchmark has accused Mr Kalanick of fraud and sued to try to stop him from intervening in Uber's affairs and appointing additional board members. Benchmark claims that Mr Kalanick hid critical details about the state of the firm when he asked in 2016 for the support of Benchmark and other board members to add three more board seats. A hearing took place on August 30th in which a judge sided with Mr Kalanick, ordering that the dispute be resolved by an arbitrator, out of court, at least for now.

All the legal wrangling makes things awkward. Mr Khosrowshahi will need to deal tactfully with Benchmark, which still has a representative on Uber's board, and with Mr Kalanick, who feels unjustly pushed out, although he has publicly backed the choice of Mr Khosrowshahi. Other senior people at Uber also need to shape up. News of the hiring is believed to have been leaked by an anonymous board member before anything was announced to staff or even to the executive team that has led Uber in recent months. That left many at Uber annoyed; no one likes learning vital news about their firm from press reports. To succeed, Uber's whole board, as well as Mr Khosrowshahi, will have to show leadership. ■



Naspers

A dime's worth

KAMPALA

Africa's most valuable company is worth less than its stake in Tencent

SOUTH AFRICA'S stockmarket has Naspers largely to thank for its recent record highs. Shares in the media and internet group have soared by 45% this year; even before then it was Africa's most valuable firm. So recent unrest among shareholders in Naspers might seem unwarranted. But in the days before its annual general meeting in Cape Town on August 25th, noisy debate erupted, chiefly about executive pay. Many investors reckon that Bob van Dijk, its boss, is being rewarded for success that he did little to create.

The source of good fortune for Naspers lies about 7,000 miles (11,265km) away. In 2001 Koos Bekker, Mr van Dijk's predecessor, made a brilliant investment of \$32m in a little-known Chinese technology firm called Tencent. Today its 33% stake is worth \$130bn, as measured by Tencent's value on the Hong Kong stock exchange; that dwarfs the \$100bn valuation of Naspers itself on the Johannesburg stock exchange. Shares in the latter rise and fall on news from Hong Kong. In its last financial year, the firm's share of profits from its Tencent holding in effect represented all of the group's trading profits; the "rump" of the business, which Mr van Dijk has control over, lost money (see chart).

So shareholders are dismayed that last year Mr van Dijk got a raise of 32%, to \$2.2m. They say it is hard to see how much he is being rewarded for his own performance, and how much for that of Tencent. Although 79% of votes at the AGM were

cast in favour of the pay policy, most are thought to have come from unlisted shares with special voting rights. Some of those shares are indirectly linked to company directors. Allan Gray, an influential asset manager, warned before the AGM that the pay policy was not aligned with shareholders' interests. The majority of ordinary investors may have voted against. Mr Bekker, now the group's chairman, swatted away any concerns. He compared corporate governance to star footballers washing their hands after going to the toilet: a nice idea, but less important than recruiting the best players for the team.

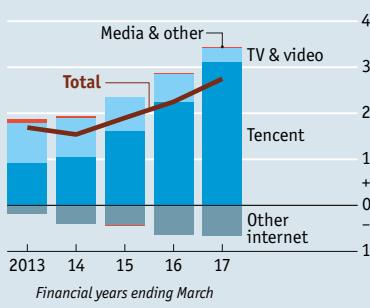
Shareholders have grumbled about pay at Naspers before, to no avail. The latest spat is more vocal and reflects deeper concern about its progress after two decades of reinvention. In the 1990s its prospects were uncertain. Founded in 1915 as Nasionale Pers ("National Press"), an Afrikaner nationalist publishing house, it was initially slow to acknowledge its long-time support of apartheid. With its roots in newspapers, it then had to adapt to the digital age. Mr Bekker refashioned it around new media, expanding its pay-TV business across Africa and investing in budding tech firms around the world.

Many of those investments have been slow to pay off. It was not long ago—the start of 2016—that Naspers was worth more than its Tencent stake but it is now worth less. The gap is widening. That may be because investors think Tencent's shares, up by 70% since the start of the year, are overvalued, or because foreign capital is fleeing South Africa's turbulent politics. But some see it as a sign that investors are losing patience with Naspers. Its e-commerce division posted trading losses of \$731m last year. "The market has become increasingly disillusioned with the ability of management to pull rabbits out of the hat," says Mark Ingham, an independent analyst.

Even the firm's popular pay-television service, which has 12m subscribers across Africa, is struggling, because of tumbling local currencies that make buying American content more expensive, and fiercer competition from firms such as Netflix and ▶

Nice little earner

Naspers, operating profit/loss, \$bn



► StarTimes, a Chinese rival.

And yet the group may still defy the doubters over time. Its online classified-ads businesses, under brands such as OLX and letgo, together have 330m monthly users in 40 countries. Sean Ashton of Anchor Capital, which owns Naspers shares, optimistically reckons that total profits in the "rump" could soon grow faster than Tencent's profits (which rose by 42% in 2016).

Although the Tencent effect draws criticism, it also means that Naspers has more money to experiment. At the AGM, Mr Bekker rejected the idea that Naspers should sell its Tencent stake and give a short-term boost to shareholders. It could be hard to find a buyer, and the Chinese government would probably want a say. For at least a while longer, the firm's profits look sure to be made in China. ■

Co-living models

Rent collective

Pricey housing markets in big cities have inspired a new kind of home

MONDAY is "Game of Thrones" night at The Collective's Old Oak building. Millennials congregate in TV rooms around the 11-storey, 550-person block. Some gather at the cinema, lounging on bean bags decorated with old graphics from *Life* magazine. Nothing gets residents out of their rooms like the hit TV show. This is not a student dorm, however. It is home.

The Collective is a pioneer of a new property format known as "co-living". Instead of self-contained flats, residents live in tiny rooms with 12 square metres of floor space. Most contain just a bed and a bathroom. During a two-night stay your correspondent could barely fit his shoulders into the shower cubicle.

It is outside these rooms that the building makes its pitch. It comes with a gym, spa, libraries, a good restaurant and a cinema. Residents get access to all of these amenities, as well as their room, for a rental payment of £800-£1,000 (\$1,033-\$1,292) a month. That includes all bills and high-speed Wi-Fi; they pay extra for meals in the restaurant. Residents have come up with their own services, too. The Collective houses a "library of things", or a shared repository of useful objects—hammers, tape measures and even tents.

Rising rents have opened up a gap in the market. The ratio of average rents to incomes in London rose from a quarter to a third between 2004 and 2014. In New York, average rents have grown from 29% of average income in 2002 to 34% in 2014. Most young professionals moving to thriving cit-

ies face a difficult choice between spending a big share of their income on renting their own place, or moving in with strangers in a shared house to save money. The Collective offers something different.

Old Oak, the firm's first building in north-west London, has been 97% occupied for most of this year. The Collective is putting up two more co-living buildings in London, one in Stratford and one in Canary Wharf. The notion of tiny rooms and shared luxury services is fairly new and little tested, but the property industry is paying attention. Jack Sibley of TH Real Estate, a property investment manager, calls it "one of the most promising ideas for the future of living to emerge for some time".

The next step for Reza Merchant, The Collective's founder, is expansion abroad. He is close to striking deals on buildings in Boston and New York, and is talking to developers in Berlin, where historically low rents have been rising fast for the city's young, creative types. The Collective has no real competitors in Britain but its move to America will see it run into Ollie, a co-living firm in New York.

Both of Ollie's existing co-living buildings are smaller than Old Oak (the largest of its kind in the world). But the American firm will soon run a co-living space over 13 floors of a building in Long Island City in the borough of Queens. It is being developed by Quadrum Global, a property investment company, whose financial models predict that co-living will substantially outperform conventional rented flats in future because the return per square foot is so high.

WeWork, a private firm that is the world's largest provider of shared workspaces and is valued at an estimated \$20bn, has a residential arm, WeLive, that is running co-living units out of a leased building on Wall Street in Manhattan. It has joined forces with a property firm in

Seattle called Martin Selig to construct a new 36-storey building, 23 floors of which will be dedicated to co-living.

The model will get tweaked as developers see what works and what doesn't. Mr Merchant is using data gathered from Old Oak to refine The Collective's new buildings. Rooms will be slightly larger, because the tiny square footage is one of the main reasons residents give for moving on. Sensors monitor use of the common spaces, and in the new complexes the kitchens will all be on one floor, rather than scattered around the building. Most of Old Oak's shared spaces are in fact fairly empty; the liveliest area is the launderette, where residents mingle and watch TV as they wait for washing cycles.

Maria Carvalho, a social-sciences academic at the London School of Economics, moved into the building because she wanted to live with other people, but did not want to have to find roommates. "I would call it a hipster commune, not a hippy commune," she says. She particularly likes meeting friends walking home from the train station but says kitchen utensils often go missing. (With too many co-livers to be able to know everyone personally, CCTV is used in these areas as a guarantor of good conduct and cleanliness.)

The Collective and other companies like it have a choice to make, says Roger Southam of Savills, a property firm. They could continue focusing on incoming workers to big cities, providing minimal private living space alongside attractive shared areas. But Mr Southam sees much more potential if co-living spaces can give residents slightly more private space, allowing them to attract people already living in cities. Starting from the smallest of rooms and working up may let co-living firms hit upon the perfect balance of shared and private space. Who, after all, doesn't want a cinema in the basement? ■



The Young Ones, sans lentils

Schumpeter | The parable of St Paul

Unilever is the world's biggest experiment in corporate do-gooding



PAUL POLMAN runs Europe's seventh-most valuable company, Unilever, worth \$176bn, but he is not a typical big cheese. A Dutchman who once considered becoming a priest, he believes that selling shampoo around the world can be a higher calling and detests the Anglo-Saxon doctrine of shareholder primacy, which holds that a firm's chief purpose is to enrich its owners. Instead Mr Polman preaches that companies should be run "sustainably"—by investing, paying staff fairly, and by making healthy products with as little damage as possible to the environment. This is actually better for profits in the long run, he argues: society and shareholders need not be in conflict.

Mr Polman's beliefs were tested in February when Unilever received a bid from Kraft-Heinz, a ketchup-to-hot dog gorilla controlled by Warren Buffett and 3G Capital, a fund known for ripping costs out of multinationals. If, in its own mind, Unilever is a good corporate citizen, then it sees Kraft as an angry American with no interest in the planet, heavy debts, no growth, very little foreign presence, and an obsession with self-harming cost cuts.

Kraft's bid fizzled when Mr Buffett got cold feet, but the clash of ideologies is not over. For one thing, Unilever seems to have been pressured into adopting some 3G-style tactics. In April it promised to lift operating margins by 3.6 percentage points by 2020, to carry out a share buy-back and to exit its poorly performing margarine business. Its investment in brands and plant and equipment is expected to be flat in 2017, having risen in former years.

After a "cooling off" spell required by British takeover rules, Kraft can now bid again. Inspired by 3G, activist hedge funds are stalking two rivals, Nestlé and Danone, and other peers are slashing costs. Mr Polman will probably stand down within two years—he wants his successor to be a Unilever insider—raising the question of whether his vision is coherent and will endure.

There are two key tests. Has Unilever really been socially virtuous while creating lots of value for its owners? And does the market for corporate control function as it should, so that such a firm can survive? Start with the question of virtue. Since early 2009, when Mr Polman took over, emissions, water usage and waste have fallen by 43%, 38% and 96% respectively, per unit of production. Investment (including capital spending, research, branding and marketing) has risen to 20% of sales, from 18%. Tax

payments have risen from 25% to 30% of underlying profits.

So far so good. But Mr Polman has not been as nice to staff as you might expect. Their numbers have stayed at 170,000 (Kraft meanwhile has cut its workforce by 20% since 2013) but pay as a share of the firm's output, or its "gross-value-added", has fallen from 46% to 39%. Unilever's pay per employee has been flat in dollar terms even as its top few managers have got 24% more on average. Mr Polman received \$9m last year, a third more than his predecessor got (though less than his American peers).

He argues that sustainability is good for shareholders because investment creates growth. Consumers, staff and regulators are attracted to firms that exhibit good conduct. For shareholders the clearest sign of success is Unilever's global market share, which has risen from 16% to 18% since 2008, according to Alliance Bernstein, a brokerage. That is impressive given that local firms are gaining ground from multinationals in the emerging economies where Unilever makes almost two-thirds of its sales.

But currency weakness has been a drag. Free cashflow per share has risen by 65% in dollar terms—a fairly average performance compared with a basket of ten Unilever rivals. Total return (share price appreciation plus dividends) was 138% in 2008-16 in dollars, behind the average for the peer group, although not by much. Mr Polman's boldest claims about his firm are over the top, but broadly speaking Unilever has been run in a fairly sustainable way and delivered reasonable results for its owners.

What about the second question—whether such a firm can survive with a fragmented base of shareholders, some of whom may be out for a fast buck? Takeovers should happen only when the target is badly run or if combining two firms will yield synergies. But Unilever is well managed and Kraft's probable changes—more debt, and cost-cutting—it can do itself.

Kraft is a "roll-up", a firm that relies on acquisitions and cost cuts to mask low growth. Its sales have declined for the past nine quarters. Roll-up strategies usually end badly for investors. Still, cheap debt means that, while such firms remain on a winning streak, they can operate on a vastly greater scale than before (a combined Kraft-Unilever might have had as much as \$120bn of debt). Many bosses, including, probably, Mr Polman, think normal firms need protecting from them. Britain could adjust its takeover rules in favour of target companies. More countries could alter their fiscal codes to stop tax breaks for leveraged buyers or they could copy France's "Florange" law, which limits the voting rights of short-term shareholders.

Society v shareholder value

In fact, Unilever's close encounter with Kraft suggests the jury is still out on whether capitalism is too myopic to allow firms to operate virtuously. The outcome so far broadly shows that markets work. Unilever's shares were undervalued. Some of the changes that it has made were actually in the pipeline anyway (for example, in 2016 Mr Polman said margins would rise by up to 3.2 percentage points by 2020). Kraft's bid forced the company to fine-tune its strategy and articulate it better. As a result Unilever's total return is now almost at the top of its peer group.

But much depends on the next 24 months. Kraft could bid again. An activist may attack Unilever. Mr Polman's successor could repudiate his approach. Mr Polman is no saint, but his legacy is to have made one of Europe's biggest companies a test case of how far shareholder primacy should go. If Unilever can't keep half an eye on the greater good, no firm can. Watch it closely. ■



Overlapping generations

Kicking the can down an endless road

The final brief in our series on big economic ideas looks at the costs (and benefits) of passing on the bill to the next generation

IN THE spring of 1899 William Miller persuaded three members of his Brooklyn prayer group to invest their money with him, promising them unearthly returns. He would pay a dividend of 10% per week, plus a commission for each new investor they could recruit. Soon, William "520%" Miller was drawing throngs of depositors to his door. So "great was the crush", by one account, his staircase eventually gave way. Miller attributed his success to "inside information". But his real method was made famous 20 years later by the man who perfected it, Charles Ponzi.

Ponzi schemes like Miller's pay a return to early investors with money raised from later ones. When they run short of new contributions, they collapse. A scheme as generous as Miller's cannot last long. But what if the promises were less extravagant and the repayment intervals less tight? What if, for example, a scheme asked investors for money in their younger years in return for a payout in their dotage? Over that time scale, a Ponzi scheme need not limit its recruitment efforts to the people alive when it begins. It can repay today's contributors with money from future participants not yet born. And since the next

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generation is never likely to be the last, the chain could, in principle, continue indefinitely. Barring a catastrophe, new marks will be born every day.

This intergenerational logic lies behind the "pay-as-you-go" (PAYG) pensions common in many countries. People contribute to the scheme during their working lives, and receive a payout in retirement. Many people fondly imagine that their contributions are saved or invested on their behalf, until they reach pensionable age. But that is not the case. The contributions of today's workers pay the pensions of today's retirees. The money is transferred between generations, not across time.

America's Social Security, for example, is largely pay-as-you-go. For this reason, its critics often compare it to a Ponzi scheme in order to discredit it. But the comparison can also work the other way. If Social Security—a venerable entitlement that has spared millions from penury—bears some resemblance to a Ponzi scheme, then perhaps Ponzi principles are not always as diabolical as the name suggests.

In some cases, those principles might indeed redound to everyone's benefit. One such scenario was sketched by Paul Samuelson of the Massachusetts Institute of Technology in 1958. His thought experiment is easiest to understand when recast as an island parable (along lines suggested by Laurence Kotlikoff of Boston University). The island in this parable is home to unusually tall cacao trees, hungry people, and little else. Only the young can climb the trees and pick the fruit, which must be eaten quickly before it spoils in the hot sun. And only two generations (young and old) are alive at the same time.

On such an island, the elderly have no way to provide for themselves. They are physically incapable of picking fruit. They cannot buy fruit from the young, because they have nothing to offer in exchange. Nor can they live off any cacao pods saved from their youth, because their stockpile will have rotted by the time they are old. There are no durable, imperishable assets that might serve as a vehicle for their thrift.

The solution, of course, is an intergenerational Ponzi scheme. The young give fruit to the old on the understanding that the next generation will do the same for them when they grow frail. In effect, the young lend to their parents and collect repayment from their children. In so doing, they serve as a link between two generations that never otherwise coexist.

Great minds overlap

The scheme works, Samuelson pointed out, only because "new generations are always coming along". If reproduction were ever to cease, the last generation would get nothing out of the scheme. Knowing this, they would not put anything in. But their failure to contribute would also deprive the penultimate generation of a payout, leaving them no reason to take part either. Any anticipated future break in the chain causes the whole thing to uncouple. If the scheme must ever end, it cannot even start.

Samuelson's paper was seminal but not wholly original. A similar model was described in 1947 by Maurice Allais, then working in a bureau of mining statistics in Paris, but his contribution had the "misfortune to be written in French", as one scholar has noted. The neverendingness of these models plays havoc with a lot of economic common sense. Economists know in their bones that budget constraints ►

► eventually bind and that accounts must be settled at the end of the day. But what if the end never quite arrives?

Such parables may seem too contrived to be illuminating. Surely the islanders benefit from a Ponzi scheme only because the story arbitrarily denies them any way to save for their future. If the young could instead acquire a durable asset, they could take care of themselves in their old age by selling it for the things they need. Instead of eating a cacao fruit, islanders could plant it to grow a new tree, which they could later rent or sell to young climbers when they retire.

In most cases, this kind of saving and investing does indeed serve people far better. Capital accumulation enlarges the economy's productive capacity, thereby creating wealth, unlike Ponzi schemes, which merely spread it around. Saving and investing both store value and add to it, turning one cacao fruit into a whole tree. Retirees can therefore expect to get more out of their investment than they put in.

In some unusual cases, however, other factors may weigh in the Ponzi scheme's favour. First, saving and investing may run into sharply diminishing returns. If a society is eager to transfer resources into the future, it will accumulate a large stock of capital, which may depress the return on further investment. Think of an orchard too densely packed with trees, each getting in the others' light and denuding their soil.

A second consideration is demography. A growing population creates a natural pyramid scheme. Each cohort of participants will receive the money contributed by a later, larger generation. Therefore they too can get more out of it than they put in. Future generations may also be better off than their predecessors. They may benefit from sources of economic advance (such as improved technology) over and above simple capital accumulation. This march of progress should allow a Ponzi scheme to pay a positive return to investors even if the scheme only takes a constant percentage from each generation's income. Thanks to economic growth, 10% collected from the incomes of today's young will be worth more than the 10% collected in the past from their parents' poorer generation.

To make things concrete, suppose a country's population grows by 1% a year and incomes per person grow by 4%. In this case, a Ponzi scheme can offer an annual return of about 5% indefinitely, simply by taking a steady share of each generation's income. If the economy already has a large stock of capital, the return on saving and investing might be less than that, especially given the risk involved. Such an economy would suffer from what economists call "dynamic inefficiency". In these circumstances, an intergenerational Ponzi scheme can be sustainable and desirable.

A PAYG pension is only the most obvi-

ous example of such a scheme. Government debt can play a similar role (a possibility entertained by Peter Diamond of MIT in a 1965 paper building on Samuelson's insights). If the government does not want to extract social-security contributions from the young, it can sell them long-term bonds instead. When these bonds mature, the government can repay them by selling a fresh round of bonds to the next, richer generation.

A third, more anarchic way to transfer resources from young to old is a speculative bubble. In a bubble, people pay over the odds for an asset, such as a house, in the belief that subsequent investors will pay a higher price still. The overpayment amounts to a contribution to a Ponzi scheme, redeemed not by the earnings of the underlying asset, but by overpayments from later investors. If each generation is collectively richer than the last, then the asset's price can keep rising even if each buyer sinks only the same percentage of their (rising) income into it.

The younger-fool theory

All these mechanisms have side-effects. Government debt can crowd out productive investment. Bubbles can do the same. But in an economy suffering from dynamic inefficiency, this crowding out is a good thing. Such an economy has accumulated too much capital. It requires heavy investment to keep this large stock of machinery, equipment, buildings and infrastructure growing in line with the economy. The young are tempted to add yet more capital in an effort to transfer resources to their future, older selves. Yet because the returns are so low, it is more efficient for them to transfer resources directly to today's elderly (by contributing to social security, buying government bonds or overpaying for the old people's assets), on the understanding that tomorrow's young will do the same for them.

Under certain conditions, then, Ponzi

principles are efficient not maleficent. But are those conditions ever found in the real world? One way to look for them is to compare interest rates (which represent the return on capital) and GDP growth rates (which reflect both population growth and increases in income per person). An alternative, stiffer test (which works well under certain assumptions) is to compare investment and profits. If national investment is greater than profits, a country is ploughing more into its stock of capital than it earns from it. It is as if the islanders are replanting all of the fruit they collect from the additional trees they have cultivated (minus whatever fruit they need to compensate themselves for their labour) plus a few more. The economy's efforts to save and invest for the future are overloading the available vehicles for thrift.

Economists used to be confident that most economies were on the right side of this test, earning far more in profit than they invested. Recent research is less definitive. Francois Geerolf of the University of California, Los Angeles believes that Japan suffers from dynamic inefficiency. And he cannot rule out the possibility that all the G7 countries (and nine others) suffer similarly. If so, the implications are provocative. They imply that G7 public debt is soaking up money that would otherwise be spent on further augmenting an overbuilt capital stock. Insofar as the proceeds of this government borrowing are spent on health care and pensions, the elderly benefit disproportionately. Perhaps, then, G7 public debt is diverting unfruitful efforts to provide for the future into providing for the elderly instead.

Several scholars, including Qian Liangxin of Anhui University, also point out that China often ploughs more into its capital stock than it earns from it. At China's stage of development, this may not be a bad thing, because the economy's capital-intensity is still in flux. But the combination of fast growth and repressed returns on saving may help explain why China is so prone to speculative bubbles, especially in property. Working-age Chinese overpay for houses, many of which stand empty, on the assumption that they will sell them at higher prices—not to a greater fool necessarily, but to a younger, richer one.

William Miller's proto-Ponzi scheme lasted less than a year. His banks (including the Hide and Leather National Bank Of New York) closed his accounts and newspapers hounded him. He fled to Canada (eluding one pursuer by ducking into a Chinese laundry, according to Mark Gribben of the *Malefactor's Register*, a blog) before the police eventually caught up with him. But he never actually ran out of investors. Even as he was escaping the country, envelopes addressed to his syndicate piled up at the post office, filled with contributions from the next generation of believers. ■





India's economy

Drifting apart

MUMBAI

India's poorer states ought to be closing in on richer ones. Why are they not?

COUNTRIES find it easier to get rich once their neighbours already are. East Asia's growth pattern has for decades been likened to a skein of geese, from Japan at the vanguard to laggards such as Myanmar at the rear. The same pattern can often be seen within big countries. Over the past decade, for example, China's poorer provinces have grown faster than their wealthier peers. India is different. Far from converging, its states are getting ever more unequal. A recent shake-up in the tax system might even make matters worse.

Bar a few Mumbai penthouses and Bangalore startup offices, all parts of India are relatively poor by global standards. Taken together, its 1.3bn people make up roughly the third and fourth decile of the world's population, with an income per person (adjusted for purchasing power) of \$6,600 dollars. But that average conceals a vast gap. In Kerala, a southern state, the average resident has an annual income per person of \$9,300, higher than Ukraine, and near the global median. With just \$2,000 or so, an Indian in Bihar, a landlocked state of 120m people, is closer to a citizen of Mali or Chad, in the bottom decile globally.

The gap has been widening. In 1990, point out Praveen Chakravarty and Vivek Dehejia of the IDFC Institute, a think-tank, India's three richest large states had incomes just 50% higher than the three poorest

est—roughly the same divergence as in America or the EU today, and more equal than in China. Now the trio is three times richer (see chart).

In some rich parts of the world, income gaps between regions have in recent decades been widening. But India's experience still puzzles economists. Poor regions benefit from technology developed in richer ones—from trains to mobile phones. Workers in poorer places accept lower wages, so firms build new factories there.

The catch-up process ought to be all the faster if barriers to the movement of goods or people are lower. Regions within China have converged rapidly, partly owing to

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the market, as factories move production inland where wages are cheaper, and partly to government attempts to lift poorer regions by investing heavily in their infrastructure.

Arvind Subramanian, chief economic adviser to India's government, earlier this year wrote that its states' divergence is "a deep puzzle". The brief bout of liberalisation in 1991 probably played a part initially, by unevenly distributing the spoils of more rapid overall economic growth. But that burst of inequality should have self-corrected by now.

One theory blames the states' divergence on their isolation even in the Indian domestic market, as a result of lousy infrastructure, red tape and cultural barriers. Moving stuff from state to state can be as tiresome as exporting. Internal migration that would generate catch-up growth is stymied by cultural and linguistic barriers: poor northern states are Hindi-speaking, unlike the richer south. Cuisines differ enough for internal migrants to grumble. It is harder to have access to benefits and state subsidies outside your home state.

Mr Subramanian thinks such arguments are overdone. India may not have mass migration on the scale that transformed China, but it is still sizeable, he argues, and has been rising as a share of the population even as convergence has gone into reverse. Inter-state trade is healthy, suggesting suitably porous borders.

Another theory looks at India's development model. Growth has relied more on skill-intensive sectors such as IT than on labour-intensive manufacturing. This may have stymied the forces of convergence seen elsewhere, Mr Subramanian posits. Perhaps, however low their labour costs, the poorer places lack the skills base to ➤

Pulling away

India, biggest three states by net domestic product per person as % of smallest three*



► poach jobs from richer rivals.

A more likely explanation is that the reasons some states lagged behind in the first place—mainly to do with poor governance—are still largely in place. Bihar's low wage costs make it look attractive on paper as a place to set up a factory. But many firms seem to conclude they do not compensate for its difficulties.

If that idea is correct, the introduction of a new goods-and-services tax (GST) on July 1st might have worsened the trend. Lots of state-level levies have been replaced with a single tax. Barriers to interstate trade have become markedly lower,

but states have forgone some fiscal autonomy, such as offering tax breaks to lure in investors. That may make it harder for poor states to catch up, says Mr Chakravarty.

Mr Subramanian notes, however, that the forces of convergence are gaining strength. Despite falling behind on income, poorer states have been catching up on human-development measures such as infant mortality and life expectancy. Fertility rates in the northern Hindi belt are fast falling to levels already reached by, for example, Tamil Nadu, a rich southern state. India's "demographic dividend" is largely an opportunity for its poorer states—if they

can create enough jobs to grasp it.

Convergence is obviously desirable in a country where the straggling states are home to some of the world's poorest people. But it might also help avert a political peril: that rich states start wondering if being lumped with far poorer peers is in their interests, and start thinking the unthinkable: secession. In many states regional political parties compete with the national ones that have mostly dominated the federal government and quashed any such talk. The questions over the divergent fortunes of India's states are puzzling. They may yet become more serious. ■

Buttonwood | Getting the long term right

The trickiest part of forecasting the distant future concerns valuation

WHAT is the right way to invest for the long term? Too many people rely on past performance, picking fund managers with a "hot" reputation or backing those asset classes that have recently done well. Just as fund managers cannot be relied on to be consistent, returns from asset classes are highly variable. The higher the initial valuation of the asset, the lower the future returns are likely to be.

That is pretty clear with government bonds. Anyone buying a bond with a yield of 2% and holding it until maturity can expect, at best, that level of return (before inflation) and no more. (There is a small chance the government might default.) With equities, the calculations are not quite so hard-and-fast. Nevertheless, it is a good rule-of-thumb that buying shares with a low dividend yield, or on a high multiple of profits, is likely to lead to lower-than-normal returns.

So a sensible approach to long-term investing would assess the potential returns from asset classes, given their valuations and the fundamentals, and allocate assets accordingly. That is what GMO, a fund-management company, has been trying to do for decades. It has made some common-sense assumptions about the fundamental drivers of returns and then assumed that valuations would return to average levels over a seven-year period.

In one sense, this process has been a success. The assets that GMO thought would perform well have offered relatively high returns; the assets it thought would perform badly have offered low ones (see top chart). But if the ranking has been correct, the level of return has not been. Assets that GMO thought would yield a negative return of -10% to -8%, for instance, have in fact suffered average losses of only -2.8%.

GMO's forecasts have been pretty ac-



curate for asset classes such as emerging-market bonds and international (non-American) shares; annual returns have been within 1.5 percentage points of its forecasts. But for American equities, GMO was too gloomy, underestimating returns by around four percentage points a year.

The reason for this error is pretty clear. Equity valuations have not returned to the mean, as GMO thought they would, but have stayed consistently above their historical levels. GMO was fairly accurate in its forecast for dividend growth, but its er-

roneous estimation of valuation accounted for all the forecast error.

There are two possible conclusions. One is that GMO is simply wrong about mean reversion. Equities have moved to a new, higher valuation level. This sounds uncomfortably like the famous quote from Irving Fisher, an economist, before the 1929 crash, that stocks had reached a "permanently high plateau". But there is some justification for a valuation shift: American profits have been high, relative to GDP, for a long period of time. This may be a result of monopoly power in some industries (see Free exchange), or perhaps of the reduced bargaining power of workers in an age of globalisation.

A more obvious argument is that, with yields on cash and government bonds so low, investors are willing to pay a high price for equities because they represent their only hope for decent returns. But given the low level of dividend yields and the sluggish rate of economic growth, profits will have to keep rising as a proportion of GDP to allow high equity returns to continue. That seems unlikely. Either there will be a political reaction—governments will clamp down on firms in response to public unrest—or, more prosaically, tighter labour markets mean that wage growth will start to erode profits.

Either way, it is understandable that GMO does not want to give up on the idea of mean reversion just yet. Its latest forecasts are pretty downbeat (see bottom chart). The real returns from most asset classes are expected to be negative; only emerging-market equities offer a decent return. Investors who disbelieve those forecasts are in essence betting that things will be "different this time". That is certainly possible but it requires a lot of faith.

Indian demonetisation

Paint it white

MUMBAI

No windfall from stashed cash

ON NOVEMBER 8th 2016, Narendra Modi, India's prime minister, stunned its 1.3bn people by announcing that most banknotes would soon become worthless. Indians then queued for weeks on end to exchange or deposit their banned money at banks. The comfort for the poor was that the greedy, tax-dodging rich would suffer more, as they struggled to launder their suitcases full of cash by year-end.

Not so. A report from the central bank, the Reserve Bank of India (RBI), on August 30th suggests that of the 15.4trn rupees (\$241bn) withdrawn—roughly 86% of all banknotes by value—15.3trn rupees, or 99% of them, have been accounted for. Either the “black money” never existed or, more likely, the hoarders found a way of making it legitimate.

Defenders of the scheme say it is merely one plank of a wider fight against informal economic activity and corruption. Banks have enjoyed an influx of cash. Digital payments are up (from a low base), as issuance of replacement notes has not caught up with the pre-withdrawal peak (see chart).

Officials once privately salivated in hope that maybe a quarter of the money, if not more, would remain in the shadows. An edict to the central-bank governor to renege on his promise to “pay the bearer” of unreturned, demonetised notes fuelled social-media rumours that this could finance a one-off dividend to be dished out to all Indians.

In fact, not much more than 100 rupees a person is available. The RBI has released the figure only now, claiming, improbably, that it needed to count the cash in its tills. Its reputation for independence and competence has been dented. So has national pride: demonetisation has pared growth and handed back to China India's coveted crown of being world's fastest-growing large economy.

Re-monetisation

India, currency held by the public
Rupees, trn

**The North American Free-Trade Agreement**

Having a domestic

Americans, as well as Mexico and Canada, are being “very difficult”

EVER game for a fight, President Donald Trump is picking one again with Canada and Mexico, America's partners in the North American Free-Trade Agreement (NAFTA). On August 27th he tweeted that both were being “very difficult”, adding: “May have to terminate?” His strategy, of getting a better deal by threatening to pull out altogether, is odd. It worsens relations with America's negotiating partners, at a time when Mr Trump's plans face just as much opposition at home.

Before April American business was quietly hoping that a Trump presidency would lead to more tax cuts than trade tensions. That changed when news leaked that Mr Trump was poised to withdraw from NAFTA. Suddenly the deal had louder champions in American business, including the energy and technology industries.

Knowing this, Canada and Mexico seem unruffled by Mr Trump's latest threats as they go into the second round of NAFTA renegotiations on September 1st. Earlier ones prompted panicky phone calls from the Mexican president and the Canadian prime minister. After the latest blast, Mexico's foreign ministry merely released a snappy statement that “Mexico will not negotiate NAFTA...through social media.”

Any move to withdraw from the deal would be challenged legally: by affected businesses, states and perhaps even members of Congress. Some legal scholars question the consensus view that Mr Trump has the authority to trigger withdrawal on his own. Joel Trachtman, a professor of international law at Tufts University, argues that, since commerce and trade fall under the remit of Congress, withdrawal without their approval “would be a usurpation of Congress's powers under the constitution”. The president has an interest in avoiding big battles with Congress, with which he needs to work to pass his planned tax reforms.

The details of the deal are of concern to Americans outside government, too. On August 23rd the chief executives of the three largest American business associations wrote a public letter to Robert Lighthizer, the United States Trade Representative, warning him against attempts to eliminate or weaken NAFTA's investor-state dispute settlement (ISDS) provisions. These allow investors to sue foreign governments, and have been invoked 59 times under NAFTA. They offend those who see international arbitration panels as under-



mining American sovereignty.

Mr Lighthizer has not yet settled on a proposal for a new ISDS system. One option floated would allow countries to opt in. In theory, this could give American investors protection in Mexican markets yet retain the supremacy of American courts at home. It seems inconceivable the Mexicans could accept such asymmetry.

But if that led to the removal of ISDS provisions, the American business lobbies are saying it would jeopardise their support for any renegotiation. That might sound extreme—presumably they would prefer a deal without ISDS provisions to no deal at all. Their letters suggest that they too are calling Mr Trump's bluff. Mr Trump can pick a fight. But not his opponents. ■

International litigation

Courtly competition

Other countries want a slice of London's financial-litigation business

LOFTILY as they may disdain the profit motive, Britain's judges are, on a national level, money-spinners. English law is often specified as the one under which commercial contracts are to be interpreted and enforced. And disputes often end up being heard in British courts. But, like any business, the law is competitive, and other jurisdictions want to snatch a share of this market. London is mounting its defences.

It has several hard-to-beat advantages: the use of English; a reputation for fairness; the centuries of precedent that lend predictability. Richard Caird, a partner at Dentons, a global law firm, notes that a foreign company can expect an impartial decision in an English court, even if it is pitted against a British firm. Over 70% of cases in ►



National treasures

► the English commercial courts involve a foreign party. In 2015, Britain had a £3.4bn (\$5.2bn) positive balance of payments on legal services.

One way for other financial centres, such as Dubai and Singapore, to compete is by becoming hubs for arbitration—by agreeing to abide by the decision of a tribunal, disputants can bypass courts entirely. But as Philip Rubens of Teacher Stern, a law firm in London, points out, such tribunals create no binding precedent. Financial firms often want their day in court.

So Singapore and Dubai, in the UAE, have also set up special commercial courts. The Netherlands, France and Kazakhstan have similar plans. Mostly, these courts will conduct cases in English and apply internationally accepted laws. Singapore and Dubai have even hired judges retired from London and other jurisdictions.

So far, however, they have attracted little international business. Since its establishment in 2015, no case has been heard in the Singapore International Commercial Court based on a contractual agreement between the parties to hear a case there, though proceedings have been transferred from other Singapore courts. Most cases heard in the Dubai International Financial Centre Courts after they opened to foreign litigants in 2011 have had UAE links.

Nor is London complacent. Judges conducted a survey of big users of the commercial courts, such as lawyers and bosses at financial institutions. One consequence was the creation in 2015 of the "Financial List". Litigants in financial disputes, generally with over £50m (\$65m) at issue, can apply to have their cases heard on the list, by judges with expertise in financial law.

Some new procedures have been intro-

duced for Financial List cases. In ordinary commercial courts, for example, different parts of a trial are heard by different judges. On the Financial List, one judge hears the entire case. The jury is out on whether the new system improves justice. Litigants had hoped Financial List cases would be faster. But Vaninna Ettori, an adviser to the Chancellor of the High Court, notes that the sort of cases that appear on the Financial List would typically be expedited anyway. Ultimately, as Mr Rubens points out, its success will depend on how many Financial List cases are overturned on appeal.

Dubai and Singapore are unlikely to make much of a dent in London's dominance. Its courts' reputation has been built over many years, and the forces of inertia stop people from changing contract terms. Mr Caird notes that the true threat to Britain's courts will be its departure from the EU. He questions whether financial institutions that move operations to the continent as a result of Brexit will still use British courts. Brexiteers worry about the influence of European judges on British affairs after Brexit. Maybe they should worry about continental European judges snapping up the valuable cases. ■

Russian banking

Too close to the sun

MOSCOW

A central-bank rescue for Otkritie Bank

VADIM BELYAEV'S start in business in the mid-1980s was to sell foreign watches on the black market in the Soviet Union. He became a financier, and by 2015 had transformed his bank, Otkritie, into post-Soviet Russia's largest private lender. Named "Businessman of the Year" by a Russian magazine, he used an English term to describe himself: "Risk-taker". The risks have caught up with Otkritie. A run on its deposits led this week to its takeover by the central bank (CBR). The rescue is likely to be the largest in modern Russian history.

Russian banking has been plagued by lenders with bad loans and inadequate capital, and "pocket" banks that function as money-laundering hubs for influential businessmen. The CBR has embarked on a campaign to clean up the sector, taking on formerly untouchable banks with powerful shareholders and clients. Since 2013 it has shut down more than 300 banks.

Otkritie rose rapidly, out of a small predecessor bank acquired in 2006. It has expanded aggressively, taking over several other lenders, a pension fund and a diamond mine; it has been moving to acquire Russia's largest insurer, Rosgosstrakh. As

Russia descended into recession in 2014, it thrived. It more than doubled its assets through deals to help Rosneft, a state-run oil giant hit by sanctions, refinance dollar loans, and to buy 74% of a Russian sovereign Eurobond issue for 831bn roubles (\$14bn). Last year the CBR named Otkritie one of ten "systemically important" banks.

Its troubles began soon after. Rumours about its stability led twitchy depositors to begin withdrawing funds. The process speeded up in July when Russia's new government-backed ratings agency, Analytical Credit Rating Agency (ACRA), rated Otkritie BBB-, barring it from holding deposits from state companies or pension funds. The collapse in mid-July of Yugra, Russia's 34th-largest bank, fuelled fears that the CBR's clean-up campaign would eventually reach Otkritie. In June and July, depositors withdrew some 435bn roubles (\$7.4bn), or 18% of Otkritie's liabilities. The bank took a 330bn rouble loan from the CBR and opened an emergency credit line.

Withdrawals continued and on August 29th the CBR stepped in. It will take at least a 75% stake in the bank and keep it functioning. It chose not to use a recently established mechanism to "bail in" other creditors, nor to revoke the bank's licence. It reckoned such measures could trigger systemic turmoil. The size of the hole in Otkritie's balance-sheet is unknown. Some analysts suggest that the failure of Otkritie's big shareholders—an eclectic and well-connected group of oligarchs and state-run companies—to recapitalise the bank at its time of crisis betrays the depth of its woes.

For now, the CBR's move has halted the panic. "It's a good precedent that banks don't have to be closed," says Oleg Kouzmin of Renaissance Capital, an investment bank. But the rescue will also accelerate the consolidation of assets in the hands of leading, mostly state-owned, banks. Russia's ten biggest account for some 70% of all banking assets; large state banks make up some 60% (see chart). Otkritie's troubles may stimulate a further "flight to quality", says Alexander Danilov of Fitch Ratings. The big will get bigger. ■

Understated

Russian banks by assets
Q2 2017 or latest available, \$bn



Free exchange | An offer we can't refuse

Powerful companies can be a boon to customers, but they still deserve scrutiny



WHEN Amazon announced in June that it would buy Whole Foods, an upmarket grocer, for \$13.7bn, other firms shuddered. The spread of Amazonian tentacles is worrying to those wary of concentrated corporate power. But shoppers entering their local Whole Foods these days find oddly low prices alongside the new stacks of Echoes, Amazon's voice-activated digital helpmate. This raises a question. Is Amazon hellbent on building a world-straddling monopoly, or merely injecting innovation and competition into yet another new market? For antitrust regulators, the welfare of the consumer is the priority. Yet working out how to protect it is harder than ever.

Competitiveness in most industries is a matter of degree. In the idealised marketplace of economics textbooks, the price people pay for goods equals the cost of producing an additional unit. Any higher, the theory goes, a competitor could cut the price a smidgen, sell another unit and profit. Yet outside commodity markets, most firms can charge more than marginal cost. Competing products are not perfect substitutes (no two brands of pasta sauce are exactly the same) and rivals cannot swoop in at once. The more distinctive a product, and the higher the barriers to entry, the more its seller resembles the nasty monopolies of the textbooks: raising prices and gouging profits. Breaking up such monopolies—as America's regulators once carved up Standard Oil and AT&T—is good for consumers and the economy as a whole.

If the competitiveness of markets is a spectrum, research suggests that American business has been moving along it, and not in the right direction. A new working paper from the National Bureau of Economic Research, by Jan De Loecker of Princeton University and Jan Eeckhout of University College, London, provides some stark evidence. The authors analyse data on publicly traded American firms from 1950 to 2014. From 1950 to 1980, average mark-ups—that is, what firms charge customers above their cost of production—were relatively low (and flat), at about 18% over cost. Since 1980, however, mark-ups have risen steadily, to 67% on average. That translates into growth in the consumer-price level, relative to firms' costs, of about 1% per year.

But this rise in market power comes in several guises, with varying implications for consumers. In some industries—such as airlines, telecoms and retail banking—the public seems to be get-

ting a raw deal. Consolidation has been accompanied by high profits and shoddy service. Elsewhere, however, margins are probably rising as a result of product differentiation and personalisation. A name-brand designer, for instance, can charge a premium because the fashions sold by competitors, whatever their beauty, cannot (legally) carry that name. A firm selling bespoke IT services is in an analogous position. In tailoring its services to a customer's unique circumstances, it provides something of value and raises the cost of switching, earning itself room to charge a premium. Niche products seem to be on the rise in some professional services, in corners of the retail industry and on the high street—where quirky cocktail bars can charge far more than less funky mass-market watering holes. Such markets fall short of the ideal of perfect competition, but nor are they examples of lazy monopolies ripping off hapless consumers.

Amazon and other big internet firms belong to a different category from both the lumbering bullies of the airline industry and wallet-draining boutiques. High rates of profit combined with industry consolidation suggest there is no shortage of market power in the tech world. But it is tricky to work out what that means for consumers. In some cases, market power (and associated profits) can be seen as the prize for costly innovation. That, after all, is the logic behind patents, which reward inventors for making knowledge public by granting them a temporary monopoly. Indeed, market power can be a lure to innovation. Constructing a new telecoms network is good for consumers but expensive; the reason to do it is the knowledge that it will not be viable for late-comers to compete away the first mover's profits.

When there are benefits to scale, dominant firms can cut costs and fatten margins without raising prices. The pile of data amassed by Google, for example, gives it an extraordinary edge in selling personalised advertisements, but also allows it to serve all its customers more effectively. And in the tech world, market power can be tenuous. New platforms displace old ones, and fresh technologies can undercut the value even of sprawling physical networks. Yet innovation-derived market power should not give firms a free pass—even if prices fall as a result.

Kale joys

Tech giants like Apple and Facebook work to enmesh their customers in ecosystems that are difficult to escape from. Big firms can use the hordes of customers acquired in one business to put pressure on suppliers or squeeze customers in another. Microsoft once argued that bundling its browser with its Windows operating system gave consumers an extra boon at no cost; rivals thought consumers would lose out by becoming more captive to Microsoft's systems. The question hanging over today's antitrust debates is whether startling deals for consumers—from Gmail to cut-price organic almond butter—are the happy by-products of innovation or the foundations of formidable barriers to competition, which will ultimately harm consumers.

For now, the grocery market seems healthy enough. Amazon's annual sales are less than a third those of Walmart and its share of the grocery market is an unimpressive 2%, even after its recent acquisition. Both Amazon loyalists and Whole Foods shoppers are likely to enjoy the perks of the combination, and cheaper avocados will come as a relief to hungry hipsters. But regulators must be vigilant, lest the time come to say: Stop! Good buy to all that. ■



Quantum cryptography in space

The early bird

BEIJING

The world's first quantum-cryptographic satellite network is likely to be Chinese

IN THE never-ending arms race between encryptors and eavesdroppers, many of those on the side that is trying to keep messages secret are betting on quantum mechanics, a description of how subatomic particles behave, to come to their aid. In particular, they think a phenomenon called quantum entanglement may provide an unsubvertable way of determining whether or not a message has been intercepted by a third party. Such interception, quantum theory suggests, will necessarily alter the intercepted message in a recognisable way, meaning that the receiver will know it is insecure. This phenomenon depends on the fact, surprising but true, that particles with identical properties which are created simultaneously are entangled in a way that means one cannot have its properties altered without also altering the other, no matter how far apart they are.

Researchers in several countries have experimented with the idea of quantum encryption, with some success. They have sent quantum-entangled messages through optical fibres, and also through the air, as packets of light. This approach, though, suffers from the fact that the signal is absorbed by the medium through which it is passing. The farthest that a quantum signal can be sent through an optical fibre, for example, is about 100km. Sending one farther than that would require the invention of quantum repeaters, devices that could receive, store and re-transmit quan-

tum information securely. Such repeaters are theoretically possible, but so technologically complex that they remain impossible in practice.

An alternative is to beam entangled photons through the vacuum of space, where there is nothing to absorb them. This would mean transmitting them via satellite. Whether that can be done while preserving entanglement was, for a long time, unclear. But it is clear now. Experiments conducted recently, by Pan Jianwei, a physicist at the University of Science and Technology of China, in Hefei, have shown that it can.

The keys to the high castle

Such tests have been made possible by the launch, in August 2016, of *Micius*, the world's first quantum-communication satellite. *Micius* (named after a Chinese philosopher of the 5th century BC, who studied optics) now orbits Earth at an altitude of 500km. Using it, Dr Pan and his colleagues have been testing the protocols that a global quantum-communications network will need to work.

Their first study, published in June, showed that entangled photons sent by the satellite to pairs of ground stations remain entangled, even when those stations are as much as 1,200km apart. Following that success, they attempted to use entanglement to "teleport" information from the ground to orbit. Information teleporting,

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so called because it happens without anything physical passing from one place to another, involves the sender changing a quantum aspect of one photon of an entangled pair that he has control over, and the receiver observing the same change in the other member of the pair, over which he has control. A series of such changes on successively transmitted photons can carry information, provided a code has been agreed on in advance.

To minimise the amount of atmosphere in the way, and thus the risk of signal disruption, Dr Pan and his team put their ground station for this experiment in Ngari, a region of south-western Tibet that has an altitude of 5,100 metres. They beamed one of an entangled pair of photons to *Micius* and kept the other on the ground. They then entangled the grounded photon with a third photon, and measured how this altered its polarisation and the polarisation of the photon on the satellite. The result, reported in July, was that the two do, indeed, change in lockstep. The team had thus succeeded in teleporting information from the ground to the satellite.

In a third study, also published in July, Dr Pan showed that *Micius* is able to transmit useful information, in the form of quantum-encryption keys, to a ground station in Xinglong, near Beijing. The transmission of such keys is crucial to quantum cryptography. Quantum-encryption keys are the quantum states of long strings of photons. Using one, a receiver can decrypt a message which has been encrypted with the key in question.

The security of quantum cryptography relies on the fact that eavesdropping breaks the entanglement by observing what is going on. It is a real-life example of the thought experiment known as Schrödinger's cat, in which a cat in a box remains both dead and alive until someone opens ►

► the box to look—at which point it becomes one or the other. Though entanglement-breaking will not be noticed by the receiver of a single photon, doing it to a series of photons will be statistically detectable, alerting him that the line is insecure.

This third demonstration of *Micius*'s capabilities paved the way for a subsequent, successful, attempt to share a secure key between Xinglong and a station 2,500km away in Nanshan, a town in Xinjiang, China's westernmost province. To do so, *Micius* sent one half of a stream of entangled photon pairs to Xinglong when it passed over the place, and held the other half on board for two hours until it passed over Nanshan on its succeeding orbit.

The next stage, scheduled to happen in about five years' time, will be to launch a quantum-communications satellite in a higher orbit than *Micius*'s. The altitude Dr Pan has in mind is 20,000km, which will permit the satellite to communicate simultaneously with a much bigger part of Earth's surface and allow him to test the feasibility of building a practical quantum-communications network. He is also hoping to put an experimental quantum-com-

munications payload on board China's space station, which is scheduled for completion by 2022. Having this device on board the station will mean it can be maintained and upgraded by human operators—a rare example of space-station crew doing something that could not easily be accomplished by robots. If all this goes well, the ultimate goal is a world-spanning ring of satellites in geostationary orbits.

One question Dr Pan and his colleagues particularly want to answer with their next experiments is whether entanglement is affected by a changing gravitational field. They could do this by comparing photons that stay in the weaker gravitational environment of orbit with their entangled partners sent to Earth. He also has other questions about the basic physics underlying entanglement—in particular, how it is that an entangled particle “knows” the result of changes made to its far-distant partner? That would be Nobel-prizeworthy stuff. Albert Einstein, famously, called the phenomenon of quantum entanglement “spooky actions at a distance”. Dr Pan's work is helping to exorcise those particular ghosts. ■

a diameter of about 7,000nm (nanometres, or billionths of a metre). The spasers created by the two researchers, by contrast, are a mere 22nm across. They consist of a gold core with a diameter of 10nm surrounded by a silica shell doped with fluorescent dyes. The outer surface of this shell is coated with folic acid.

A conventional laser consists of a resonator (usually a chamber with mirrors at either end, between which the light being amplified bounces), and a gain medium, which sits between the mirrors and takes external energy (also often in the form of light) and employs it to amplify the bouncing light. In the spasers Dr Zharov and Dr Stockman are using, the gold acts as the resonator and the doped silica as the gain medium. Instead of amplifying light, the system amplifies plasmons oscillating across the surface of the gold sphere.

The device's other ingredient, the folic acid, is its guidance system. Unlike most healthy cells, cancer cells are usually covered with folate-receptor molecules. If a spaser comes into contact with such a cell, it therefore tends to stick. So, if a horde of spasers is injected into someone with metastasising cancer, those spasers should quickly track down CTCS in the bloodstream or lymphatic system and bond to them. Laboratory studies show that, often, dozens of spasers will attach themselves to a single cell. Once attached, they are quickly absorbed into that cell.

Spasers so absorbed can be employed for two purposes: diagnosis and destruction. Shining low-level laser light into a patient, either through his skin or (to reach deeper inside) through a fibre-optic probe, causes cancerous cells containing spasers to shine brightly. That reveals their locations. Applying more powerful laser pulses (though still at a level harmless to humans) transforms the spasers into killers. The idea behind this was Dr Zharov's. In a piece of past research he turned a laser onto some cells from a melanoma, an aggressive form of skin cancer. One characteristic of melanomas is the presence in them of particles of melanin, a dark pigment. These particles absorbed the laser light, heated up, and, he discovered, thus created bubbles of steam around themselves that could kill the cells they were in.

The researchers' plan was to use their spasers to do something similar to CTCS, with the spasers substituting for melanin particles. And it worked. The external laser pulses stimulated the spasers to produce plasmons that heated the water surrounding them in a cell to well over 100°C. That created steam bubbles, the sudden formation of which generated shock waves which blew the affected cells to bits.

To exploit this effect therapeutically, Dr Zharov and Dr Stockman plan to fit patients with special wrist sensors. Such a sensor will use low-level laser light to de-

Cancer

Pop!

Microscopic lasers may stop tumours spreading around the body

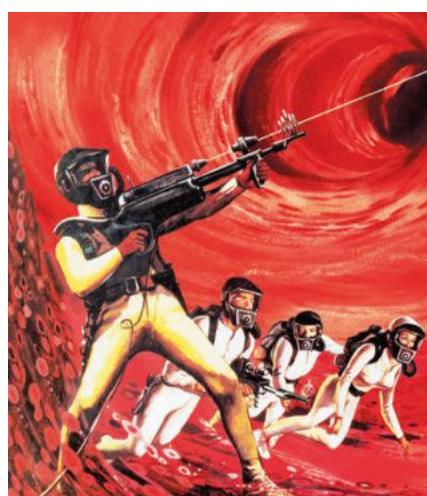
IT IS more than 50 years since “Fantastic Voyage” hit the silver screen. The film's premise, shrinking a submarine and her crew of doctors to the point where they can travel through a patient's bloodstream to repair damage *in situ*, though entertaining, remains as absurd as it was in 1966. Not so the idea that therapeutic machines small enough to circulate in this way might be built. Indeed, perhaps inspired by the film, several such efforts have been made. Some are drug-delivery devices. Some are ways of concentrating externally applied energy into tissue that needs to be killed. And they are starting to be approved for clinical use.

The latest attempt, by Vladimir Zharov of the University of Arkansas and Mark Stockman of Georgia State University, in Atlanta, involves injecting cancer patients with hordes of tiny lasers that will seek out and destroy so-called circulating tumour cells (CTCs). These are cells that have broken off a primary tumour and which, if left unchecked, might lodge in various parts of the body and turn into secondary cancers, a process called metastasis.

The minuscule lasers which the pair use, of a type developed a few years ago by

Dr Stockman, are called “spasers”. This is short for surface-plasmon amplification by stimulated emission of radiation. Surface plasmons are clouds of electrons that oscillate over a conductive surface. Spasers generate them in response to stimulation by an external light source.

A red blood corpuscle has, for reference,



Set spasers to “kill”

etect spaser-carrying CTCS passing through blood vessels beneath. It will then swiftly activate a high-powered laser to destroy those cells. With luck, this arrangement will keep secondary cancers at bay while a patient's primary tumour is dealt with. Spaser treatment would then continue for a while longer, to deal with leftover CTCS.

Animal trials having been promising; the two researchers are now planning to test the system in people. They are also try-

ing to tweak their spasers to respond to infra-red, rather than visible light. Infra-red penetrates tissue more deeply than visible light can manage, so an infra-red-sensitive spaser should be more effective.

Exactly how good an executioner of human CTCS the spaser system will be remains to be seen. But even a partial slaughter would inhibit metastasis. And that would have a potent effect on treatments for all sorts of cancers. ■

of treating coronary-artery disease, by developing ways to inhibit inflammation. Canakinumab itself is a type of medicine called a monoclonal antibody. Many such drugs are expensive. They cost tens—sometimes hundreds—of thousands of dollars a year. Though appropriate for treating people with actual illnesses, or a serious risk of developing one, they are not suitable for use as general prophylaxes in the way that statins are. But other prophylactic ways of reducing inflammation might be.

Nor need such approaches be pharmaceutical. For many years, epidemiology has shown an association between consumption of oily fish and a lower risk of coronary-artery disease and strokes. A probable cause is the anti-inflammatory effect of fish oil, which is predominantly a type known as omega-3, because of a feature of its molecular structure. Indeed, an Italian study published in 2002 showed that one gram a day of supplementary omega-3 oil reduced death from cardiovascular disease by 30% in those who had recently survived a heart attack.

The best advice of all, though, is "eat less and exercise more". Being overweight is, itself, a way of provoking inflammation. And exercising, independently of its effect on body weight, is also anti-inflammatory. Numerous studies show this, and that exercise protects directly against heart disease. Diet and exercise rarely make the front pages in the way that drug trials do—and should, of course, be supervised by a doctor if the individual concerned has a dodgy heart. But for most people they remain the best medicine of all. ■

Medicine

Heart of the matter

A wonder drug for heart disease isn't that wonderful

ON AUGUST 27th the results of a trial of an anti-inflammatory medicine called canakinumab were released at a meeting, in Barcelona, of the European Society of Cardiology. Press reports were gushing, telling of a fabulous new drug that would cut the risk of heart attacks and cancer at the same time. The coverage was so positive that people reading or hearing it might have been forgiven for wondering when this treatment would be available to everyone. The answer is probably "never", for canakinumab's benefits have been greatly oversold. This trial was, nevertheless, important. Though it offered no immediate treatment, it confirmed what has long been suspected—that inflammation is an important factor in heart disease.

It has been common knowledge for decades that one way to reduce someone's risk of having a heart attack is to keep his cholesterol levels low. But that is only part of the story. About half of heart attacks happen to those who have what are considered normal levels of cholesterol. Trials show that even people who do not have high cholesterol levels benefit from being prescribed cheap, cholesterol-lowering statin drugs. Since another effect of these drugs is to reduce inflammation, the suspicion has been that this is where the protection is coming from. But the cholesterol-lowering properties of statins have made it impossible to isolate this effect.

The new study, co-ordinated by Paul Ridker of the Brigham and Women's Hospital in Boston, could look at inflammation by itself because canakinumab reduces only that, and not cholesterol levels. Dr Ridker and his colleagues took 10,000 patients who had had heart attacks and who were receiving high doses of statins. They gave some of them quarterly injections of canakinumab in addition. Participants taking a 150mg dose of the stuff proved 15% less likely, over the four years the trial lasted, to

suffer a further heart attack or a stroke than did those not so treated.

Patients on canakinumab also showed a drop in rates of death from cancers of several sorts, and in the actual incidence of lung cancer. As with heart disease, inflammation exacerbates the effect of cancer. The flip side of the study, though, is that there were significantly more deaths from infection among those who received canakinumab—an effect large enough to cancel out the drug's positive effects on mortality, including its anti-cancer effects.

The excitement surrounding this trial is therefore scientific rather than clinical. It provides evidence for a possible new way



How plesiosaurs swam

Plesiosaurs roamed Earth's oceans for nearly 150m years, until their extinction 66m years ago. They were propelled by four equal-sized flippers, unlike any animal alive today. A question that has long bothered palaeontologists is, did all four flap up and down, or were they rowing rather than flapping, or did the back ones steer rather than flap or row? As he reports in the *Proceedings of the Royal Society*, Luke Muscutt of Southampton University, in England, has now answered this definitively. By testing robotic replicas of plesiosaur flippers in a water tank he has shown that all four flapping up and down is by far the most efficient and powerful arrangement.



Mikhail Gorbachev

The story of a good Soviet man

How a peasant boy turned Communist Party boss ended the cold war and buried the Soviet Union

ON DECEMBER 23rd 1991 Mikhail Gorbachev, the last leader of the Soviet Union, and Russia's first president, Boris Yeltsin, met for eight hours to discuss the transfer of power. At the end, they downed a couple of vodka shots and Mr Gorbachev, feeling unwell, disappeared into his back-office while Yeltsin strode off "as if he were marching along a parade ground", recalled Alexander Yakovlev, a close Gorbachev ally who had brokered the meeting.

When Yakovlev went to see his old comrade, he found him lying on a sofa, tears welling. "You see, Sash, this is how it goes," said Mr Gorbachev, who had just lost his job as the president of the Soviet Union and the country with it. Yakovlev tried to console him, but he too was choking. "A feeling that something unfair had happened was suffocating me. A man who had brought drastic change to the world ... was a helpless victim of the cruelty and capriciousness of history."

It was a history that Mr Gorbachev himself had set in motion. Ever since the end of the Soviet Union, the question of "why" has lingered in Western, Russian and Chinese minds. Why did a man at the head of a superpower undermine his own authority? Did he simply fail to understand the consequences of his actions, or did he act out of courage and vision? How did Mr Gorbachev, the peasant boy turned Communist Party boss in a fedora, become the statesman who liberated his people from

Gorbachev: His Life and Times. By William Taubman. *W.W. Norton; 880 pages; \$39.95. Simon & Schuster; £25*

70 years of lies and fear, end the cold war and bury the Soviet Union? Was he a product of the Soviet system, as he claimed, or its "genetic error", as Andrei Grachev, an earlier biographer described him? What made Gorbachev Gorbachev?

These are the questions William Taubman, an American political scientist, sets out to answer in his comprehensive and immensely readable account of Mr Gorbachev's life. "Gorbachev is hard to understand," the former Soviet leader told Mr Taubman, speaking of himself in the third person. The author applies a Tolstoyan lens to Russia's recent history and displays particular sensitivity in his assessment of a life that would prove richer than politics. It is the logical continuation of Mr Taubman's biography of Nikita Khrushchev, which won a Pulitzer prize in 2004.

Mr Gorbachev's use of unnatural and hackneyed Soviet "newspeak" made him seem like an apparatchik. But beneath it was a bedrock of moral instinct and common sense that informed his choices far more than Marxist dogma and Soviet ideology. How did these normal human reflexes survive in a not entirely normal country?

Mr Taubman calls his first chapter

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"Childhood, Boyhood, and Youth" (from the title of Tolstoy's semi-autobiographical trilogy), and glimpses some answers there. Mr Gorbachev was born in the village of Privilnoye, in Russia's southern steppe, in 1931, a breaking-point in Russian history with more drastic consequences, in many ways, than those of the revolution of 1917. Stalin consolidated absolute power in his hands, and unleashed brutal collectivisation and a famine which claimed the lives of two of Mr Gorbachev's uncles and an aunt and destroyed the Russian peasantry.

One of his grandfathers rejected collectivisation, kept an Orthodox icon in his house and was arrested in 1934 for not carrying out orders to sow; he had no seeds. The other was a communist who welcomed and assisted collectivisation, hung portraits of Stalin and Lenin on his wall and yet was arrested in 1937—to make up the quota for Stalin's great purges. Miraculously, both grandparents survived. But the brutality of collectivisation and the story of how the communist grandfather was tortured left an enduring sense of injustice.

Another formative memory was that of war. Mr Gorbachev was ten when his father, a gentle and loving man, went to the front and his village was overrun by the Nazis. Mr Gorbachev's father, mistakenly reported killed, eventually returned home in 1945. As Mr Taubman notes, the close escape of his grandparents and his father from tragedy-in-the-making instilled in the boy a sense of optimism and confidence that sometimes went too far. For all its hardship, he had a happy childhood.

He was proud that he could work with his father in the fields for 20 hours a day, caked in dirt and fuel, operating a huge combine harvester onto which he could clamber from any direction—"even where the reel was revolving and the cutters were gnashing their teeth." Mr Gorbachev's ➤

► hard work was rewarded with the Order of the Red Banner of Labour, which helped him get into Moscow State University, where he met his wife, Raisa.

Mr Gorbachev began his professional life with a set of values that would later define his policies. He rejected physical violence as a way of ruling, believed in dignity and hard work, and respected private life. He was no dissident. Indeed, in many ways he was an exemplary Soviet man—hardworking, of peasant pedigree and lacking bourgeois instincts, such as a desire for private ownership. He believed (and still does) in the high principles of socialism, as preached and yet never practised by the Soviet regime. The paradox was that only a Soviet man who was determined to implement those principles without resorting to lies and violence could dismantle the Soviet regime.

The first attempt to give socialism a human face was made in Czechoslovakia in 1968 by Mr Gorbachev's closest university friend, Zdenek Mlynar, and others. That it was crushed by Soviet tanks did not turn Mr Gorbachev from the idea of socialism, but made him all the more determined to try it again when he came to power nearly two decades later. Dismantling the Soviet Union was the last thing Mr Gorbachev wanted; he came to save it, not to bury it.

Ironically, it was the power of the general secretary and the party apparatchiks' continued fear of offending him that allowed Mr Gorbachev to achieve what he did. He did not take over as party leader armed with a grand strategic plan (he would not have lasted long if he had). He simply wanted to improve the dismal living conditions of his countrymen, which mattered more to him than the Soviet Union's geopolitical status as a superpower, which he took for granted. His instincts told him that if the country were relieved of excessive internal control and its long confrontation with the West, it would right itself under the continuing leadership of the party. His foreign policy flowed from that. It was his humanity rather than his often woolly statements that persuaded Margaret Thatcher that he was a man she could "do business" with.

Yet, revealing as the book is about Mr Gorbachev's ability to overcome ideological dogmas that required squaring up to the West, it is equally revealing about how Western leaders were unable or unwilling to believe him. This became evident during the presidency of the elder George Bush, some of whose advisers, labelling themselves "realists", argued that Mr Gorbachev's reforms made him potentially more dangerous than his predecessors. He was, said Brent Scowcroft, Mr Bush's national security adviser, "trying to smother us with kindness".

Even when Mr Gorbachev accepted the fall of the Berlin Wall, the unification of

Germany and ultimately its membership of NATO, Mr Bush would play to Mr Gorbachev's weakness for wanting to be lionised, but felt no obligation to help Russia financially or accommodate him politically. "To hell with that! We prevailed. They didn't. We can't let the Soviets clutch victory from the jaws of defeat," he said to Helmut Kohl, Germany's chancellor. This triumphalism was misplaced and would later backfire on America.

Mr Taubman argues that those in power in the West lacked the vision and will to extend a Marshall-type plan to Mr Gorbachev's Soviet Union (and later to Yeltsin's Russia). Those who had it were no longer in power. In 1991 Mrs Thatcher appealed to Mr Bush: "We've got to help Mikhail...Just a few years back, Ron and I would have given the world to get what has already happened here." If the West did not come to Mr Gorbachev's aid, she argued, "history will not forgive us."

Mr Gorbachev's life—almost uniquely among Soviet leaders—did not end in office, and neither does Mr Taubman's biography. Incomprehensibly, for modern Russian politicians, Mr Gorbachev emerged from his presidency almost empty-handed; he would earn money advertising Pizza Hut and Louis Vuitton handbags. But his biggest loss was that of his beloved wife and helpmate, Raisa, who died of leukaemia in 1999. In their last days together Mr Gorbachev, wearing a sterilised mask, held her in his giant combine driver's arms, reminding her of their life together. Mr Gorbachev's dignified retirement—far more than his politics—helps explain what made Gorbachev Gorbachev: a good man from the Soviet Union. ■

Paul Samuelson

Practical theorist

Founder of Modern Economics: Paul A. Samuelson, Volume 1—Becoming Samuelson, 1915-1948. By Roger Backhouse. Oxford University Press; 760 pages; \$34.95 and £22.99

In 1940, Paul Samuelson needed an academic position. As a graduate student and then a junior fellow at Harvard, he had achieved a strong publication record and impressed his professors. Joseph Schumpeter described him as "the most gifted graduate we have had these many years". Nonetheless, eminent economists doubted he would be able to find a prestigious position because his work was too mathematical.

Samuelson joined the economics department at the Massachusetts Institute of Technology (MIT). At the time, the de-



Looking back with smiles

partment's purpose was to offer engineering students a little background in economics. The faculty published few articles, and the department did not even have a PhD programme.

While there, Samuelson revolutionised economics, bringing mathematical methods from the fringe to the centre of economic theory. He changed how economics was taught with a textbook that would be used by generations of students. And he attracted talented academics and students to the MIT economics department, helping to turn it into the powerhouse it is today.

The first volume of Roger Backhouse's biography describes Samuelson's life up to 1948, the year he published "Economics: An Introductory Analysis". Mr Backhouse describes Samuelson's undergraduate education at Chicago, his time as a graduate student and junior fellow, his wartime work for the government and his early years at MIT. Samuelson's later life, including his receipt of the Nobel prize in 1970, will be covered in a second volume.

When Samuelson started out, debates over economic theory were predominantly verbal rather than mathematical; in 1940 70% of articles on economic theory in the *American Economic Review* did not include any maths. Consequently, different schools of economic thought flourished, each with its own complex ideas.

Samuelson realised that the use of complicated mathematics could clarify ideas and unify different fields under a common framework. His approach culminated in the idea that people try to optimise their well-being, which he then used to think about overall welfare. This insight allowed him to describe theories mathematically and to work out their implications by solving equations. Samuelson was able to

▶ apply this method of analysis to several different fields, including consumer preference theory, the economics of trade and labour economics.

The Great Depression was in full swing when Samuelson began his studies. He understood the challenge that high unemployment presented to the free-market theories he had learned at Chicago. He adopted Keynesian ideas, arguing that to ensure full employment governments should spend to make up for shortfalls in private demand and investment. And he came to believe that governments have a role to play in improving social welfare.

His textbook for undergraduate economics students included Keynesian ideas. As a result, he attracted criticism from industrialist donors to MIT. That did not prevent his book from succeeding, and it remained the standard economics textbook for undergraduates until the 1990s. Ironically, even though it was written by a strong proponent of mathematics in economics, it is not maths-heavy. Perhaps drawing on his experience of explaining economic concepts to government officials during the war, Samuelson made the book accessible. It was written in a colloquial style, with practical examples and even fictional stories that demonstrated the impact that economic policy has on people's lives. Samuelson intended the book to be read by students who were not specialising in economics.

Mr Backhouse looks at Samuelson's personality as well as his ideas. He reveals a man who was publicly modest but privately boastful. Samuelson played down the originality of some of his work (he referred to the Stolper-Samuelson theorem as just an extension of the work of Eli Hecksher and Bertil Ohlin) as well as his contributions to collaborations with other economists. In his undergraduate diary, however, he compared his independent confirmation of old theorems to the discovery of calculus.

As well as Schumpeter at Harvard, Samuelson's teachers included Frank Knight at Chicago. Mr Backhouse provides an overview of the lives and ideas of these men and other distinguished people who influenced Samuelson. The obsessive speculation on which classes Samuelson may have attended as a student and which papers he may have read do not add to the book, however.

A common thread throughout Samuelson's life was the desire to bring clarity to economics. He understood that mathematics could help resolve debates that had been obscured by too much jargon. He also knew that plain, interesting writing was necessary to explain economics to the public. Today, when difficult maths can obscure economics for the uninitiated, economists would do well to keep the latter point in mind. ■

Diary-writers

Men, pen and ink

The Curious World of Samuel Pepys and John Evelyn. By Margaret Willes. Yale University Press; 282 pages; \$27.50 and £20

SAMUEL PEPYS and John Evelyn were among the most determinedly inquisitive chroniclers of 17th-century England. Of all the period's diarists and emergent memoirists, it was Pepys and Evelyn who offered the most complete vision of what it meant to embrace the great experiment that was the English Renaissance.

Both men were inveterate collectors of curiosities and books. Both were marked by civil war, regicide, the advent of a republic and the restoration of monarchy. Both endured the threat of plague, the closing and the reopening of the theatres, the outbreak of the Great Fire of 1666 and the political turmoil of the Glorious Revolution in 1688. And both were involved with the Royal Society in London, in the flourishing of empiricism and natural philosophy that took place across the country and in the trying of exotic and newly available food and drink—tea, coffee, chocolate, pineapples. On occasion, their feelings about these innovations conflicted. Yet they were united by a commitment to the importance of finding things out, and over the course of their lives they became dear friends.

Margaret Willes's new book shows more clearly and more engagingly than most previous works how this friendship developed, and offers a vivid and subtle depiction of her subjects' sensibilities. Pepys, who was born to quarrelsome and barely literate parents and rose to become

a principal officer of the navy, could be radical in religion and politics, exuberant in friendship, restlessly bibulous, guiltily devoted to music and theatre, congenitally lascivious, prone to bouts of violent jealousy, and often generous to friends and family.

Evelyn, unfairly dismissed by Virginia Woolf as "something of a bore", was born into minor aristocracy, conservative in matters of church and state, controlling and misogynistic, and obsessed with garden design and horticulture. Yet he would sometimes, like Pepys, take women as friends and treat them as equals. He was also civic-minded; in the 1660s he wanted London planted with an array of vegetation to counteract the city's pollution.

Ms Willes establishes and expands on these qualities by attending to both men's diaries (Pepys kept his from 1660 to 1669, Evelyn from 1640 to 1706), by examining their correspondence, and by placing those writings alongside the papers of their contemporaries. Still, her book is not strictly a biography. Rather, it is an attempt to use the strange and inquiring lives of Evelyn and Pepys to illuminate the peculiarity of their age.

The result is a finely balanced work. It succeeds in offering a strong impression of the period's two great diarists: the reader learns a great deal about their reading habits, their domestic and romantic difficulties, their love of animals (Evelyn kept a tortoise, Pepys a monkey and a tame lion). It also captures the bizarre world they inhabited. Robert Hooke, a philosopher, tries cannabis; a man is encased in a diving bell and submerged in the Thames; men of science assemble in private to administer opium to dogs—and then dissect them.

Such occurrences are entertaining and instructive. But Ms Willes's book is not without its shortcomings. Her prose can be inattentive ("take the bull by the horns"; ►►



A time to be inquisitive

▶ “putting on a brave face”; her account of the period’s social and political unrest is laboured and lacking in fresh insights; and her consideration of the writing of Evelyn and Pepys suffers from a lack of comparison with that of the century’s other great life-writers—one thinks of George Fox, a Quaker, or John Rogers, a member of the Fifth Monarchy, an extreme Puritan sect.

However, when weighed against the abundance of insight, enthusiasm and wonder in the work, these are minor complaints. Ms Willes brings Evelyn and Pepys fully and vibrantly to life. She makes the reader feel their foibles, their virtues, their pleasure and their pain; and on almost every page there is a detail to be thought about, recorded, relayed. It is a fitting tribute to two figures who so cherished curiosity—and who did so much to contribute to the curiosity of their age. ■

Essays

Leaves turning

Autumn. By Karl Ove Knausgaard. Translated by Ingvild Burkey. Penguin Press; 224 pages; \$27. Harvill Secker; £16.99

FOR all his rapturous passages of ecstasy and agony, Karl Ove Knausgaard can also make you laugh. In “Autumn”, the first in a “Seasons Quartet” of journal-essays addressed to an unborn daughter, he visits a German editor who owns a spotless summer house with “not a single object awry”. Here, Norway’s superstar of confessional writing lets slip one of the artful revelations that helped his “My Struggle” cycle of autobiographical novels spread like literary wildfire. Karl Ove chews gum. His desk contains old grey wads of the stuff, which resemble “shrunken brains”. Now he needs to expel a masticated remnant. How to inform this sophisticated friend? It would be smarter, cooler, to “shoot up some heroin in his bathroom”. When he does admit his childish problem, the editor’s face expresses “partly surprise, partly reproof, maybe also contempt”.

Like the sticky gum in the bright pavilion, Mr Knausgaard contaminates literature. He spikes it with the gross material of shame, failure, embarrassment; with bodily functions and emotional malfunctions. In “Autumn”, a lyrical cabaret beside the grand opera of the “My Struggle” books, taboo memories and forbidden feelings disrupt the grown-up project of a compendium of fatherly wisdom. Divided into three months, with each section composed of 20 short essays, “Autumn” does offer paternal advice to the gestating infant—Mr Knausgaard’s fourth child. Above

“Bake Off”

Let them bake cakes

The most popular programme on British television goes global

A LUSH, country-house setting. Bunting and tweed decor. Naff jokes about “soggy bottoms”. Many have argued that the ingredients of “The Great British Bake Off” (GBBO), which returned for season eight on August 29th, are eminently home-grown, and that the competitive cooking show evokes a simpler time in the country’s past. That nostalgia has doubtless contributed to the show’s impressive viewing figures: around 15m people devoured the season finale in 2016, more than half the viewing public.

Yet this does not explain why GBBO is one of Britain’s most successful cultural exports. More than 20 countries across Europe, the Americas, the Middle East, Asia and Africa have taken up the format. Producers rarely tinker with its winning recipe. The challenges—a tried-and-tested “signature” bake, a technically demanding dish and a decorative “showstopper”—are often the same. Many have kept the jaunty theme tune and picked an elderly, matriarchal judge similar to Mary Berry, a previous judge of GBBO. With few exceptions, the competition is hosted in a pristine white tent on a countryside estate (Australia’s is in a shed and South Africa’s looks out onto dry bushland).

But each country adds its own garnish. On “Bake Off Brasil”, contestants have been tasked with making Pão de queijo (cheese bread rolls), empadão (a savoury pie) and quindim (a baked custard dessert thought to have been created by African slaves in the country’s northeast in the 17th century). It is unsurprising that the kanelbullar (cinnamon bun) has made an appearance on “Hela Sverige Bakar” (“All of Sweden Bakes”): the country celebrates its favourite pastry every year on October 4th. It is even less surprising that France, the home of the croissant and the crusty baguette, takes the competition most seriously of all. “Le Meilleur Pâtissier” (“The Best Pastry Chef”) lasts two hours; there are cameras in the ovens and extra taste experts to

judge what emerges from them.

Some productions depart from their British parent in more remarkable ways. Turkey’s “Ver Firina” (“Give It Up To The Oven”), which is no longer on air, encouraged contestants to dance as well as bake; those on Italy’s “Dolce In Forno” (“Sweet in the Oven”) still do, sometimes using kitchen implements as props. In Germany, a country that is more open than many about discussing adult relationships, participants had to make a cake that would offer a “sexy seduction of the jury” in taste and in theme. Danish challengers, asked to make a dessert fit for a bachelor party, offered buttercream buttocks and fondant figures copulating under the covers.

The different national flavours are fun, but it is the simple base that makes the contest so appetising: the drama of a talent show without the garishness, with tasty confectionery instead of tawdry cover songs, and performances that you could (with great effort) repeat in your own kitchen. When it comes to the global appeal of a simple British idea, the proof has been in the puddings.



Piping bag of tricks

all, it transmits his rhapsodic delight in natural beauty, as when an electric storm “heightens the sense of being alive”.

From the wasp armoured “like a knight dressed for battle” to the dawn that affirms “light and life”, “Autumn” glows with a radiant attachment to “the world, as it is”. Both Vanessa Baird’s artwork and Ingvild Burkey’s translation capture the harvest-time wonder prompted by bare willows or burned stubble. At the same time, it dives

into excruciating episodes of humiliation and abjection. Even vomit, “firm and porridge-like” or “runny, like soup”, counts among life’s miracles. Mr Knausgaard knowingly breaks the frames of taste and tact. His art of transgression satisfies the “longing for authenticity”; the urge “to go beyond the boundaries”. So “Autumn” leads into the bathroom as well as the forest. From sunshine to head-lice, it celebrates the “dizzying intensity of being”. ■

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The ivory game

Wayne Lotter, fighter for Tanzania's elephants, was killed on August 16th, aged 51

NO LANDSCAPE was dearer to Wayne Lotter than the savannah of southern Africa, and in particular one corner of it, the Selous-Niassa Wildlife Corridor round the Ruvuma river in Tanzania. He cherished it from the air, circling in a microlight over the dry rolling plains, the miombo woodlands, the white river bed and the bright-green hippo marshes; he surveyed it from lurching Land Rovers and on foot, brushing his way through the tall elephant grass. Sometimes he was the only human, and even he was in his khaki ranger's camouflage. Almost invisible, he would listen to the voices of the elephants and lions that really ruled this place.

Too often on his sorties, though, his stomach would start to knot. An elephant would scream out, alerting the herd. Or, on a breeze, he would catch that smell. It was a stench that hit you from 100 metres away: rotting elephant. And there, soon enough, would be the carcass, swollen in the sun, too much meat even for the scavengers to keep up with. The face would be hacked off with an axe or machete and the tusks, of course, would be gone.

Over his time in Tanzania he found hundreds of such carcasses, sometimes 14 in a day. He never got used to it. But he had landed in the world's hotspot for ivory poaching: between 2009 and 2014, Tanza-

nia lost 60% of its elephants. Astounded by the slaughter, he and two colleagues, Kriskie Clark and Ally Namangaya, founded the Protected Area Management Solutions (PAMS) Foundation in 2009 to do what they could to slow it down.

He had spent long enough in conservation—25 years, much of it in Kruger National Park, his first love from childhood, and in Kwa-Zulu Natal—to know that simply throwing money at policing was woefully ineffective. It was stupid to address just the symptom, the poaching, rather than the causes. He was fighting networks that stretched from poor villages in the wildlife areas to fancy shops in Beijing and ivory-carving factories in Vietnam, involving not only the poachers and the henchmen who controlled them but corrupt individuals in government, the judiciary, the police and, he insisted, even NGOs and conservation departments. His biggest problem was that almost no group or institution was clean. At the village end, poachers flashed their money and lured in other young men; at the Far Eastern end, demand was insatiable. As fast as the rangers armed themselves, the poachers went one better, toting Kalashnikovs against single-shot rifles. Penalties for their crimes were laughably light; ivory left the Selous in an unending stream. Even if he lopped a head off this oc-

topus, he would find several legs still hard at work.

To fight this, he proposed an idea he had first heard from a detective in South Africa: when investigating a crime, create a network of informants. His were local people, incentivised with uniforms, cash and GPS devices to patrol in a buffer zone round their villages, recording the movements of elephants and also of their would-be killers, intercepting them and their rifles before they even reached the park. He wanted scouts to mingle, too, with the poachers living in their villages, finding out so much about them that, when arrested, they would instantly spill the beans on their paymasters. After all, the ivory they were paid five euros a kilo for was going for 2,000 euros in China.

This intelligence-led policing was so successful that in five years more than 2,000 poachers were arrested; the rate of poaching, he reckoned, was reduced by more than half, and the elephant population began to stabilise. Yet rangers, as he saw them, were like goalkeepers in a football team: the last line of defence. He also had to persuade farmers not to attack the elephants who trampled their crops, but to keep them away with barriers of chilli plants or beehives. He taught schoolchildren to value nature, and to put themselves in the paws, feet and hooves of the wild creatures that lived alongside them. (In fact, he wanted everyone in the world to try that exercise.) And he fortified Tanzania's own serious-crime investigation agency with money for sniffer dogs and handlers and strong backing for timid prosecutors. As a result he helped get several kingpins arrested and tried, including Yang Fenglan, "The Queen of Ivory", and Boniface Methew Malyango, known as Shetani, "The Devil has no Mercy".

No place for a tie

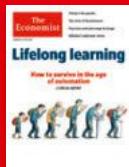
He made little of his role, though. When Leonardo DiCaprio asked him to appear in his documentary "The Ivory Game" in 2016, he told him to film his village rangers instead. They did it all; he was just the one who went round, joking despite his anger, to ginger people up. He was fighting a war and, as in a war, he wanted his NGO to be nimble and unpredictable—no place for a collar and tie, which he barely knew the use of. The more ponderous and narrowly focused a conservation outfit was, the more easily poachers could corrupt it.

The gunman who forced his taxi door and shot him on the outskirts of Dar es Salaam probably killed him for his work. He knew it could happen; he had death threats all the time. With typical bravado he ignored them, and just went out again to watch with a cherubic smile a herd of elephant making their way across the Tanzanian savannah, safer than they were. ■

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