



TOWARDS A DREAM

LOUIS VUITTON

The great inflation debate

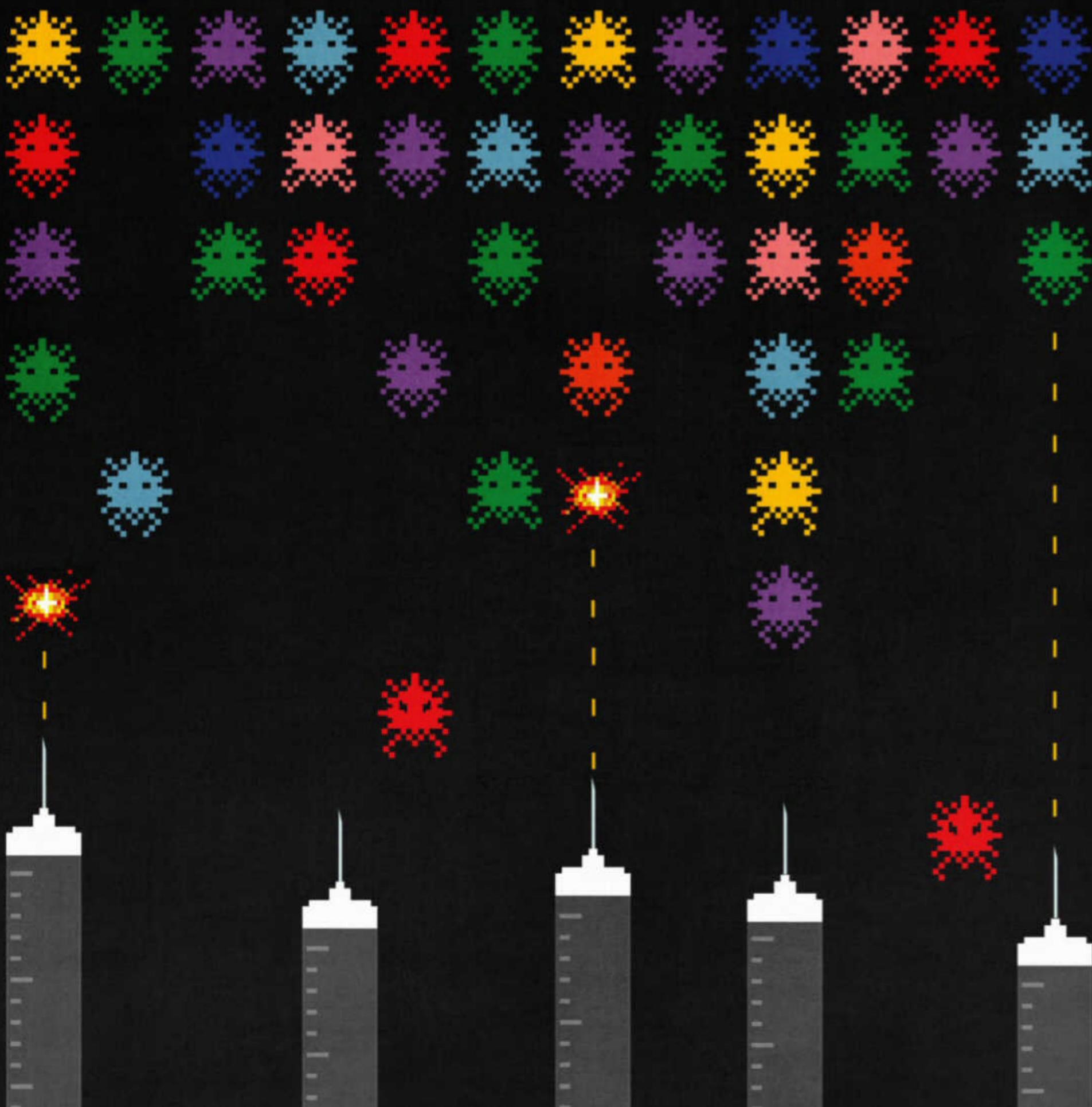
Is China committing genocide?

A special report on the future of travel

Searching for alien life

FEBRUARY 13TH–19TH 2021

How well will vaccines work?





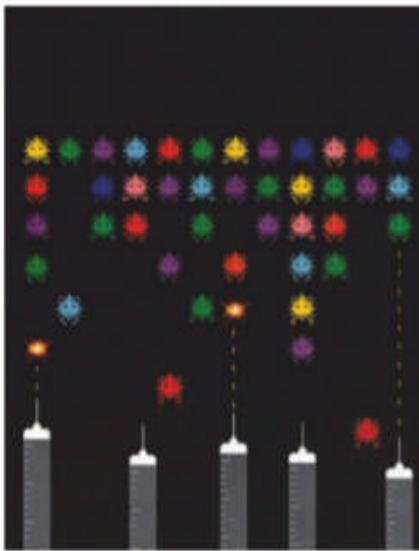
COLLECTION

Women



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MANUFACTURE DE HAUTE HORLOGERIE

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

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Introducing ATEM Mini

The compact television studio that lets you create presentation videos and live streams!

Blackmagic Design is a leader in video for the television industry, and now you can create your own streaming videos with ATEM Mini. Simply connect HDMI cameras, computers or even microphones. Then push the buttons on the panel to switch video sources just like a professional broadcaster! You can even add titles, picture in picture overlays and mix audio! Then live stream to Zoom, Skype or YouTube!

Create Training and Educational Videos

ATEM Mini's includes everything you need. All the buttons are positioned on the front panel so it's very easy to learn. There are 4 HDMI video inputs for connecting cameras and computers, plus a USB output that looks like a webcam so you can connect to Zoom or Skype. ATEM Software Control for Mac and PC is also included, which allows access to more advanced "broadcast" features!

Use Professional Video Effects

ATEM Mini is really a professional broadcast switcher used by television stations. This means it has professional effects such as a DVE for picture in picture effects commonly used for commentating over a computer slide show. There are titles for presenter names, wipe effects for transitioning between sources and a green screen keyer for replacing backgrounds with graphics.

Live Stream Training and Conferences

The ATEM Mini Pro model has a built in hardware streaming engine for live streaming via its ethernet connection. This means you can live stream to YouTube, Facebook and Teams in much better quality and with perfectly smooth motion. You can even connect a hard disk or flash storage to the USB connection and record your stream for upload later!

Monitor all Video Inputs!

With so many cameras, computers and effects, things can get busy fast! The ATEM Mini Pro model features a "multiview" that lets you see all cameras, titles and program, plus streaming and recording status all on a single TV or monitor. There are even tally indicators to show when a camera is on air! Only ATEM Mini is a true professional television studio in a small compact design!

ATEM Mini.....US\$295

ATEM Mini Pro.....US\$595

ATEM Software Control.....Free



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The impeachment trial of Donald Trump got under way in the Senate. Six Republicans joined Democrats in voting to reject the defence's argument that Mr Trump should not be tried as he has left office, but it is unlikely that the prosecution will get the two-thirds majority of votes needed to convict Mr Trump of inciting the mob that stormed the Capitol on January 6th. The proceedings are expected to be quick, certainly not as long as the three weeks of Mr Trump's first impeachment trial a year ago.

Darker Summers

The Senate approved a budget blueprint for Joe Biden's \$1.9trn **stimulus** bill. The vote was 50-50 along party lines; Kamala Harris cast her first tie-breaker as vice-president. The House is crafting the details of the legislation. Democrats, meanwhile, were furious at Larry Summers, a former economic adviser to Barack Obama, who warned that the bill's hefty spending tag might lead to "inflationary pressures" and financial instability.

In his first big foreign-policy speech, Mr Biden said he would end American support for the Saudi-led campaign against the Houthi rebels in **Yemen**. His administration also moved to delist the Houthis as a terrorist organisation, making it easier for aid to reach areas under their control. The war, now in its seventh year, has caused a humanitarian disaster.

Libyan delegates at UN-sponsored talks chose a new interim government. Muhammad al-Menfi, a former diplomat, will head a three-man presi-

dency council, while Abdulhamid Dbeibeh, a wealthy businessman, will become prime minister. Their main task is preparing the country for elections in December.

Thousands of people gathered in Tunis, the capital of **Tunisia**, to mark the killing in 2013 of Chokri Belaid, a popular politician, and decry police abuses. It was the country's biggest protest in years.

Loujain al-Hathloul, a prominent women's-rights activist in **Saudi Arabia**, was released from prison after serving three years for supposedly harming national security. Her release was seen as an effort by the kingdom to curry favour with the Biden administration.

A deadlock between clan leaders and the government in **Somalia** meant that a deadline passed to elect a president before the end of Mohamed Abdullahi Mohamed's term in office. The country was meant to hold its first direct elections in 50 years last year, but these were postponed because of a jihadist insurgency and the covid-19 pandemic.

Ethiopia gave the UN permission to allow 25 foreign staff to provide humanitarian aid to the northern region of Tigray. Ethiopia has barred outsiders from the region since fighting started in November. Millions of Tigrayans are hungry.

Allowed to settle

Colombia is to give protected status for ten years to 1m migrants from Venezuela. Some 5.4m Venezuelans have fled their country's economic disaster; 1.7m are in Colombia. The UN high commissioner for refugees called the decision a "historic gesture".

Andrés Arauz, an ally of **Ecuador's** former president, Rafael Correa, led the first round of a presidential election. He will advance to the second round in April. Mr Correa, a left-wing authoritarian, has been convicted of corruption.

Cuba's communist government expanded the scope for private enterprise. An old list of 127 professions open to entrepreneurs has been replaced with a list that reserves 124 activities for the state, allowing entrepreneurs to enter the other fields. The state still bars them from professions they were eager to enter, such as accountancy.

Haiti's government ordered the arrest of at least 23 people whom it accused of attempting to stage a coup against the president, Jovenel Moïse.

Chinese officials formally arrested an Australian journalist, Cheng Lei, about six months after she was detained in Beijing. Ms Cheng, a presenter on CGTN, a Chinese state broadcaster, has been charged with supplying state secrets to "foreign forces".

Crowds gathered in cities across **Myanmar** to protest against the army's coup and to demand the release of Aung San Suu Kyi, the leader of the ruling party. The security services used water cannons and rubber bullets to disperse the protesters.

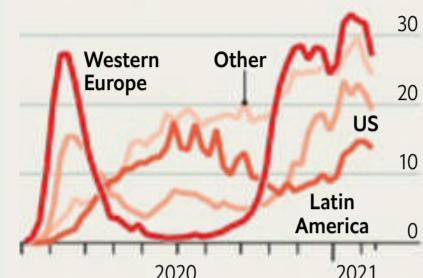
After the **Indian** government started legal action against it, Twitter reimposed blocks on some 500 accounts, including those linked to ongoing farmers' protests. But it refused to impose blocks on journalists and media firms, which the government had requested.

Assailed from all sides over its lax covid-19 checks on international arrivals, the British government announced that passengers returning to **Britain** who have visited any country on a "red list" will be required to pay for a "quarantine package" costing up to £1,750 (\$2,420). This mandates ten-day isolation at a designated hotel and covers transport costs and two covid-19 tests. Fines reaching £10,000 or up to a decade in prison will be put in place for those who disobey. It is unlikely that any court will impose such a draconian term.

Coronavirus briefs

To 6am GMT February 11th 2021

Weekly confirmed deaths by area, '000



Vaccination doses

	This week, '000	Total '000	Per 100 people
Israel	727	5,832	67.38
UAE	981	4,527	45.77
Seychelles	9	42	42.40
Britain	3,034	13,163	19.39
United States	9,620	43,206	12.92
Bahrain	18	213	12.51
Malta	9	41	9.35
Serbia	139	544	8.00
Denmark	72	349	6.03
Chile	514	1,067	5.58

Sources: Johns Hopkins University CSSE; Our World in Data; United Nations

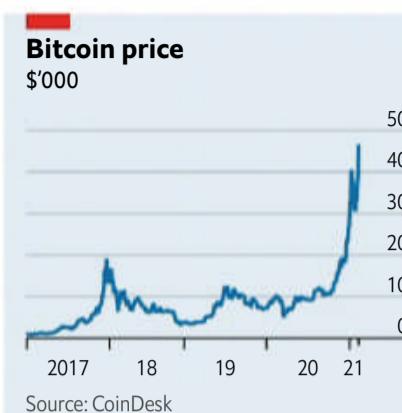
The World Health Organisation recommended the **AstraZeneca** vaccine for all adults, even in places where more virulent strains of the disease have appeared.

Earlier, **South Africa's** health minister said he might try to sell or swap the AstraZeneca vaccine for other types, after a paper found that it gave "minimal protection" against mild-to-moderate cases of the South African variant.

The number of **Americans** in hospital with covid-19 and the number of patients in intensive care dropped to their lowest levels since November. New cases continue to fall.

Diners in **New York state** are able to eat inside restaurants again from February 12th. The date was brought forward to accommodate romantics looking for a Valentine's Day meal. Canoodling couples can expect more privacy; restaurants are only allowed to operate at 25% capacity.

For our latest coverage of the virus please visit economist.com/coronavirus or download the Economist app.



Bitcoin surged to a record high, after **Tesla** revealed that it had bought \$1.5bn-worth of the cryptocurrency and would accept it as payment for its cars. Elon Musk's recent musings on digital money have bolstered the claims of bitcoin backers that it will one day be mainstream legal tender. Tesla's investment in such a volatile market is a risky bet, however, and blemishes its green credentials. The amount of computer energy needed to mine bitcoin accounts for 0.56% of the world's total electricity consumption, according to the Cambridge Centre for Alternative Finance.

Oil prices were at their highest level in over a year. Brent crude rose above \$60 a barrel; in April last year, the early days of the coronavirus crisis, it had dropped below \$20. Prices have been on a steady ascent since October, fuelled in part by more curtailments to Saudi Arabia's output and a pick-up in demand from China; oil imports there are thought to have jumped by a third in January, from December.

Kuaishou's share price continued climbing, days after its IPO in Hong Kong raised \$5.4bn, the biggest stockmarket flotation in the tech industry since Uber. A rival to TikTok (known as Douyin in China), Kuaishou's stock rose by 160% on the first day of trading.

Meanwhile, court filings in America suggested that the Justice Department under the new Biden administration is reviewing whether **TikTok** is a threat to national security, a claim the Trump administration made citing data-privacy issues. There were reports that

the sale of TikTok's American operations to Oracle and Walmart would not go ahead.

What do you say, Joe?

Huawei, a Chinese maker of network equipment, filed a new legal challenge to the American government's designation of it as a national-security threat, this time against the Federal Communications Commission. Ren Zhengfei, Huawei's boss, said he would welcome a call from Joe Biden to discuss the situation.

Higher rates to carry sea freight between Asia and Europe helped **Maersk**, the world's biggest container shipping line, to almost double its quarterly profit. Freight prices jumped amid a resurgence in global demand for imports last year, and a shortage of empty containers to ship them in.

SoftBank's Vision Fund reported a record quarterly profit, as the value of its investments in tech firms such as Uber was lifted by rising stockmarkets. Despite booking losses from its colossal trades in derivatives, which eventually led to it being dubbed the "Nasdaq whale", the Japanese conglomerate made an overall quarterly net profit of ¥1.17trn (\$11.1bn).

A big jump in sales from **Uber's** food-delivery business was not enough to offset a sharp drop in revenues from its ride-hailing service last year, driving it to an annual loss of \$6.8bn. Still, that was an improvement on the \$8.5bn it lost in 2019.

Ocado's annual earnings shone a little more light on consumer behaviour during the pandemic. Based in Britain, Ocado provides a logistics platform for online supermarket sales. Revenues rose by 35% for the year ending November 29th. Because of capacity constraints, Ocado's number of customers actually fell, but this was offset by an increase in the average size of an order from £106 to £137 (\$147 to \$190). The company believes that the pandemic has shifted consumers towards more online shopping "for good".

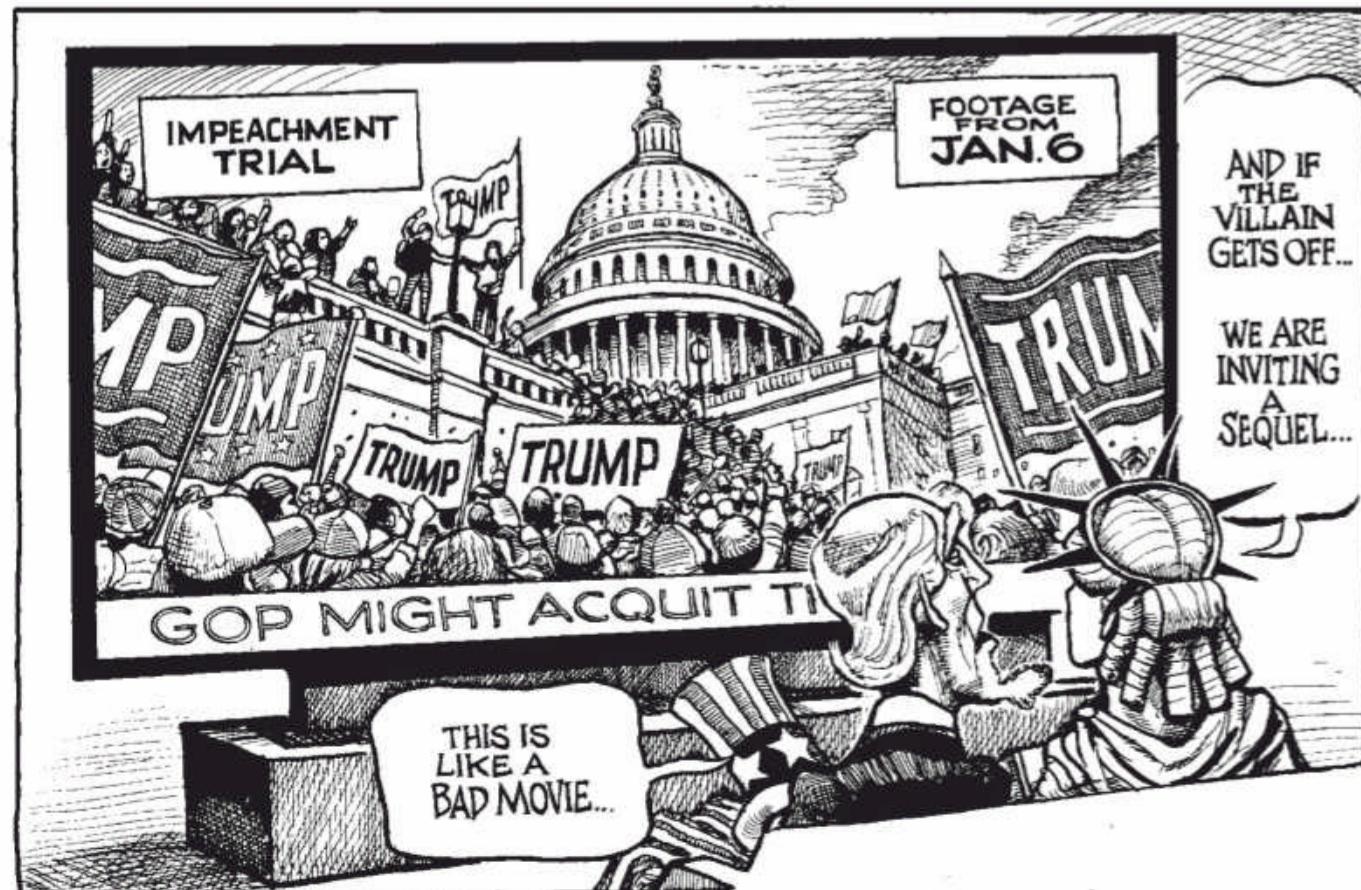
Heineken decided to shed 8,000 jobs, or nearly 10% of its workforce, as lockdowns cut into sales, pushing the Dutch brewer to an annual loss. In Britain **beer** sales dropped by 56% last year, according to the industry's association. It urged the government to remove restrictions on what and when pubs and bars can serve customers when the current lock-

down eases, or else thousands of pubs will be forced to close.

Vale agreed to pay \$7bn to the Brazilian state of Minas Gerais in compensation for the collapse of the Brumadinho dam two years ago, which killed at least 270 people. The dam had held iron-ore waste from one of the Brazilian company's mines. The reparations settlement was described as the biggest ever in Latin America.

So how's it going?

JD Sports, a British retailer, plans to open a new distribution centre in the European Union, because of what its chairman described as worse-than-expected **Brexit** red tape that is causing delays to European shipments. Britain's Brexit negotiator, David Frost, said that the new relationship was more "bumpy" than he had hoped, but blamed the EU for "niggling border issues". Meanwhile, Andrew Bailey, the governor of the Bank of England, lambasted the EU's inflexible attitude over post-Brexit arrangements for Britain's financial services, saying this was "unrealistic, dangerous and inconsistent with practice". Negotiations with Brussels are continuing.



How well will vaccines work?

They will not simply eradicate covid-19. Governments need to start thinking about how to live with the virus

EVEN MIRACLES have their limits. Vaccines against the coronavirus have arrived sooner and worked better than many people dared hope. Without them, the pandemic threatened to take more than 150m lives. And yet, while the world rolls up a sleeve, it has become clear that expecting vaccines to see off covid-19 is mistaken. Instead the disease will circulate for years, and seems likely to become endemic. When covid-19 first struck, governments were caught by surprise. Now they need to think ahead.

To call vaccination a miracle is no exaggeration. A little more than a year after the virus was first recognised, medics have already administered 148m doses. In Israel, the world's champion inoculator, hospital admissions among those aged below 60, who have not received a jab, are higher than ever. By contrast, among the largely inoculated over-60s they are already nearly 40% below their mid-January peak and they will fall further. Although vaccines fail to prevent all mild and asymptomatic cases of covid-19, they mostly seem to spare patients from death and the severest infections that require hospital admission, which is what really matters. Early evidence suggests that some vaccines stop the virus spreading, too. This would greatly slow the pandemic and thus make it easier to alleviate lockdowns without causing a surge of cases that overwhelms intensive-care units. Those findings, and many more, will harden up over the next few months as more data emerge (see Briefing).

However, despite all this good news, the coronavirus is not finished with humanity yet. Covid-19 will continue to circulate widely. There is a growing realisation that the virus is likely to find a permanent home in humans, as "The Jab", our new podcast, which launches on February 15th, will explore. That has profound implications for how governments need to respond.

One reason the coronavirus will persist is that making and distributing enough vaccine to protect the world's 7.8bn people is a Herculean task (see Graphic detail). Even Britain, which is vaccinating the population at a faster rate than any other big country, will not finish with the over-50s until May. To add to the burden, the potency of a jab may fade, making boosters necessary. Outside the rich world, 85% of countries have yet to start their vaccination programmes. Until the billions of people who live in them have felt the prick of a needle, which may not be before 2023, they will remain fuel for the virus.

Another reason for covid-19's persistence is that, even as vaccines are making SARS-cov-2 less infectious and protecting people against death, new viral variants are undoing some of their good work. For one thing, successful variants are more infectious—anything from 25-40% in the case of B.1.1.7 which was first found in Britain. Infection is governed by the dizzying mathematics of exponential growth, so cases and deaths accumulate rapidly even if the variant is no more deadly. To get a given level of viral suppression, more onerous social distancing is needed.

In addition, new variants may withstand current vaccines. The ones found in Brazil and South Africa may also be defeating the immunity acquired from a previous covid-19 infection. The hope is that such cases will be milder, because the immune sys-

tem has been primed by the first encounter with the disease. Even if that is true, the virus will continue to circulate, finding unprotected people and—because that is what viruses do—evolving new strains, some of which will be better at evading the defences that societies have mounted against them.

And the third reason SARS-cov-2 will persist is that lots of people will choose to remain a target by refusing vaccination. A total of 10m Britons are vulnerable to the disease, because of their age or underlying conditions. Modelling suggests that if just 10% of them declined to be vaccinated and if social distancing were abandoned while the virus was still liable to circulate at high levels, then a tremendous spike in infections and deaths would result.

In reality, the share of the overall population that remains unvaccinated is likely to be much higher than in that thought-experiment (see Briefing). Vaccines are not yet licensed for children. Minority communities in many countries, which are most vulnerable to infection, tend to have less trust in the government and the medical establishment. Even among some care workers, as many as half refuse vaccination, despite having seen the ravages of covid-19 at first hand. With the new variants, about 80% of the overall population needs to be immune for an infected person, on average, to pass on the disease to less than one contact, the threshold at which the epidemic subsides. That will be a tall order.

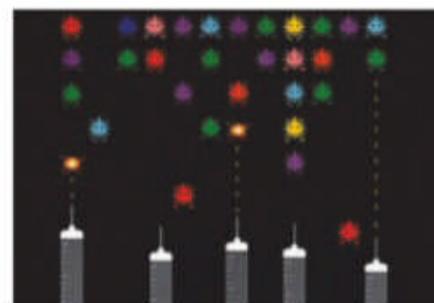
For all these reasons, governments need to start planning for covid-19 as an endemic disease. Today they treat it as an emergency that will pass. To see how those ways of thinking differ, consider New Zealand, which has sought to be covid-free by bolting its doors against the world. In this way it has kept registered deaths

down to just 25, but such a draconian policy makes no sense as a permanent defence: New Zealand is not North Korea. As vulnerable Kiwis are vaccinated, their country will come under growing pressure to open its borders—and hence to start to tolerate endemic covid-19 infections and deaths.

Across the world governments will have to work out when and how to switch from emergency measures to policies that are economically and socially sustainable indefinitely. The transition will be politically hard in places that have invested a lot in being covid-free. Nowhere more so than China, where vaccination is slow. The Communist Party has defined every case of covid-19 as unacceptable and wide circulation of the disease as a sign of the decadence of Western democracies.

The new coronormal

The adjustment to living with covid-19 begins with medical science. Work has already started on tweaking vaccines to confer protection against variants. That should go along with more surveillance of mutations that are spreading and accelerated regulatory approval for booster shots. Meanwhile treatments will be required to save more of those who contract the disease from death or serious illness. The best outcome would be for a combination of acquired immunity, regular booster jabs of tweaked vaccines ►



► and a menu of therapies to ensure that covid-19 need rarely be life-threatening. But that outcome is not guaranteed.

To the extent that medicine alone cannot prevent lethal outbreaks of covid-19, the burden will also fall on behaviour, just as it has in most of the pandemic. But rather than national lockdowns and months-long school closures, which come at a huge price, the responsibility should fall more heavily on individuals. Habits like mask-wearing may become part of everyday life. Vaccine passports and restrictions in crowded spaces could become mandatory. Vulnerable people will have to maintain great vigi-

lance. Those who refuse vaccination can expect health-education and encouragement, but limited protection. As our special report on the travel industry makes clear, people's desire to live their lives will ultimately be hard to resist, even in autocracies like China that may be reluctant to leave zero-tolerance behind.

The persistence of acute infections and chronic, debilitating "long covid" means that the next stage of the pandemic sounds grim. But even if covid-19 has not been completely put to rest, the situation is immeasurably better than what might have been. The credit for that goes to medical science. ■

The world economy

Inflategate

How higher inflation could disrupt global economic policy

THE DEBATE about whether high inflation will emerge out of the pandemic is becoming more pressing. In January underlying prices in the euro zone rose at their fastest pace for five years. In America some economists fear that President Joe Biden's planned \$1.9trn stimulus, which includes \$1,400 cheques for most Americans, may overheat the economy once vaccines allow service industries to reopen fully. Emerging bottlenecks threaten to raise the price of goods. Space on container ships costs 180% more than a year ago and a shortage of semiconductors caused by this year's boom in demand for tech equipment is disrupting the production of cars, computers and smartphones.

Headline statistics on price rises will soon contribute to the sense that an inflationary dawn is breaking. They will go up automatically as the collapse in commodities prices early in the pandemic falls out of comparisons with a year earlier, and the recent rise in the oil price begins to bite—on February 8th Brent crude rose above \$60 a barrel for the first time in more than a year. In Germany the reversal of a temporary cut in VAT has already helped year-on-year inflation rise from -0.7% to 1.6% in a month.

For most of the past decade the world economy's problem, judged by central banks' targets, has been too little inflation, not too much. As a result it is easy to view the coming acceleration in prices as welcome. In fact, it is worth worrying about, for several reasons.

One is that it weakens the hand of those arguing for more fiscal stimulus in places that need it. There is little prospect of the euro zone sustaining higher inflation, for example. Its main rate of interest has not been cut during the pandemic and its deficit spending remains inadequate given its economic outlook and lack of monetary firepower. Much as the European Central Bank mistakenly raised rates in response to a temporary burst of inflation in 2011, the danger this time is that a temporary acceleration in prices emboldens fiscal hawks who are complacent about the dangers of a depressed economy. The same danger lurks in Japan, the archetypal low-inflation economy. Its prices started falling during the pandemic. Japan will probably escape deflation this year, but beyond that it looks destined to remain in a low-inflation trap, having seemingly given up on its brief attempt to spring out of it in the mid-2010s.

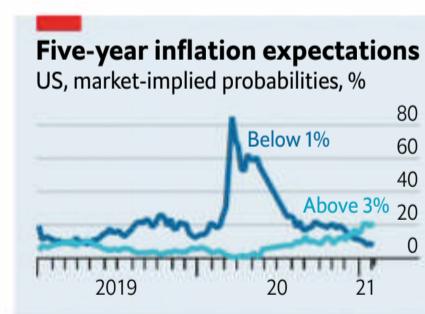
Higher inflation could also cause gyrations in monetary policy in America, where rising inflation expectations and a faster

rebound mean price rises are more likely to prove persistent. Financial markets imply a one-in-five chance that consumer prices will grow by at least 3% per year on average over the next five years. The Federal Reserve has promised to keep interest rates low and to keep buying bonds because it wants inflation to overshoot its 2% target, in order to make up for today's shortfalls. But its new "average inflation targeting" regime does not allow for an enduring or large overshoot. Eventually the central bank will want to raise interest rates to bring inflation back down.

The faster prices rise this year, the sooner that tightening could come. Richard Clarida, the Fed's vice-chairman, has said that the central bank will make up only for inflation shortfalls that have occurred over the preceding year, meaning the point at which catch-up is complete could come surprisingly quickly. On February 7th Janet Yellen, the Treasury secretary, tried to reassure critics of Mr Biden's stimulus by saying that America has the tools to deal with inflation. But higher rates are not without consequence, and if the Fed finds itself pouring cold water on an overheating economy, the risks of another recession will rise.

Higher rates also hold deep implications for markets. Almost everything about today's financial landscape is premised on central banks keeping interest rates low for a long time. Cheap money lies behind the idea that the government can spend however much it likes—including, say, on Mr Biden's planned infrastructure bill—and underpins today's sky-high stockmarket values and abundant credit. An abrupt change in the interest-rate outlook would be painful, as it was in 2013 when the Fed's hawkish comments led to what became known as the "taper tantrum".

On Wall Street higher rates would be a shock. In emerging markets they would be agonising. Many have been experimenting with unconventional monetary policy and bigger budget deficits, following the rich world (see Finance section). But their efforts assume that global financial conditions will stay loose. Higher interest rates in America to see off inflation would mean a stronger dollar and capital outflows from emerging economies, as in 2013. This would imperil their finances and make it harder for them to fight the effects of the pandemic. There is a lot to like about the idea of escaping the low-inflation, low-rate paradigm of the past decade. But higher inflation will expose the world economy and financial markets to a bumpy ride. ■



Human rights

How to talk about Xinjiang

"Genocide" is the wrong word for the horrors China is inflicting on the Uyghurs

WHEN RONALD REAGAN cried "tear down this wall", everyone knew what he meant. There was a wall. It imprisoned East Germans. It had to come down. One day, it did. In the struggle between democracy and dictatorship, it is crucial that democracies tell the truth in plain language. Dictatorships will always lie and obfuscate to conceal their true nature. Democracies can tell it like it is. Bear this in mind when deciding what to call China's persecution of the Uyghurs. On his last full day in office, Donald Trump's secretary of state, Mike Pompeo, called it "genocide". Although Joe Biden did not use that word this week in his first talk with Xi Jinping, China's president, his administration has repeated it (see United States section) and lawmakers in Britain are mulling it (see Britain section). But is it accurate?

By the common understanding of the word, it is not. Just as "homicide" means killing a person and "suicide" means killing yourself, "genocide" means killing a people. China's persecution of the Uyghurs is horrific: it has locked up perhaps 1m of them in prison camps, which it naturally mislabels "vocational training centres". It has forcibly sterilised some Uyghur women. But it is not slaughtering them.

Calling it genocide depends on a definition rooted in a UN convention which suggests that one need not actually kill anyone to commit it. Measures "intended to prevent births", or inflicting "serious bodily or mental harm" will suffice, if their aim is "to destroy, in whole or in part, a national, ethnical, racial or religious group". How large a part is not specified. In principle it is, alas, possible to imagine the destruction of an entire people by, for example, the systematic sterilisation of all women. But if conventions are worded with unusual broadness, they must also be used with special care. Until now, America's State Department had applied the "genocide" label only to mass slaughter, and even then it often hesitated, for fear that uttering the term would create an expectation that it would intervene. It did not call

Rwanda's genocide a genocide until it was practically over.

America's political rhetoric has thus undergone a dramatic shift, which has profound implications for the world's most important bilateral relationship. By accusing China of genocide, it is sending the signal that its government has committed the most heinous of crimes. And yet at the same time it is proposing to deal with it over global warming, pandemics and trade.

Some campaigners think the rhetorical escalation is nonetheless wise. It will stoke useful outrage, they argue, rallying companies to shun Chinese suppliers and countries to boycott next year's Winter Olympics. On the contrary, it is more likely to be counter-productive. For a start, it accomplishes nothing to exaggerate the Communist Party's crimes in Xinjiang. Countless

true stories of families torn apart and Uyghurs living in terror appal any humane listener. When ordinary Han Chinese hear them, as a few did on Clubhouse, a new social-media platform, which China has rushed to block, they are horrified (see China section). By contrast, if America makes what sound like baseless allegations of mass killing, patriotic Chinese will be more likely to believe their government's line, that

Westerners lie about Xinjiang to tarnish a rising power.

Democracies face an unprecedented and delicate task when they deal with China, which is both a threat to global norms and an essential partner in tackling global crises such as climate change (see Chaguan). To refuse to engage with it is to endanger the world economy and the planet.

Mr Biden is right to decry China's abuses, but he should do so truthfully. The country is committing crimes against humanity. By accusing it of genocide instead, in the absence of mass murder, America is diminishing the unique stigma of the term. Genocide should put a government beyond the pale; yet American officials will keep doing business with the regime they have branded genocidal. Future *genocidaires* will take comfort. ■



Reducing child poverty

An end to exceptionalism

The White House and a prominent Republican senator propose to follow European schemes

AMERICAN EXCEPTIONALISM takes many forms. One, alas, is a shockingly high rate of child poverty. According to the OECD's measure, which defines as poor those families living on less than half of median family income, 21% of American children are in poverty. This is double the rate in France and nearly triple that in Poland. This grim statistic is cause to welcome two proposals to reduce child poverty, one from Joe Biden's administration, the other from Mitt Romney, a Republican senator.

Helping poor Americans involves balancing a complicated set of trade-offs. The more people who receive help, the more money it costs. The solution to this is usually to means-test aid,

which does the most good per dollar spent. Yet help that is narrowly targeted at a small group of Americans can easily be dismissed as aid to the undeserving, eroding the political support it requires to exist. Highly targeted schemes are also more complicated to administer. Much of the help to poor families comes in the form of tax credits, which are confusing and go unclaimed by many of those who are eligible to receive them.

It is so hard to get right that the last serious attempt at change was a quarter of a century ago. The Biden and Romney plans both balance competing imperatives by making monthly payments per child (\$350 at the top end for Mr Romney, \$300 for the White

►

► House version). The thresholds at which these payments are withdrawn are set so high that most Americans with children would receive them. This helps with the politics and also avoids punishing low-income people with high effective marginal tax rates if they receive a pay rise. Mr Romney's plan involves starting payments before a child is born, which ought to please pro-life conservatives, and it pays for itself by cutting other programmes, which ought to please fiscal conservatives. Mr Biden's plan does not pay for itself with cuts elsewhere.

Mr Romney's plan would probably cut child poverty by a third; Mr Biden's by a half. One reason this can be said with confidence is that many other developed countries already have similar schemes. Canada, a country not too dissimilar from its southern neighbour, introduced a child benefit in 2015 that decreased poverty by 20% in just two years. Many European countries began paying cash child benefits after the second world war. Programmes enjoyed support from the left, which saw them as a plank in the expanding welfare state, and also from the right, which saw them as strengthening the family (and, in pre-feminist days, as sparing women from having to work). As the inter-

national comparisons attest, they still make a difference.

The main economic worry associated with child benefits paid in cash (as opposed to tax breaks) is the risk of discouraging women, who tend to be the chief caregivers, from taking a job. In Germany a reform of 1996 that made benefits more generous led many low-income women with partners to shift from full-time to part-time work. In Poland the initial version of one scheme reduced women's labour-force participation by one percentage point. But that was largely because poor families lost eligibility for their first child when they crossed the poverty threshold, reducing their income. When the programme was expanded to cover all first children in 2019, the labour-force effect disappeared. Canada has seen very little drop-off.

Suffer the little children

In a country that has only a threadbare social safety-net and a political system which is plagued by extreme polarisation, crafting good anti-poverty policies is a struggle. Against that background, the proposals for direct monthly payments per child are a big step forward. They deserve to win broad support. ■

Life, the universe and everything

Alien dreams

The search for ET may soon yield an answer

MOST SCIENTIFIC research has practical ends. But some still pursues goals better described by the field's original name: "natural philosophy". One of its most philosophical questions is, "Is there life elsewhere in the universe?"

It is philosophical for two reasons. One is its grand sweep. If there is life elsewhere, particularly of the intelligent sort, that raises the question of whether humans might ever encounter it, or its products (see Books & arts section). If there is not—if all the uncountable stars in creation waste their light on sterile, lifeless worlds—then life on Earth must be the result of a stroke of the most astronomically improbable good luck. As Arthur C. Clarke, a science-fiction author, is reputed to have said: "Two possibilities exist. Either we are alone in the cosmos or we are not. Both are equally terrifying."

The other reason the question is philosophical is that there has, historically, been too little evidence to settle it. Arguments about life in the cosmos must extrapolate from a single example that is itself poorly understood. Biologists still lack a bulletproof theory of how earthly life began. Other planets are far away and hard to study. That leaves room for all sorts of theories. Perhaps life is rare. Perhaps it is common, but intelligence is not. Or perhaps even intelligent life is common, but the technology that lifts it up ends by destroying it (a popular line of thinking after the development of nuclear weapons).

This paucity of data will soon change. A variety of telescopes and spacecraft are, or soon will be, looking for signs of life in places ranging from the moons and planets of the solar system to other stars in Earth's corner of the Milky Way (see Briefing). In particular, this search will employ powerful telescopes to try to find chemical signatures of life in the atmospheres of planets orbiting stars other than the sun. An alien astronomer looking at

Earth, for instance, would be struck by the persistence of both oxygen and something that it reacts with in the atmosphere, and might conclude—correctly—that living organisms were responsible for keeping them there.

An unambiguous detection of alien life would count as one of the momentous discoveries in the history of science. Exactly what would happen next would depend on what was found. News of a "biosignature" on a planet dozens of light-years away would shake the world. It would be strong evidence that life is indeed common in the cosmos. That conclusion could upend humanity's understanding of its place in the universe.

A few adventurous scientists might suggest using a radio telescope to beam a message, in the hope that, if anything intelligent lives there, it will, decades later, send a reply. Still, the sheer distances involved mean that there would be few immediate, practical consequences. By contrast, finding life closer to home—beneath the Martian regolith, say, or in the oceans under the frozen surfaces of the solar system's icy moons—would lead to a flurry of action. A sample-return mission would give biologists the ability to compare earthly life with the unearthly sort, a process that could shed new light on the workings and origins of both.

And if nothing is found? That too would be a piece of data, albeit of a less dramatic sort. It would not prove that no life exists elsewhere in the cosmos, but it would be evidence that it is, at least, rather uncommon.

Half a century ago, returning from the arid and sterile lunar surface, the Apollo astronauts found a new appreciation for Earth's joyous blooms of life and colour. If there are no aliens nearby, such sentiments might grow stronger. A jewel is all the more valuable for being rare. ■





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Impatient nationalists

Rather than the patient strategists that Bagehot portrayed them to be (January 9th), the Scottish National Party are constant opportunists. If nationalists were truly patient they would not be talking about plans for independence during a pandemic. In 2014 they campaigned for separation from the United Kingdom based on a high oil price, knowing that leaving the UK would automatically have meant leaving the EU. Now, with the oil price less than half of what it was in 2014, they claim Brexit as the new reason for independence. The circumstances change, but the SNP's solution is always the same.

In the current nationalist narrative, there is no waiting to see how Brexit will pan out, no consideration that the post-covid world might be very different, and no acknowledgment of a future change in the British government. Even covid-19 is claimed as a reason for breaking away. John Swinney, Nicola Sturgeon's deputy, recently asserted that a second independence referendum is an "essential priority". I am not sure these are the words of a patient pragmatist.

ALASTAIR CAMERON
Director
Scotland in Union
Glasgow

As you say, in May the SNP will probably win a mandate at the Holyrood elections to hold a further independence referendum ("Searching for the exit", January 30th). If so, it would be the will of the Scottish people and the Westminster government should not try to prevent a referendum.

However, it is absurd to think that a single vote could determine the outcome of such a significant constitutional question. A narrow win for either side would simply lead to rancour, bitterness and division. It is common sense that a matter of this magnitude should require at least 60-65% of the vote to settle the matter. Moreover, it should be made clear at the outset how long

before a further referendum can be held. After all, both nationalists and unionists may have an interest in another re-run.

JAMES MAYBEE
Farr, Scottish Highlands

GameStop's real winners

Greed is fine. It is the juice that keeps our financial system going. That's why I find the narrative that r/wallstreetbets and other armies of retail investors were sticking it to the establishment disingenuous ("Will the GameStop?", January 30th). Call me a cynic, but exactly which part of Wall Street was being punished? Was it the private-equity stakeholders of AMC that converted debt into a profit of hundreds of millions of dollars? Or perhaps BlackBerry executives who sold their shares at a five-year high? And let's not forget Ryan Cohen, whose stake in GameStop swelled to a billion dollars.

NISHAD TRIVEDI
New York

The sage of Oologah

Buttonwood's paraphrasing (January 30th) of the advice that Will Rogers offered on market timing did not fully capture his impeccable logic concerning the arrangement of events in the correct order. Rogers said "Don't gamble; take all your savings and buy some good stock and hold it till it goes up, then sell it. If it don't go up, don't buy it."

EMMETT GRINER
Potomac, Maryland

Three points on innovation

The role of innovation in economic growth evolves as markets and technologies change. Your briefing on government investment in research and development provided useful pointers, but underplayed three important changes in the landscape ("Molecules, missions and money", January 16th). First, R&D creates and deepens knowledge and the talent to use it in new fields: what econ-

omists call absorptive capacity. To be effective, government R&D and investment in talent should align. Second, data analytics induces fundamental changes in R&D, potentially speeding up innovation, creating new businesses. Artificial intelligence and data analytics have become a universal part of the scientific infrastructure, requiring new investment and policies.

Third, universities became more entrepreneurial after the financial crisis in 2008. Students want to participate with social purpose and stakeholders are rightly focused on impact. Governments that invest in talent, digital infrastructure and entrepreneurial universities will gain a higher return from their R&D spending.

PROFESSOR DAVID GANN
Pro-vice-chancellor
Development and External
Affairs
University of Oxford

Ditching party primaries

The suggestion from William Horns to reform party primaries by adopting non-partisan blanket elections (Letters, January 23rd) has already been set in place in California. It is called a "top two" system where, regardless of party, the candidates who come first and second in a primary for Congress face off against each other in the general election. California also has a citizens' commission to draw the boundaries of state legislative districts. Though personally happy about the reform, I can't say that it has made a lot of difference. California is so solidly Democratic that Republicans barely have a voice. Most of the time the top-two vote winners are both Democrats.

SUSAN GIEGERICH
Berlin

Fields of dreams

Minor-league baseball grew from the desire of people to have access to a community-based game, which created a loyalty to and identity with their local club. The economics

and demographics may have changed over the years, but the clubs' success is based on providing affordable family entertainment in a clean and safe environment. An owner once told me that he believed 80% of people left his park after a game not having any idea who won, but it didn't matter. The fun and sense of community did.

The squeeze that major-league baseball is putting on minor-league clubs is an act of civic vandalism ("Trouble on the farm", January 16th). In its quest for control it is destroying years of identity-building in towns small and large. Trenton is the best example of a kneecapped franchise now saddled with a questionable future that it did not deserve. With all the problems in the country, I doubt this outrage will gain much attention.

BOB GOLON
*Little Egg Harbor Township,
New Jersey*

Pass us a ziggie

Although Rizla is synonymous with cigarette rolling-paper in much of the world, asking for a pack in America would be met with a blank stare ("Rolling in it", January 16th). Zig-Zag dominates the American market. Its parent company has just had its best quarter ever, in a country where tens of millions of people can smoke pot legally, and have had plenty of time and reason to do so recently.

TONY RUTT
Portland, Oregon

Your article reignited memories of craving for a smoke when battling around the New Hebrides in the 1960s. The rice-paper pages of the airmail edition of *The Economist* made an excellent substitute for Rizlas.

PETER GILLOTT
Sydney



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NOWTEACH

A photograph of Jane Leighton, a woman with short blonde hair, smiling. She is wearing a black t-shirt and dark trousers. Her shadow is cast onto a teal background. Text on the right identifies her as Jane Leighton, former Creative Industries and now Maths Teacher. Below this, a large, bold text asks 'ARE YOU READY FOR A CHANGE?'. At the bottom, it says 'Come back to school' with a website link, and 'NOWTEACH'.

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Obstacle course

The race between vaccines and variants is heating up

ON FEBRUARY 1ST researchers around the world saw the tweet for which they had been waiting: "We say with caution, the magic has started". Eran Segal, a scientist at the Weizmann Institute, had been posting regular updates on the course of Israel's covid-19 epidemic since its mass vaccination campaign had begun six weeks earlier. By February 1st he was seeing the number of hospitalisations dropping significantly among the over-60s—a cohort in which the number vaccinated had reached 70%, seen as a crucial level, three weeks before. After an expected but still somewhat nail-biting lag, the vaccine was doing its thing.

By February 6th about 85% of the over-60s in Israel—and 40% of the general population—had received at least one dose of the Pfizer/BioNTech mRNA vaccine (or in a few cases the Moderna mRNA vaccine) and 75% of the over-60s had received their second dose, too. In that age group hospital admissions for covid-19 were about two-thirds what they had been at their peak in January and still falling (see chart 1 on next

→ Also in this section

20 Vaccine hesitancy

page). At the same time, the country as a whole was seeing its caseload rise.

The vaccine was not the only thing which arrived in Israel late last year. So did B.1.1.7, a highly contagious variant of SARS-CoV-2, the virus responsible for covid-19, which was first identified in Britain in September. It set about filling up hospital wards in Israel just as it has done in Britain, Ireland and Portugal. Despite an extended lockdown it is still doing so.

It is no surprise that SARS-CoV-2 has evolved new biological tricks over a year spent infecting more than 100m people. But the near simultaneous arrival of not just B.1.1.7 but also B.1.351, which is now the dominant strain in South Africa, and P.1, a variant first seen in Brazil, is making the roll-out of mass vaccination more complicated and more confusing than might have been hoped when the first evidence of safe, effective vaccines became available last November. How fast the various new variants can spread, how well today's vaccines work against them and how soon new vaccines better attuned to them—and to the other variants which will turn up over time—become available will determine the course of the pandemic.

Testing the bounds

As of February 10th at least nine vaccines had been authorised for use in one or more countries. The Pfizer/BioNTech vaccine, first out of the gate, has now been authorised for use in 61, as well as for emergency use by the WHO. The number of doses administered, 148m, now exceeds the number of confirmed covid-19 cases recorded over the entire course of the pandemic. All of the vaccines appear very good at preventing severe cases of covid-19 of the sort that lead to hospitalisation and/or death; in trials which compared the vaccinated with control groups the efficacy with which the various vaccines prevented these outcomes was 85-100%.

Their efficacy against all symptomatic cases of the disease found in trials has been lower, ranging between 66% and 95%. Some of that range is down to intrinsic differences between the vaccines. Some is down to trials being done according to different protocols and in different populations, sometimes against different variants of the virus. It is hard to disentangle such effects. The general message, though, is fairly clear. The vaccines make serious cases of all sorts very rare, and mild-to-moderate cases caused by the original strain of the virus a lot rarer than they would be otherwise.

That is undoubtedly good news; it lessens the death toll, the suffering and the strain on hospitals. But the situation is not perfect. For one thing mild and moderate cases can be worse than they sound. Many

► cases of “long covid”, a debilitating form of the disease in which some effects last for months, follow original infections that were not severe enough to require hospital admission. It is not yet clear whether long covid is less likely in people who have been vaccinated.

What is more, this pattern of effects does not reveal what the vaccines are doing about transmission. As Natalie Dean, a biostatistician at the University of Florida, points out, there are two ways one can imagine a vaccine bringing about the pattern of protection the covid-19 vaccines have been seen to provide (see chart 2 on next page). In one of them the same number of infections occurs as would occur otherwise, but the consequences of these infections are systematically downgraded. Thus almost all of the infections which would lead to severe cases lead to moderate or mild cases, and many of the infections that would have led to moderate or mild cases produce no symptoms at all.

The alternative is that the total number of infections is being reduced, but the ratio of severe to mild to asymptomatic cases stays roughly the same. The already low number of deaths and hospitalisations shrinks to something hardly there. The number of mild cases is similarly deflated (although, since bigger, remains palpable). And so is the number of asymptomatic cases. Indeed, the main difference between the two scenarios is that in one the asymptomatic cases rise, and in the other they fall.

The passing game

In the real world there is almost certainly a bit of both going on: lower infections overall and a lessening of the symptoms that follow, with different vaccines offering different profiles. But considering the two extremes is still instructive. Vaccines which do little more than downgrade the symptoms will be doing relatively little to stop the spread of the virus. Honey-I-shrank-the-infections vaccines, on the other hand, will be making a big dent in the epidemic’s now infamous R number—the number of new infections to which each infection gives rise. If you imagine reducing what are known as “non pharmaceutical interventions”—masks, social distancing, shelter at home orders and the like—that difference would begin to matter a lot.

Some people will not be vaccinated, either because of pre-existing conditions which make it dangerous for them, because there isn’t enough vaccine for everyone, or because they choose not to (see following story). If the vaccines are basically downgrading symptoms, then these unvaccinated people will be at risk. If they are making the virus less transmissible that risk will be lessened.

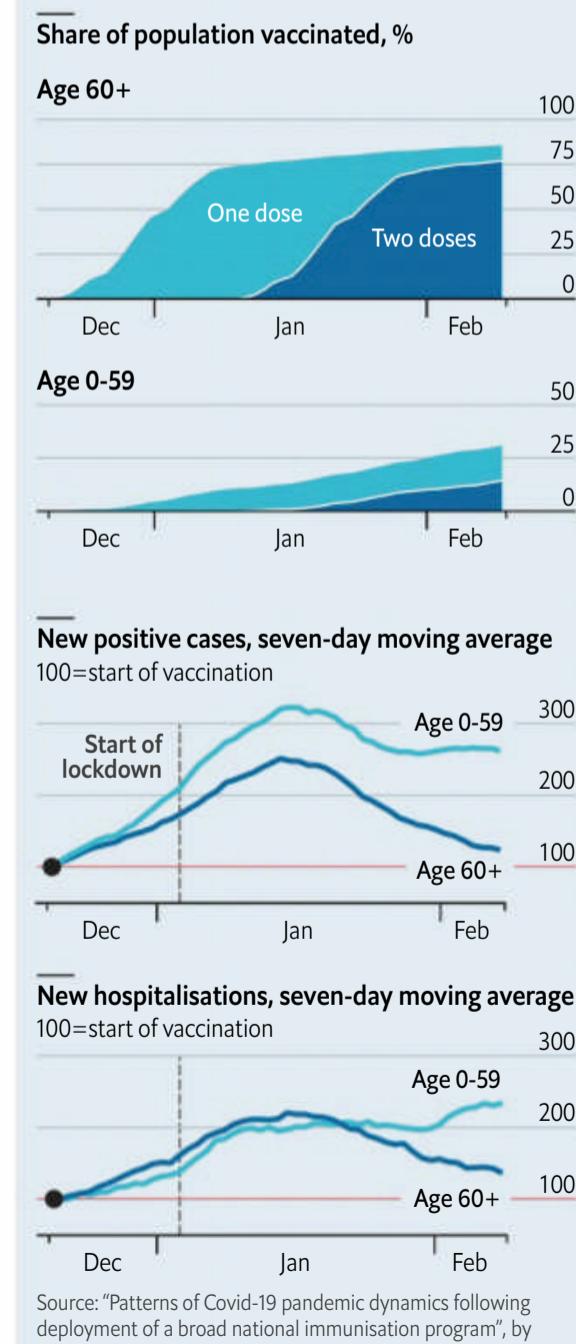
A covid-19 vaccine that is highly effec-

tive in preventing transmission will, therefore, be particularly useful. According to a model by Imperial College London, all other things being equal, a vaccine that blocks 40% of infections and thus prevents 40% of disease would have a similar impact on the number of covid-19 deaths as a vaccine that got rid of 80% of disease but left infection untouched.

Epidemiologists are waiting with bated breath for results that will tell them how good existing vaccines are at reducing asymptomatic infections and infectiousness. Data from Israel suggest that the viral load in swabs from infected individuals is lower if they have been vaccinated. Clinical trials of the Oxford/AstraZeneca vaccine suggest that the jab may halve infections as detected by PCR tests. Such results suggest that covid-19 vaccines are likely to reduce overall transmission of the virus. But understanding quite how much transmission is blocked—and the degree to which some vaccines are better at blocking transmission than others—will take months.

Sufficiently advanced technology

Israel, covid-19 vaccination and cases, 2020-21



And then there is the further complication of the new variants. Vaccines seem to have no particular problem with B.1.1.7. It just complicates things by running through the unimmunised parts of the population that bit faster. B.1.351, which has now been found in more than 30 countries, is of greater concern. At least three vaccines—those from Oxford/AstraZeneca, J&J and Novavax—have been found to be less effective at stopping it from causing disease than they are against variants elsewhere. There is increasing evidence that P.1, now also reported in a number of countries beyond Brazil, also appears to be better at avoiding immunity created by prior infection and by some vaccines.

Countries that have already vaccinated a lot of people could be brought back to square one by the spread of such variants. Britain, where 13m people had been vaccinated as of February 10th, and millions more have been infected and thus have some immunity (British studies have found reinfection very rare for at least five months), is trying hard to keep B.1.351 from making inroads in the population. Health authorities are mass-testing neighbourhoods where cases of B.1.351 have been spotted and are doing particularly meticulous contact tracing when a case is found. Border controls have been tightened.

Eking out an advantage

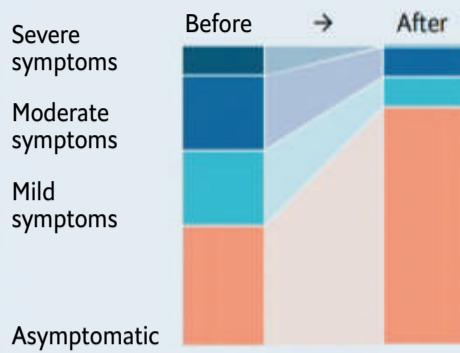
Not all such new variants can be spotted and stopped at borders. Mutations can arise anywhere—sometimes the phone call is coming from inside the house. But there may be a limited range of mutations about which people need to worry. The new variants all differ from the original virus and from each other in various ways. But P.1 and B.1.351 both share a particular mutational quirk—technically called E484K but mercifully nicknamed Eric or Eek—which makes a specific change to the spike protein on the outside of the virus. Eek has now been found in some isolates of B.1.1.7. too. Researchers are beginning to think that the change Eek represents is what allows those variants to infect people even if they have been vaccinated or previously infected.

It would be great if there were no vaccine-resistant strains. But given that there are, the possibility that they are all using the same trick offers a bit of comfort. It suggests that Eek may be the best way for new variants to avoid immune responses capable of dealing with the original strain, or at least the way evolution can most easily find. If the variants have all converged on the same trick, tweaking vaccines to protect against one may protect against all—and against any later variants to which natural selection teaches the same ruse. If the virus had found a whole panoply of ways by which to avoid existing immune

Dowgraded, or shrunk?

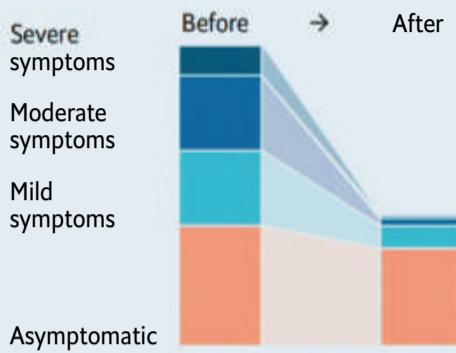
Covid-19 infections by severity, before and after vaccination, illustrative example

Vaccine that prevents disease but not infection



Source: Natalie Dean, University of Florida

Vaccine that prevents disease and infection



bined with the fact that children are not being vaccinated and that new variants of the virus are less tractable to vaccination, means the country may never see the “herd immunity” that population-wide vaccination programmes tend to aim for—the state in which people neither previously infected nor vaccinated are so few and far between that the virus is hard put to find them. And the level of refusal could grow in months to come; younger people, perhaps because they feel in less danger, seem less keen on the vaccine.

Hesitancy is promoted and spread by a hard core of proselytising “anti-vaxxer” voices whose misinformation and downright lies about microchips, infertility and damage to DNA have spread to the four quarters of the internet. They have been helped by large online misinformation campaigns run by China and Russia seeking to undermine confidence in Western vaccines. But hesitancy is a broader and more complex phenomenon than that. Some are worried, not opposed; some reject specific vaccines while accepting various others; some are adamant, some persuadable, some, in the end, willing to get vaccinated despite their reservations. People interpret vaccines in the light of their own experiences, relationships and trust in authority. Such subtleties make the molecular biology behind the vaccines seem simple in comparison.

There is nothing new about this complex set of fears. To introduce anything other than food into your body or blood is always likely to be an emotionally freighted experience. When Edward Jenner, a British doctor, began vaccinating people with cowpox to defend them against smallpox in the late 1790s there was immediate disquiet. Critics said the idea of vaccination was repulsive and ungodly; cartoonists showed people who had been vaccinated sprouting cow's heads. But elite medical and political opinion fell in line. Thomas Jefferson was a fan. Napoleon vaccinated his armies, writing that “Jenner...has been my most faithful servant in the European campaigns.” In Sweden vaccination was compulsory in 1803, in Bavaria in 1807; both countries saw smallpox rates plummet.

In 1853 vaccination was made compulsory for all infants in England and Wales with parents who failed to comply liable to a fine or imprisonment. Opposition to this infringement on personal liberty promptly grew, even more so after the law was strengthened in the 1870s.

Victorian anti-vaxxers spread misinformation eerily similar to today's. In 1878 the *National Anti-Compulsory Vaccination Reporter* told its readers that vaccination could cause diseases including diphtheria, abscesses, bronchitis and convulsions. “On the whole”, it wrote, “it is a greater evil to humanity than smallpox itself!” In

► responses things would look a lot worse.

Whether or not Eek turns out to be crucial, new ways of broadening immunity are on their way. Some vaccine-makers are developing booster shots designed to help people vaccinated with earlier versions of their jabs deal with new variants. Others are developing vaccines intended to work for multiple SARS-CoV-2 variants straight away. On February 3rd GlaxoSmithKline and CureVac, a German biotech company with an mRNA vaccine in late-stage clinical trials, added their names to those developing such “multivalent” vaccines.

Tweaked covid-19 vaccines will not be required to go through large scale clinical

trials to prove their efficacy, any more than updated seasonal flu shots do; small trials that look for markers of immunity in the blood may suffice. Britain's National Health Service, which should be able to vaccinate all adults who choose to be jabbed by the end of the summer, is already starting to make plans for a round of covid-19 booster shots aimed at new variants in the autumn. Increased surveillance may yet provide advance warning of which variants need to be dealt with by subsequent tweaks. It will take luck, diligence and hard work, but the magic that started at the beginning of this year may be made to last for many years to come. ■

Vaccine hesitancy

Broken arrow

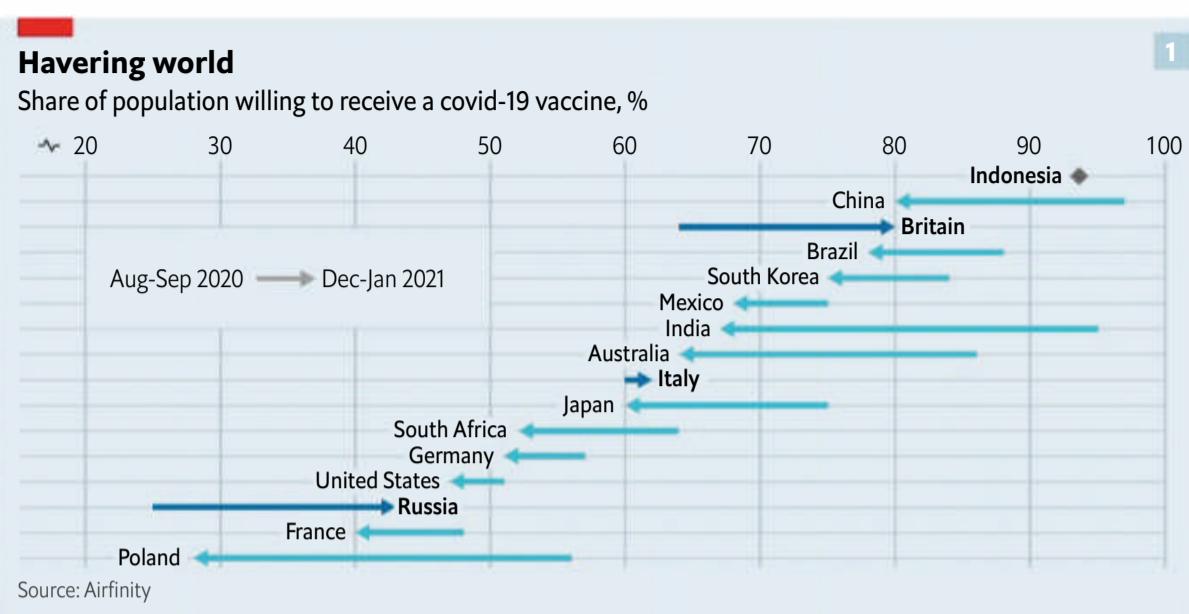
Some people are unwilling to be vaccinated. That will be a problem

WHEN THE news finally comes it triggers a range of emotions. Most people told when and where they will receive their first shot of covid-19 vaccine speak of their relief, delight, even their elation. One person danced around the room, another “screamed a bit”, yet another felt giddy. “It feels”, says one, “that my life's about to begin.” But for some, there are other emotions in play: concern, fear, even anger.

Almost as soon as biomedical researchers began working on vaccines against SARS-CoV-2, the virus that causes covid-19, people concerned with public health began to worry about “vaccine hesitancy”. It can sound trivial, even foolish, but it regularly costs lives. Hesitancy is a large part of the reason that few young Japanese women get themselves vaccinated against human papillomavirus, and thus are more likely than vaccine-accepting young women elsewhere to contract cervical cancer.

Widespread hesitancy during worldwide campaigns against covid-19 could cost many lives, both among the hesitant and among their fellow citizens. Scott Gottlieb, who led America's drug regulator, the FDA, from 2017 to 2019 (and who is also on the board of Pfizer, a vaccine-maker) argued in a recent opinion piece in the *Wall Street Journal* that the main challenge to vaccination efforts in America could soon move from supply and logistics to individual reluctance to be vaccinated.

In Britain, a country generally quite keen on vaccination, about 15% of those offered a covid jab so far have refused it. With 13m mostly elderly Britons vaccinated as of February 10th, that suggests almost 2m people who could have been vaccinated have not been. When, eventually, social distancing measures are reduced, those people will remain vulnerable to infection. What is more, that level of refusal, com-



echoes of today's concerns about Big Pharma, the *Reporter* speculated that compulsory vaccination was a plot by the medical establishment and averred that faithful obedience to the "sacred laws of health" would provide superior protection. It is hard to put a sliver of organic carrot between this sanctimony and the notion that nasty viral pathogens can be warded off by raising children "naturally" and using alternative medicines.

Nevertheless smallpox vaccination became near universal. And then in 1977, 177 years after Benjamin Waterhouse, a Harvard professor and correspondent of Jefferson's, published his pamphlet "A Prospect of Exterminating the Small-pox", it became obsolete. The disease was wiped out. No other human disease has yet followed it to oblivion, though polio is close. But many death tolls have been slashed.

Vaccinations have become the most successful public health measure in history. About 85% of one-year-olds around the world now receive all three doses of the combination vaccine that protects against diphtheria, tetanus and pertussis. Public support for this is high; nine in ten people

worldwide think vaccines are important for children. But there are variations. Support for childhood vaccination is lower in North America, Europe and Russia than in Africa, Asia and South America, and there are pockets where it dips dangerously. What is more, the success of long-running childhood vaccination campaigns does not necessarily translate into acceptance of novel vaccines for adults.

Against complacency

Towards the last quarter of 2020 polls on vaccine hesitancy spurred mounting concern among public health officials. In September a significant number of British people said they were unlikely to get one. A month later, in a STAT-Harris Poll in America, only 58% said they would—down from 69% a month previously. Though Britain bounced back, other countries have seen worrying drops since (see chart 1).

But such polls come with caveats. One is what psychologists describe as the "intention-behaviour gap"; humans are sufficiently complicated that what they say and what they do can be very different things. A second is that polls are snapshots of a proc-

ess in flux. Vaccine hesitancy is extremely fluid in time and space, subject to all manner of influences. A poll is an instantaneous map of temperatures, when what you need is a moving forecast.

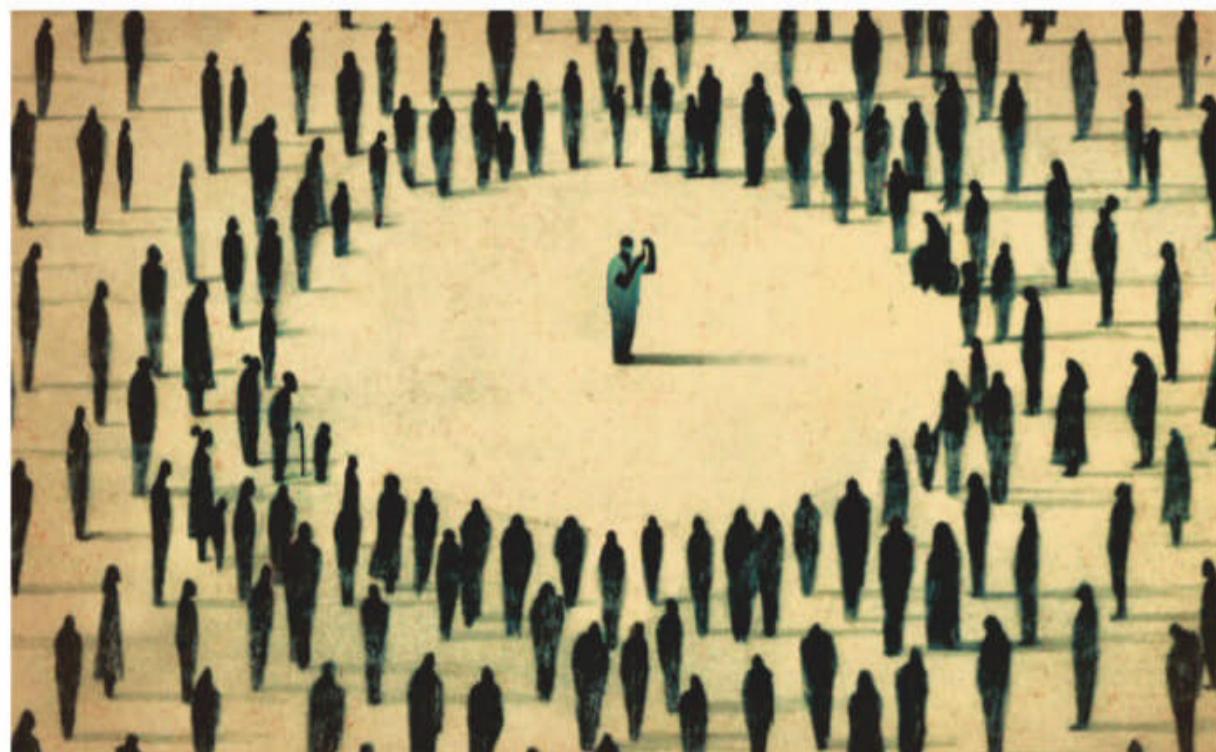
One of the main vaccine-weather forecasters is Heidi Larson, a professor of anthropology, risk and decision science at the London School of Hygiene and Tropical Medicine. She is also the founding director of the Vaccine Confidence Project, which monitors global concerns about vaccines. Looking at her latest survey of sentiment toward covid-19 vaccines in 32 countries Dr Larson sees storms brewing in Lebanon and the Democratic Republic of Congo (DRC)—two countries in which the political climate is tense.

Hesitancy in the DRC might seem surprising; novel vaccines recently helped quash an outbreak of Ebola there. But Dr Larson says that unlike Ebola, which people have had to live with for almost half a century, covid-19 is new and brings new distrust. Maître Donat, a lawyer in Kolwezi, a mining city in the south of the country, bears out that case. "Here everyone thinks covid is a scam", he says, "dreamed up by the whites, by Americans."

Dr Larson worries about this because she has found that, in general, concerns about vaccines that arise in Africa spread much more quickly than in higher-income countries: "It is quite explosive." Last year a comment by a French doctor about using Africa as a testing ground for vaccines spread like wildfire across Francophone Africa. He apologised, but the damage was done. There are now reports of rising hesitancy, at least partly tied to trust in government, in South Africa and Nigeria, where plans are being laid to start vaccination.

Just as there is variation over time, so there is in space. Even in countries where there is a rush to get vaccinated, hesitancy can crop up in particular communities, particularly in marginalised groups: some groups distrust state authority—sometimes, given the history of medical experimentation, for sound historical reasons; some seek spiritual rather than temporal guidance on how to live their lives.

Naively, one might believe that education would be enough to change this. It is not. Take the reluctance of some American health-care workers to get vaccinated. This is not down to a lack of information or a failure to understand what vaccines offer. It can often reflect a lack of faith in their employers. As in many other parts of the world, nurses, long-term-care staff and others in similar jobs report feeling badly treated over the past year. They may have been put at risk of covid, or fallen ill, or struggled to obtain protective equipment. They will have seen a lot of death. They will mostly have done so on low pay. And they have either not succumbed to the disease



► or have survived it. This all disinclines them towards accepting the vaccines that their employers now want them to take.

A December survey of 16,000 employees of a health system in Pennsylvania revealed concerns about unknown risks and side effects. At the nadir 45% said they either did not want the vaccine at all or wanted to wait (see chart 2). One-fifth did not trust the rushed regulatory review. Others worried they were not actually at high enough risk for infection or disease. Hard refusals, though, soon began to wane.

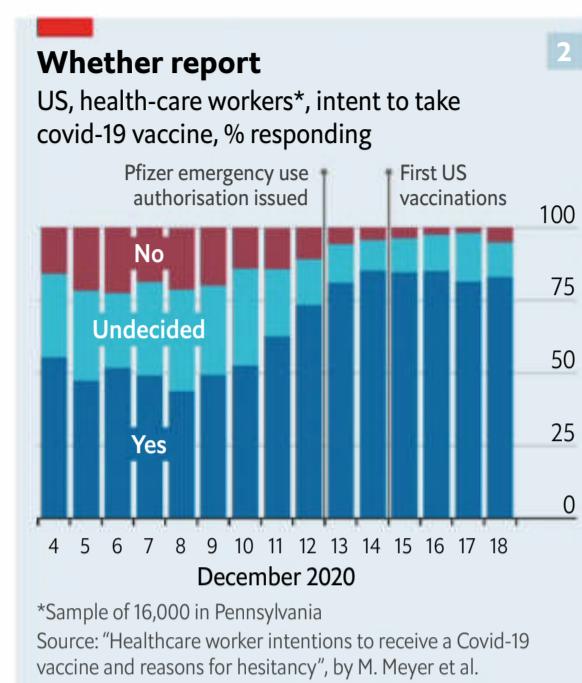
In general, a feeling that the government is cutting corners seems to drive hesitancy up. When Donald Trump appeared to be trying to rush approval along before the election Americans became more hesitant. Concerns have risen in Indonesia and India at the same time as there have been controversies about aspects of government vaccination programmes.

Another factor in hesitancy is peer-group sentiment transmitted through social networks. Parents who choose not to vaccinate children have a much higher percentage of people in their social networks with similar views. The same will be true of people who intend not to get vaccinated against covid-19.

Understanding how the hesitancy weather changes offers ways to modify it. Some are well known to advertisers. People are encouraged by the sight of happy people eagerly lining up to receive vaccines, or by politicians, royalty and celebrities rolling up their sleeves. They may also respond to the notion that something is in scarce supply. Since scares about the H1N1 flu vaccine in 2009 the French have been very dubious about vaccination. But since realising that their country has few doses to offer, their opinions have been changing. To refuse is one thing; to be denied another. Marine Le Pen, a right-wing nationalist who had previously said she would wait and see before getting vaccinated now says she will do so, a decision which is expected to be influential (and which will better position her to attack Emmanuel Macron on the issue in next year's election campaign).

The bad news about changing the weather in this sort of way is that it can quickly change back again. Vinay Nair, boss of Lightful, a tech firm that works in the charity sector to enhance its use of technology, says that because vaccine sentiment is dynamic, so the response to it has to be too.

It is also important to reach vaccine-hesitant communities directly rather than through the media. In 2017 Patricia Stinchfield, a nurse practitioner at the Children's Minnesota Hospital, told *Modern Healthcare*, a magazine, about intervening this way among Somali-Americans in Minneapolis after their under-vaccinated commu-



*Sample of 16,000 in Pennsylvania

Source: "Healthcare worker intentions to receive a Covid-19 vaccine and reasons for hesitancy", by M. Meyer et al.

nity suffered a serious measles outbreak. "We spend a great deal of time meeting imams in the community and ask them to partner with us." Even with the help of social-media campaigns aimed at younger parents, it is slow, painstaking work. But it is effective.

Storm warning

Unfortunately, help through social media is far from the norm. The Centre for Countering Digital Hate (CCDH), a not-for-profit group, is tracking 425 anti-vaccine accounts on Facebook, Instagram, Twitter and YouTube that it says spread covid misinformation; they have 59.2m followers between them, and the number is rising rapidly. The organisation says that while a minority of these anti-vaxxers act on the basis of profoundly held beliefs, about four-fifths have a financial motive as well, or instead. Half are entrepreneurs with businesses that promote alternative or oddball remedies such as homeopathic immunisation or a bleach nebuliser "with a 100% success rate". The other half are conspiracists who profit from the online-advertising revenue their sites attract and the merchandise they sell.

The work of these groups is a lot easier than that of public-health workers: fear and uncertainty are easier to foster than trust and confidence, and inaction easier to encourage than action. In October last year representatives of the CCDH were present at a private online conference held by influential opponents to vaccination who, it says, saw a historic opportunity to reach larger numbers of supporters, and drive long-term vaccine hesitancy. They outlined three basic tools with which to do so: sow doubt about the seriousness of the threat posed by covid-19; spread concern about the safety of the vaccines; stress the untrustworthiness of experts.

These three basic messages will be adapted with selective reporting—making sure, for example, that Brazilians know

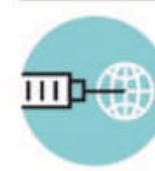
that their president has said he will not be vaccinated—half-truths and lies. Ethnic minorities will be told that covid vaccines are unsafe for them, or part of a plot or experiment—something that will resonate in communities that remember stories of this in the past. Young people will be told taradiddles about fertility. The religious groups will hear that vaccines are not halal or contain fetal material. (It is true that the vaccine produced by AstraZeneca is grown in a cell line derived from material taken from a fetus in the 1970s; it is also true that the pope has deemed the use of such cell lines morally acceptable.)

A recent study in *Nature* using data from 2019 created a network map of 1,300 Facebook pages carrying pro- and anti-vaccine messages and their followers. Anti-vaccine pages were more numerous, faster growing and increasingly connected to pages containing undecided users. If current trends continue, the researchers predicted, anti-vaccine views will dominate online discussion in a decade. A new pre-print by many of the same authors reports that the strengthening of online bonds that has been seen during the pandemic has given conspiracy theories greater access to mainstream parenting communities.

On February 8th, in the teeth of ongoing criticism, Facebook said it would remove false claims related to covid vaccines (see United States). Many think the move has come too late—and that to shift the balance of power decisively will require further action. Mr Nair believes that tech companies need to amplify positive messages, stories and campaigns

"A mix of factors will challenge our plans to defeat covid-19, from new variants to supply issues. But vaccine hesitancy is a significant threat to population protection against covid-19," says Dr Larson. And after emotional contagion has taken hold it is difficult to tamp down. As the French experience with the H1N1 vaccine has shown, once widespread a negative impression about a vaccine can be hard to shift.

At the moment, people are leaving vaccination centres happily, and tweeting and posting about their good fortune and success. They proudly display the badges and stickers that show they have received the vaccine. For now, public health is winning. But continued good news cannot be taken for granted; in this struggle, fair weather has to be fought for, not counted on ■



On Monday February 15th
The Economist is launching a new podcast, "The Jab", devoted to the science, business, policy and politics of rolling out covid-19 vaccines around the world. You can subscribe at economist.com/thejab



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Congress

Swing voters

WASHINGTON, DC

Unable to surmount a filibuster, Democrats are pursuing a strategy in the Senate that is deadly for bipartisanship

WHEN IT COMES to actually passing legislation in Congress, intramural unity among Democrats will matter much more than the bipartisan unity that President Joe Biden seemed to be seeking in the opening days of his administration. As the impeachment trial of former president Donald Trump limps to its foregone conclusion in the Senate, Democrats will also be muscling through Mr Biden's ambitious covid-19 relief package costing \$1.9trn unilaterally, using a parliamentary manoeuvre that will require no Republican votes. There is little reason to doubt that the same strategy will be employed to pass the second immediate aim of the Biden administration, an enormous infrastructure package. Parliamentary quirks and partisan incentives mean that conservative Democrats will matter much more to the White House than luring liberal-ish Republicans.

There are two conceivable routes to

passing Mr Biden's legislative agenda. The first is through normal operating procedure, also called regular order. Such bills can be sweeping in scope or narrowly tailored to attract Republican votes, most likely those of senators like Susan Collins of Maine or Lisa Murkowski of Alaska (both of whom voted against repealing Obamacare) or Mitt Romney, who favours, like many Democrats, expansive child benefits. The problem with bills proposed in the ordinary way is that they are subject to the threat of a filibuster, effectively raising the threshold for passage from 50 votes to 60.

The task of luring another seven Republicans derails most major Democratic ambitions. Political scientists have devised a quantitative score of how left- or right-leaning a legislator is, known as DW NOMINATE. The current rankings show that the 60th most liberal senator is Cindy Hyde-Smith of Mississippi—a pro-life, pro-bal-

anced budget sort of Republican not especially known for her bipartisan ways. There are perhaps a few areas where some legislation could avoid a filibuster, like criminal-justice reform and paid family leave, but these pale in comparison to Mr Biden's dreams. That was clear in the president's reaction to the counter-offer made by ten Republicans offered to his proposed stimulus, which was about one-third the size of his. After giving a good-natured, two-hour-long hearing to the senators at the White House, Mr Biden ultimately ignored their preferred framework and advanced instead by the second route: reconciliation.

This is the special parliamentary procedure for passing budgetary legislation, which is immune from filibustering and requires only a simple majority of senators to pass. In general, reconciliation can be used only once per fiscal year. But because Republicans did not pass a budget resolution for the current fiscal year, Democrats will probably have two opportunities in 2021. The first will be devoted to the stimulus, while the second will probably be devoted to infrastructure and possibly include tax increases and revisions.

In theory, a 50-vote threshold ought to allow more cross-party coalitions. But the temptations of reconciliation—the rare chance it offers of sidestepping a filibus-

ter—mean that, in practice, it is not very conciliatory to the minority party. The incentives are to instead stuff as many majority-party proposals allowable under the so-called Byrd rule—the strict and complicated rule adjudicating which policies are allowed in reconciliation bills—while the chance is available. “It’s very difficult for the minority party to support a reconciliation package, just based on the structure of the approach, which is to diminish their involvement,” says Jason Grumet, the president of the Bipartisan Policy Centre, a think-tank. Even if a senator like Mr Romney were supportive of Democrats’ child-tax credit reforms, for instance, he would almost certainly balk at other features of the legislation, like the proposed \$350bn bailout of state and local governments, and vote against the entire package.

For that reason, both of the last significant reconciliation bills—the Trump-era tax cuts and an Obamacare-related law—received no votes from the opposition party in the Senate. In a sign of things to come, the budget-resolution bill to start this round of reconciliation was passed on February 5th on strict party lines.

Reconciliation makes kingmakers of conservative Democratic senators, like Joe Manchin of West Virginia and Kyrsten Sinema of Arizona. With them, Democrats can achieve a sizeable chunk of their agenda. Without them, their efforts will go down to defeat just as Republican efforts to repeal Obamacare using reconciliation did. Already they have started to flex their powers. Mr Manchin has pushed for the \$1,400 cheques Mr Biden promised to go to a more limited set of Americans. His scepticism of plans, dear to progressives like Bernie Sanders, to eventually increase the federal minimum wage to \$15 may end them too. With Ms Sinema and six other Democratic senators, Mr Manchin also voted for an amendment barring stimulus payments to undocumented immigrants.

Progressives have launched some efforts to berate them into changing. “Unfortunately our senator, Joe Manchin, thinks he knows better than both our president and the Democrats in Congress. I guess Joe just don’t know what it’s been like to live through the pandemic,” claims one radio ad airing in West Virginia from the No Excuses PAC, a pressure group. So far, there has been no discernible budging. Mr Manchin, who once released a campaign ad of himself shooting a hole through Barack Obama’s climate plans, will probably determine the outer limit of the president’s clean-energy agenda too. He has favoured investments in energy innovation like carbon capture, but remains lukewarm on Mr Biden’s other climate proposals.

The promised repeal of the Trump tax cuts, which may be proposed to pay for infrastructure spending, may also prove

hard. That is because it would require “268 of 272 elected Democrats [a majority in the House plus 50 senators] to agree on the same set of policy choices,” says Rohit Kumar of PwC’s national tax-policy group, a former deputy chief-of-staff to Mitch McConnell. Because that degree of party discipline is hard to achieve, Mr Kumar is sceptical that Democrats will agree to increase the corporate-tax rate from 21% to 28%, as Mr Biden campaigned on, or to increase the tax rate on capital gains from 20% to 39.6%. Another likely result is that traditional infrastructure spending on roads, bridges and broadband may survive, while the green-tinged bits on retrofitting schools and houses and installing electric-vehicle charging stations, may be culled.

Politicos pouring over obscure senatorial rules (one coming attraction will be feverish discussion over the “Byrd bath”) can sometimes miss that the rules restraining Mr Biden are self-imposed. Three Republicans could be conceivably picked off on piecemeal bills, but gathering ten to avoid a filibuster looks impossible in most cases. Eliminating the filibuster, by a simple majority vote is thus appealing to some. “Over my dead body,” Mr Manchin recently told *The Economist*. Ms Sinema’s office has said quite definitively that she is “against eliminating the filibuster and she is not open to changing her mind.” That will push Democrats towards a parliamentary manoeuvre that is repellent to persuadable Republicans. So much for bipartisanship. ■

Social media and anti-vaxxers

Likes and protein spikes

DALLAS

Facebook tries to pre-empt regulation by squeezing anti-vaxxers on its platform

I JUST BELIEVE strongly that Facebook shouldn’t be the arbiter of truth of everything that people say online,” Mark Zuckerberg, the social-media boss, said last year. Yet despite Mr Zuckerberg’s hope, that is what Facebook has become. Like a power company, Facebook can illuminate certain voices, while pushing others off the grid. The most high-profile example of the social-media firm wielding its might was in January, when Facebook kicked Mr Trump off for stoking the riots at the Capitol. (Twitter also suspended him.) Facebook’s decision is currently under review by the social-media firm’s internal jury, the

Oversight Board, which advises the company on thorny content issues, of which there are plenty more.

On February 8th Facebook announced that it was taking another stand on what could not appear on its platform: falsehoods about vaccinations. The company will now remove posts and block groups that claim vaccines make people ill or cause autism; previously the company had only demoted such claims, giving them less prominence in users’ feeds and in search results. Facebook and other internet companies have been under pressure by politicians and the press to do more to police anti-vax content since 2019, when measles outbreaks in New York prompted a flurry of nonsense. Covid-19 has given the subject new urgency and attention.

In America social-media platforms are not only tools for spreading misinformation but also for co-ordination. The anti-vax campaigners who briefly halted immunisations at Dodger Stadium in Los Angeles used a Facebook page to organise, says Allison Winnike, boss of the Immunisation Partnership, a non-profit that raises awareness of vaccinations. Campaigners are also employing social media to push anti-vax bills in many American states, says Joe Smyser, who runs Public Good Projects, a non-profit focused on public health. For example, one proposed bill circulating in Kentucky tries to eliminate all vaccine requirements for employees. Another aims to create a pre-emptive opt-out in case covid-19 vaccinations are ever required.

Just how much Facebook will actually ►



Group think

WHAT IS AVAXHOME?

AVAXHOME -

the biggest Internet portal,
providing you various content:
brand new books, trending movies,
fresh magazines, hot games,
recent software, latest music releases.

Unlimited satisfaction one low price
Cheap constant access to piping hot media
Protect your downloadings from Big brother
Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages
Brand new content
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► curb vaccine misinformation is an open question. Showing users truthful content in their feeds and searches will help, but removing problematic content could also drive users to other platforms. After Facebook and Twitter cracked down on accounts promoting QAnon conspiracies, those users just went elsewhere, says Renee DiResta of the Stanford Internet Observatory. "Social-media companies run the risk of turning what should be something that could be easily addressed with a label into forbidden knowledge," she says. Nor is everyone comfortable with Facebook's employees, contractors, Oversight Board and the 80 external firms that do various degrees of fact-checking suggesting what should be erased. "Censoring speech and pretending you can make it go away is really problematic," says Matt Perault, a former director of public policy at Facebook who now runs Duke University's Centre on Science and Technology Policy.

The decision to combat anti-vax propaganda may have as much to do with Facebook's own public-relations problems as its desire to cleanse its platform of life-threatening fabrications. In Washington, Democratic leaders are putting the squeeze on platforms to do more to police content. In January three Democratic senators, including Amy Klobuchar, sent a letter to internet companies demanding action to combat vaccine misinformation.

Facebook may be reading today's political mood correctly, since Democrats control the House, Senate and White House. But its actions risk further alienate conservatives who are concerned about the censorship of free speech, and revive discussion about antitrust enforcement among the many politicians who worry about the dominance of big tech.

Already politicians and regulators are grappling with how and whether to change the liability shield that internet companies have when hosting users' content under section 230 of the Communications Decency Act, an internet law passed in 1996. By taking more proactive action to police content on its own platform, Facebook may be hoping to head off discussions of tweaking or entirely doing away with section 230.

That is optimistic. Support for repealing section 230 was a rare point of agreement between Donald Trump and Joe Biden, although they favour doing so for very different reasons. Rather than repealing section 230, though, several Senate proposals are circulating to reform it. Facebook and other internet firms worry that tweaking section 230 could lead to a deluge of lawsuits from people who consider them responsible for material posted on their sites. Having once declared that Facebook should not be an "arbiter of truth", Mr Zuckerberg is acting more like one, and hoping that works in his favour. ■

Election administration

Count-22

NEW YORK

Why can't New York counties run elections?

ONE HUNDRED days after November's election, New York's 22nd congressional district (NY-22) has a representative in Washington. On February 5th a state judge ordered Oneida County in upstate New York and the state's boards of elections to certify their results. Claudia Tenney, a Republican, beat Anthony Brindisi by 109 votes. It was the last undecided congressional race in the country. The lengthy delay meant the district's constituents did not have a voice in votes on impeachment and the House leadership or on a presence on committees. Yet NY-22 is far from the only district with election problems. For New Yorkers across the state, dysfunction at the board of elections is par for the course and a perennial problem.

Despite its conservative leanings, NY-22, which spans rural areas and rustbelt cities in central New York state, was among the most competitive races in the country. That was mainly a reflection on Mr Brindisi, the Democratic incumbent, who was fairly popular in an area where registered Republicans outnumber Democrats by 30,000. His challenger, Ms Tenney, had a convincing lead at first, but Mr Brindisi narrowed the gap when absentee and affidavit ballots were counted. Both candidates called for a judicial review of the ballots. After Scott DelConte, the presiding judge, noted several errors, he ordered the district's boards of elections to review votes again. "It is more important that this

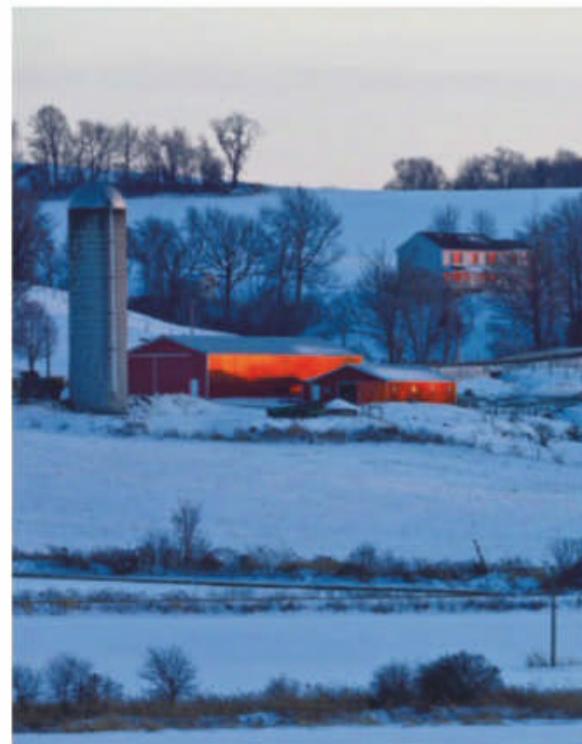
election is decided right, than that it is decided right now," he said in December.

Errors were made in seven of the district's eight counties. Oneida County's mistakes were especially egregious, said Mr DelConte. More than 2,400 electronic voter registrations in Oneida were not processed in time for November's election. Oneida labelled challenged votes with Post-it notes. The notes did not stick, making it impossible to know which votes were disputed. Despite the record of voter suppression in Republican states, David Wasserman of the non-partisan *Cook Political Report* says that "probably one of the most egregious examples of voter suppression that I've seen this cycle was in [New York] a state that's pretty firmly blue".

Mr DelConte was scathing about election commissioners, who are responsible for administrating boards of elections in each county. Commissioner selection "is the last vestige of patronage politics in New York state", says Luke Perry, a political scientist at Utica College. Some counties have deadlocked boards with Republicans and Democrats sniping at each other. And every county has different standards. Susan Lerner of Common Cause, a voting-rights group, says NY-22 has shown that "if you have eight different counties in a congressional district, you have eight different ways to approach counting absentee ballots, and eight different ways to make mistakes". The covid-19 epidemic didn't help—election officers across the state were overwhelmed and overworked because of outbreaks and social distancing.

NY-22 is far from alone in its chaos. The New York Civil Liberties Union sued Rockland County in the autumn to extend early voting hours. New York City is plagued with problems, from broken voting machines to long queues. In 2019 the city's board of elections bizarrely sued City Hall to stop it offering translation services at the polls unless they were provided by the board. State government is little better. New York City has been waiting a year to get approval for new vote-counting software.

On February 8th Mr Brindisi conceded, ending the uncertainty in NY-22. Had he pursued and won an appeal, it is not clear if the court could have removed Ms Tenney from her Congressional seat once she had been sworn in. "Sadly, we may never know how many legal voters were turned away at the polls or ballots not counted due to the ineptitude of the boards of election, especially in Oneida County," Mr Brindisi says. He hopes an investigation will be conducted. "What's so disturbing about what happened in Oneida County is that if it weren't for this incredibly close election, we would have not even known," says Sean Morales-Doyle of the Brennan Centre for Justice. What errors, New Yorkers may wonder, occurred in less competitive races? ■



Lovely place, shame about the elections

Presidential libraries

The shrining

CHICAGO

Barack Obama's post-presidential project gets a green light

IN AUTOCRACIES, putting up mausoleums for ex-presidents is common. China, North Korea, Russia and Vietnam all encourage visitors to gawp at embalmed bodies and tour museums that glorify their dear, dead leaders. In most democracies that sort of thing is frowned on, making America's passion for hagiographical presidential museums unusual. Every occupant of the White House since Herbert Hoover has put up a monument to himself. They are built with private cash, but their upkeep eventually falls to the federal government, which spends about \$100m yearly on 13 sites. The 14th is coming. Last week federal permission was granted for the Obama Presidential Centre, a \$500m complex on Chicago's South Side. Work starts this summer. It should open in 2025.

Anthony Clark, author of a book on them, notes that over 2m visitors visit presidential libraries in a normal year. After Dwight Eisenhower died, in 1969, 630,000 people made a pilgrimage to his library in Abilene, Kansas. Now it typically fails to draw one-third as many. Fewer still pay homage to Herbert Hoover in rural Iowa. In 2018 George H.W. Bush was buried at his library, in Texas, one of seven presidents interred at their museum grounds.

Mr Clark sees such spots as "partisan shrines". Their common message—that a few big men, imperial presidents, steer America's fortunes—looks dated. He dislikes, too, how ex-presidents in their "last campaign" try skewing how history remembers them. Richard Nixon's library long neglected mention of Watergate, for example. Ronald Reagan's lets visitors see Air Force One or a reconstructed pub brought from Ballyporeen, Ireland, where Ronnie and Nancy once had a drink. It barely addresses the Iran-Contra scandal.

Jodi Kanter, who has written a book on presidential museums as theatre, is a bigger fan. They offer "romance about individual achievement" she says. Scattered nationwide, they are more accessible than museums in Washington. She expects Donald Trump to announce his own, as he won't "resist having a monument to himself". But battles for land and donors could delay it; Nixon took 16 years to compete his.

Unusually, the Obama one in Chicago won't house his official records (which will be digitised instead). Limited space will go to exhibits on the Obamas' time in the White House. Mike Strautmanis, who is



H.W. for a day

working on the project, says instead it is to be "a tool" for Mr Obama's post-presidential work. The centre will host young activists from America and overseas, training them in how to achieve social change. It will include a branch of the Chicago library and let locals grow vegetables in its grounds. Mr Obama "is still a relatively young man" eager to turn ideas to action, says Mr Strautmanis. And growing things beats embalming them. ■

Oregon's drugs policy

Trail blazers

Oregon decriminalises drugs for personal use

GETTING CAUGHT with a small amount of drugs in Oregon is now like getting a traffic ticket. At the beginning of this month, it became the first state to decriminalise possession of even hard drugs for personal use. Rather than face criminal charges, those in possession of small amounts of drugs (defined as having less than 1 gram of heroin or MDMA, 2 grams of methamphetamine or cocaine, 12 grams of psilocybin, 40 units of methadone or LSD, or 40 pills of oxycodone) will face a \$100 fine or a health assessment that could lead to rehabilitation rather than jail time. Drug treatment will be funded by state tax revenue from legal marijuana sales, which reached \$133m in 2020.

The Oregon Criminal Justice Commission expects the new law to decrease the load on the criminal-justice system. Going by 2019 estimates, they expect arrests for possession of controlled substances to

drop from 6,700 to 615 in an average year, a 91% reduction. They also estimate that 1,800 fewer Oregonians will be convicted of felony possession, and 1,900 fewer of misdemeanour possession. "That impact is going to be huge," says Bridget Budbill of the Office of Public Defence Services. "It's an opportunity for overburdened public defence systems to see a modest reduction in cases...so that these public defenders can focus their attention on [...] more serious matters." This will have a particular impact on racial minorities, who get disproportionately arrested for possession and then caught-up in the criminal-justice system, says Ms Budbill.

A handful of American cities have already decriminalised drugs harder than marijuana. More states could follow Oregon. The cities focus on psychedelics, psychoactive substances such as psilocybin (also known as "magic mushrooms") and LSD. Ann Arbor, Denver, Oakland, and Somerville, Massachusetts, have all decriminalised psychedelics. The District of Columbia also passed a referendum to do so in November, though the city's mayor, Muriel Bowser, has publicly opposed it.

America is inching towards the example of Portugal, which in 2001 became the first country to decriminalise drug consumption for personal use (while continuing criminal prosecution for other drug offences, such as trafficking). The country saw a reduction in drug-induced deaths and reduced rates of HIV infection. But, says João Castel-Branco Goulão, Portugal's National Co-ordinator for Drugs and Drug Addiction, decriminalisation must be paired with other policies or else it will fail. "Decriminalising without doing anything else does not lead to any improvement of the situation," says Dr Goulão.

He warns policymakers that any plan to decriminalise drugs must consider four factors: accessible treatment, prevention, harm reduction and reintegration. In Portugal, first-time offenders go before a panel at the Ministry of Health and receive a warning. Subsequent violations within five years of the first offence incur either a fine or other administrative sanction, such as community service. Punishment is individualised. Someone struggling with drug dependency may receive therapy, while a recreational user battling with depression may receive mental-health care.

Nora Volkow, director of America's National Institute of Drug Abuse at the National Institutes of Health, encourages decriminalisation alongside support policies and prevention programmes to protect children and adolescents from addiction. "We need to be very aware of...how the decriminalisation is going to affect accessibility," she warns, "...because we know that the more accessible a drug is, the greater the likelihood someone will pick it up." ■

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America and China

Genocide aside

NEW YORK

Can America's government deal with China's after accusing it of genocide?

HAVING BRANDED China with committing the most heinous of crimes, the Biden administration is confronting diplomats and multinational firms with a vexing question: how do you compartmentalise genocide? The term was first applied by Mike Pompeo, the outgoing secretary of state, in his last full day in the job. The Biden administration has declined to rescind it. Thus the question is likely to haunt Olympic sponsors and athletes too, as next year's winter games in Beijing draw closer.

The administration contends it can work alongside China on matters like climate change, while excoriating it as genocidal because of its abuses of the Uyghur minority in the northwest province of Xinjiang. But human-rights advocates are watching to see if the administration will stick by the accusation and follow it up with severe penalties—or, by failing to do so, diminish the power of an accusation of genocide to shock the world's conscience.

The Biden administration is considering what penalties, including sanctions on individual officials, it might add to measures put in place by the Trump administration. Biden officials also expect the genocide designation to bring new pressure to bear on multinational firms operating in China. One lawyer with experience combating crimes against humanity described fielding calls from companies with business in China asking what the designation might mean for them. "You put China together with the term 'genocide' and you're in new territory," this lawyer said.

Whether seen against the history of American indulgence of Chinese human-rights abuses, or the history of American reluctance to level accusations of genocide against even weak, murderous states, the administration's move is extraordinary. So far no allies have shown much interest in lining up behind America. Joe Biden avoided the word on a call with Xi Jinping on February 10th. China has rejected the charge of genocide and warned against trying to interfere in matters like its approach to Xinjiang or Hong Kong. "They constitute a red line which must not be crossed," according to China's top diplomat, Yang Jiechi.

The American approach to naming and punishing genocide has been a tug-of-war between morality and expediency almost from the start. Like the word "genocide" itself, the UN convention describing the crime was created in the wake of the Holoc-

caust. Under President Harry Truman, America signed the treaty in 1948, after it was unanimously approved by the General Assembly. (China has also signed the treaty.) But the Senate resisted ratifying it, out of fear it might infringe on American sovereignty, or that African-Americans or Native Americans might invoke its provisions against their own government.

Almost twenty years on, in 1967, Senator William Proxmire of Wisconsin vowed to argue for the genocide convention on the floor of the Senate each day it was in session until ratification. It took him more than 3,000 speeches across 19 years to win the argument. Two years later, in 1988, Congress complied with a stipulation of the treaty by passing its own anti-genocide law, which replicates the UN's definition of the crime. The American law empowers the justice department to arrest and prosecute foreign officials it can connect to a campaign of genocide, but the law creates no obligation to do anything. Past administrations have nevertheless been reluctant to invoke the term, fearing that they would be conjuring intense pressure to act.

The Clinton administration took to referring carefully to "acts of genocide" during the Bosnian war and the slaughter in Rwanda, prompting one exasperated reporter to ask at a State Department briefing, "How many acts of genocide does it take to make genocide?" Eventually, the Clinton State Department did apply the word

"genocide" to both those cases. That administration would go on to describe the mass killing of Iraqi Kurds in 1988 as genocide. Subsequent administrations applied the term to slaughter in Darfur, in 2004, and in areas under the control of ISIS in 2016 and 2017. The American government has never spelled out a process for arriving at a determination of genocide.

America has yet to stamp Myanmar's persecution of its Rohingya minority as genocide. But in light of the deployment of the term to describe the treatment of the Uyghurs, the Biden administration is coming under intensified pressure from members of Congress and human-rights groups to invoke the word against Myanmar too. Antony Blinken, the secretary of state, has said he will review whether the treatment of the Rohingya amounts to genocide.

Many human-rights advocates argue that the case for genocide is more stark against Myanmar than against China. The UN convention says that genocide refers to acts "committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group". These advocates worry that it is harder to establish intent without evidence of mass slaughter, which has not been documented in Xinjiang, and that as a result the Biden administration may, in effect, define genocide downward. But others note that the UN convention, like the American law based on it, calls out "measures intended to prevent births within the group" as well as forced transfers of "children of the group to another group." Journalists and NGOs have found extensive evidence of both practices in Xinjiang.

Rather than diluting the genocide convention, its application to Xinjiang could fulfil a deeper reading of the treaty. Raphael Lemkin, the Polish lawyer who invented the word "genocide", had studied the developments that led to the Nazis' campaign of extermination. The convention, which he helped draft, aimed not just to punish genocide but to prevent it in the first place.

As a result, some human-rights advocates regard calling out the treatment of the Uyghurs as a potentially important step forward in applying the treaty's principles. According to this view, China's government may be playing a long game in Xinjiang, committing genocide not by killing off the Uyghurs but by working across time to erase their identity as a people. "They have patience," says Beth Van Schaack, a professor of human rights at Stanford Law School and a former deputy to the state department's ambassador-at-large for war-crimes issues. "You can imagine them doing it in a much more methodical, slow way, even if it takes three generations." The task the Biden administration has now set itself is to find a way to honour Mr Lemkin's vision without blowing up the world's most important bilateral relationship. ■



They make such nice phones, though

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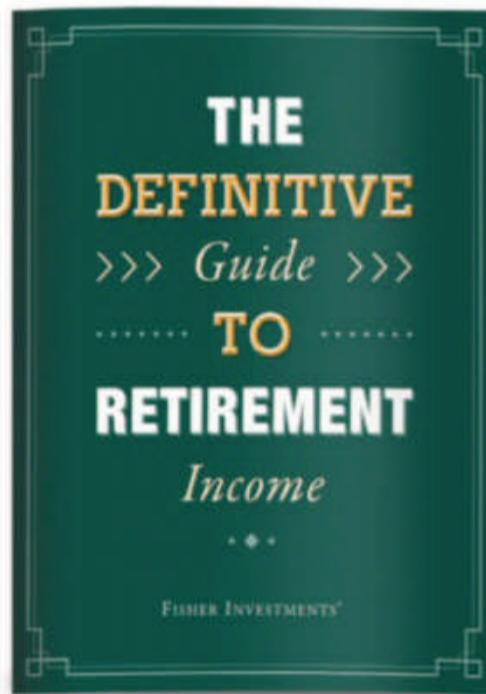
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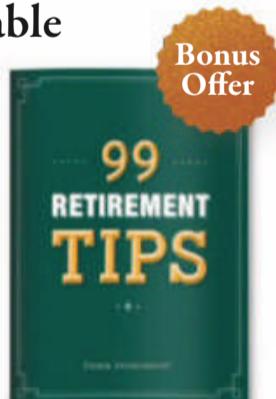
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After decades of undue pessimism, civil libertarians should be moderately concerned



IN THE SUMMER of 1964 a television repairman and Klansman called Clarence Brandenburg invited a television reporter to join him at a hooded rally in rural Ohio. The resultant footage of Brandenburg and other goons standing by a burning cross and vowing to take "revengeance" against blacks and Jews landed him in jail for inciting violence. He was sprung by the Supreme Court, after it ruled that such a threat was too vague to abrogate his right to free speech. That precedent—the court's last word on inflammatory language—was the nub of Donald Trump's defence this week.

It was a poor legal argument, because an impeachment is not a criminal trial, which makes the Brandenburg case barely relevant. But it was a strong political one. Mr Trump is appealing to partisan emotion, not reason. And a belief that the left hates free speech is scripture on the Fox-MAGA right. Thus the war on political correctness Mr Trump promised, when he dared to call Mexicans rapists and Christmas merry. And he has since exacerbated this grievance by characterising the two big social movements of his presidency, #MeToo and Black Lives Matter, as twin prongs of a liberal conspiracy to stifle, or "cancel", conservative voices.

"You're not allowed to use the word 'beautiful' anymore when you talk about women," was Mr Trump's take on #MeToo. The BLM protests, he said, were intended "to silence dissent...to bully Americans into abandoning their values." This ultra-politicisation of civil liberties may be as ominous as anything he has done. Rights subject to a partisan interpretation are not secure (never mind civil). It is also especially threatening to the rights organisation that would naturally hold the line against Mr Trump: the American Civil Liberties Union, which defended Brandenburg and has been the foremost defender of civil liberties for a century.

Left-leaning, though non-partisan, the ACLU has traditionally maintained its influence by suing the governments of both parties in roughly equal measure. It sued George W. Bush's administration for torturing people, for example; and Barack Obama's for killing them with drones. This has not always convinced conservatives that it had their backs. George H.W. Bush derided his Democratic opponent, Michael Dukakis, as a "card-carrying member of the ACLU". Yet such hostility was mainly a response to the organisation's work on civil rights, which Republicans defined themselves

against long before Mr Trump. And a related libertarian gripe, that the ACLU had been captured by minority interests to the cost of its defence of civil liberties, has for the most part been unconvincing.

A cursory review of the centre-right press suggests this incendiary claim has been made, in much the same alarmist Bill-of-Rights-going-to-the-dogs tone, since the 1980s. Meanwhile, ACLU lawyers have carried on defending the speech and assemblies of Nazis—in Charlottesville three years ago just as among the Holocaust survivors of Skokie, Illinois, in 1978—as dutifully as ever. Aryeh Neier, an admired ACLU director of the 1970s (and himself a Berlin-born fugitive from Nazism) says he sees no reduced commitment on that score. The only significant evidence to the contrary—much tutted over by civil libertarians—appears to be a post-Charlottesville determination by the ACLU's current director, Anthony Romero, that the group should no longer help armed groups hold rallies. That does not seem like a big worry.

Yet just because American liberties are in safer hands than many claim does not make them invulnerable to new threats. Illiberalism is on the rise on the left as well as the right. Polls of college students suggest they are more worried about offensive language than free speech—"a serious cause of concern", Mr Romero notes. And the same woke spirit, increasingly evident in boardrooms and newsrooms, has reached the ACLU. The organisation's transgender activism elides sex and gender identity. The ACLU's deputy director for transgender justice suggested last year that a book hostile to that unscientific view should be banned. He was tweeting in a personal capacity, Mr Romero notes, and an organisation dedicated to free speech cannot object to that. Yet the ACLU's decades-old claim that its work on civil rights and civil liberties are mutually reinforcing is under pressure.

Mr Romero acknowledges the tension. He admits to spending more and more time arguing the case for classical civil liberties inside his organisation. In time, he suggests, the more woke elements of his staff will come to accept them: "Leadership matters". Maybe so. Yet politics as well as the culture are against it.

The ACLU's long tradition of sticking it to both parties has been a force for moderation inside the organisation as well as out. "If we became the civil liberties wing of the Democratic Party we would become irrelevant. It would be a death knell for civil rights and civil liberties," Mr Romero says. Yet the more profoundly illiberal drift of the Republican Party has made it hard for the ACLU to maintain its customary even-handedness. It sued Mr Trump's administration over 400 times and advocated impeaching him twice. Thanks to the gusher of money this elicited from approving liberals, it meanwhile doubled in size. It would be odd if that surge, borne of opposition to Mr Trump, had not moved it in a partisan direction.

The shrinking middle

This is an illustration of the damage hyper-polarisation is doing outside politics, to the civic fabric. Already endangered, non-partisan organisations such as think-tanks, research groups and law firms are, like the ACLU, becoming increasingly aligned with the ascendant left. The ACLU's unique history may also provide a useful way to calibrate how worrying this development is. Decades of overly pessimistic attacks on its values and institutional integrity suggest they are stronger than the doomsayers allow. The defenders of American rights are still mostly moderate and effective. The liberal mainstream, by the same token, is probably less vulnerable to illiberal groupthink than is claimed. Yet both are moving in that new and worrying direction, and the endpoint is unclear. ■



Cuba and Venezuela

Practically perfect

CARACAS

Latin America's most socialist countries open up, hesitantly, to the market

“DEEP DOWN, we are one single government, one single country,” said Venezuela’s loquacious president, Hugo Chávez, of the relationship with Cuba in 2007. Fidel Castro, Cuba’s ailing revolutionary leader, was like a father to him. Venezuela provided millions of barrels of subsidised oil to shield Cuba from the economic consequences of its socialist system. Cuban doctors served Venezuela’s poorest neighbourhoods, boosting Chávez’s popularity and providing Cuba with extra cash. Cuban spies schooled Chávez and Nicolás Maduro, who became president after he died in 2013, in the dark arts of perpetual rule. Their political and economic alliance was the strongest in Latin America.

Now the allies are discreetly sharing another experience: adoption of free-market practices to rescue their moribund economies. Neither admits this. The goal, each claims, is “perfeccionamiento”—perfection—of socialism, not its abolition.

On February 6th Cuba’s council of ministers expanded the number of trades open to self-employed entrepreneurs, called *cuentapropistas*. A list dating from 2010 (and twice revised) permitted private enterprise in 127 professions. Cubans could be horse-cart drivers and birthday clowns but not computer programmers or pet veterinarians. A new list, published on February 10th, specifies 124 sectors reserved for the state (or entirely banned). Everything else is to be permitted for entrepreneurs. Some finicky rules, like those that bar hairdressers from offering manicures, are expected to be scrapped.

This follows another long-awaited reform. On January 1st, after more than a de-

cade of debate, Cuba’s government ended its economy-distorting dual-currency system. The cuc, a supposedly hard currency that Cuba introduced 1994 after the collapse of the Soviet Union, is being phased out. The surviving Cuban peso has been pegged at 24 to the American dollar (but is now trading at 50 in the black market). State enterprises, which could hide their losses by valuing each of their Cuban pesos at \$1, will no longer have that luxury. That will probably lead to lay-offs. The government hopes that sacked workers will become newly liberated *cuentapropistas*.

Venezuela, which sabotaged private enterprise with expropriations and price controls but did not outlaw it, has been on a similar journey. Mr Maduro scrapped its bewildering system of multiple exchange rates in 2018. The American dollar, formerly the “criminal dollar”, has recently been allowed to circulate freely. It is much more common on the streets of Caracas than bolívar banknotes, of which the government is not printing enough to meet demand. The government no longer enforces price controls. It has even raised the price of petrol for the first time since 1996; state-run petrol stations take dollars. In November Santa Teresa, a private maker of rum, issued the country’s first corporate bond denominated in dollars in two decades.

Shops, once emptied by price controls,

→ Also in this section

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35 Bello: A comeback for Correa?

► are now well stocked. A semi-dormant Ferrari dealership plans to open a showroom in Caracas. In the countryside, vast tracts of land that Chávez once promised to give to impoverished *campesinos* are being bought by people who got rich from the crony capitalism practised by his successor. One farmer in Bolívar state, in eastern Venezuela, says that he was offered \$5m in cash to sell. He declined.

Parts of the state sector are shrinking, as is about to happen in Cuba. PDVSA, the decrepit oil monopoly, which in 2012 employed 150,000 people, now has a workforce of 111,000, according to Iván Freites, secretary of the FUPTV oil union. PDVSA has reportedly offered small domestic contractors rights to operate its oilfields. Many ex-PDVSA workers are among the 5.4m Venezuelans, 18% of the population, who have left the country since 2014. (On February 8th Colombia offered residency rights for ten years to nearly 1m Venezuelans who migrated to the country.)

Cuba and Venezuela are acting out of desperation. Venezuela has been in recession for more than six years (see chart). Its debt soared under Chávez, mismanagement at PDVSA caused oil production to slump and sanctions imposed by the Trump administration in 2019 clobbered oil exports. Rampant corruption boosts the market for supercars but bankrupts the state. "This government is doing the sort of things that would be demanded under a classic IMF restructuring, and sanctions have made it politically possible," says a Venezuelan businessman.

Cuba's graft does not match Venezuela's. Its officials "are mostly punctilious administrators. Corruption tends to be an afterthought," says a Western businessman. But its economy is similarly blasted. GDP shrank by more than 11% in 2020, according to the government. Exports of sugar are close to their historic lows. In 2019 the Trump administration restricted travel by Americans to Cuba and the sending of money by Cuban-Americans to family members on the island. The United States has imposed sanctions on operators of tankers that carry oil from Venezuela to Cuba. Last year it forced Western Union, an important conduit for remittances, to shutter its shops in Cuba.

Sanctions plus covid-19 cut the number of tourists from an expected 4m to 80,000 last year. Luxury hotels in Havana, built by the army with help from mysterious (perhaps Venezuelan) loans, stand empty. For ordinary Cubans, food is in short supply.

Neither regime is planning to leap free of socialism in a single bound. The IMF does not lend to Venezuela and Cuba is not a member of it, which means they will not get the sort of aid available to most countries that undertake painful reforms. Venezuela's government will continue to fi-

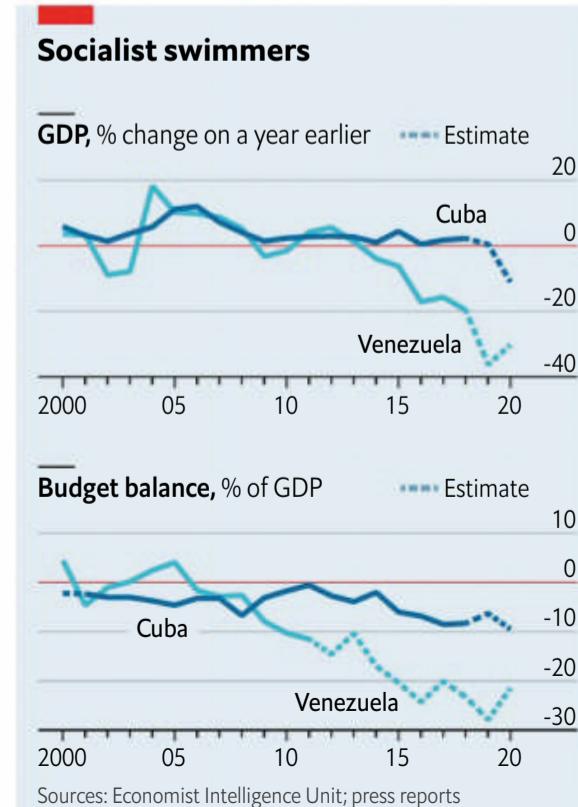
nance its massive budget deficit by getting the Central Bank to create money.

Cuba's president, Miguel Díaz-Canel, is more constrained than Mr Maduro. He is "at best a closet reformer", says the Western businessman. Soviet-era officials still have powerful jobs. They include Raúl Castro, Fidel's brother, who is secretary-general of the Communist Party. Mr Díaz-Canel will try to avoid antagonising them at least until April, when he is expected to take over from Mr Castro.

For now, the government is maintaining control of all large industries and wholesale shops, which will restrict *cuentapropistas'* options for obtaining supplies. The state will continue to monopolise professional services such as architecture and accountancy, a big disappointment. Talk of a law to enable entrepreneurs to incorporate has gone quiet.

The pandemic and American sanctions mean that neither Cuba nor Venezuela is likely to enjoy a market-led boom anytime soon. Ventures requiring large investments will have to wait. Cuba's continued restrictions on entrepreneurship in vast areas of the economy will blunt its growth. But ingenious Cubans will exploit to the full the new opportunity to enter any profession that is not specifically prohibited.

Mr Maduro and Mr Díaz-Canel will not offer their citizens political freedoms to match their new economic ones. They look to China and Vietnam, where repression and rising prosperity co-exist, rather than to democratic neighbours. "Both countries are changing their economic policies to certain degrees. But they are not changing their political regimes," says Orlando Ochoa from Economista Consultor, a consultancy in Caracas. "That is the whole point." Deep down, Cuba and Venezuela will continue to have much in common. ■



Colombia

Activists amid anarchy

BOGOTÁ

Why so many social leaders are being murdered

YORDAN EDUARDO GÜETIO championed the rights of the Nasa people, an indigenous group in Cauca, in western Colombia, to which he belonged. On February 2nd men in military fatigues stopped him and his father on their motorcycle on the outskirts of Corinto, in northern Cauca. They let Mr Güetio's father go, but shot the son dead. He was less than 30 years old.

Activism has long been a dangerous vocation in Colombia. From the 1980s to the early 2000s right-wing paramilitary groups murdered trade unionists, Communists and peasant leaders. The FARC, a guerrilla group that demobilised after a peace deal with the government in 2016, kidnapped farmers who opposed them.

Peace, it was thought, would bring safety for social leaders, as Colombians call activists. In fact, it has brought more peril. At least 400 rights-defenders have been killed since 2016, according to the UN's human-rights commissioner. Colombia's ombudsman has documented 710 such murders during the same period. Last month 19 activists were killed or went missing, according to Indepaz, a think-tank.

One reason may be that peace has encouraged more activists to make more demands, says Juan Carlos Garzón of the Ideas for Peace Foundation, a think-tank. They campaign for causes that were overshadowed by war, such as the rights of indigenous and Afro-Colombian people, land reform, protecting the environment and corruption-free government.

A more obvious reason is the rise of armed groups that are fighting for control of territories vacated by the FARC. These include the ELN and the EPL guerrilla outfits and gangs composed of FARC and paramilitary fighters who refused to disarm. In Nariño, in south-western Colombia, drug-trafficking groups attack advocates of a government programme that encourages farmers to switch from growing coca, used to make cocaine, to legal crops like cacao.

Most activists slain in Cauca were indigenous or Afro-Colombian leaders trying to expel armed groups from territories reserved for them. In Norte de Santander, in the north-east, the ELN and the EPL are at war with each other and with local worthies, such as football coaches, whom they suspect of supporting their foes.

The state remains absent from large swathes of Colombia's territory. The government sends soldiers to kill drug-traf- ►

► fickers and other troublemakers. But it has not set up institutions needed to enforce the law consistently. Without order, it is left to protect social leaders one by one.

Iván Duque, Colombia's conservative president, has made an effort. In 2018 he created the "timely action plan" to come up with policies to protect social leaders. The government holds meetings to discuss alerts issued by the ombudsman about specific risks to social leaders. A "national protection unit" has given hundreds of leaders cell phones, bulletproof vests and even bodyguards and armoured vehicles.

These are half-measures. When the ombudsman identifies threats, officials rarely propose action to head them off, says a person who attended their meetings. The interior ministry, which has no enforcement powers, is in charge of the timely action plan. Other agencies, such as the defence ministry, are supposed to protect social leaders. But they do not co-ordinate with each other outside Bogotá, says Mr Garzón.

Another problem is mistrust. Activists are cynical about a government that is largely absent from their regions. Left-wing parties have used the murders as a

cudgel against Mr Duque's government. Some of his allies dismiss their outrage as an expression of *castrochavismo*—socialist ideas from Cuba and Venezuela. Activists sometimes refuse to meet officials to discuss how to protect them.

On February 10th Human Rights Watch, a global pressure group, urged the government to establish police forces and law courts in regions where social leaders are being slaughtered. Mr Duque, whose term ends in 2022, is running out of time to do that. Meanwhile, tragedies like the murder of Mr Güetio will keep occurring. ■

Bello Ecuador's politics of the negative

Anti-incumbency versus anti-correismo

FOR A DECADE Rafael Correa, a leftist populist, ruled Ecuador as an autocrat. Enjoying an oil boom, he doubled the size of the state, built roads and hospitals, curbed the media, harassed opponents and presided over corruption. As money got tight, he lined up a proxy: Lenín Moreno, his former vice-president, narrowly won a presidential election in 2017 against Guillermo Lasso, a conservative banker. But then Mr Correa's plan unravelled.

Faced with an oil bust, Mr Moreno broke with his predecessor in both economics and politics. Since Ecuador adopted the dollar in 2000, it cannot devalue when exports fall. Instead of saving part of the oil windfall Mr Correa had piled up debt. Mr Moreno had little choice but to adopt austerity. An ill-managed attempt to withdraw fuel subsidies prompted widespread protests in October 2019 and, with the pandemic, left his government deeply unpopular.

That has offered Mr Correa, who is in Belgium, another chance for a comeback. Sentenced in absentia to eight years in jail for corruption, he picked a new proxy for the presidential election on February 7th. Andrés Arauz, a loyal former minister but dull campaigner, promises to convolve a constituent assembly with the seeming purpose of taking control of the judiciary, overturning Mr Correa's sentence and allowing him in effect to run the country.

Whether Mr Correa's gambit works turns in part on whom Mr Arauz, who won 33% of the vote, faces in a run-off on April 11th. For 60 hours after the polls closed it looked as if that would be Yaku Pérez of Pachakutik, an indigenous party. After a review of votes that had been set aside because of administrative errors by polling officials—many in Guayaquil, the

main port—Mr Lasso squeezed ahead with 19.7% to Mr Pérez's 19.6%.

On his Twitter account Mr Correa had been rooting for a fight with Mr Lasso once again. This would be a straightforward left-right contest, and two-thirds of voters backed candidates to the left of centre. Mr Lasso is tarred not just by being "the banker candidate", as Mr Arauz calls him, but also by his support for Mr Moreno's government. In much of Latin America today, disdain for incumbents trumps all else.

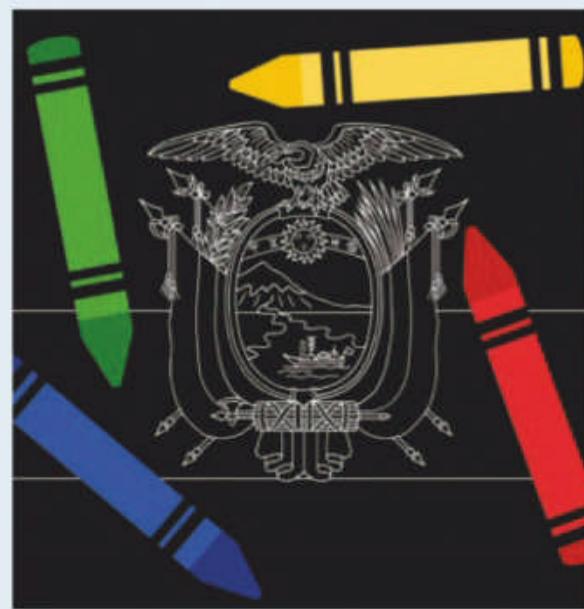
However, Mr Correa's appeal is waning. Mr Arauz's share of the vote was seven points lower than Mr Moreno's in the first round in 2017. As Mr Lasso put it, two-thirds "have voted no to the totalitarian and populist model that is trying to return". Mr Pérez, who claimed fraud, had a better chance of harvesting anti-correismo. He grew up in a house without running water. He studied law, became an environmental activist and changed his first name from Carlos to Yaku, meaning "water" in the Quechuan languages of the Andes. He abhors Mr Correa, whose government detained him five times for op-

posing mining projects. Campaigning partly on a bicycle, he has a reputation for honesty. Whereas Mr Correa is an ally of the dictators in Venezuela and Cuba, Mr Pérez is not. His political affinities look more green than red. Will he now endorse Mr Lasso?

The next president faces some unforgiving realities. Hit hard by the pandemic and its recession, Ecuador's economy is recovering only slowly after contracting by 9% last year. A \$6.5bn loan from the IMF, of which \$4bn has already been disbursed, requires the government to cut the fiscal deficit from 7.8% of GDP last year to 2.8% this year. That will be less hard than it looks: tax revenues are recovering and Mr Moreno's debt renegotiation saved 1.5% of GDP in interest that would have fallen due this year. Even so, the new government will have to cut spending or raise taxes—and probably both—fairly soon.

Mr Arauz promises a \$1bn giveaway to families in his first week. He wants to pay for this by using the Central Bank's reserves. Since their function in a dollarised economy is to back bank deposits, that risks a bank run. Mr Lasso opposes raising VAT, but otherwise supports the IMF programme and fiscal restraint.

The next government will not have a majority in the parliament. Mr Correa's allies will form the largest bloc and his sister Pierina may be the legislature's speaker. Ecuador's drama is that the dollar has given it stability, but can bring rapid growth only if governments undertake sweeping reforms. When president, Mr Correa squandered an oil-fuelled opportunity to do that. History suggests that with less money, populists become more authoritarian. To prevent that, anti-correismo will need to overcome anti-bankerism.



"Since losing my mother to pancreatic cancer, my goal has been to ensure that everyone facing a pancreatic cancer diagnosis knows about the option of clinical trials and the progress being made."

-Keesha Sharp

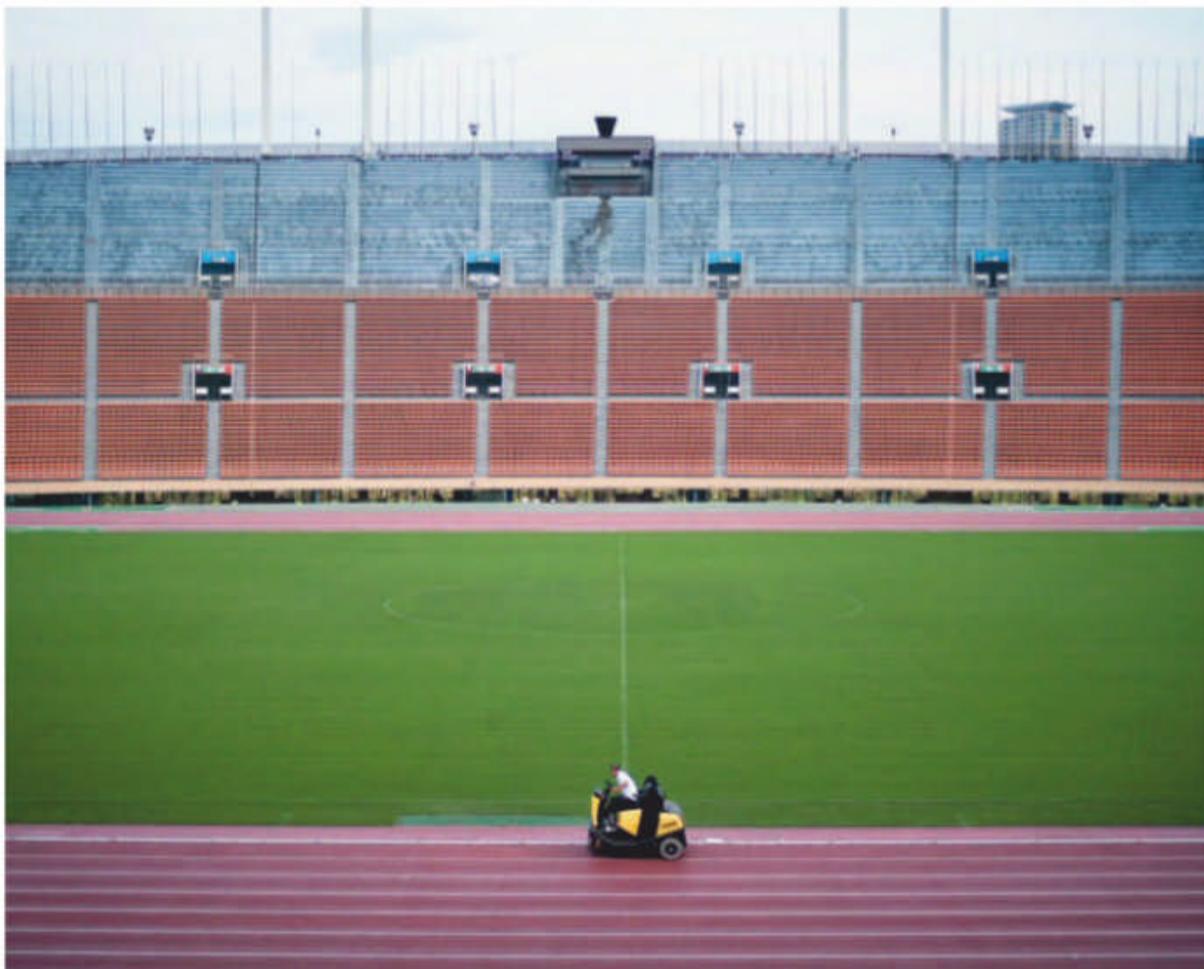


Photo By Brett Erickson

Stand Up To Cancer and Lustgarten Foundation are working together to make every person diagnosed with pancreatic cancer a long-term survivor.

To learn more about the latest research, including clinical trials that may be right for you or a loved one, visit PancreaticCancerCollective.org.





The Tokyo Olympics

Olympic gory

TOKYO

The obstacles to holding the games as scheduled in July are daunting

THE RED digits on a clock outside Tokyo Station tick off the seconds until the Olympic games begin, on July 23rd. Yet the closer the date gets, the greater the uncertainty about whether the games will go ahead at all. The clock has, after all, already been reset once: as the covid-19 pandemic swept across the world last year, they were delayed until this year. Organisers spoke of the Olympics as a symbol of the light at the end of covid's tunnel. With the torch relay, the official start of the festivities, set to begin on March 25th but with the disease still rampant, another decision looms.

It is a more complicated choice than it was last year. Covid-19 is better understood and more effectively controlled than before, making the games, at least without massed spectators, appear tantalisingly feasible. But holding them comes with big risks. An Olympic outbreak would symbolise hubris and incompetence, and could provoke a crisis for the prime minister, Suga Yoshihide, whose approval ratings are already sagging. The alternative is also unpalatable: the International Olympic Committee (IOC) has, at least so far, ruled out another postponement, meaning that if the Tokyo games are not held this year,

they will probably be cancelled altogether. "They have presented [the games] as a symbol of victory over coronavirus, so if they cancel, it becomes a symbol of the Japanese government's failure," says Sone Yasunori of Keio University. "Both options are quite terrible."

The reasons to cancel the games are obvious. The pandemic is still raging around the world, with nearly 300,000 new cases recorded every day. Japan itself is in the midst of a stubborn third wave that forced the government to extend a state of emergency until early March. Although vaccination campaigns have begun in many countries, even the most optimistic estimates do not foresee immunity becoming widespread enough by the summer to guarantee a virus-free event. In Japan the first jabs have yet to be administered. Some public-health experts say it would be mad to go ahead. Even some athletes agree. As Niiya Hitomi, a Japanese track-and-field star, put it: "To be honest, I think life is more important than the Olympics."

The Japanese public, predictably, has soured on the idea of hosting tens of thousands of athletes, journalists and other hangers-on from around the world, each

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potentially a vector for the virus. When polled in 2019, nearly 90% of Japanese were looking forward to the Olympics; recent polls show that 80% now oppose holding the games this year (roughly 40% favour cancellation, while another 40% want another postponement).

Spiralling costs have added to the misgivings. The tab had already ballooned from a projected \$7.3bn to an official estimate of \$12.6bn, but government's own auditors put the true cost at over \$20bn. Postponement and virus-prevention measures will add another \$2.8bn to the total. The president of Tokyo's organising committee, Mori Yoshiro, an 83-year-old former prime minister, added to the event's problems earlier this month when he suggested that women talk too much in meetings, prompting a storm of public indignation. Japanese media are reporting that he will soon resign.

Yet though the Japanese people bear most of the risks of the games, the choice is not theirs alone. Japan's top leadership remains committed: Mr Suga told a recent virtual gathering of the World Economic Forum that Japan is "determined to deliver hope and courage to the world". So is the IOC: Thomas Bach, its president, has said there is "no plan B" to holding the Olympics in Tokyo this year. Myriad stakeholders, from national Olympic committees to corporate sponsors to television networks, have an interest in seeing the games happen, even in a limited form. Many athletes would welcome the chance to compete. Many Japanese business leaders believe even a circumscribed Olympics would be

► better than cancellation, economically speaking. Big sporting events elsewhere offer hope that the games can proceed: just this week, America's National Football League crowned a new Super Bowl champion, while the Australian Open, an international tennis tournament, got under way, despite a series of covid-19 scares.

The Olympics, however, present a challenge on a different scale. Some 1,200 players, staff and officials visited Australia for the Open. More than 11,000 athletes from some 200 countries are booked to compete in Tokyo, with many more officials, coaches and reporters tagging along. Organisers must figure out how to keep athletes healthy, especially in close-contact sports. Outbreaks have already disrupted sumo and rugby tournaments in Japan this year. If top contenders are infected, it would threaten not only their health, but also the integrity of the competition. Organisers will also have to work out how to welcome fans, if they are allowed to attend at all. At the moment foreign spectators are unlikely, though some local ones may be permitted, as they have been in recent months at Japanese football and baseball games.

Plans released by the organising committee this month offer hints of what such an event might look like. Those attending would be subject to constant testing and rigorous restrictions on movement. What spectators there are would be allowed to clap, but not sing or chant. Hugs and handshakes should be avoided. The Japanese government's covid-19 tracking app, COCOA, would be deployed to try to stop the spread of any infections. (It has problems of its own: the health ministry recently admitted that for more than four months, a bug prevented the Android version of the app from notifying users who came into close contact with individuals who tested positive for covid-19.)

The fate of the games, like so much else, will depend on how the pandemic progresses. In private, some sources close to the government presume that holding them as scheduled will prove impossible. They wonder about the next unclaimed summer slot—in 2032. Other sources think that the obstacles will seem less daunting once the winter outbreak ebbs and vaccines start flowing. The public, they reckon, will come around. Either way, Japan will probably twist and turn to avoid making a unilateral decision, lest it be seen as denying the world. Last year's postponement came only after Australia and Canada, among others, announced they would not send any athletes. In late January, by contrast, the head of Australia's national committee declared: "The Tokyo Games are on. The flame will be lit on July 23rd 2021." If any athletes do indeed make it to the starting line, that in itself will be a feat worthy of a medal. ■

Protests in Myanmar

Don't putsch me

SINGAPORE

The army faces growing public opposition to its coup

IT WAS DIFFICULT to hear the commander-in-chief over the din. Every night since the army toppled Myanmar's civilian government on February 1st, people all over the country have banged pots and pans at 8pm, turning a traditional ritual to cast out evil spirits into a political protest. On February 8th, at 8pm, the head ghoul made his first televised address since the coup. Those who were not drumming kitchenware or slapping the image of the general on their TV screens with their slippers would have heard Min Aung Hlaing trying to reassure the public. There would be no change in government policy, he said, and elections would be held in a year. His interim government would be "different", he pledged, from the oppressive junta that had preceded Myanmar's ten-year experiment with democracy.

His audience is not convinced. Just hours earlier the army's Orwellian "True News Information Team" had warned that action would be taken against "wrong-doers" who "disrupt the state's stability". But its pleas for "discipline" are falling on deaf ears. Tens of thousands of Burmese have thronged the streets in cities big and small, day after day, since February 6th, in the biggest protest movement in a generation. They are clamouring for the release of Aung San Suu Kyi, the leader of the National League for Democracy (NLD), the erstwhile ruling party. To justify the coup, the army claimed, without evidence, that the election in November at which the NLD won a second term by a landslide was

marred by "terrible" fraud.

Many of the demonstrations have the air of a carnival. On February 10th young women paraded around central Yangon wearing Disney princess outfits. Another group carried a coffin with a picture of the commander-in-chief. Placards full of obscenities abounded. Shops have sold out of balloons in the NLD's trademark red.

Yet a current of foreboding is charging the atmosphere. The previous junta crushed dissent ruthlessly. Htay Win, who runs a tea shop in Yangon, took part in protests in 1988 and 2007. Both times the army shot into crowds, killing hundreds. "I think 100% that the military is going to crack down on us very soon," he says.

General Min Aung Hlaing's assurances notwithstanding, agents from the feared intelligence service are knocking on doors, prompting many activists and journalists to go into hiding. Some 200 people have been arrested, according to the Assistance Association for Political Prisoners, a human-rights group. Ninety districts, including all of Yangon, the largest city, and much of Naypyidaw, the capital, have imposed curfews and restricted gatherings to no more than five people, in effect criminalising public assembly.

The authorities have also begun trying to disperse the protests. Police have fired tear gas, water cannon and rubber bullets into crowds. Videos on social media showed police beating protesters with truncheons in Mandalay, a big city. Three protesters are being treated for wounds from rubber bullets. Two people in Naypyidaw were shot with what seems to have been live ammunition; one, Mya Thwe Thwe Khine, is on life support.

So far, the protesters seem undeterred. Their numbers are swelling with people from all walks of life: teenagers, labourers and professionals. Teachers, firefighters and health workers across the country are on strike. Civil servants are reportedly re-



Ghost busters

signing en masse, among them the entire staff of the Ministry of Welfare. On February 10th a handful of officers from the police force, which is under the command of the army, broke ranks and joined the protesters. The next day, dozens of police officers from Kayah state declared their opposition to the coup.

General Min Aung Hlaing may “hope the protests exhaust themselves” and that Burmese “settle for less than what they’re demanding right now”, says Aaron Connally of the International Institute for Strategic Studies, a think-tank in Singapore. But

with the bureaucracy in turmoil and some foreign businesses leaving the country, “it is very difficult to see how they get back to some kind of status quo”, says Kim Jolliffe, another analyst. Young people, in particular, are more educated, organised and connected than the previous time protests convulsed the country, in 2007. They are unlikely to back down meekly, Mr Jolliffe thinks. President Joe Biden’s announcement on February 10th that America would impose sanctions on the coup leaders is another blow to the generals.

The coup, naturally, has hardened mis-

givings about the prominent role the army already took in public life. Esther Ze Naw, a 27-year-old activist, wants not only a return to civilian rule but also an overhaul of the constitution, which the generals wrote to entrench their own power. “If we cannot abolish the military regime,” she says, “then full democracy will not be created.” A prominent 22-year-old activist speaks of “revolution”. If non-violent methods of protest fail, he says, he will take up weapons. “I think Min Aung Hlaing expected this coup to be a fait accompli,” says Mr Connally. “It’s not been that at all.” ■

Banyan Cool it or blow?

Joe Biden has two months to decide what to do about Afghanistan

WHEN HE CAME to office last month President Joe Biden inherited, in Afghanistan, America’s longest war. He also inherited a deal that his predecessor struck a year ago with the Taliban, who have fought a bloody insurgency ever since American-led forces ousted them from power in late 2001. Under the accord, Donald Trump agreed to withdraw all American forces by May 1st 2021—so supposedly ending this “forever war”.

The Taliban leadership promised, in return, not to allow Afghanistan to be used as a base by terrorist groups planning attacks against America, as it was by al-Qaeda. It also committed itself to talks with the debilitated, American-backed government in Kabul, whose writ covers a diminishing portion of the country. As part of those talks, it specifically promised to negotiate a “permanent and comprehensive ceasefire”.

The United States has kept its side of the bargain. In recent months Mr Trump cut the American presence, which once numbered over 100,000 servicemen, to just 2,500 troops. That is a fraction of what American generals consider a minimum, for both counter-terrorism efforts and for helping the despondent Afghan armed forces prepare for life without American support. Yet apart from a (delayed) exchange of prisoners, very little else has moved forward. The Taliban still appear close to al-Qaeda. Talks between the Taliban and the Afghan government started six months late, in September, and have got nowhere. The gulf at times appears unbridgeable, including whether Afghanistan should be a theocracy or a republic.

Worst of all, the violence—the Taliban’s biggest bargaining chip—continues. Scores are killed or injured each week in gun and bomb attacks. Recent

assassinations in Kabul and elsewhere, widely assumed to be the work of the Taliban, have targeted not just police and soldiers but civil-society activists, journalists and, last month, two female judges. On February 9th five government employees were killed in two separate attacks in the capital.

Laurel Miller, a former American official at the International Crisis Group, a think-tank, points out that neither the Taliban nor the government believes they have exhausted their military options, so are half-hearted about talking. As May approaches, Mr Biden faces a pressing decision. Should the United States, having expended 2,300 American lives and nearly \$1trn, cut and run, leaving the country to its fate? Or should it declare the peace deal dead and accept that the war, if not endless, is not over yet?

Mr Biden’s gut surely favours the first option. When vice-president to Barack Obama, he argued against redoubled attempts at nation-building in Afghanistan. But his reappointment of Mr Trump’s special envoy to Afghanistan,

Zalmay Khalilzad, who negotiated last year’s deal, suggests indecision. So does the administration’s talk of a “review”.

With the clock running down, Ms Miller and others argue that Mr Biden should seek a six-month extension of the deadline. The intention would be to keep the peace process alive, while buying the Biden administration time to work out what it wants. A delay would reassure the Afghan government, which felt sidelined by the Trump deal and dreads American abandonment. Officials in Kabul hope to be treated as American partners again. Their message to the Biden administration, says a negotiator, Nader Nadery, is that a lasting peace deal must not be rushed, especially when the Taliban are not keeping to their side of the bargain.

But America has few ways to force the Taliban to behave better. The insurgents’ leaders, former international pariahs, may be reluctant to give up the boost in standing that the peace process has given them. And the Taliban’s friends in the region, in places like Pakistan, might conceivably be persuaded to press the insurgents to curb their attacks.

To some in both Afghanistan and America that seems like fantasy. They fear the Taliban will seize on any American foot-dragging to abandon the peace process altogether. Even if the Taliban do acquiesce to a delay, that may only be because they believe time works in their favour. Popular anger at the corruption and ineptitude of the Afghan government is high. Taliban commanders, meanwhile, are buoyed by their creeping conquest of the country. They talk not of power-sharing but of a coming takeover. Meanwhile, even if Mr Biden secures an extension, the same dilemma is likely to loom for him six months later: should I stay or should I go?



Bangladesh's army

Wallets at the ready

The government has bought soldiers' loyalty, at a high price

WHEN AL JAZEERA, a Qatari television network, accused Bangladesh's army chief not only of helping to hide his two fugitive brothers, who are on the run from a murder conviction, but also of steering military procurement contracts their way, the Bangladeshi government did not investigate the allegations. It did not even bother to rebut the claims in detail—including the assertion by one of the fugitives that Sheikh Hasina Wajed, the prime minister, was aware of and happy with this arrangement. Instead, it simply dismissed the whole story as a "smear campaign".

Sheikh Hasina has a peculiar relationship with the armed forces. It was soldiers who got her into politics in the first place, by murdering her father, Sheikh Mujibur Rahman, Bangladesh's first president, as well as most of her family, during a coup in 1975. Ever since, she has pursued the two somewhat contradictory ends of avenging the killings and cultivating close ties with the army, lest she be toppled herself.

Sheikh Hasina's party, the Awami League, used to be less popular among the armed forces than its main opposition, the Bangladesh Nationalist Party (BNP), which was founded by an army officer and war hero, Ziaur Rahman, and is now led by his wife, Khaleda Zia. Yet since Sheikh Hasina began her second stint in power in 2009, she has gradually purged the armed forces of BNP supporters and promoted loyalists like Aziz Ahmed, the current army chief and object of Al Jazeera's accusations (pictured, on the left). At the same time, she has showered the armed forces with perks. Close relatives of soldiers can receive health care in military hospitals, which are considered the best in the country. In 2015 she doubled pay across the armed forces, as well as for the civil service.

The government's spending on defence rose by 123% between 2008 and 2017, according to a report by the Stockholm International Peace Research Institute, a watchdog, despite the lack of any obvious military threats. The army has bought Chinese fighter jets and tanks, and built several big new bases, such as one of 620 hectares in the southern district of Patuakhali that the prime minister opened in 2018.

During Sheikh Hasina's decade in power, the armed forces have also massively expanded their business interests, in part through the Bangladesh Army Welfare Trust (AWT) and Sena Kalyan Sangstha



Sheikh Hasina pays homage

(SKS). These two foundations for the welfare of soldiers and veterans are technically independent of the army, but managed by serving officers. According to its website, SKS alone has assets of over 60bn taka (\$700m). Among the assets of the AWT, meanwhile, are several luxury hotels and the firm that makes the voting machines used in national elections. There was no tender for the contract; watchdog groups and opposition politicians complain the machines' design makes vote-rigging easy.

The armed forces also manage lots of infrastructure projects on the government's behalf—an alarming prospect given the practices Al Jazeera has alleged. The navy spent \$300m developing a refugee camp on a remote island, for instance. The air force is in charge of the expansion of the main airport in Dhaka, the capital. The army handles highway construction.

Senior officers are also handed explicit opportunities for self-enrichment, in the form of land in Dhaka, a cramped city of 18m. They all get plots on which they are entitled to build a seven-floor building, with up to seven apartments. In theory, this is a form of housing allowance; in practice, officers sell at least some of the flats at a huge profit. Many serving or retired officers are also given swanky government jobs: heading the national port authority, for instance, or the agency that regulates tea farming. Even the lower ranks enjoy lucrative perks: the government passes on the roughly \$10,000 it receives from the UN for each Bangladeshi soldier deployed on a peacekeeping mission.

This coddling has worked. Although the army has seized power three times and run the country for 15 of the 50 years since independence, it has let Sheikh Hasina be. But in buying its loyalty, she has put it at the heart of government. Given her lack of a clear successor, its banishment from politics may last no longer than she does. ■

Noise complaints in South Korea

Hell is other people

SEOUL

The pandemic has enraged a nation of apartment-dwellers

THE LOUD music that his neighbours keep playing is fairly easy to deal with, says Yoo Seung-joo, a 21-year-old who lives in a block of flats in Seoul. "I just call the security guard to tell them to keep it down and that usually works." But there is a more delicate problem. "At least once a week I'm woken up at 5am by loud sex noises." The recurring disruption to his sleep is extremely wearing, but he feels too embarrassed to raise it with the security guards, let alone his parents, with whom he shares the flat.

Mr Yoo is not the only South Korean suffering from noisy neighbours. In a country where around two-thirds of people live in sound-carrying high-rise apartment blocks, "noise between floors" is such a well-established problem that there is a national centre dedicated to dealing with it. The centre registers complaints and offers mediation through a range of committees to prevent lawsuits and perhaps even patch up neighbourly relations.

The pandemic has given the noise mediators more work. Although South Korea never imposed a lockdown, the government recommended early last year that people work from home whenever possible and avoid going out to prevent the spread of covid-19. For those stuck in cramped flats at all hours, opportunities for being bothered by loud neighbours have proliferated. The noise centre registered 60% more complaints in 2020 than in 2019.

Resolving them is not easy, not least because large numbers of people seem to be driven mad by the mere existence of their neighbours. Nearly two-thirds of the complaints the centre received last year were related to children running or adults simply walking in the flat upstairs. Total silence being an unreasonable expectation, mediation often ends with people being told they have to put up with the noise, says a lawyer representing those who wish to take their complaints to court. Even if they win, compensation is paltry.

The government, which last mandated thicker floors in new buildings in 2013, is considering requiring them to be thicker still. But that will not help residents of older flats. With few options to settle matters, long-suffering apartment-dwellers sometimes take them into their own hands. Many websites recommend effective ways to take revenge on noisy neigh-

► bours, for instance by blasting bass-heavy music towards the ceiling or by banging rubber mallets against the wall to create noises that can “shake the skull”.

Not everyone takes this advice quite as literally as the man sent to prison in September for assaulting his neighbour with a rubber mallet after a noise dispute. But many resort to desperate measures. Kwon Seo-woon, who suspects her upstairs neighbours practise basketball and golf in their apartment, says bashing the hoover against the ceiling has worked on occasion. Lee Sun, who feels tormented by the noise of her neighbours’ children, says she

is considering putting up a notice in the lift to shame them publicly. Mr Yoo says he has tried playing Buddhist chants and the national anthem through the ceiling at full volume. Though effective at shutting up the neighbours, the approach has its drawbacks: “It’s basically unbearable to listen to for any length of time.”

The number of noise complaints will probably fall along with the covid-19 case-load. But pandemic or not, it seems certain that there will always be a healthy market in South Korea for thick carpets, fluffy slippers and noise-cancelling headphones—if not rubber mallets. ■

grated bloc. There is little trade or tourism among its members. Their most important ties are to the various countries of the Pacific rim rather than to one another. Although Jules Dumont d’Urville, a French explorer, divided the Pacific into three regions in the 1830s, contemporary economic realities have in effect reduced it to two.

The northern Pacific relies chiefly on America as a source of aid and a place to migrate to, whereas the south has closer ties to Australia and New Zealand. In the northern Pacific most flights go to Guam, an American territory, or Hawaii, as well as to China, Japan and Taiwan in search of tourists. In the south they tend to connect to Auckland, Brisbane or Sydney. Australia and New Zealand are the biggest contributors to the PIF’s budget.

Micronesia straddles this divide: the two southernmost Micronesian countries, Kiribati and Nauru, have strong ties to Australia. Nauru has earned most of its foreign exchange over the past decade by hosting a detention centre for Australia’s unwanted asylum-seekers. Kiribati, a country of some 120,000 people spread across an area of ocean bigger than India, uses the Australian dollar as its currency.

That may undermine the Micronesians’ united stance. So may geopolitics. Australia and America are both anxious about China’s expanding influence in the Pacific. One of the ways they hope to curb it is by promoting Pacific unity. Guam, the Northern Marianas and American Samoa, America’s three remaining territories in the Pacific (as opposed to Hawaii, a state), became associate members of the Forum in 2011. Already David Kabua, president of the Marshall Islands, has said he would prefer to “review” membership rather than pull out of the Forum. A few more Zoom calls may yet patch things up. ■

Geopolitics in the Pacific

Palm-fringed fury

WELLINGTON

Micronesian countries threaten to withdraw from the Pacific Islands Forum

IT WAS YET another Zoom meeting gone horribly wrong. The annual shindig of the Pacific Islands Forum (PIF), the main regional organisation for the far-flung countries of the Pacific, could not take place in person this year, owing to covid-19. Instead, its members chose a new secretary-general in a video conference. When a former prime minister of the Cook Islands, Henry Puna, squeaked into the job by a single vote, five of the forum’s 18 members threatened to withdraw from the body in protest.

The five dissenters are the PIF’s Micronesian members: Kiribati, the Marshall Islands, the Federated States of Micronesia (FSM), Palau and Nauru. They insist that a gentlemen’s agreement requires rotation of the top job among the three main regions of the Pacific: Melanesia, Polynesia and Micronesia (see map). Since the outgoing secretary-general was Melanesian, and her predecessor was from Polynesia, the Micronesian candidate, Gerald Zackios, had widely been considered next in line. Yet on February 4th, with Australia’s encouragement, the forum’s members disregarded the convention to award Mr Puna the job by nine votes to eight.

The Micronesians are furious. Palau announced it was shutting its embassy in Fiji, where the PIF’s secretariat is. Then on February 9th the five Micronesian countries declared that they would “initiate the process to formally withdraw from the Forum”, although the final decision will be up to national governments.

Micronesians have long feared marginalisation in Pacific diplomacy. The PIF began life in 1971 as the South Pacific Forum, an organisation of Pacific countries mostly

south of the equator. At the time most of Micronesia, to the north, was still, in effect, an American colony (technically, America administered the area on behalf of the UN). All five Micronesian countries had joined the forum by 1995, but only in 1999 did it drop the word “south” from its name.

Moreover, even by Pacific standards the countries of Micronesia are small. All five put together muster a population of barely 300,000, not only vastly less than PIF’s giants, Australia (25m), Papua New Guinea (8.6m) and New Zealand (4.9m), but also considerably less than Fiji (900,000) or the Solomon Islands (670,000).

The PIF has never been a closely inte-





Repression in Tibet

Accept these gifts, or else

As in Xinjiang, China is tightening its grip in Tibet

THE COMMUNIST Party chief of Tibet, Wu Yingjie, replied in January to a letter from a yak-herder living on the outskirts of the region's capital, Lhasa. According to state media, the author, Sonam Tsering, had expressed gratitude to China's leader, Xi Jinping, for his "happy life", and to the party for providing care "as warm as the sun". Mr Wu asked the farmer to spread this story to others in order to encourage them, too, to love Mr Xi "from the bottom of their hearts". He also made clear what was not responsible for Mr Tsering's happiness: Tibetan Buddhism and its leader, the Dalai Lama. Mr Wu wrote that Tibetans must "reduce religious consumption", eliminate the Dalai Lama's "negative influence" and "follow the party's path".

The party has long vilified the Dalai Lama, who escaped to India in 1959, as the treasonous overseer of an "evil clique" that seeks to split Tibet from China. Since 2007 the government has even claimed sole legal authority over his reincarnation (he is

85 and, says an aide, in "excellent health"). But in recent months officials have intensified their efforts to eradicate the Dalai Lama from the religious lives of China's 6.3m Tibetans, of whom less than half live in Tibet itself, with most of the others in neighbouring areas of the Tibetan plateau. They have also been trying to persuade Tibetans to pay less attention to their faith and show more enthusiasm for Mr Xi and the party. It is the latest stage in a decades-long attempt to crush Tibetan identity.

The Tibetan religion is undergoing what the party calls "sinicisation". Although different methods are involved, the process echoes a campaign in neighbouring Xinjiang to do the same to Islam, the faith of most of that region's 12m ethnic

Uyghurs. The purpose is to eliminate religious influences from outside China, especially from the Dalai Lama (on the Tibetan plateau) and from radical Islamic groups (in Xinjiang). In both regions, the party's efforts amount to an assault not only on religion, but on cherished cultural traditions. Chen Quanguo, the party boss in Xinjiang, was Mr Wu's predecessor. While in Tibet Mr Chen tried out some of the heavy-handed security tactics which later, in Xinjiang, he developed into a vast network of "re-education" camps for Uyghurs.

The party has taken its campaign to horrific extremes in Xinjiang because it fears that the region may turn into a hotbed of terrorism (over the years, Uyghurs have staged several bloody attacks). In Tibet the party has big worries about stability, too. An explosion of unrest across the plateau in 2008 prompted a security clampdown there and tighter restrictions on travel to Tibet by foreigners (journalists are rarely admitted). After that, a series of public self-immolations by desperate Tibetans kept the authorities on high alert.

But officials in Tibetan areas have not replicated the worst atrocities in Xinjiang, which America has contentiously called "genocide", though they do not involve killing (see United States section). In Xinjiang, more than 1m Uyghurs have been sent to the new gulag, where they supposedly learn job skills. In Tibet, many farmers

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(including Sonam Tsering, the herder near Lhasa) have been moved in the past decade to more modern housing in or near towns and cities. Hundreds of thousands have been admitted to vocational training centres set up by the government. But most observers believe this has been far more voluntary than in Xinjiang.

As in Xinjiang, however, sinicisation—though officially limited to religious affairs—involves a much broader effort to make ethnic-minority residents feel they belong to China. In schools, “patriotic education” is emphasised. Mandarin has replaced Tibetan in most classes. Surveillance has been stepped up. Networks of informers relay information to the state; smartphones are tapped. Just as Uyghurs can no longer make pilgrimages to Mecca, it has become almost impossible for Tibetans to travel to India to attend religious teachings given by the Dalai Lama, as many did before Mr Xi took power in 2012.

Unlike Uyghurs, Tibetans can still keep in touch with friends and relatives outside China using WeChat, a social-media app, without fear of arrest. But they are cautious. Posting images online of the Dalai Lama can be an imprisonable offence. In December a 30-year-old herdsman, Lhundup Dorjee, was sentenced to a year in prison for posting a lunar new-year greeting from the Dalai Lama on WeChat. The charge was “splitting the nation”.

In December and January officials seized the mobile phones of dozens or hundreds of members of a WeChat group of Tibetans in and from Xiahe, a monastery town in Gansu province which borders on Tibet, says a member of the group who lives in exile. Participants had used the app to discuss sensitive topics, such as the life of the Dalai Lama and America’s passage in December of a law calling for sanctions against Chinese officials if they interfere in the Dalai Lama’s reincarnation. In the 2000s Tibetans still kept images of the Dalai Lama in their homes. Now many display photographs of Mr Xi as well as of Mao Zedong and other former leaders of China (see picture, previous page). These are handed out by officials along with gifts of rice, clothes or cash. Refusing the presents, and the photos, may incur reprisals.

As in Xinjiang, the party is planning ahead. “It seems these policies are aimed at creating future Tibetans who won’t know about the Dalai Lama as having any role in Tibetan Buddhism except as an enemy,” says Robbie Barnett, a scholar of Tibetan culture. But there are still occasional signs of resistance among the young. In January Tenzin Nyima, a 19-year-old monk, died from injuries apparently sustained while in custody in a Tibetan area of Sichuan province. He had been detained in August for spreading news about his earlier arrest for distributing leaflets and shouting slo-

gans calling for Tibet’s independence.

Officials fear that when the Dalai Lama dies, distraught Tibetans may once again stage big protests. The party would rather not be accused of crushing acts of mourning—better to deter people from displaying grief well beforehand by incessant waving of an iron fist. At a convention in August of officials involved in Tibet-related policy, Mr Xi called on schools to teach “patriotism” more thoroughly. The party, Mr Xi said, should “plant the seeds of loving China in the depths of the hearts of every teenager”. It will be a long struggle. ■

Online debate

Suddenly, space for free-thinkers

HONG KONG

Chinese speakers around the world pour into Clubhouse for open debate

FOR MODERATE, open-minded critics of Communist Party rule in China, who also speak Mandarin, the past few days have been heady ones. Across the global Chinese diaspora, word has spread rapidly that Clubhouse, an audio social-networking app, is the place to be for unfettered, calm debate about contentious topics relating to China. People have been pouring into its “rooms” to discuss everything from the gulag in Xinjiang to the Tiananmen Square protests of 1989. Some are residents of mainland China, despite a hasty attempt by censors to block them.

Why the rush of enthusiasm? One reason is that Clubhouse, launched last April by an American firm, is not subject to the word-sniffing controls that stifle free speech on social-media apps such as WeChat and Weibo. It is also largely free of the



nationalist rants and pro-party cheerleading that often crowd out liberal voices on such Chinese-language platforms. Rooms are set up by users who then act as moderators with the power to kick out the unruly and rein in the long-winded. Membership of Clubhouse is by invitation only: those admitted may recruit others. This may put a brake on access by trolls.

For users in China, this has been a deep breath of fresh air. But there are probably few who have enjoyed it. The Clubhouse app is available only on iPhones, and not to those with Apple IDs registered in China. Fang Kecheng of the Chinese University of Hong Kong reckons no more than 50,000 Clubhouse members live on the mainland. Since February 9th they have needed a VPN in order to leap over the “great firewall” and use the app. Also since that day, Chinese mobile operators have blocked verification codes sent by text message. Such measures may be turning some mainlanders away. But there is clearly pent-up demand. Before the great firewall began blocking Clubhouse, people in China were paying up to 500 yuan (\$78) to buy an invitation code through Taobao, a retail platform.

Clubhouse has been a boon for people belonging to China’s ethnic minorities, and for residents of Hong Kong and Taiwan, whose views are rarely heard on the mainland. Rayhan Asat, an ethnic Uyghur who was born in Xinjiang and now lives in America, has spent hours on Clubhouse in rooms with up to 5,000 participants, most of them non-Uyghur Chinese, sharing her brother’s story. He is almost five years into a 15-year sentence in China on what she says is a trumped-up charge of inciting ethnic hatred.

On Twitter Ms Asat is often bombarded by hate messages from members of China’s ethnic-Han majority. But on Clubhouse she has received many supportive ones. She thinks the use of audio encourages more intimate discussion than exchanges by text on other social-media platforms. “People heard my voice, they heard my pain,” she says. “They messaged me privately afterwards saying they believed me, they silently supported me. I understand they can’t speak publicly because they fear the Chinese government will retaliate against their family still in China.”

Even before the great firewall was reinforced, some members suggested self-censoring in order to deter a government clampdown on the app. But one young user from the mainland pushed back. “We should take advantage of this brief opportunity to be human, to be normal for once, to talk about our feelings, to talk about what’s going on and whatever else we haven’t been allowed to say,” he said. Outside China, Mandarin speakers are still flocking to Clubhouse. But free speech in China appears as far away as ever. ■

Chaguan | Working together, but in parallel

China and America talk of reviving climate-change co-operation. It will not be easy



FOR THE first decades of global wrangling about climate change, China's foot-dragging caused alarm. Its self-interested approach to climate action—once summarised by a Beijing-based diplomat as seeking “maximum credit for the minimum effort”—frustrated governments that were ready to enact costly measures. Worse, China's blame-shifting ways gave cover to politicians clinging to climate denial and inaction in America and elsewhere.

Soon, the most disruptive force in global climate politics may be China's ambition. Its economy is being readied for a low-carbon world sooner than many expected. Its companies are under orders to develop world-beating clean-energy technologies, including by aggressively pushing foreign firms to share them. China says it wants to re-engage with America on climate matters.

Optimists see signs in China of high-level pragmatism in the return from semi-retirement of Xie Zhenhua. He is a well-connected climate negotiator who brokered the burden-sharing agreements between China and the Obama administration that made possible the Paris climate accords in 2015. Mr Xie, China's new climate envoy, has known his American counterpart, John Kerry, for years. Gloomier sorts worry about the distrust and disdain shown by other Chinese officials and scholars who call America a jealous, declining power, bent on containing a rising China. Talks on such subjects as climate cannot prosper when bilateral relations are bad, said a foreign-ministry spokesman, after Mr Kerry promised that he would not trade away American criticisms of Chinese trade or human-rights abuses for climate-related concessions. Chinese co-operation is not like “flowers that can bloom in a greenhouse despite winter chill”, the spokesman sniffed.

China's ambitions are disruptive because they are newly credible. They are credible, not because it has been converted to selfless acts of sacrifice, but precisely the opposite. To Communist Party leaders, greenery increasingly aligns with their economic and political interests. China, a populous country that is cruelly lacking in clean water and arable farmland, and which hates having to rely so heavily on imported energy, has a selfish interest in embracing what President Xi Jinping calls “ecological civilisation”. Though the Chinese public is not very focused on climate change, citizens care deeply about clean air and water. They stage

frequent demonstrations against pollution. In the words of a European diplomat, Mr Xi is convinced that “ecology is key to China's renaissance and is part of the social contract between the Communist Party and the people.” China also wants to enhance its global reputation, the diplomat adds: “China cannot be Number One, which is of course its aspiration, without being a climate leader.”

Last September, in a speech to the UN General Assembly, Mr Xi unexpectedly committed his country to carbon neutrality by 2060. That pledge to offset or capture all carbon dioxide emitted in China would require most fossil fuels to vanish from an economy that currently consumes more than half the coal burned worldwide. In December Mr Xi tweaked existing targets for the year 2030 to make them a bit more ambitious and cover such areas as fossil-fuel use, forest cover, and wind and solar installations. In a rare public humiliation, environmental inspectors reporting to China's leaders recently accused officials at the National Energy Administration of a “deviation in ideological understanding” for allowing too much dirty coal to be burned.

The climate battle is not over. Fossil fuels still have powerful defenders in China. Some provinces approved fleets of new coal-fired power plants in 2020 while they still could. Chinese banks and businesses still invest in coal-powered plants overseas, from Pakistan to Africa. Still, signs may be glimpsed that China is planning for a different future. Research institutes close to Mr Xi's inner circle, notably at Tsinghua University in Beijing, have laid out paths for the electricity sector to achieve net-zero emissions of carbon dioxide by 2050. Indications of seriousness could appear in the next five-year plan, to be unveiled in March. They could include an absolute cap on emissions, a step that China has so far refused, or a promise to advance to 2025 the date when emissions will peak. The current target for this will hardly be a stretch.

Previous high-level co-operation between China and America or the European Union, as in Paris in 2015, involved joint announcements of sweeping goals and targets, intended to prod other countries into action. In these low-trust times, such moments may prove hard to replicate. Instead, there is much talk in Beijing of confidence-building exchanges between experts. Wang Xin, who heads the research bureau of China's central bank, cites promising areas for co-operation with America and other countries. These include joint work on important technologies such as carbon capture and storage, clean coal and hydrogen power, and on developing green financial instruments to fund such efforts. Climate co-operation is needed to tackle a threat to humanity, Mr Wang says. “In the process, it is only natural to strengthen mutual trust and improve relations.”

Asking China to show leadership cuts both ways

Obstacles loom. Other countries are wary of helping to strengthen China's industrial policies. In order to sell climate-related measures to voters, Mr Biden talks of creating millions of well-paid jobs by making America an export champion in clean technologies. Li Shuo of Greenpeace, an environmental group, worries about calls to action that are framed as a competition to beat China in sectors like solar or wind power, where China “is so far ahead”. Mr Li thinks that China and America may have to settle for “climate engagement” as they pursue common goals in parallel.

China is a latecomer to climate seriousness. Western powers, especially in Europe, have long pushed it to do more. Now, at least when it comes to clean technologies, China's price for saving the world may be asking to lead the world. ■

SPECIAL
REPORT:

The future of travel

→ February 13th 2021

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6 Environmental damage

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8 Corporate jets

9 Testing and vaccines

10 Tourism's rebound

12 A faster future

Return of the wanderer





The fight for equality.

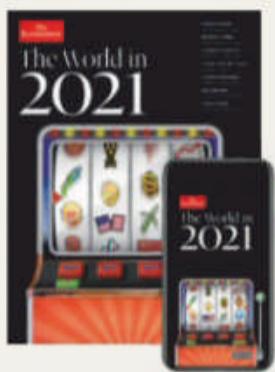
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The age of the wheelie-bag

Covid-19 has brought international travel to a standstill. But it will recover and may even become a better experience, says Simon Wright

LUGGAGE UNPACKS how international travel has changed down the ages. Adventurers in the 15th-century age of discovery set sail in galleons loaded to the gunwales with supplies for voyages that might take years. Aristocrats on a “grand tour” in the 18th century trekked around Europe for months in horse-drawn carriages packed with trunks, servants and even furniture. The suitcase arrived at the end of the 19th century when spending several weeks abroad became more common for the wealthy. By the 1970s tourists and executives needed to cart the wherewithal for a few nights away through vast airports. And so the wheelie-bag came to symbolise the era of mass travel.

The rise of the wheelie-bag reflects the falling cost and increasing speed of long-distance travel. Cheaper air fares, rising incomes and more leisure time have made foreign trips routine and a holiday abroad accessible to many in the rich world wishing to escape their daily stress. Travel brings new experiences and memories (or moments to capture on Instagram). And if not every mind is broadened, surely few suffer the opposite effect. As Mark Twain put it, “Travel is fatal to prejudice, bigotry and narrow-mindedness.”

The ease of travel has not just expanded tourism. As companies have spread across the world so have their workers. Business travel keeps multinational companies and supply chains connected. And the ability to get away has let people spread around the world to work, learn or just have a change of scene. As families have dispersed so has the need to keep in touch or attend weddings and birthday parties in foreign parts. It has brought the world together by allowing family and friends to live farther apart.

Yet until recently few people went far. Travel was slow, difficult

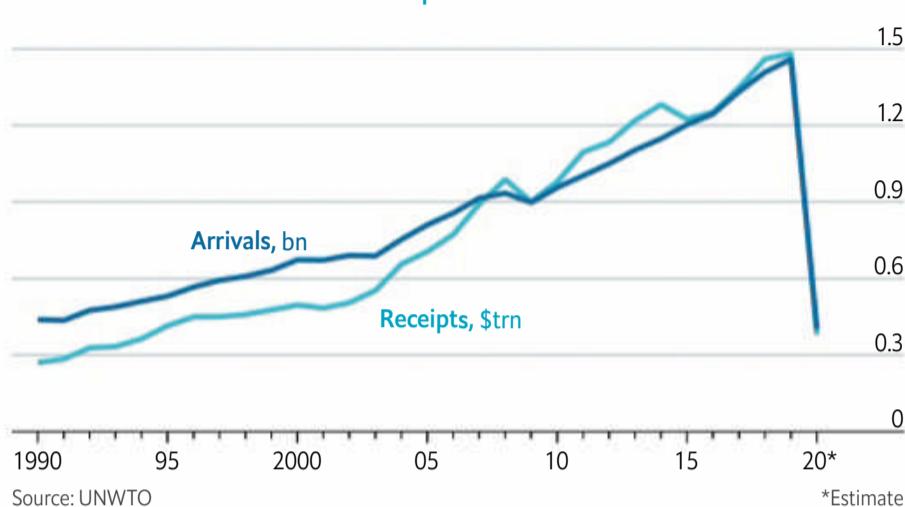
and expensive when it relied on wind or horsepower. Steam and railways opened the gates a little wider. But getting far afield even 100 years ago took an ocean liner or airship, a pricey way to go. A first-class cabin on the *Titanic* in 1912 started at £30 (\$3,500 today); a transatlantic ticket on the *Hindenburg* cost \$400 in 1936 (both one-way, as it later turned out). The big surge in international travel came with flying. A train on the trans-Siberian route from Beijing to Moscow takes over five days; a flight around seven hours. Yet the real game-changer was cheaper fares. In 1950 only 25m people took a trip abroad, says the United Nations World Tourism Organisation (UNWTO). By 2019 the number of trips had grown to 1.5bn (and that excludes migrants, refugees and visits of over a year).

Nearly three-fifths of international travellers arrived and departed by plane in 2019, compared with only 5% by sea and 1% by train, according to UNWTO. The 35% of travellers crossing borders in a car were mostly Europeans, inhabitants of the world’s largest travel market, taking advantage of their continent’s small size and good roads. Going on holiday is the main motive for travel abroad, accounting for 55% of trips. Business travel made up 11% of the total. Most of the rest was to visit families and friends abroad. Some travel for religious reasons (2m Muslims visit Mecca every year); and around 15m sought medical treatment in 2017.

International travellers have filled tills for hotels, restaurants, car-hire firms and tour operators. Their spending hit \$1.5trn in 2019. Before covid-19, travel contributed 4.4% of GDP and 6.9% of employment in the OECD rich-country club. International travel made up 6.5% of global exports in 2019, according to the World Trade Organisation. In all, travel and tourism accounts for over ➤

Rising—before the fall

International tourist arrivals and receipts



Source: UNWTO

► 330m jobs, one in ten of the world's total, claims the World Travel and Tourism Council (WTTC).

Covid-19 has devastated an industry that relies on the freedom of people to move. International travel stopped almost completely between March and May 2020, as four-fifths of countries closed their borders. Forbidden or unable to get around, travellers have stayed put. International arrivals fell by 70-75% in 2020, estimates the UNWTO, with 1bn fewer travellers and \$1.1bn less spending (see chart). That is ten times the shortfall in travel spending in 2009 after the financial crisis. And recovery looks far off, even with effective vaccines. The OECD predicts that tourism will be among the "last sectors of the economy to...recover lost demand".

It is not all dark clouds, however. Greenhouse-gas emissions by commercial jets plunged in 2020, intensifying debate about how to curtail this pollution permanently. Destinations blighted by overtourism have had a break. And optimists reckon that in the long run the link between growing wealth and the urge to travel will remain unbroken. This report will argue that, for all its high short-term costs, the pandemic may accelerate trends that will eventually make travel both easier and less damaging. Today's travel industry may have taken a battering—but the new one that emerges could be better than ever. ■

The airline industry**No heads in the clouds****Governments' re-entry into airlines may spur more competition**

ECONOMY PASSENGERS taking one of the few international flights still running have had an unusually pleasant experience of late. Exasperated cabin crew battling to close overhead lockers full to bursting with wheelie-bags, duty-free booze and laptop cases have been replaced by masked attendants presiding over planes two-thirds full at best and often with only a handful of passengers. Some report sleeping across empty rows of seats. The collapse of passenger numbers and revenues will damage the industry. Yet previous disruptions have shaken up the airlines to the benefit of the flying public. It could happen again.

The advantages of the previous big interruption to air travel, the second world war, are debatable. The experience of servicemen

crammed into uncomfortably spartan transport aircraft, argues Eric Zuelow in his book, "A History of Modern Tourism", created a generation without pre-war expectations of air travel as glamorous and luxurious. When those same aircraft were converted for civilian use, travellers accepted being packed in like sardines. The cattle-truck economics worked in passengers' favour when deregulation brought competition to a previously highly regulated and often state-controlled industry. Air fares tumbled everywhere. Between 1995 and 2014 they fell by half in real terms, according to IATA, a club of the world's airlines.

World wars aside, past crises have passed speedily. The terrorist attacks of 9/11 and the financial crisis of 2009 were "nasty shocks", says Brian Pearce, chief economist of IATA, but "small bumps in the road" compared with covid-19. At its height in April 2020 flying was down by 94% over a year earlier, measured by total revenue passenger kilometres (RPKS). Current estimates are that RPKS in 2020 will be down by 66% on 2019, when (including domestic flights) 4.5bn passengers took to the skies. Only 1.8bn people buckled up last year. By the end of it, some 30% of the global fleet was still grounded, according to Cirium, an aviation-data firm. And the sense of optimism that had slowly grown took a fresh hit early in 2021 as more transmissible and dangerous variants of the virus emerged, leading to renewed border closures and capacity cuts.

The plunge comes after years of bumper growth. In each 15-year period since 1988 RPKS doubled. They were expected to do so again between 2018 and 2033, according to Airbus, the European half of the duopoly that builds the world's biggest passenger jets. Boeing, its American rival, notes an acceleration over the past decade, when growth averaged 6.5% per year, above the long-term average of 5%. Darren Hulst of Boeing is confident of an eventual return to a growth trend of 5% a year, even if over the decade from 2019 the number may be closer to 3.7%. In the meantime it will be a rough ride for airlines. Only 2.8bn passengers are expected to take to the air this year.

Signs of recovery are scant. Domestic flying in China and Russia has largely recovered, but in Australia it is still down by 86% and in America, the world's biggest domestic market, it has fallen by 60%. International routes are suffering the most. Despite huge capacity cuts (only a quarter of the international flights scheduled a year earlier were still running in January), load factors are still low. Planes are often taking off a third full at most.

The opportunity for travellers to stretch out comes at a heavy cost. Full service will not resume for a long while. Mr Pearce says the gradual deployment of vaccines merely makes him more confident about his baseline forecast of a return to 2019 levels by 2024. Not all air travel will recover at the same pace. Domestic flying will continue its rebound, followed by regional international traffic. The last part of the industry to refill its seats will be long-haul flying. This has a disproportionate impact on legacy airlines that still rely most on long-haul international routes.

All airlines face a bleak period. Rather than increase by 4% on 2019 levels to \$872bn, air-transport revenues in 2020 have plummeted to \$340bn, reckons IATA. In a good year the industry makes an operating profit of \$50bn. Losses for 2020 are forecast at \$118bn and, even if the second half of this year sees a recovery, they will still be around \$38bn in 2021.

Airlines have responded by slashing costs, getting rid of staff and cutting fleets, yet carriers continue to burn cash at a rate of \$5bn-6bn a month. Looking at the cash and liquid assets of carriers in mid-2020, the median airline had enough funding to last just eight-and-a-half months (or half way through this month), according to IATA. Some big names have succumbed. Norwegian Air Shuttle, one of Europe's largest low-cost carriers, sought bankruptcy protection in November 2020. Dozens of smaller airlines including FlyBe, a British low-cost carrier, Virgin Australia and ►



Still lumbering, but where are the passengers?

► Avianca, based in Latin America, have gone to the wall.

Two types of carrier have the best chance of survival. Those with sound business models and strong balance-sheets, such as Ryanair in Europe, Southwest in America and AirAsia, are all low-cost carriers ready for a rebound. And legacy carriers, mostly propped up by governments, will keep their grip on long-haul flying when it returns.

Subsidies, subsidies

Support for airlines has been prodigious. Governments are used to helping airlines for reasons of national pride and to maintain international connections. Many countries in the Middle East, India and Africa cling to ownership of loss-making national carriers. Others are just returning to the orbit of governments. Bruno Le Maire, France's finance minister, has promised to "do what is necessary to guarantee the survival of Air France". Germany's Lufthansa has had a bumper aid package. America's airlines, never shy to extend an upturned palm, benefited handsomely from its CARES stimulus act, signed into law in March 2020, which set aside \$25bn in grants for airlines and the same in loans and guarantees.

The result will be an industry wallowing in debt and beholden once again to the state. Aviation Strategy, a consultancy, puts the total in 2020 of government support plus loans from banks, other investors and aircraft-leasing companies at \$600bn, an increase of \$170bn since the end of 2019. Keith McMullen, a partner at the consultancy, points out that most government aid has come in the form of loans, the terms of which incentivise rapid repayment. But the fragile state of the industry will make that tricky. European governments may then be obliged to swap debt for equity.

A return to the days before deregulation and the rise of low-cost carriers, when governments controlled national flag-carriers, set (high) fares and decided routes based on national goals rather than demand, is the fear of Andrew Charlton of Aviation Advocacy, another consultancy. America's big carriers, Asian giants such as Singapore Airlines, and Lufthansa and Air France-KLM may be subject to government meddling. The terms of bail-outs for Air France stipulate that it must no longer compete with high-speed rail on some routes; Lufthansa's decide what planes it may purchase.

That could give the low-cost carriers an advantage. Michael O'Leary, boss of Ryanair, admits to mixed feelings about state aid. Although it is "hugely distorting", it is also likely to "sustain high-cost employment", he says. And high-cost competitors are what he and his kind thrive on. Legacy airlines, already having to compete harder on short-haul routes and often weighed down by heavy pension-fund deficits, could struggle to adapt to an uncertain future that will require flexibility and nimbleness as well as lower costs.

Moreover, legacy carriers rely especially heavily on lucrative business travellers, a sector that may never recover fully, to subsidise seats at the back of the plane. If business customers and feeder routes dwindle, the complex web of domestic and international flights becomes harder to sustain, reducing connections and forcing up long-haul prices.

Not all will suffer. British Airways has slashed costs and raised capital and is fast-tracking its previous restructuring effort to compete with low-cost rivals. Other models look riskier. The Gulf carriers—Emirates, Etihad and Qatar Airways—that have grown swiftly in recent years may struggle. They lack a large domestic market to fall back on, unlike their Chinese competitors, and passengers may prefer not to mix with people from all over the world as they change planes at vast airports in the Gulf. If their model falters, the sky will be clearer for China's state-controlled behemoths, which are already eating away at long-haul routes.

Low-cost carriers such as Ryanair and Wizz Air, based in eastern Europe, sniff opportunities. Mr O'Leary has promised to slash fares to rekindle his business. His ability to compete with airlines under the heavy hand of the state will be helped by several factors. The availability of bargains from embattled planemakers and leasing companies will help carriers in decent health or with new business models. Ryanair confirmed an order for another 75 Boeing 737MAXs in December, taking its total to 210. The plane's grounding after two fatal crashes had led to cancelled orders, so a big vote of confidence from Ryanair was surely worth a hefty discount. Wizz Air, which relies on more robust parts of the market such as younger flyers and east Europeans going west for work and returning to

Up and then down

Worldwide revenue passenger kilometres flown, trn



► visit family, also has big growth plans. Southwest, America's biggest low-cost carrier, is in expansion mode as the country's legacy carriers retreat. Tony Fernandes, boss of Air Asia, based in Malaysia, is "quietly optimistic" about 2021, and hopes to start three new airlines in the region.

A surplus of pilots where there was a dearth and unemployed cabin crew looking for work could also boost low-cost carriers. Once-scarce landing slots at busy airports may become more available. And, if prices rise for long-haul seats, this may rekindle interest in low-cost long-haul services, which have a patchy history. The demise of Norwegian was largely down to its inability to make profits on long-haul routes. The business model of short-haul carriers does not easily translate to long-haul flights, where fuel is a bigger share of costs and schedules are compromised by time differences and airport curfews that do not affect short-haul travel. But a new plane, Airbus's A321XLR, a single-aisle jet with the ability to fly long-haul routes, could change the equation again.

The commercial-aviation business will be smaller for years to come. Yet opportunities abound, especially if legacy carriers fail to adapt. Higher fares and lower costs will attract competitors that threaten the old guard. In 20 years' time air travel will be back on track and growing again but the old names may no longer be on the tarmac. Just as Pan Am and TWA are distant memories, so a clutch of now familiar airlines may become relics of the past. ■

The environmental damage

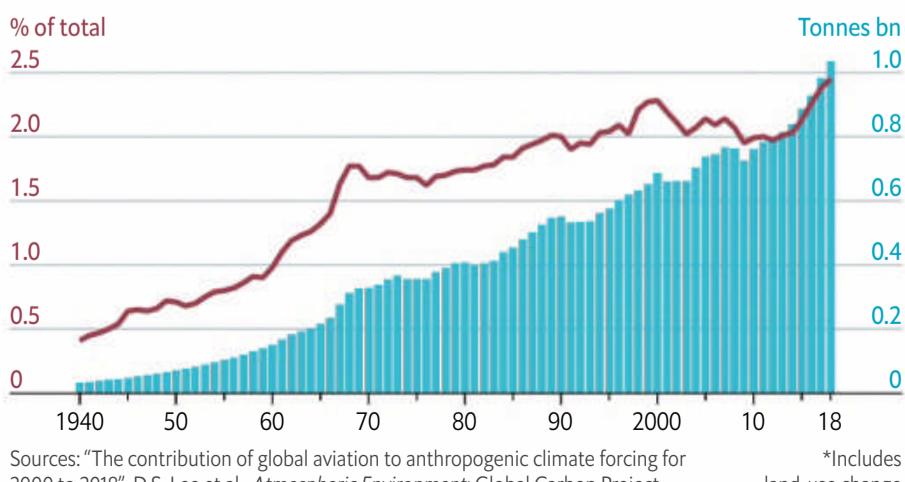
Emission days

How today's reviled airlines could become greener

SKIES CLEARED of much commercial aviation gave plenty of ammunition to those who see air-travel emissions as one of the gravest threats to the environment. Travel by commercial jet attracts more criticism than its 2-3% share of global carbon emissions seems to justify. Yet despite this seemingly modest contribution it is (or was, until covid-19 struck) one of the fastest-growing sources, the worst contributor of all emissions per kilometre travelled of transport and is likely to continue on its upward path. The growing ease and falling cost of travel, plus a lack of any regulations to curb emissions, means that unchecked a rise to as much as

Hot airlines

Global aviation, CO₂ emissions*



9% of total carbon emissions by 2050 has looked plausible.

As far back as 2009 the airline industry pledged to cut emissions from flying by half from levels in 2005 by 2050. More recently *flygskam* (flight shame), a Swedish word that sums up a growing worry about the environmental impact of flying, protest groups such as Extinction Rebellion, whose followers have blockaded airports, and other anti-flying movements have all reminded the airline industry that for too long it has got away with failing to tackle the growth in carbon emissions.

The industry has adeptly managed to sidestep regulation. Aviation fuel is exempt from taxes on international flights, thanks to the Chicago convention, still the main rulebook for the industry even though it was agreed in 1944. In 2013 the EU tried to add international flights to its emissions-trading system, but the industry successfully resisted. As a compromise the International Civil Aviation Organisation, a UN agency, came up with CORSIA, a global scheme to offset emissions. Although criticised for its toothlessness—it is voluntary until 2027 and does not include domestic flights—CORSIA starts its pilot phase this year.

Yet carbon emissions per passenger have fallen by over 50% since 1990. New technology serving the commercial interests of airlines (fuel typically accounts for 15-20% of airlines' operating costs) has had the side-effect of lowering emissions. Every generation of aircraft, such as the newest short-haul planes from Airbus and Boeing, is typically 15-20% more fuel-efficient than the one it replaces, mostly because of improvements in engines. Other bits of kit have helped. Airbus's "sharklets" or Boeing's "winglets", the specialised wingtip additions on new planes, have improved fuel efficiency by 3-4%. Better business models, such as low-cost carriers that pack in more passengers, have ensured that aircraft are flying around with more people on board. Average load factors have improved by some ten percentage points over the past 15 years to 83% in 2019—though that was pre-covid.

Emissions per passenger will fall further in the next few years, if only because flying is unlikely to return to levels of 2019 for three or four years. Cleaner skies will result from the early retirement of older, less efficient planes as airlines cut capacity. The oldest, most inefficient models such as the Boeing 747 jumbo jet and the Airbus A340 may stay on the ground for good. Other older planes will be retired earlier and replaced with more efficient models.

Rail v air

The pandemic might even see some shift to rail, especially in Europe where trains and planes compete on international routes and an established high-speed network can be expanded. China's domestic market could see similar competition between rail and jet engine. UBS, a bank, reckons that the use of high-speed trains could lead to zero growth in air traffic between European destinations from 2018 to 2028. Governments should be keen to invest in high-speed rail in Europe given their commitments to net-zero-carbon emissions by 2050. Further liberalisation across the EU will expose state-run incumbents to more competition.

Yet rail can never compete with airlines on long-haul routes that traverse large stretches of water. So a bigger leap to net-zero emissions from aviation has come to the fore. Airbus and Boeing, the duopoly atop the aircraft supply chain, have been clobbered by big losses, production cuts and fears for the financial health of their suppliers and their customers. Boeing's woes have been compounded by the damage from the grounding of the 737MAX for almost two years after two fatal crashes. The plane was eventually recertified for a return to service by American regulators in November. Yet the pair will continue to sell planes and these will largely replace older ones rather than expand fleets. So the share of newer, cleaner planes in the world's fleets will grow.

Airbus and Boeing have gone further, with plans for aviation to ►

► clean up its act more comprehensively. The European firm hopes to have net-zero-emission planes that can ply short-haul routes in commercial service by 2035. The three concept aircraft it has unveiled, including a futuristic "blended wing" design, use hydrogen as a fuel. In January Boeing said that by 2030 it will start delivering commercial planes powered entirely by biofuels, another way to cut emissions. These are already in use in limited quantities by several airlines, blended with regular fuel, but are still prohibitively expensive—perhaps twice the price of kerosene.

Scale should bring prices down. And turning plant matter and waste into fuel has a carbon footprint of its own. Rolls-Royce, a jet-engine maker, nevertheless reckons a 75% reduction of carbon emissions is possible, with more to come. Other zero-emissions technologies are in development. Startups have been testing small battery-powered planes. Eviation, an Israeli firm, hopes that Alice, capable of flying nine passengers up to 800km, will fly for the first time next year. Others, such as ZeroAvia, are trying out fuel cells that use hydrogen to generate electricity to power engines.

Airbus expects its new plane to be powered by hydrogen directly as a fuel in new turbofans of the sort now found in large passenger jets. Big investments will be needed, starting with engine makers that must work out how hydrogen, which burns at a far higher temperature than kerosene, can be used safely. Boeing's plans require some adaptation of existing engines. Given that new planes can take seven or eight years to get from drawing-board to commercial service, that gives Boeing what Robert Spingarn of Credit Suisse, another bank, calls "breathing room". Airbus is likely to launch its hydrogen programme formally in 2027. So gradually, after 2030 if the timetable holds, new planes will have far lower emissions and after 2035 short-haul jets should have net-zero emissions. The hydrogen technology could be extended to twin-aisle planes, all of which should be using more biofuels. No switch will be flicked but in around a decade the journey to clean up travel will start in earnest. ■

Business travel

Video-conferencing rules

Business travel may never fully recover from covid-19

BUSINESS TRAVEL is as old as the traders who carted silks and spices between ancient civilisations. The executive tapping at a laptop as other flyers recline their seats and settle down with a glass of wine is a more recent phenomenon. The physical movement of goods on ships and planes and the supply chains that underpin global manufacturing and services firms rely on an army of businessfolk flying around the planet. But that army is in retreat.

Executives, diplomats and government employees, and NGO staff still trot the globe. Bosses of big companies often spend more time in corporate jets than with their families. At lower altitude workers travel to fit out factories, attend trade shows and conferences, launch new products or meet clients. Business class is a recent arrival. Airlines pitched it between first and economy class only in the late 1970s. Such travel has grown a lot in the past 25 years. According to Bernstein, an equity-research firm, total spending on international and domestic travel in 1995 amounted to \$2.1trn, of which \$400bn was for business. By 2019 around a quarter of the total, or \$1.3trn, was spent on business travel.

Covid-19 has hit corporate jaunts hard. A poll in January by the



Lecturing from afar

Global Business Travel Association found that 79% of its members had cancelled all or most business travel. Credit Suisse reckons 2021 will see 65% fewer international business trips than in 2019. Bill Gates thinks the shift will be permanent. "My prediction would be that over 50% of business travel...will go away," he says. That may be too pessimistic. The boss of one aviation firm sees a full return. Bernstein goes for up to 24% never coming back. Credit Suisse reckons 10-20% will disappear for good. Citi, another bank, plumps for 25%. Any recovery will be long in coming. McKinsey, a consultancy, points out that business travel rebounded more slowly than leisure travel after earlier disruptions, noting that after the financial crisis the number of international business trips from America fell by 13% (against 7% for leisure travel) and took five years to recover, compared with two years for tourism.

Every knock that travel has taken in recent decades has been followed by similar predictions of permanent decline. Each time it has failed to materialise. Why is this time different? Vaccines, fast-testing regimes and the dropping of travel bans might yet open the door for leisure travel. But Zoom, Google hangouts, Skype and other video-conferencing services have a better chance of permanently replacing business-class tickets, for several reasons. One is that companies badly hit by covid-19 will be under pressure to cut costs—and travel is an easy target. Second, a blizzard of pledges to cut carbon emissions and hit climate-change targets make cutting flying "low-hanging fruit", says Paul Flatters of the Trajectory Partnership, a consultancy. Third, even though vaccines may reopen borders to many travellers, so long as covid-19 is at large firms will be reluctant to sanction trips not strictly required.

Some types of business trip are harder to conduct over a screen and so likely to revive. Vik Krishnan of McKinsey notes that these include sales and client meetings. Personal contact, especially when seeking new business, is hard to replicate digitally. And once one company resumes meetings in person, so will its competitors. Manufacturers will struggle to monitor remotely factories in far-flung corners of their supply chains. Trade shows and conferences that bring many people together in close proximity are more vulnerable, notes Bernstein. Hybrid shows, with some people present and others joining online may attract a larger audience who might ►

► otherwise have neither the time nor the excuse to attend, says Caroline Bremner of Euromonitor, a data firm. Plenty of low-level internal meetings will migrate permanently to the online world. One executive who has not flown in months happily notes that the sort of trip that required flying halfway around the world for one short meeting will go for good. Though the number of trips is likely to fall, their length may increase as executives try to fit in more, perhaps visiting several outposts in one country in a single trip.

If around a fifth of business travel never returns, that will have big consequences for airlines. Most accommodate some business travellers. Legacy airlines, which rely disproportionately on long-haul business customers, will suffer the most. But even low-cost carriers, which have targeted business travellers in recent years with flexible tickets at higher fares, will feel the pinch. Some 17m of easyJet's 96m passengers in 2019 were flying on business, almost a fifth of the total and up from 10m in 2012. Southwest is even more reliant, with two-fifths of passengers paying business fares. But the mark-up over economy fares is generally lower than a legacy

carrier's price premium of three- to six-times as much as economy.

For the likes of IAG, Lufthansa and Air France-KLM, around 25-30% of revenues come from passengers flopping into business-class seats. A rule of thumb for legacy airlines is that business class comprises 10% of tickets, but 40% of revenues and up to 80% of profits. Citi reckons that every 1% fall in business custom knocks 10% off profits. Some airlines are trying to change how they operate. BA, which is part of IAG, is trying to sell business-class seats to leisure travellers, but it can never charge as much as to a late-booking executive. The secular decline in business travel will mean a smaller business cabin—and higher long-haul economy fares.

The likelihood that lucrative business travel will rebound more slowly than leisure is a blow to airlines that depend disproportionately on companies picking up the tab. A permanent decline will make life harder still. Yet for the executive who has had to spend weeks of every year on the road the chance to leave the wheelie-bag in the cupboard more often and settle down in front of a computer screen instead may come as something of a relief. ■

High flyers

The wealthy are not bound by airline schedules

CORPORATE JETS are emerging from covid-19 in better shape than commercial ones. Bosses of big companies and the super-rich have long relied on owning or chartering their own small jets. As Jim Currier of Honeywell, a conglomerate, points out, business aviation suffered as much as commercial airlines at the start of the pandemic, but recovery has been "steady, consistent and at a higher pace". The number of flights undertaken by scheduled airlines was down by 49% in 2020 on a year earlier whereas business flights were down by only 24%, according to WingX, a private-aviation data firm. Mr Currier expects a full recovery by mid-2021.

Economic jolts have taken a toll on business aviation, which had barely recovered from the financial crisis of 2008-09. Annual sales of new planes fell by almost half from a peak of 1,200 in 2008 to 700 a year, as the mood in boardrooms turned against corporate jets. But a health crisis is different to an economic one. Chad Anderson of Jetcraft, which sells new and used business planes, notes that second-hand planes have not been dumped on the market as in the financial crisis. With so many international flights grounded, executives and the ultra-rich may be joined permanently by the merely wealthy.

A new class of private traveller has emerged that Mr Currier characterises as those who used to fly first class but, though they can afford it, have not seen any value in chartering a private jet. It is a big step up in price, perhaps five to ten times, says Richard Koe, of WingX. Yet

anecdotal evidence suggests that the number of "first timers", who want to avoid crowds on commercial jets and in airports, has doubled with covid-19.

Charter companies are doing what they can to hold onto these new clients by offering more flexible deals than the long-term commitments usually required. Mr Koe reckons that the outcome will be an industry that provides a more flexible on-demand service in future. But as private jets emit up to 20-times as much carbon per passenger as a commercial flight, the industry will also have to make more effort to introduce sustainable fuels, carbon-offsetting programmes, and hybrid and electric technology.

The mega-rich may also lead the way to the next step change in the speed of travel.

Supersonic planes could cut journey times almost in half. Several are on the drawing board. Aerion, an American firm, hopes to have an eight-to-ten-seat supersonic jet on sale by 2025. Boom Supersonic plans a larger 55-seat all-business-class jet.

The latest holiday destination for the ultra-rich may open the door to even speedier jaunts. Space tourism may change travel if the technology to take a few people to the edge of space can be developed into hypersonic flights at mind-boggling speeds. Elon Musk's SpaceX hopes to use its giant Starship rocket to fly 100 people around the world in the blink of an eye: New York to Shanghai in 39 minutes, and for less than the current price of a business-class ticket.



How to avoid the crowds

Testing and vaccines

Well travelled

New health and other apps may make travel easier

VENETIANS CAN be credited with one significant intervention in the history of travel and one near miss. Disgruntlement over the constant din led them to consider a ban on wheelie-bags in Venice's alleyways in 2014, though it was never enacted. Seven centuries earlier the city pioneered the use of international borders to stop an infectious disease. The word quarantine is derived from a requirement for ships to anchor offshore for 40 days if plague was suspected. Perhaps inconvenient for ancient mariners, the impact on the travel business of attempts to keep covid-19 at bay has been greater. Efforts to restore confidence have accelerated moves to make travel more digital, contactless and seamless.

Reinstating international travel depends on reassuring people that it is safe and finding ways acceptable to health authorities to let passengers fly. Long quarantines are almost as much of a deterrent to travel as a ban, says Andrew Charlton of Aviation Advocacy, a consultancy. "The public are not scared of flying, they are scared of arriving." Getting people back onto planes is not a problem, if the rebound in domestic markets where covid-19 persists is a guide. A poll in July 2020 by UBS found that only 10% of European leisure travellers and 9% of businessfolk would refuse to fly in the foreseeable future. In October data collected by IATA found that only 44 out of 1.2bn passengers since the start of 2020 were known or thought to have contracted covid-19 on a plane. IATA's medical adviser notes that, even if 90% of cases went unreported, that implies just one infection for 2.7m passengers.

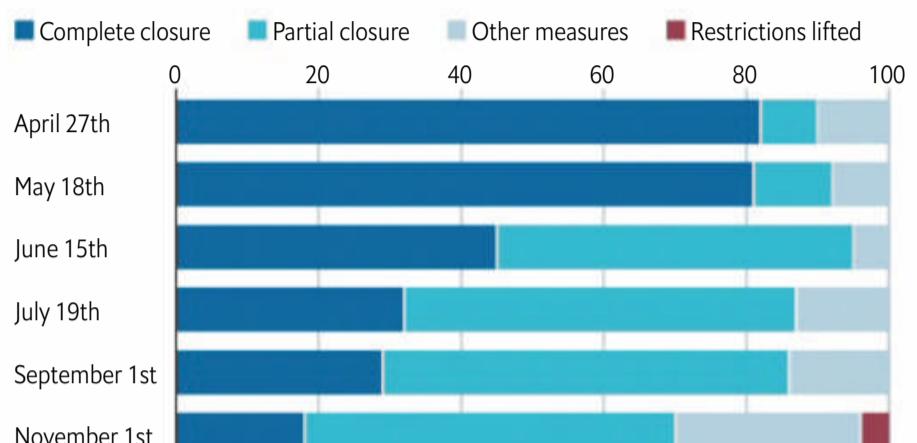
Commercial jets are fitted with a grade of air filter found in operating theatres. The air on board is replaced 20-30 times an hour. Seating arrangements help. Boeing reckons that sitting side by side in an aircraft facing a seat back is equivalent to sitting seven feet apart indoors on the ground. New measures make flying safer still. Some airlines are keeping middle seats in economy free. Hygiene practices go far beyond the cabin crew sauntering down the aisle collecting rubbish. Queuing for the toilet is banned on some flights and airlines have introduced rules to keep passengers apart by ensuring they get on and off in strict row order. Planes are thoroughly disinfected between flights.

The main obstacles to a rapid rebound are closed borders and ever-changing regulations for entry, as covid-19 ebbs and flows. Out of 220 countries monitored by Kayak, a travel firm, 50 remain closed to air travel, and most of the rest have some restrictions. Effective vaccines give hope, but Gloria Guevara, boss of the WTTC, says the travel industry "cannot wait". Her organisation says that 198m jobs are at risk if current restrictions remain in place until the summer.

The aviation industry has pushed testing to get planes back in the air. But agreement on how, where and when to test is covered by such a mish-mash of different requirements as to make flying even more troublesome. The Centres for Disease Control and Prevention recommends that Americans should have a test one-to-three days before flying and three-to-five days after a trip abroad, and also isolate at home for seven days. It also requires travellers to America to have evidence of a negative test. Many other countries require a test as a condition of entry. This is often accompanied by checks on arrival and a period in quarantine, sometimes in a hotel at the traveller's expense. A PCR test, often required by

Slow opening-up

World destinations* by travel restriction type, 2020, %



Source: UNWTO

*Share of world international arrivals in 2019

countries that insist on a test before travelling, can cost \$50-150.

Until fast, accurate and cheap tests are available or vaccinations are widespread, the hope is that a standard pre-departure regime could allow a restart of international travel. Airlines think trials of different systems may provide evidence that pre-flight testing is enough to dispense with quarantine rules. IATA and ACI World, a global airports association, have called for an internationally recognised pre-flight testing regime to replace quarantine.

If such systems are to work, mutually agreed standards and some way of showing that passengers are covid-free and/or vaccinated will be needed. Qantas's boss, Alan Joyce, reckons a valid vaccination "passport" may become a general pre-boarding requirement. This has led to a flurry of activity to develop digital-health passes. IATA is promoting Travel Pass, a digital-health app, that allows governments to verify tests and identities of passengers presenting a result issued by a recognised laboratory. Free to travellers, airlines will pay a small fee. A more recent vaccination credential initiative, backed by tech giants including Microsoft and Oracle, has a similar aim.

Such technology will become common, reckons Arnaud Vaissié of International SOS, the world's biggest travel-security firm. AOKpass, its digital-health pass, is secure and easily readable using blockchain technology. Apps like this will be the basis for a new focus on health in travel. Mr Vaissié notes that, after 9/11, security went from being an obscure corporate function to the main priority in many boardrooms. Health information will become as vital to international travel as a passport is today.

The experience of electronic tickets for airlines, which went from 20% of the total in 2004 to 100% by 2008, shows that digital data-sharing can cut costs and make travel easier. Technical hurdles remain to making different health systems interoperable with each other and with airlines' passenger-information systems. Jeffrey Goh, boss of Star Alliance, the world's biggest airline alliance, says the industry is resigned to living with multiple passes. Personal data will need to be secure but systems must also be flexible

enough to reveal what health data is required where—lots on arrival in snooping Singapore but little apart from covid-free status in America, say. And a way needs to be found not to discriminate against passengers who are unable to take a vaccine.

It helps that the travel industry has long been working on how to make journeys more seamless. Steve Peterson of IBM, another company working on a digital-health pass, says such systems could be the "back-

A valid
vaccination
"passport" may
become a general
pre-boarding
requirement

► bone" for storing more data, allowing a new level of personalisation in travel. He cites the example of a passenger with a trip from London to New York that includes a plane ticket, hotel and transport on arrival. If something changes, such as a delayed flight, an app loaded with personal preferences can automatically rebook all these elements. It may eventually book the entire trip, with a traveller just entering where and when to go and letting details of past journeys and personal preferences guide the choice of flight, hotel and so on.

Passage through airports may be about to get easier as well. Jeff Lennon of Vison-Box, a Portuguese operator of automated border controls, argues that "biometrics is the enabler...the face is the key". An app will store a person's credentials, cameras can then recognise the traveller at security and boarding gates will automatically open. Travel may thus become a more seamless, even personalised experience, with business customers greeted by name and even given their favourite drink. Nina Brooks of ACI World reports that some 50 airports are trying out biometrics. The ideal outcome would be continued travel without most of today's hassles. ■

Tourism

The holiday only just began

Tourism will rebound, and may even improve

IT IS AN unfortunate fact that the ease of throwing things into a wheelie-bag and travelling far and wide helped spread covid-19 around the world. The effects on leisure travel and destinations that rely on tourism will be felt for years to come. But just as the way we travel may improve as a result, so the chance for countries to rethink tourism industries could turn a bruised and battered industry into a better one.

The pursuit of pleasure using cultural pursuits as cover goes back to the days of the grand tourists, who trawled Europe's artistic heritage as well as indulging in more hedonistic activities. As souvenirs they returned with paintings, sculptures and sometimes syphilis. Travel was hard and expensive. The earl of Salisbury spent the equivalent of nearly £500,000 today on his grand tour in the 18th century, according to MBNA, a credit-card firm. Even 50 years ago foreign travel was a luxury pursuit. In 1970 a return flight from New York to London cost around \$500 (equivalent to \$3,500 today).

Lower fares and the rise of the internet have made holidays cheaper and easier to arrange. Airlines, hotel chains, car-hire firms and other businesses have moved online. Dedicated internet travel agents like Expedia and Booking.com have emerged. Online peer-to-peer review sites offer a mostly honest assessment of hotels, restaurants and tourist sites. Airbnb and its competitors have created a new class of accommodation. The frictional costs of travel have fallen sharply.

Such is the stunning growth of tourism that the 72% decline in trips in the first ten months of 2020 on a year earlier merely took international travel back to where it was in 1990. Leisure travel accounts for the

biggest slice but the rest contributes too. Business travellers stay in hotels, eat at restaurants and hire cars. Some visits to relatives or friends may be barely distinguishable from a holiday.

Not only are there more trips, but the world is a bigger oyster. In 1950 the top 15 destinations—with America, France, Italy and Spain the most visited—claimed 97% of tourist arrivals. By 2015 that share had dropped to just over half. Europe, with its historic cities, countryside and beaches, still rules, taking just over half of all international travellers. That is twice the share of the Asia-Pacific region, the next most popular area. Europe rakes in the most receipts, around 37% of the global total, worth some \$619bn in 2019. France and Spain are the most popular countries for a visit. The top spots may not have changed, but their arrivals have. Chinese visits overseas have grown from just 9m trips in 1999 to 150m in 2018.

Travellers' preference for richer countries has created large industries. Spain relied on domestic and foreign visitors for 11.8% of GDP in 2019, France 7.4% and Mexico 8.7%. Poorer countries lean even more on tourist dollars. America is the biggest country for travel spending, some \$1.8trn in 2019, but overseas visitors have put tourism at the heart of many economies. In Aruba it accounts for nearly three-quarters of GDP; in most other small Caribbean islands it is also the main economic activity. Other poorer countries are less reliant overall but have vast tourist industries. Thailand welcomed around 10m foreign tourists in 2001. By 2019 it had grown fourfold (with a quarter of the total coming from China), bringing in 1.9trn baht (\$60bn) and contributing some 18% of GDP.

The emptying of tourist trails and resorts resembling ghost towns is causing massive upheaval. UNCTAD estimated that losses could amount to 2.8% of world output if international arrivals dropped by 66% in 2020. The OECD now reckons that the drop was more like 80%. And the expectation is that international arrivals will probably not recover to pre-covid levels until 2023.

Tourism is a resilient industry. But it faces a downturn like no other. Firms reliant on visitors may not be best placed to survive. According to the WTTC, around 80% of tourist businesses worldwide, from hotels to restaurants to tour guides, are small businesses. Large hotel chains may have the balance-sheets to weather the storm or the management skills to reconfigure their business to cater more to domestic travellers. Small businesses probably lack the cash to invest in equipment for contactless payments or better cleaning and hygiene to reassure returning tourists.

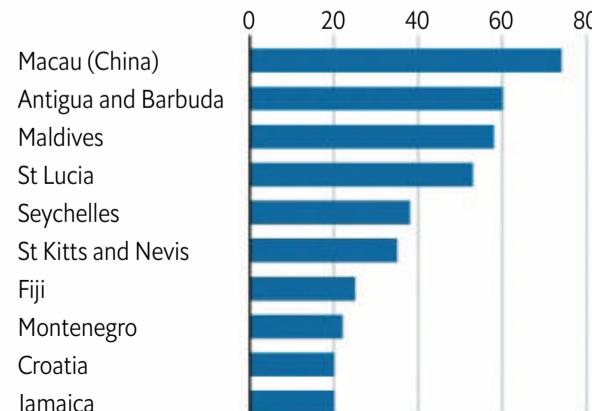
The uncertain path to recovery raises questions over what will remain. The UNWTO reckons that countries with a big share of domestic tourism—America, China and India have the largest home markets—will recover more quickly. Travel restrictions have kept China's high-rollers at home, giving its fanciest hotels their best year ever. But even domestic tourism is far from a saviour. Britain and Spain, for example, reckon on a decrease in domestic tourism of 45-50% in 2020.

These problems have prompted various responses to keep businesses alive. Some countries such as France, which launched an \$18bn bail-out in May, have aimed cash directly at tourist businesses. Others are trying to reassure tourists that their countries are safe by developing protocols and guidelines for tourism workers. Luís Araújo, president of the Portuguese National Tourism Authority, says his organisation has arranged training for 60,000 workers at restaurants, hotels and travel agents to create a safer travel experience. Finland and Greece are among countries with new training programmes aimed at ►

In need of tourists

Inbound tourism spending as % of GDP

Selected countries, 2018



Sources: UNCTAD; UNWTO



Correct distancing by the sea

► improving the digital presence of tourist businesses.

Some parts of the tourist economy will do better than others. Travel firms have noted a rising preference for self-catering and private accommodation over hotels. Coastal and rural locations, far from crowds, will recover faster than cities. Cyril Ranque of Expedia notes that his customers are more inclined to drive to domestic locations but then to stay longer than before. But these trends, he believes, are “all temporary”.

Waiting for the rebound

The travel bug seems certain to outlast the virus. Its first manifestation may be “revenge tourism” as people get away after a year of lockdowns and quarantines. But some things will change for good. A preoccupation in previous centuries, health and hygiene will re-emerge as central to holiday planning. Guidebooks from Baedeker, a German publisher, were never reticent about warning travellers of the filth they faced in foreign climes even in the early 20th century, bemoaning the “evil sanitary reputation of Naples”. Destinations will continue to boast of their scenery, cuisine and beaches but safety and hygiene will become as important, says Ian Yeoman, a tourism academic at Victoria University of Wellington, New Zealand. This may benefit longer-established destinations, tilting visitors away from poorer countries.

Those countries will not be deliberately trying to avoid tourists, even so. Some remote places have used the hiatus to build a better online presence, says Mr Ranque. He points to other innovations to make travel less of a bother. Flexibility, to cope with last-minute changes of plans, will endure. Late or even last-minute bookings are more common. Josh Belkin of Hotels.com reports that, because people are taking more staycations and travelling by car rather than plane, they are booking hotels later, on average 13 days before a trip rather than the 20 before covid-19.

Many travel companies and airlines have introduced more flexible rebooking policies. Faced by a wave of cancellations as co-

vid-19 took hold, Expedia introduced “one-click cancellation” to deal with all elements from flights and hotels to car hire. Firms that use its platform can deploy new tools to add special offers to listings to encourage last-minute bookers and manage refunds. Gathering real-time data on searches, and sharing them with businesses that relied on information from previous years to set prices, could also lead to a better match between supply and demand and encourage more dynamic pricing. In future, personalised customer data should allow travel firms to recommend holidays in a more focused way.

Covid-19 presents a “once-in-a-lifetime opportunity to move towards more sustainable and resilient models of tourism development”, says the OECD. “Tourism was seen as unambiguously good 20 years ago...now it’s a double-edged sword,” says Paul Flatters of the Trajectory Partnership. Concerns about the impact of tourism on the environment predate the pandemic. But tourism also broadens awareness of different cultures and environmental issues and helps pay for wildlife conservation, as well as providing employment and economic development.

Many destinations failed to strike a balance between tourist numbers and local sensibilities. Venetians have long protested against vast cruise ships, prompting some firms to drop the city from their itineraries. Venice also plans to impose a levy on all visitors from 2022. Anti-tourist slogans daubed on walls have greeted visitors to Barcelona, which has clamped down on illegal holiday letting (as have Berlin and other places in which holiday lets have replaced rental properties, forcing up prices for residents). Amsterdam is considering a ban on non-residents buying cannabis in its notorious coffee shops, to encourage a better class of tourist. Machu Picchu, where trails were overrun, imposed a pre-

Many destinations failed to strike a balance between tourist numbers and local sensibilities

► covid limit of 5,000 visitors a day. That will be cut to 675 to ensure social distancing.

Covid-19 offers the chance not only to reset tourism to reduce the numbers who spend the least but also to spread them out. Barcelona has run a campaign to encourage people to venture away from the old city. Thailand has a scheme to promote 55 less visited parts of the country. Concentrating on attracting fewer tourists ready to spend more is one way to promote a healthier business. And sustainability may become a more important guide to choices as awareness of climate change and the less welcome effects of tourism grow. Getting the right balance between economic, environmental and social benefits and costs has seen a new emphasis on sustainability. Mexico thinks covid-19 will help with its “Mexico Reborn Sustainable” campaign, which aims in part to create new routes that spread tourist dollars more widely and promote destinations that tap into fast-growing nature tourism.

A dynamic tourism economy depends on the availability of a variety of services, from accommodation and good services to attractions, activities and events. Whether a critical mass of services will remain everywhere is less clear. Less choice and competition, if businesses go bust, may mean higher prices. The rapid growth of tourist economies in recent years suggests they can be rebuilt swiftly. But for all those governments that redesign their tourism strategies to keep down crowds and protect the environment, others may compete by racing to the bottom, using deep discounts to fill hotels and planes. Tourist numbers will recover and continue to grow either way. Greater efforts to manage them carefully should make for a better experience for everyone. ■

The future

Faster, higher, longer

Travel will return, more exotically than ever

INTERNATIONAL TRAVEL is sure to recover, not least because its benefits have long been appreciated. “Travel and change of place impart new vigour to the mind,” is a quote attributed to Seneca, a first-century Roman philosopher of the Stoic school. That is as true of the relaxation of a package trip to the seaside or a trek in the Himalayas as it is of visiting a close friend abroad or of a business leader seeking new opportunities. The goal of stoicism was to encourage virtue and maximise happiness. Travel often brings both virtue and happiness. It could be a bigger part of the bargain when the wheelie-bag era resumes.

The urge to travel is unlikely to be permanently dimmed by covid-19 even if the means to do it suffers a long-lasting hit and some destinations take years to recover. All forecasts reckon on travel and tourism returning to prepandemic levels over the next few years and then continuing on a path of growth. Looking back, there will appear to have been a “blip in demand but no impact over 20 years,” says Michael Khan of Oliver Wyman, a consultancy. Underlying motives and the longer-term factors of growing wealth and increasing leisure time seem certain to reassert themselves. The rapid growth of Chinese tourism shows the importance that the newly wealthy place on taking a well-earned break. A growing global middle class will see the Chinese joined by Indians, Malaysians and Indonesians. This could bring significant shifts. Asia’s burgeoning middle class and the preference for regional travel could mean that South-East Asia overhauls the Mediterranean as the

world’s preferred holiday destination.

The hope is that vaccines will bring a return of something approaching normality despite the emergence of a more transmissible form of covid-19 in the final weeks of 2020, bringing another round of travel restrictions as countries rapidly banned visitors from affected countries. For all such setbacks, a recovery could begin in earnest in the second half of this year as vaccines start to tame the virus and those in lockdown for many months take advantage of cheap tickets to get away, events delayed by families spread around the world are rescheduled and executives take to the air again. Yet how will travel look different, in both the short and longer term?

More airlines, the main means of foreign travel, will fail and others will remain under closer state control. Some long-haul fares will rise and short-haul carriers go bust. But this should create new opportunities for low-cost competitors, helping keep prices in check. Health will become as central to travel as an airline ticket and passport. The apps and platforms that will keep people safe by allowing sharing of health status should also help make travel easier and smoother. Safety will become more of a selling-point alongside visitor attractions, making for better-trained staff and richer experiences. Holiday destinations will start to look more carefully at the drawbacks as well as the benefits of tourism. New technology and pressure from governments and more environmentally aware passengers will eventually result in net-zero-emissions aircraft.

Despite recent rapid growth, foreign travel is still an experience for the few, not the many. As the world gets richer and populations age, the numbers with the time and the means to take a holiday abroad will keep growing. As aviation bosses are quick to point out, there is a vast untapped market: around 80% of the world’s population has never set foot on an airliner. A trip abroad is still a rarity for most. A study by Stefan Gossling at Linnaeus University in Sweden finds that only 11% of the world’s population took a flight in 2018 and at most 4% flew abroad. Even in rich countries less than half the population caught a plane. A huge swathe of the world’s population could be preparing for a holiday.

Further step changes in the price and speed of travel, opening up more out-of-the-way places and allowing more choice, will change the whole business yet again. This could come most obviously from supersonic travel, which despite the commercial failure of Concorde seems likely to return, lopping several hours off long flights. Some startups are already developing small supersonic corporate jets. And there is potential scope for even speedier jaunts if space tourism can be successfully brought into play. The technology to take passengers to the edge of space could produce hypersonic flights, with the possibility of flying people around the world in next to no time. The price of travel may not have much further to fall, but greater speed is certainly on the horizon. And that will doubtless require another step change in luggage technology beyond the wheelie-bag. ■

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America and the Middle East

New sheriff in town

DUBAI

Joe Biden looks to end the war in Yemen and reset relations with Saudi Arabia

FOR THE previous two American presidents, the war in Yemen seemed like an afterthought. Barack Obama backed the Saudi-led coalition fighting on behalf of Yemen's government against the Houthi rebels. But it was a cynical decision meant to blunt Saudi anger over the nuclear deal he reached with Iran in 2015. Then came Donald Trump, who resisted calls to curtail American support for the war. Instead he signed huge arms deals with Saudi Arabia.

Joe Biden has promised a different approach. In a wide-ranging speech at the State Department on February 4th, Mr Biden excoriated the "humanitarian and strategic catastrophe" of the war in Yemen, now in its seventh year. There was no hyperbole in his diagnosis. More than 112,000 people have been killed in the fighting. With the economy devastated, four out of five Yemenis rely on aid to survive. Collapsing health and sanitation systems caused a years-long cholera outbreak; the United

Nations warns of incipient famine.

To take Mr Biden at his word, America will no longer be complicit in this. It will continue to sell defensive arms to Saudi Arabia, which the Houthis have targeted scores of times with drones and missiles, including an attack on February 10th that targeted the airport in Abha. But Mr Biden pledged to end "all American support for offensive operations", including arms sales. He also reversed the Trump administration's eleventh-hour decision to label the Houthis a terrorist group and tapped a respected diplomat, Timothy Lenderking, to serve as his special envoy for Yemen.

Much will depend on the details of his policy. If America merely cuts off the flow of "smart" bombs, the Saudis can continue dropping dumber ones. If it goes further, though, it could hobble the Saudi war machine. Between 2015 and 2019 the kingdom was the world's largest arms importer, according to figures collected by the Stock-

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► ship with Saudi Arabia. Forged in 1945, when Franklin Roosevelt met King Abdulaziz aboard an American cruiser in Egypt's Great Bitter Lake, it has grown dysfunctional since the turn of the century. The attacks of September 11th 2001—overseen by the Saudi-born Osama bin Laden and carried out by mostly Saudi hijackers—led many Americans to associate the kingdom with terrorism. Eighteen months later George W. Bush invaded Iraq, over the objections of some Saudi officials, who feared (correctly) that it would destabilise the region.

Still, the Saudis remained friendly with Mr Bush. Not so with his successor. They were furious in 2011 when, as revolution brewed in Egypt, Mr Obama called on Hosni Mubarak, its longtime dictator, to step down. It seemed to them a hasty betrayal of an American partner—one that left them worried about their own status. A far bigger rupture came in 2015, when Mr Obama signed the deal under which Iran curbed its nuclear programme in exchange for sanctions relief. For Mr Obama it was a legacy-defining achievement. For the Saudis it was a reckless boost to their arch-nemesis, one that offered Iran the prospect of legitimacy and economic growth.

No surprise, then, that the Saudis were happy to see Mr Obama go. They spared no effort to charm Mr Trump. Unusually for an American president, he made his first foreign trip to Saudi Arabia, where his hosts feted him with a traditional sword dance and a bizarre glowing orb. The president's decision to withdraw from the nuclear deal was well received in the kingdom. After the murder in 2018 of Jamal Khashoggi, a Saudi journalist dismembered by Saudi agents inside the kingdom's consulate in Istanbul, Mr Trump helped shield the government from consequences.

Yet Mr Trump was hardly a reliable partner either. The Saudis (and other Gulf states) were shaken in 2019 when he did not retaliate for an Iranian attack on their oil facilities. And his embrace turned Saudi Arabia into a partisan issue in Washington.



Many Democrats, and some Republicans, want to see the kingdom punished for the carnage in Yemen and Mr Khashoggi's murder. Mr Biden himself said in a presidential debate that he would treat it like a "pariah".

That is unlikely. Americans may be exasperated with Saudi Arabia, but it remains a big oil producer and a useful intelligence partner. Mr Biden cannot simply cut ties. Nor, however, can he avoid confrontation. He plans to re-enter the nuclear deal with Iran. And he will probably keep up his criticism of the kingdom's human-rights record, as it seems to have produced a result: the release on February 10th of Loujain al-Hathloul, a women's rights activist. Mr Biden's challenge will be to find a path that neither indulges the kingdom's worst impulses nor reinforces its worst fears. ■

pushed the LNA back to Sirte.

Some of these foreign powers probably do not want the new administration to succeed. But there has been cause for hope in the past six months. A ceasefire negotiated by the UN in October has largely held and prisoners have been exchanged. In September General Haftar lifted a blockade on oil exports, the country's main source of income. A separate government in the east, allied to the general, agreed with the GNA on a single exchange rate for the Libyan dinar and the resumption of flights between east and west. Countries are reopening their embassies in Tripoli.

When the UN created the GNA in 2015, it met behind closed doors and imposed Fayez al-Serraj, a largely unknown politician, as prime minister. It was more inclusive and transparent when setting up the new administration. The proceedings of the 74-member forum were broadcast live on the UN's website, as were interviews with candidates for the presidential council and prime minister, who ran on four-person lists (and who agreed not to stand for office in December). "When we began the process in November, the delegates were cursing each other," says a UN official. "By February they stayed up after midnight laughing and chatting together."

The delegates took observers by surprise, rejecting a list of powerful politicians from east and west in favour of people who had never held high office. The presidential council will be led by Muhammad al-Menfi, a former diplomat. The new prime minister is one of the country's richest men, Abdul Hamid Dabaiba. During the Qaddafi era he ran the state-owned Libyan Investment and Development Company, responsible for some of the country's biggest public-works projects. His brother-in-law, Ali Dabaiba, has been investigated for allegedly embezzling millions of dollars from public funds, perhaps with the help of his family. Ali sat on the forum and is accused of trying to buy votes for Abdul Hamid. He denies all of these claims. ►

Libya

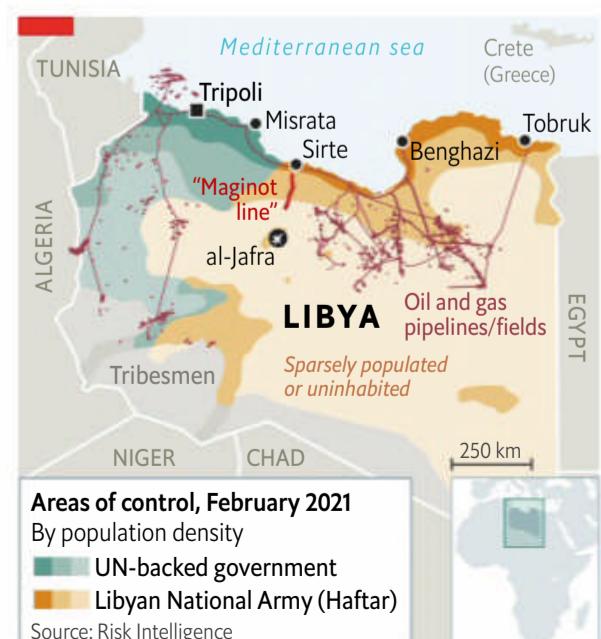
Fourth time lucky

Can a new administration reunite war-torn Libya?

THE DRIVE from Benghazi to Tripoli, Libya's capital, should take ten hours. But the coastal road connecting the two cities has been impassable for most of the past decade because of an on-and-off civil war. Since Libyans toppled Muammar Qaddafi, their old dictator, in 2011, various groups have fought for control of the country—and for parts of the road. Today, near the road's mid-point outside Sirte, militias, boulders and landmines block the way.

Opening that road is one of many tasks facing the new Libyan administration unveiled in Geneva on February 5th. Holding presidential and parliamentary elections in December is its primary job. The body, led by a three-person presidential council and a prime minister, was chosen by 74 Libyans in a forum representing the country's regions at talks sponsored by the United Nations. It was the UN's fourth attempt to establish a unified government in Libya since the revolution. But the new administration faces some old problems.

The biggest of these is meddling by foreign powers. Turkey and Qatar back the Government of National Accord (GNA) and its allied militias, which control the west (see map). The GNA was the UN's third attempt at a unified government. But it has been challenged by the self-styled Libyan National Army (LNA) led by Khalifa Haftar, a renegade general who dominates the east. He is backed by Egypt, France, Russia and the United Arab Emirates. Even so, the general's siege of Tripoli was broken last year by forces loyal to the GNA, which then



Critics of the Dabaiba family believe it will use its influence to hog contracts and increase its wealth. "He'll try to get as much as he can," says a UN official, referring to Abdul Hamid. Others, though, liken him to Rafiq al-Hariri, the businessman who led and rebuilt Lebanon after its long civil war—and who also was dogged by corruption allegations.

General Haftar and militia leaders in the west encouraged their representatives on the forum to choose the winning list because they reckoned it would make for a weak administration. It will certainly struggle to persuade the warlords to give up their arms. It may also have trouble winning over Libyans in the east, many of whom distrust the new prime minister because he comes from the western city of Misrata. Abdullah al-Thani, head of the eastern government, says he is waiting for instructions from the old parliament, which sits in the eastern city of Tobruk.

The foreign powers pay lip-service to the political process, but they ignored the UN's deadline of January 23rd to withdraw. Turkey wants to maintain influence in Libya. In 2019 it signed a deal with the GNA that supposedly gives Turkey the right to drill for oil and gas in waters off Greek islands. It views Mr Dabaiba, who has business interests in Turkey, as an ally.

Russia, meanwhile, wants to preserve its access to air bases and ports facing NATO's underbelly. It dispatched more mercenaries to Libya shortly after the new government was voted in. And it continues to help General Haftar dig his "Maginot line", a fortified trench running from Sirte into the desert. That will not make the new government's job any easier. ■

The Horn of Africa

Adding to the chaos

Gulf rivalries are spilling into north-eastern Africa

THE NARROW waters separating the Arabian peninsula from the Horn of Africa have never served as much of a moat. Goods and people routinely cross. Iran and the United Arab Emirates (UAE), in particular, are increasingly active in the Horn. Tensions between them rose after the UAE established diplomatic ties with Israel last year, a move that Iran furiously condemned. A string of recent arrests shows how the rivalry between the two is adding volatility to an already unstable region.

In recent weeks Ethiopia arrested 15 people for allegedly plotting to attack the UAE's embassies in Ethiopia and Sudan.



The authorities said that those arrested were working for a "foreign terrorist group", but did not say which. Around the same time Sweden said it was holding two men, a Swede and an Eritrean, on suspicion of planning a terrorist offence in an unnamed foreign country. Western intelligence sources say the arrests were linked and Iran was behind the planned attacks.

That would be nothing new for Iran. It has a history of plotting attacks in Africa, often unsuccessfully. Western spies believe it may be looking for soft targets so that it can retaliate against its rivals, namely America, Israel and the Gulf states.

Iran is destabilising the Horn in other ways, too. Since 2013 UN experts have voiced concerns to the Security Council about a flow of weapons from Yemen and Iran into Somalia. In recent years as many as four shipments every month have been arriving. Western and local forces have intercepted several boats heading for Somalia and Yemen, loaded with weapons made in Iran or North Korea. Some of these arms may go to al-Shabab, a Somali jihadist group. Others may be destined for Houthi rebels in Yemen. Last June, for instance, Saudi Arabia seized a dhow carrying anti-tank missiles and thousands of assault rifles made in Iran on their way to Yemen via smuggling networks in Somalia.

In January al-Shabab released a video commemorating its attack last year on an American air base in Manda Bay on Kenya's coast. Its fighters can be seen carrying Iranian-made rocket launchers. But they are also carrying rifles stolen from the Somali army—originally supplied by the UAE.

From 2014 to 2018 the UAE trained part of Somalia's army. But the countries fell out after Somalia resisted Emirati pressure to cut ties with Qatar following a dispute between the Gulf states. Somalia, for its part, was angry with the UAE for making deals with Somaliland, a breakaway region.

Nowadays the UAE is more active in Eritrea and perhaps Ethiopia. It has provided weapons to Eritrea's army in defiance of a

UN arms embargo. And it has used an air and naval base in the port city of Assab to launch air strikes in Yemen. That base, claimed by Ethiopia, has also been used to launch drone attacks against them. Eritrea is fighting alongside Ethiopia's government against the Tigrayan People's Liberation Front (TPLF), the ousted rulers of Ethiopia's northern Tigray region.

Iran and the UAE are not the only Middle Eastern powers operating in the Horn. Israeli journalists have long reported the existence of secret Israeli intelligence facilities in Eritrea, which occupies a strategic position, overlooking the Bab al-Mandab strait at the mouth of the Red Sea.

Is any of this good for the Horn? Somalia's fragile attempts at state-building were set back earlier this month, when presidential elections were indefinitely delayed. Ethiopia, meanwhile, is at risk of splintering into warring ethnic groups. The region needs outsiders to douse these flames. Instead, many are fanning them. ■

Congolese politics

The president pounces

KINSHASA

Félix Tshisekedi cuts free of his would-be puppetmaster

IN THE LAWLESS eastern parts of the Democratic Republic of Congo, nomads and sedentary folk often clash. Cattle-rearing groups rub up against crop-growers over access to land. In the absence of a strong state, disputes can quickly turn violent. By contrast another type of nomadism obsesses the population in Gombe, the wealthy core of Congo's capital, Kinshasa: that of elected officials.

Few politicians are loyal to ideas or people. Instead they head for the best grazing. "The Congolese politician is the most unstable human ever to exist," says Félix Momat Kitenge, until recently a government minister. "He will change with the breeze." Others call it, in French, *transhumance politique* (political nomadism).

On January 27th several hundred members of Congo's parliament put on their metaphorical walking boots and took a hike. They left the majority political grouping, the Front Commun pour le Congo (FCC), which is affiliated with Joseph Kabila, Congo's president until 2019. Most joined two of the largest opposition parties in supporting a new majority called the "Sacred Union" set up by Félix Tshisekedi, who has been president for the past two years. The prime minister, Sylvestre Ilunga Ilukamba, an ally of Mr Kabila's, resigned. So did his ministers, including Mr Momat. ■

► A new government will now be appointed that will be closer to Mr Tshisekedi.

Mr Tshisekedi's ascent to the presidency, in rigged elections at the end of 2018, was unexpected. For much of his adult life he had lived in Belgium. He was given a place on the ballot largely because of the reputation of his late father, Étienne, a firebrand opposition leader who died in 2017. Electoral tallies compiled by the Catholic church suggested that Mr Tshisekedi came second, with under 20% of the vote, well behind Martin Fayulu, a charismatic anti-corruption campaigner. Yet Mr Tshisekedi, to the astonishment of many Congolese, was declared the winner, seemingly as part of a last-minute deal with the former president. The quid pro quo, allegedly, was that Mr Kabila kept control of much of the state.

Yet power has steadily flowed to Mr Tshisekedi as he has appointed allies to key posts. He appears to have routed Mr Kabila more quickly and comprehensively than almost anyone predicted. "We thought it would be closer to 50/50," says Manya Riche, a Congolese political analyst. "This totally surpassed that."

Exactly how Mr Tshisekedi achieved this is unclear. Supporters of Mr Kabila (or at least those who did not swap sides) mutter that bribery must have been involved. There are whispers that some MPs took payouts of \$7,000-15,000 to join the new coalition. One leading MP who changed sides admits that although "money circulated", people were offered much more to stay. Other MPs may simply have been unnerved enough to change their allegiance by Mr Tshisekedi's threat to call new elections. He has also targeted allies of Mr Kabila with an anti-corruption drive. Faced with the chance of lucrative positions under Mr Tshisekedi on the one hand, and prosecution on the other, many opted to migrate to the president's greener pastures.

Mr Tshisekedi made big promises on coming to office, including providing free primary schooling, building infrastructure and reforming the electoral system. Almost none of that has happened. Most Congolese remain extremely poor. In a park near the parliament, a group of men playing backgammon with bottle tops say that jobs remain scarce. "The poor in Congo still suffer, while the rich continue to eat," complains Eric Kayado, a petrol vendor. ("Eat", in Congo, implies "embezzle".)

Mr Tshisekedi has long argued that Mr Kabila's control of parliament was a problem. "The system of Mr Kabila was to block [progress]," says Jacquemain Shabani, an official in Mr Tshisekedi's party, the UDPS. Outside the party's offices, a crowd of his supporters argue that their president has "chased away" Mr Kabila and will now bring them the changes they hope for. "Now he can work for the people," says Darcin Mukendi.

Kenya's rose-tinted spectacle

Flower power

TIMAU

Covid-19 wilted Kenya's floral farms. Now they are blooming again

IVAN FREEMAN runs a 20-hectare rose farm at the foot of Mount Kenya right by the equator, where the soil is fertile and the sun shines all the year round. His business, Uhuru Flowers, exports to some 49 countries, including China, Nigeria and parts of eastern Europe. Some of his buds reach the shop window within four days of being cut.

That finely tuned business came to a halt when the pandemic struck. Celebrations were cancelled, florists shut and aeroplanes were grounded. Uhuru halved workers' hours and destroyed 1.2m unsold stems, about a month's harvest. Supply chains have slowly been rebuilt since then, and the 350 staff are back full-time. Now Mr Freeman, like many farmers, is speeding up production, hoping to recoup last year's losses with sales on February 14th. "Valentine's Day for most farms is a huge deal," he says. "Everyone is feeling positive and ready to take advantage of it."

After the initial disruption, countries have reopened their borders. Florists

have gone online and Kenya's flower industry has come up roses. The sector employed more people last month than before covid-19 began to spread, according to a survey of producers in the Rift Valley by Kenya's central bank. Production and exports are at 90% and 95% of their levels in February last year, respectively.

Farmers say demand has recovered surprisingly well. The global economy may have wilted and consumers may be penny-pinching, says Anna Barker at the Fairtrade Foundation, but "a bunch of flowers on the table does wonders when you're in lockdown."

That is good news for Kenya's economy. The flower industry usually contributes around 1% of GDP and is a source of foreign exchange. It employs more than 500,000 people, including 100,000 directly in farms. Debate about flower farms once focused on poor conditions for workers, who are on their feet all day and exposed to all sorts of chemicals. The focus now is on keeping these workers, including lots of unskilled women, in jobs.

A big problem that hasn't gone away is transport. Fewer passenger flights than usual ply the crucial route from Africa into Europe. And freight capacity has fallen as planes have been redirected to moving medical equipment around. Richard Fox at Flamingo Horticulture, a big flower producer with farms in Timau, reckons the cost of air freight has jumped from \$1.90 to almost \$3 per kilo in the past year.

Such disruption has hurt the smaller farms a lot more. Flamingo, which processes a mammoth 780m stems every year, has a long-term agreement with a logistics provider. Its supply chain has barely been disrupted. But smaller farms are busy negotiating with freighters. Competition for slots on planes is particularly fierce ahead of the peak season, which begins with Valentine's Day and extends to Mother's Day weeks later. "The big guys always win," sighs Mr Freeman.



Little luxuries for lockdown lovers

Yet a new majority may not make reform easier. The new government will not necessarily be stable, notes Ms Riche. The president's new allies will be competing for ministerial positions. Not every aisle-crosser will stay loyal. The economy remains weak and, for the moment, Mr Kabila retains his grip on a large part of it.

Some fear that Mr Tshisekedi may end up emulating Mr Kabila, whose final years in office were characterised by grotesque

corruption and the suppression of dissent. On coming to office Mr Tshisekedi released political prisoners and promised freedom of the press. Now he appears to be backtracking. On January 28th Human Rights Watch, a watchdog, accused Mr Tshisekedi's government of having arbitrarily detained and prosecuted journalists and activists. It is too early to conclude that the new boss is the same as the old boss. But ordinary Congolese have cause to worry. ■

**Education and covid-19**

A tale of two colleges

AMSTERDAM

Covid-19 school closures are widening Europe's class divisions

NO ONE IS ever truly ready for lockdown. But when the Netherlands closed its schools in December, the Herman Wesse-link College, a high school in a well-off suburb of Amsterdam, was readier than most. About half its students have parents who completed higher education. Nearly all have their own bedroom to study in. The school has given its pupils laptops for years, and during the first lockdown last spring switched smoothly to remote learning. The director says students have not fallen behind a whit in terms of content, though their study skills have languished.

The Mundus College, a trade school in a poorer Amsterdam neighbourhood, has had it rougher. About a third of its students are new immigrants or refugees. Vocational education is hard to do remotely. Classes have stayed open at half-size under an exception for vulnerable students, but it is impossible to follow social-distancing rules for subjects like nursing, says Diana Brummelhuis, the director: "You can't teach someone to handle a wheelchair by

lecturing." She estimates that her pupils are lagging at least a quarter behind their normal pace.

Such contrasts are playing out all over Europe. On a continent famous for its welfare systems, school closures threaten to widen divisions of education, ethnicity and class. Compared with the rest of the world, Europe has not done badly during the pandemic. Most of its schools reopened in the autumn, while in South America and South Asia they largely stayed shut. But covid-19's second wave has forced many European schools to close again.

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This hurts all pupils, but it hits the poor and vulnerable ones harder. France's education ministry says that last spring's lockdown increased the gap in exam scores between normal schools and ones in hard-up areas by several points. In Germany, that first lockdown cut studying time from 7.4 hours per day to 3.6. An analysis of last year's national exam results in the Netherlands came up with the depressing finding that during the spring lockdown the average pupil had learned nothing at all. Those whose parents were poorly educated did even worse: they emerged from their first two months of schooling by internet knowing less than when they started.

France has been the most determined of any European country not to let schools close, arguing that the risks to educational attainment and social cohesion are greater than those to public health. Last spring President Emmanuel Macron overrode advice from epidemiologists and ordered schools reopened. They have stayed that way, though since November most high schools have worked in shifts. Germany closed its schools from December 16th until at least February 15th. Its state governments would like to start reopening them, but Chancellor Angela Merkel wants to wait until covid-19 caseloads fall by half from current levels. Northern Europe has roughly followed the German pattern (apart from contrarian Sweden, which closed only briefly in January).

In southern Europe closures have been less widespread. Spanish schools have stayed open since the autumn, though most high schools use some distance-learning. Some 35,000-40,000 new teachers and assistants have been hired to reduce class sizes. In Italy primary schooling has not been interrupted. High schools, shut in November, have reopened for most classes. Both countries have struggled with remote classrooms, thanks to dodgy internet connections and a lack of computers among poorer pupils.

Similar tech problems plague the continent's poorer east. Nevertheless, the closures there have been stricter. In Poland schools have been shut since late October; schools for those aged up to eight reopened on January 18th. A survey of Polish teachers last summer found that most knew of pupils who had not turned up since instruction went online. Romania's schools were shut almost continuously from March until they reopened on February 8th, yet more than a quarter of the country's children are not equipped for online education, according to Save the Children, a charity. By January the government had distributed around 250,000 tablets, but said 287,000 more students still needed one.

Many experts worry about the emotional and developmental damage of lockdowns. But the data are ambiguous. A survey of Dutch social workers last year found that emotional neglect of the children they were responsible for was much more common than in the same period in 2017. But even though some children report less affection from their families, others say they are getting more, including a rise in hugs. Others worry about working parents forced to stay at home to care for children. About 150,000 Polish women have dropped out of the labour force since last March, says Piotr Lewandowski, an economist.

One issue has been what to do about Europe's all-important national examinations. Germany is pressing ahead with the *Abitur* to ensure that this year's graduates get equal respect. Dutch high schools have stayed open for students in their final year before the *eindexamen*. In France, the dreaded four-hour *baccalauréat* exams have been cancelled, apart from bits the country considers essential: French literature, the final oral exam and, of course, the written exam in philosophy.

At least the gravity of the threat to education has sunk in. Austria, Denmark and the Netherlands reopened their primary schools on February 8th; Romania reopened primary and most high schools as well. The question is what governments will do if infection rates rise in the spring: close schools again, or find other painful measures (such as curfews or bans on house visits) to compensate for keeping children in class. ■

France

The president's dilemma

PARIS

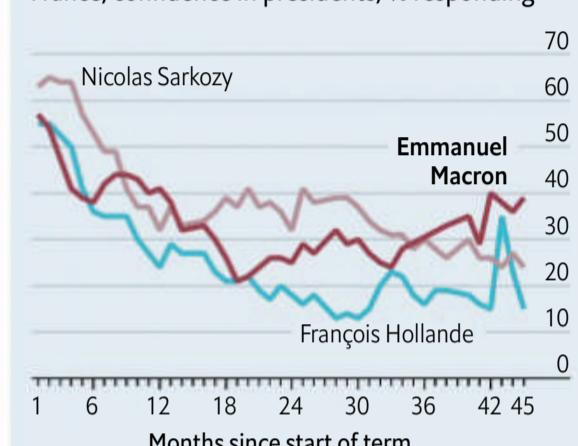
The pandemic favours the politics of caution over risk

IN FEBRUARY 2016, just 14 months before the most recent French presidential election, not a single opinion poll of potential candidates bothered to test the name Emmanuel Macron. Weak party allegiances, anti-establishment distrust, a bold campaign—and a generous dose of luck—carried the electoral novice from nowhere to the presidency in record time. As France now turns its mind to the presidential contest in 2022, all polls and predictions therefore deserve caution. Yet the contours of the next campaign are beginning to emerge, and they present a peculiar challenge to Mr Macron as he thinks ahead to his re-election bid.

Two new polls suggest that 2022 will bring a repeat of the run-off between the centrist Mr Macron and the nationalist Marine Le Pen. But each also points to a far tighter race than in 2017, when Mr Macron beat Ms Le Pen squarely by 66% to 34%. One poll reduces the sitting president's margin to 12 points. The other gives him an even narrower victory of 52% to 48%. The French, prone to malaise even in good times, give little credit to their president and are feeling anxious: about a possible third lockdown, the spread of *le variant anglais*, the reliability (and now the availability) of vaccines, the well-being of the young, and the livelihoods of all those fur-

Not bad, considering

France, confidence in presidents, % responding



Source: Kantar

loughed chefs and waiters who sustain the French *art de vivre*.

Apprehension, as well as disease control, has bred a politics of reassurance and caution. Whereas once Mr Macron stood in an army tent and declared war on the virus, covid-19's long effect on politics has been to emphasise protection. He promised to do "whatever it costs" to save jobs and lives. His government maintains a generous furlough system for millions of employees, as well as loans and grants to keep businesses afloat. It is shielding its supermarkets from foreign predators, has raised health workers' salaries and has all but shelved its controversial pension reform. A nightly national curfew has been in place since mid-December. Even France's glacial vaccine roll-out is justified as a measure to build trust in a vaccine-sceptical country; Britain's approach, said a minister, carries "enormous risks".

Such prudence may be justified by the pandemic, and in many ways matches the new global orthodoxy. Yet the broader message also works against Mr Macron's reflexes, and what he stood for during his bid for the presidency in 2017. The candidate's campaign then was based on an attempt both to free up initiative and risk-taking, and to build a modern system of rules and protections to encourage this to happen. Mr Macron's defiant, disruptive side-reforms to the labour market, schools, training, the railways and taxes—marked his initial years in office. Covid-19 is crushing this flat.

"In all our societies the pandemic is leading us to protect more; that's normal," Mr Macron told *The Economist* at a recent



Quoi faire?

▶ meeting with foreign reporters, arguing that if he had not carried out his liberalising reforms before the pandemic the country would be less well placed to finance protection today. The recovery plan based on common European Union borrowing is, he pointed out, oriented towards investments that “build the future, and not from a perspective of protection”. But Mr Macron does not deny that the balance has shifted: “Two years ago I was told, ‘You are freeing up more than you are protecting’; today I am told, ‘You are protecting more than you are freeing up’.”

This poses a particular challenge in France, a country that has long had a strong central state and that has tended to long spells of conservatism interrupted by bursts of rebellion, some of them rather dramatic. Protection is in some ways the country’s default mode, and that mindset can be hard to alter. Mathieu Laine, a liberal writer and the author of a new book, “*Infantilisation*”, argues that the French state is now acting to entrench a dangerous form of risk aversion. All those rules and forms devised by overzealous bureaucrats during the pandemic—no more than one hour of exercise a day, at no more than one kilometre from home—are teaching people, he says, how to “unlearn what it means to exercise freedoms”.

It may yet be that this shift towards the politics of protection could in fact provide Mr Macron, a former investment banker, with a form of defence. The most disillusioned of his former supporters are on the left. Last year he lost his absolute parliamentary majority when a group of left-leaning deputies quit his party, La République en Marche. Instead of a nod in their direction, he then replaced one centre-right prime minister (Edouard Philippe) with another (Jean Castex). Some inside the party now want Mr Macron to tilt towards the left to recover such voters. If faced with another second-round choice between him or Ms Le Pen, they might otherwise abstain. Polls suggest that this is part of the reason for the closer run-off gap.

The chances are that Mr Macron, whose adage is *en même temps* (at the same time), will seek to forge a fresh balance in the run-up to 2022. He has shown that he is still ready to take risks, says one of his presidential aides, by keeping schools open since last May, and refusing—against scientific and ministerial advice—to put France into a third lockdown right away. Partly as a result, his poll rating among the young has risen 11 points in three months. For now, his greatest asset is that no single credible alternative candidate has yet emerged, on either the left or the right. But these are uncertain times. And nobody knows more about the volatility of electoral politics than the former outsider whom polls overlooked, Mr Macron. ■

Turkey

Lesbian, gay, bi and terrorist?

ISTANBUL

Recep Tayyip Erdogan takes on a top university and the LGBT movement

SQUADRONS OF armed policemen block the entrance. Metal barriers line the avenue leading up to the campus. Snipers occasionally emerge on nearby rooftops. Boğaziçi University has long been considered one of Turkey’s most prestigious. Today it resembles a besieged terrorist hideout.

That, believe it or not, is how Turkey’s president, Recep Tayyip Erdogan, sees it. On February 1st police stormed the campus

and detained dozens of students who were protesting about his appointment of a government loyalist as their rector. The protests have taken place regularly for over a month. They escalated after the arrest of four students who had organised an art show that included a rainbow flag alongside an image of the Kaaba, the black cube at the heart of Mecca. Turkey’s interior minister called the students “LGBT perverts”. Mr Erdogan compared the protesters (at least 600 of whom have been detained) to terrorists. “There is no such thing as LGBT,” he said on February 3rd. (Why he is so upset about something he doesn’t think exists remains a mystery.)

Mr Erdogan tends to inflame protests. He often depicts them as part of an existential struggle between pious and secular, conservative and degenerate, patriotic and

Pets and covid-19

Canine crushes

BERLIN

Pets have made lockdown more bearable. What happens when it ends?

ARTHUR SCHOPENHAUER owned a succession of pet poodles. Franz Kafka maintained that “all knowledge, the totality of all questions and all answers is contained in the dog.” Frederick the Great exclaimed: “The more I see of men, the better I like my dog.” Pets have been deeply embedded in Germanic culture for centuries, but never more so than now. As people seek a cure for covid-induced solitude and angst, demand has surged for dogs, budgies, snakes and even cats.

The German Kennel Club says dog sales increased by 20% in 2020. Prices for puppies sold on pets4homes, Britain’s largest online ad site for pets, more than doubled. A Yorkshire terrier pup can

set you back £1,500 (\$2,050), and some breeds cost twice that. Some dogs are no doubt enjoying the pandemic, since their owners are always home. Many are being pampered. The share price of Chewy, an online pet-supplies store, rose by more than 260% in 2020 as owners splurged on posh toys and organic food. Zoo Zajac, a huge pet shop based in Duisburg, says January was probably the best month in its 45-year existence.

Soaring profits, alas, attract crooks. The unspeakable crime of “dognapping” is on the rise. Pedigree pooches are preferred. The German Animal Welfare Federation (DTB) registered 75 illegal trades between January and October last year, more than in all of 2019, involving more than 800 animals (mainly dogs). The true number is surely much higher. Many take place online and are hard to spot. Puppy farms are mass-producing dogs, often in poor conditions. Thomas Schröder of the DTB demands a ban on the online sale of animals. Other activists argue that the internet helps find good homes for many pets, though they advocate stricter regulation of online sales.

When covid-19 eventually recedes, animal shelters expect another problem. Some new owners will tire of their lockdown pets and want to return them. Others will go back to work and find they have no time to look after them. Europe’s biggest animal shelter, in Berlin, which is the size of 22 football pitches and houses some 1,300 animals, including apes and a pig called Tinkerbell, is bracing for a post-pandemic crush.



He's got the answers



The latest enemy

foreign—and crushes them. This tactic worked in 2013, when a small protest in defence of a small park snowballed into countrywide demonstrations after Mr Erdogan referred to the protesters as looters and had them sprayed with tear-gas and rubber bullets. Dozens were later rounded up and indicted on coup charges.

Mr Erdogan is doing something similar today, while attempting to seize control of Bogazici, a rare bastion of liberalism in a country increasingly under the sway of nationalists and Islamists. Sexual minorities make a perfect target. Homophobia in Turkey is a chronic condition. With the exception of the country's main Kurdish party, no political group in Turkey has embraced LGBT rights, out of both conviction and fear of a conservative backlash.

After an abortive coup in 2016, Mr Erdogan redoubled his attempts to bring education into line with his vision of a more pious, prouder Turkey, a country looking inward rather than westward. Under an emergency law, he sacked over a thousand academics accused of terrorist sympathies (with scant evidence) and gave himself the power to appoint university rectors. His choice of Melih Bulu, a longtime member of the ruling party, as Bogazici's president, has gone down particularly badly. Since being parachuted in, Mr Bulu has had to contend with claims that he plagiarised parts of his dissertation. Condoning the arrests of hundreds of his students has not made him popular on campus.

Once again, Turkey's president has deliberately turned a local crisis into a national one. Once again, he seems poised to prevail through a combination of division, intimidation and force. But all this comes at a price. In a poll published last year, over 62% of young people in Turkey said they would prefer to live abroad if they had the means. If the country's best and brightest start leaving, Mr Erdogan will have no one to blame but himself. ■

Italian politics

No time for foot-Dragging

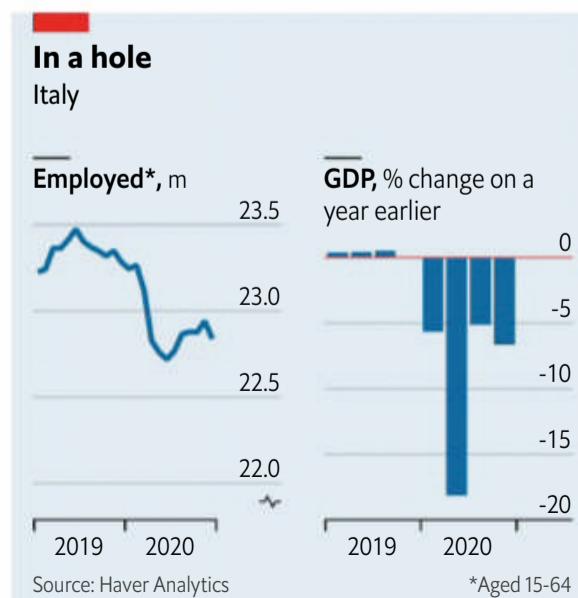
ROME

The prime minister-designate will have to move fast

WAS THERE ever a luckier prime minister than Mario Draghi? Or an unluckier one? He looks set to come into office with around €200bn from the EU's recovery funds to spend. But he will also take over Europe's worst-performing economy in a pandemic and with a parliamentary majority hard put to agree on anything, let alone on controversial structural reforms the European Commission wants to see implemented as the largesse is disbursed.

By February 12th only the far-right Brothers of Italy party had declined the chance to climb aboard the "Super Mario" bandwagon, though the backing of the ideologically variegated Five Star Movement (M5S), the biggest group in parliament, was still in doubt. Faced with a grass-roots rebellion, its leadership was putting support for Mr Draghi's government to an online vote. Even the hard-right Northern League hastily renounced its Euroscepticism to book a place in Italy's next parliamentary majority, and perhaps its cabinet.

The former president of the European Central Bank faces both a daunting challenge and a unique opportunity. The challenge is to cope with the effects of covid-19 in a country hard hit by the virus; Italy is fourth in the EU in terms of deaths relative to population. Its economy shrank by 8.8% last year, compared with 5% in Germany. If a ban on sackings is lifted at the end of March, an estimated 250,000 more people will be dumped onto the labour market. Mr Draghi's opportunity, though, is to use the recovery funds to start reversing two decades of economic decline. Even before the pandemic, Italians' real GDP per person was lower than at the start of the century.



Behind that woeful performance lies an array of obstacles to growth, held firmly in place by vested interests.

In consultations with the various parties, Mr Draghi has hinted at how he intends to deal with both the challenge and the opportunity. The priority areas he indicated were health (a central aim must be to speed up vaccination); education (he has suggested that the school year be extended to allow students to catch up); the protection of individuals and enterprises from the effects of the pandemic; and, less obviously, the environment (which squares with the priorities of the commission and the M5S). The prime minister-designate's targets for reform are said to include Italy's tax regime, its stultifying bureaucracy and a slow, unpredictable civil-justice system that discourages both domestic enterprise and foreign investment.

But these are tasks for a period of years, so the first question that arises is how Mr Draghi's long-term aims can be reconciled with the EU's exacting deadlines and—a point largely overlooked in the euphoria surrounding his appointment—the short life expectancy of his government. Contracts for 70% of the recovery funds must be awarded and signed by the end of 2022 and the remainder committed within the following year. In the meantime, a general election must be held by early 2023. But, given the parties' aversion to winter campaigning, it is more likely in the first half of next year. Mr Draghi may want to step down even sooner if he is to run for president in a separate election due in February 2022. "I think he'll set a working method for the next government," says Veronica De Romanis, who teaches European economics at LUISS, a university in Rome.

A second question is how much unpopularity Mr Draghi is prepared to risk. When the outgoing government suggested a longer school year, it prompted an outcry from the unions. Tax reform usually favours some parts of society at the expense of others. And Mr Draghi's approach to safeguarding enterprises may also prove controversial. Last year he co-chaired a working group of the Group of Thirty, an informal body of bankers and officials, that looked at restoring the corporate sector after the pandemic. It concluded that governments should focus on supporting viable firms and managing the pace of what his co-chair called "the needed creative destruction".

Mr Draghi is popular. But Italy's electorate and parliament are notoriously fickle. "If he starts immediately with these reforms we have been speaking about for 20 years, he will have a chance of success," says Giuliano Noci, professor of strategy and marketing at Milan's Politecnico University. "But if he waits for more than a month, the sentiment will change." ■

Charlemagne | They told you so

The European Union must face up to the real Russia



WHEN ROBERT CONQUEST, a historian, was working on a new edition of “The Great Terror”, his seminal text on Stalin’s crimes, he was told to come up with a new title. The book had described the horrors of the Soviet Union at a time when apologetism for it was still rife. By the time of the new version, freshly opened archives had vindicated Conquest’s account. His friend Kingsley Amis, a novelist, suggested a pithy new title: “I told you so, you fucking fools”.

Head east in Europe today and it is easy to find similar sentiments about Russia. The Baltic states and Poland warned Josep Borrell, the EU’s foreign-policy chief, against visiting Moscow in the wake of its imprisonment of Alexei Navalny, Russia’s leading opposition politician. They were right. Mr Borrell was humiliated. In a press conference Sergey Lavrov, the Russian foreign minister, dismissed the EU as an “unreliable partner”, while Mr Borrell stood alongside. European hypocrisy was mocked as he brought up the treatment of Catalan politicians by Spanish authorities, knowing that Mr Borrell is a staunch opponent of independence for the region. Mr Borrell did not even insist on visiting Mr Navalny in jail. While he was there, news leaked that the Russian government had expelled diplomats from Germany, Poland and Sweden for attending pro-Navalny rallies. Diplomats from eastern Europe may be politer than Amis, but the message is the same.

Dealing with Russia is the most pressing foreign-policy problem facing the EU. It is also where the bloc is least coherent. While national capitals may not always agree on how best to handle China or how close to remain to America, on Russia they are hopelessly split. Russia can be a potential or even necessary ally, a business opportunity or an existential threat, depending on whether you are in Paris, Berlin or Warsaw. The notion of an EU foreign policy is flimsy at the best of times, but especially on this topic. “Everybody knows that the big boys freelance on anything that matters,” says Radek Sikorski, a Polish MEP and former foreign minister. And Russia is among the things that matter most.

Doveish attitudes are based on pragmatism, pessimism and cynicism. France puts its accommodating strategy down to culture and geography: Russia is too large to push around and too near to ignore. It emphasises patience and engagement—a tactic

its critics label “doing nothing”. When it comes to Russia, Emmanuel Macron, the French president, talks in terms of decades, and doubts whether tough action would do much good. Whereas such remarks may be wise from a policy wonk, they are less comforting coming from the mouth of the EU’s only hard power.

In Germany economics trumps geopolitics. Nord Stream 2, a pipeline running from Russia to Germany, undercuts the EU’s wider strategy of trying to rely less on Russia for energy but retains the support of the German government. (The fact that Gerhard Schröder, a former German chancellor, is the chairman of the scheme does not help.) Angela Merkel surprised critics by shepherding through—and sticking with—sanctions on Russia over its actions in Ukraine. Yet she is soon to leave office. Armin Laschet, the new leader of her Christian Democratic Union, is more doveish. Even direct attacks, such as Russian hackers breaking into the Bundestag’s computers in 2015, failed to budge opinion. Unfortunately for the EU’s band of eastern hawks, France and Germany are not alone. Spain and Italy, the EU’s other big countries, are similarly meek when it comes to Russia.

Each approach shares an assumption that there is not much the EU can do about Russia. But the EU forgets its power. It is a bloc of 450m people with a GDP that is nine times larger than that of its Russian neighbour; Russia’s economy is slightly larger than Spain’s and smaller than Italy’s. Collectively, EU countries spend almost three times as much as Russia on defence. Just France and Germany together spend roughly two-thirds more. Yet when dealing with Russia, the EU behaves like a supplicant. What Russia lacks in relative means, it makes up for in motivation: from the Sahel to Belarus, Russia is an enthusiastic troll, causing no end of trouble for the bloc. European governments have the tools to take a firmer line with Russia, whether sanctions on those close to Mr Putin, or scrapping Nord Stream 2. What they lack is the will to use them. In one multilingual intervention, Assita Kanko, a Belgian MEP, asked of Mr Borrell: “Dónde están los cojones de la UE?”

When doves cry

The ill-fated Moscow trip caps off a period in which Russia’s gangsterism has become impossible to ignore. Until recently, it was possible to argue that it was open to a constructive relationship with Europe. Now it is not. Sanctions require the unanimous support of all governments, which is tricky, even with new EU legislation that makes it easier to punish human-rights abusers. But such measures are more likely thanks to Russia’s recent actions. “Russia is usually its own worst enemy,” says one official from an eastern country.

This clarity leaves Europe’s doves in a bind. Their vision of a better relationship with Russia, working together on matters like climate, is appealing. In this world, Russia could be a well-behaved G8 member. Unfortunately, that Russia does not exist. Instead, European powers face a government that tries to murder its opponents, stokes proxy wars and hacks its neighbours. It is a country that deliberately chooses confrontation rather than partnership, and the EU—both its national capitals and its institutions—must recognise this.

The real Russia is much closer to the way it is described by the EU’s eastern countries than to the benign image conjured up by western ones. No one can force Mr Macron to give up his hope that Russia will eventually be a partner. Likewise, no one can force German politicians to take a short-term economic hit for geopolitical gain. But they cannot say they were not told. ■



National Health Service

Hands on

The first major reform of the health service in a decade seeks to reduce competition and give politicians more control over it

ONCE UPON a time, an ambitious young Tory MP could write columns mocking *bien-pensant* pieties about the health service—dinner-party attendees who thought “how maahvellous it was that the duke and dustman were treated alike in our glorious New Jerusalem, watching the same TV, eating the same spotted dick, attended by the same starch-bosomed nurses.” When that was written, in 2004, Tories liked to flirt with the idea of adopting the social-insurance systems seen in much of Europe. At the very least, they would argue, the health service’s internal market ought to be sharpened to raise standards and cut costs.

Now that MP is the prime minister, he treats the NHS with rather more reverence. The health service is, Boris Johnson says, “the beating heart of this country...It is powered by love.” His government’s prescriptions for it also differ. A white paper, due to be published as *The Economist* went to press but leaked beforehand, sets out plans for the first major NHS legislation in a

decade. They would put the final nail in the coffin of the internal market—competition will no longer be the “organising principle” of the health service—and would give ministers more direct control over the NHS.

The country’s current rulers believe they express the will of the British people, and are therefore justified in grabbing power from any institution that gets in their way, whether the EU, the courts or bureaucrats in the civil or health service. But politicians mess with the NHS at their peril. Although health outcomes are below par for the rich world, Britons love the health service with a deep and abiding passion. This gives medics enormous power.

The fate of the last politician to try to reform the health service serves as a warning. In 2011 Andrew Lansley, health secretary in the Tory-Lib Dem coalition, set out to abolish almost all national and regional management by extending the use of market mechanisms, and to take oversight of the system out of political hands. Although the

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legislation he promoted eventually passed, it met strong opposition. Mr Lansley was sacked, and the officials put in charge of the NHS largely ignored the changes his legislation sought to introduce.

The Conservative party has taken a more cautious approach to the health service of late. At the general election in 2019, Mr Johnson promised the NHS lots of money to build hospitals and hire nurses. There was no mention of traditional Tory cost-cutting demands. The reforms in the new white paper are happening partly in response to the requests of NHS bosses.

Although the internal market helped cut waiting times, there is not much evidence it improved the quality of care. And the split between purchasers (mostly GPs) and providers (mostly hospitals) makes the health service unwieldy. As the population ages, fewer patients go to hospital for a single operation, and more need care for a complex set of problems. The hope is that integrated care, of the sort pioneered in Singapore and by Kaiser Permanente in America, will serve them better than the fragmentation of an internal market.

Integrated care’s introduction to the NHS has been driven by Sir Simon Stevens, the health service’s boss, who has brought purchasers and providers together to plan care for areas covering 1m-3m people. The white paper suggests sweeping away remaining barriers, such as procurement ►

► rules and regulation, and giving the centre powers to overcome local resistance.

Health wonks mostly approve of the direction of travel. Worries, where they exist, are about details. The most concerning, says Nigel Edwards of the Nuffield Trust, a think-tank, is that the proposals may end up creating unaccountable local monopolies. Jeremy Hunt, a former health secretary, suggests setting up a body along the lines of Ofsted, which inspects schools, to guard against this; others would like more performance data published so that officials can be held to account.

But while those in the business mostly approve of the first part of the government's plans, they do not like the second. Mr Lansley's reforms created a clear division between politicians and the NHS. The government sets the priorities and appoints the boss; the technocrats are left to work out the details.

Nicholas Timmins, a historian of the health service, thinks the set-up has led to more consistent policymaking: "There have not been endless announcements in recent years, 'Oh well, we're going to spend £40m (\$55m) on dementia or £60m on cancer because the minister needs to say something.'" Supporters of the NHS's independence point out that organisations under ministerial control—such as Public Health England and the test-and-trace system—have not had successful pandemics. The NHS has done a better job.

The white paper would put the government back in control, giving it, among other things, the ability to abolish or alter the arm's-length bodies that make up the health service without new legislation. The political rationale is that since the state spends more than £160bn a year on health care, around 7% of GDP, ministers (or, as they prefer to put it, taxpayers) should have more say over how it is run. A cruder explanation is that the government is annoyed that Sir Simon runs rings around it, whether in funding negotiations or questions of data access, and gets credit when things go well. Politicians also like to be able to influence decisions that matter to voters—over, for instance, the fate of an inefficient hospital in a marginal constituency. Shutting it may be the right decision for health care, but the wrong one for a government clinging to power.

Knowing how fraught any legislative process involving the NHS can become, the government has played down the significance of these new powers. Mr Johnson will be loath to get into an argument with medics, so he will hope they do not rally to the defence of the officials who run the health service. At times, the NHS really is powered by love. But it can also run on anger—a frightening prospect to any politician, especially one who came to power posing as its protector. ■

Rule-breaking

Going underground

A secret world of illicit fun is developing

ALEX, A CRYPTO-CURRENCY trader in east London, is a party animal. For a while covid-19 put a brake on his hedonism, but during this lockdown the boredom got too much, so he has started attending cocaine- and spirit-fuelled parties once more. At the last bash, in January, there were 40-50 people. He is not surprised it was so well-attended: his friends, he says, are "a bunch of degenerates... Liberal progressive people don't give a toss anymore." One such soirée was so raucous that it exploded onto the street, where two guests scrapped. Alex says the neighbours did not call the police because they host similar gatherings.

When the pandemic began Britons embraced a wholesome 1950s-style of living. Sales of board games and bicycles soared, while social-media feeds were swamped with photos of homemade sourdough bread. Most people may have stuck to such blameless pastimes. In a survey by Ipsos MORI in January, 78% of Britons claimed to follow the government's rules.

But Robert Dingwall, professor of social sciences at Nottingham Trent University, reckons a parallel society is emerging. It is, he says, "very much like eastern Europe in the old days... not entirely secret but carefully organised so not to come to the attention of the authorities."

Despite an £800 (\$1,100) fine introduced in January for anyone attending a gathering of more than 15 people, police regularly break up large house parties. Last month, a

raid on an upmarket party in Knightsbridge saw two officers injured as attendees fled. Security-conscious promoters are doing their best to avoid unwanted publicity. Some use Telegram, a secure messaging app, to advertise exclusive parties. "No photos or videos," read one flyer for a party held on February 6th with an entrance fee of £10. Cannabis cafés and poker clubs have also been shut down.

Sport has gone underground, too. Across Britain, youths have been scaling fences to break into skateparks—often abusing officials who try to stop them. But skaters are also disappearing into the shadows, says an enthusiast, by building their own skateparks in wasteland and woodland areas, some from concrete. Amateur footballers have broken into pitches for kickabouts. On January 31st police stopped a football game involving more than 20 people in Dartford, Kent. Meanwhile, police in Shropshire say car races are taking place on farmland. Hare-coursing—setting greyhounds to chase hares, which is illegal—is all the rage in the Midlands. In January, a large gathering was broken up by police in Peterborough and fines were issued.

Another marginal pursuit that has flourished during lockdown is group sex in outdoor locations, or dogging. Locals who live near notorious sites have reported increased activity in lockdown; in Birdlip, a Gloucestershire village, there was even a report of goings-on at lunchtime. On February 4th, Police Scotland dispersed over 50 doggers from a Paisley car park; which, given the chilly northern temperatures, showed an impressive level of commitment. It is such a problem in Hampton-in-Arden, a West Midlands village, that a security gate has been installed to close off a popular lane. "It is just not what you'd expect from an affluent village in Solihull," says a councillor. ■



Fun for some

Bagehot | The price of acceptance

The British establishment is one of the most open in the world—for a consideration



SOMETIMES FICTIONAL characters are so vivid that they cannot be confined to the page. Augustus Melmotte began life as a villain in Anthony Trollope's 1875 masterpiece "The Way We Live Now". Seventy years later he escaped into the real world in the form of Captain Robert Maxwell, a Czech war hero whose extraordinary rise and fall is the subject of a new book (see Books & arts section).

Melmotte is a large man with heavy eyebrows and a "wonderful look of power about his mouth and chin". Nobody knows where he came from, and nobody knows why he's so rich, though there are rumours of chicanery in Paris and Vienna. But none of this is a barrier to his social ascent. He sets up a company that promises to build a railway linking Utah with Mexico and throws lavish parties at his rented house in Grosvenor Square. The Emperor of China comes to dinner along with various ministers and "a prince of the blood royal". He swiftly becomes a Conservative MP for the plum seat of Westminster.

Melmotte and Maxwell are doppelgangers all the way down to the heavy eyebrows. But the most important similarities between the two lie not in their physiognomies but in the way they are treated by British society. The real target of Trollope's novel is not the monstrous Melmotte but the even ghastlier "we" of the book's title—the Lords and Ladies Monogram with the grandest of pedigrees and the basest of motives. Impoverished aristocrats promise to marry Melmotte's daughter for "half a million down". Dissolute young men who know nothing about either railways or Utah accept well-paid seats on his board. The Conservative Party takes him up in return for "fiscal assistance" and, as a newly minted MP, he enters Parliament on the arm of the prime minister. And they do all this while privately despising the newcomer who doesn't understand the secret codes that hold British society together. (A particularly excruciating passage describes Melmotte's confusion about when to wear a top hat in the chamber.)

The British establishment prides itself on openness to foreign talent. Look at the City of London: Rothschild's bank has occupied the same spot in New Court, St Swithin's Lane, since 1809. Or look at the world of learning: while Maxwell was swindling shareholders imported geniuses were revolutionising almost every branch of learning from English history (Lewis Namier) to archi-

tecture (Nikolaus Pevsner) to the history of ideas (Maxwell's neighbour in Oxford, Isaiah Berlin). When Berlin died in 1997 William Waldegrave, a man at the heart of the British establishment who is now provost of Eton, wrote that "if you had asked me to show you what I meant by the ideal of Englishness...I would have taken you to see Isaiah Berlin."

But the stories of Melmotte and Maxwell reveal a darker side to British openness. The apparently generous welcome is actually the offer of a deal: social position, and the stamp of respectability that goes with it, for cash.

Consider the transatlantic marriage market: in the late Victorian and Edwardian era great British aristocrats responded to the agricultural depression by marrying their sons to the daughters of American plutocrats. By 1914, 60 peers and 40 younger sons of peers had married American heiresses, most notably the ninth Duke of Marlborough who married Consuelo Vanderbilt. Or consider political funding. Lloyd George's great honours fire-sale of 1916-1922, when he sold 91 hereditary peerages and 1,500 knight-hoods, ground to a halt only when he tried to enoble Joseph Robinson, a South African gold and diamond magnate whose reputation was so unsavoury that George V objected. Harold Wilson's resignation honours list in 1976 included the names of several businessmen who may have taken buccaneering to unusual lengths. Joseph Kagan, for example, a Lithuanian-born textile maker who funded Wilson's private office for years and provided the prime minister with his trade-mark Gannex raincoats, was awarded a peerage, only to end up in prison for tax fraud.

Thanks to globalisation, the trade in cash for respectability has boomed since the demise of Maxwell, who disappeared off his yacht in 1991. Oliver Bullough, the author of "Moneyland", points out that Britain, particularly London, is home to the world's largest collection of insecure plutocrats: not just attention-seeking Russians who buy flashy toys like football clubs, but also the more self-effacing Chinese. They have spawned a vast industry of people who do their best to make sure that, in Boris Johnson's phrase, Britain is to the billionaire what the jungle of Sumatra is to the orangutan: City panjandrums who list foreign companies on the London Stock Exchange; lawyers who protect their reputation with fearsome libel suits; public-relations consultants who burnish their image; family offices that not only look after their cash but also help open the right doors; public schools that furnish their children's brains, polish their manners and get them admitted to the best universities. Residency in Britain is for sale: a Tier One Investment visa is available for a minimum investment of £2m in the country—a very reasonable price given the many social and economic advantages that it confers.

Britain's political establishment remains as venal as it was when Trollope skewered it a century and a half ago. Sometimes the greed is Lloyd-Georgian in its crudity: last year Lubov Chernukhin, the wife of a former Russian finance minister, paid tens of thousands to play tennis with Boris Johnson. Usually it relies on a nod and a wink. Evgeny Lebedev, the son of a former KGB agent and a familiar figure in Tory circles, until recently employed George Osborne, a former chancellor, as editor of the *Evening Standard*, and has entertained Mr Johnson at his "party-castle" in Italy. He was recently elevated to the peerage as Lord Lebedev of Hampton and Siberia. The Melmottes and Maxwells of this world may come and go. But the British upper classes go on forever, shape-shifting but semipiternal, sponging but self-satisfied, lethargic but opportunistic, the world's most cynical and accomplished free-loaders. ■



Freedom of speech

Inconvenient truths

Governments keen to muzzle journalists are abusing laws against “fake news”

DURING HIS final days Mohamed Monir, an Egyptian journalist, was so short of breath he could barely speak. In a video recorded in July last year, as his final hours approached, he begged for oxygen. He died in a hospital isolation unit after contracting covid-19 in prison while awaiting trial. He had been arrested the previous month after, among other things, writing an article lambasting the Egyptian government's response to the pandemic. He was charged with spreading false news, misusing social media and joining a terrorist group.

Covid-19 has indeed unleashed a flood of misinformation. But it has also given governments such as Egypt's an excuse to crack down on their critics using the pretext of restricting the spread of fake news. Between March and October last year 17 countries passed new laws against “online misinformation” or “fake information”, according to the International Press Institute (see map on next page). Among those leading this charge are such guardians of free speech as Vladimir Putin, Viktor Orban and Rodrigo Duterte. Other authoritarians, such as Nicaragua's Daniel Ortega, have

followed since then. Hong Kong's chief executive, Carrie Lam, is keen to pass a law to stop the dissemination of fake news after the protests that roiled the city in 2019.

Governments have always regulated speech. And the spread of disinformation is indeed a serious and growing problem. If politicians are enacting laws against fake news to catch people spreading deliberate lies, “that's one thing”, argues Marko Milanovic, an expert in international law at the University of Nottingham. If, however, they are putting in place broad, vague measures that are in fact intended to curb the freedom of the press and free speech more widely, “that's a huge problem.”

Some governments have cited the pandemic as justification for new laws. Under legislation introduced in March 2020 in Russia, media outlets found guilty of deliberately spreading false information about matters of public safety, including covid-19, face fines of up to €117,000 (\$140,000). Russia already imposed fines on people for spreading “false information” but the new regulations fall under the criminal code which means the puni-

shments can also include time in jail. The editor of one website was fined 60,000 roubles (\$810) for reporting that 1,000 graves had been dug for potential victims of covid-19. Tatyana Voltskaya, a freelance journalist, was fined 30,000 roubles in December for a radio report that included an interview with an anonymous health worker, who described the shortage of ventilators in Russian hospitals and other difficulties faced by doctors battling covid-19.

Other governments are reviving obsolete legislation, ostensibly to combat fake news related to covid-19. Their true aims, however, are to hamper independent journalism or “retaliate against those doing reporting that they don't appreciate”, says Courtney Radsch of the Committee to Protect Journalists, a New York-based NGO. In March the Jordanian government used a “defence” law from 1992 that permits the declaration of a state of emergency in exceptional circumstances to do so as part of its efforts to stem the spread of covid-19. The law allows the government to monitor the content of newspapers and censor or shut down any outlet without giving any reason. On Christmas Eve Jamal Haddad, the Jordanian publisher of a news website, was detained after publishing an article asking why officials had received vaccinations against covid-19 when these were not yet available to ordinary citizens.

And some authorities are invoking laws that may not even exist. Hopewell Chin'ono, a journalist in Zimbabwe, was arrested in January for tweeting about police vio-

rence while enforcing lockdowns. The government says that “anyone who spreads false news will be charged in terms of Section 31 of the Criminal Code”, according to Doug Coltart, one of Mr Chin’ono’s lawyers. But the section of the law criminalising the dissemination of “falsehoods” had been struck down in 2014 by the Zimbabwean constitutional court.

Some of the new laws are temporary. But their creators appear in no hurry to lift them. Mr Orban imposed a state of emergency in Hungary in March last year. Among other measures it made the dissemination of “misinformation” punishable by up to five years in prison. The state of emergency ended in June, but Mr Orban’s government reimposed it in November as the country faced a second wave of covid-19 cases.

South Africa also introduced temporary legislation in March 2020, as part of a package of measures to limit the spread of covid-19. It stipulated that those publishing falsehoods about the disease could face fines or up to six months in prison. Only a handful of people have been arrested. Those who have been prosecuted were social-media users charged with promoting unscientific nonsense, such as a man who claimed that covid tests spread the disease. So far, journalists have been fairly relaxed about the restrictions, in part because the government listened to their concerns, reckons Izak Minnaar, a former broadcaster who works on disinformation issues as part of the country’s National Editors’ Forum. Fact-checking of contentious social-media posts is done by an independent body rather than one run by the government, for instance. But the law has set a precedent for tighter curbs on the press. “We cannot make it permanent,” says Siavuya Mzantsi, editor of the *Cape Times*.

Even as free-speech campaigners in rich democracies offer support to those fighting censorship in poorer, less free places, their own governments are providing the would-be censors with cover, even inspiration. Germany’s Network Enforce-

ment Law (NetzDG), passed in 2017, is meant to protect readers from fake news and hate speech by requiring social-media platforms to remove material deemed incendiary. More than a dozen countries, from Russia to Turkey, have copied this legislation as a way to suppress dissent online. Many of these countries expressly referred to the German law as justification for their repressive legislation. Turkey’s allows the government to remove online content and reduce the bandwidth of social-media sites so much that they become unusable. Jacob Mchangama and Joelle Fiss of Justitia, a Danish think-tank, have described the NetzDG as “the Digital Berlin Wall” because it has accidentally become a “prototype for global online censorship”.

None so zealous

Converts to the cause of tackling fake news are often guilty of peddling the stuff themselves. Brazilian politicians are in the process of passing a law against fake news. But the president, Jair Bolsonaro, has downplayed the dangers of covid-19 and touted ineffective pills. Though he was infected in July last year, he says his background as an athlete helped him shrug it off. He is cool on the law because he worries it will affect his supporters, some of whom are also quick to spread misinformation. Alexander Lukashenko, the president of Belarus, has prescribed saunas and hockey as cures for covid-19. In a survey of 1,406 journalists conducted by the International Centre for Journalists, a non-profit organisation in Washington, 46% said that elected officials were the source of misinformation relating to covid-19 that they had encountered. They also blamed government agencies and networks of trolls linked to various states.

These laws are making journalists’ jobs harder. In Hungary they have made reporting more arduous. Sources are less willing to talk. Atlatszo, an independent news site established in 2011, has three lawyers who do a legal check of articles to make sure that everything complies with the regula-

tion. Mr Orban’s government has become more secretive. It is more reluctant to answer questions from independent media outlets. It has established a central “Operative Unit” to deal with journalists’ inquiries. As a result questions to local hospitals, schools and municipalities are now handled by national authorities. In Myanmar the “True News Information Team” exists largely to suppress reports about crimes committed by the army, which since February 1st has been in charge of the whole country.

In desperation some have gone into exile. Belarusian journalists have fled to Poland. Many Nicaraguan reporters have moved to Costa Rica. After Lucia Pineda, a Nicaraguan journalist, was arrested and held in prison for six months in 2019, she moved her news website, 100% Noticias, there. Gerall Chávez, another Nicaraguan hack, co-founded a website called Nicaragua Actual but works out of Costa Rica, too. He still worries that his work puts him in danger. Last summer he received death threats on Facebook, including a cartoon showing him being killed. His parents, who are still in Nicaragua, were sent the same animation on a USB stick.

Others are censoring themselves. In countries that have had such laws on the books for a while, this is already apparent. Bangladesh’s Digital Security Act, passed in 2018, imposes hefty fines on journalists or individuals found guilty of “cyberterrorism”. It has created a culture of fear, one journalist explains, which silences reporters. The government does not need new laws to do so. “Our legal system, our judiciary is so fragile that...if the government wants to harass someone, they don’t need any piece of legislation,” he says.

Such repression is changing how journalists publish and where people seek their news. Some media outlets are moving onto new platforms, such as Telegram, an online-messaging service. In Belarus the government responded to big protests over a contested election in August by shutting down the internet and arresting scores of journalists. Between mid-August and mid-November subscriptions to the Telegram channel for Tut.by, a news website, grew by 28%. In Hungary many publishers are controlled by the government. During the pandemic they have published nothing but articles praising the effectiveness of the state’s response, says Tamás Bodoky, the editor of Atlatszo. His site, by contrast, has reported on controversies concerning the government’s handling of the crisis. He reckons that explains the rise in its average monthly views from around 182,000 in 2019 to over 285,000 in 2020: “People were actively looking for articles about the pandemic which were not government propaganda.” No laws can stop them doing that. ■

New countries on the block

Countries that have passed “fake news” laws*

March-October 2020





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Corporate earnings

Harbingers of boom

NEW YORK

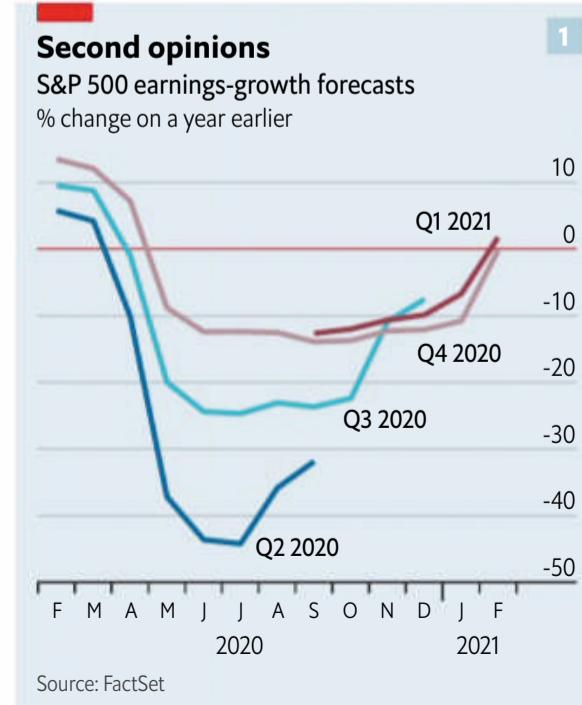
America Inc has survived the weirdest year in modern corporate history. What next?

BEFORE THE covid-19 pandemic investors favoured companies with strong sales growth, low debt and high return on assets. In the past three months, they have been ploughing money into smaller, underperforming firms that have barely survived the coronavirus recession. A robust economic recovery, Wall Street seems to think, will pull the most covid-impaired away from the abyss and towards financial outperformance. Right now, says Jonathan Golub of Credit Suisse, an investment bank, “the market is rewarding failure”.

The bet on weaklings is the latest sign, if more were needed, that 2020 marked a weird year in corporate history. Far from imploding, as many feared after the virus clobbered stockmarkets in March, America Inc is looking astonishingly healthy. It did not take long for analysts to start revising their profit forecasts back up (see chart 1). Even then, four in five big firms that have reported their latest quarterly results beat projections. Their aggregate earnings exceeded estimates by nearly 17%.

The losers—chiefly in industries like

hospitality, travel and energy, which rely on people mixing or moving about—lost a lot. Of the 311 S&P 500 firms that have presented full-year results, 42 ended 2020 in the red, up from 17 the year before. Their



losses added up to \$173bn, nearly five times as much as the comparable figure in 2019. But the winners won big: \$832bn, all told, just 13% below last year’s profit pool. The tech titans without whose products socially distant shopping, work, socialising and entertainment would be tough made more money than ever (see chart 2 on next page). Wall Street is wagering that both winners and losers have room for improvement.

Big firms are the most bullish. A survey last month by *Corporate Board Member*, a trade publication, found that overall confidence has risen at public companies. Two in three board members rated their firm’s outlook “very good” or “excellent”. Three-quarters of chief executives expect revenues and profits to increase, compared with less than two-thirds in December. Half predict increased investment.

Lacking the access to capital enjoyed by bigger firms, smaller ones in the Russell 2000 index were bleeding red ink mid-pandemic. Now things are looking up even for them. In the last quarter the Russell 2000 posted a gain of 31%, against 12% for the S&P 500. The latest survey by Vistage, an executive-coaching outfit, found that 64% of bosses at small and medium-sized firms plan to expand their workforce this year, up by a fifth from the previous quarter. Two-thirds think sales will increase in 2021. Over half expect profitability to rise.

There are two main reasons for this perkiness. First, investors are pricing in the successful rollout of vaccines in America ▶

by the summer, which would help reopen the economy. Citigroup, a bank, calculates that Americans have squirrelled away \$1.4trn in unspent income over the past year. All told, \$5trn or so is sitting idle in money-market funds which could be spent—on everything from a new pair of shoes to new shares. Second, it is widely assumed that Democratic control of the White House and Congress will mean continued fiscal and monetary stimulus that could fuel demand further still.

This has led forecasters to project that S&P 500 revenues in 2021 will match or surpass those in 2019 for most sectors, according to Goldman Sachs, an investment bank. By 2022 everyone bar America's oilmen should be in rude health. Gregg Lemons-Stein of S&P Global, a ratings agency, now foresees a speedier revival in health care, building materials, business services and non-essential retail (see chart 3). On this view, share prices have room to soar.

Two dangers lurk. If President Joe Biden fails to get something like his proposed \$1.9trn stimulus through Congress, investors and bosses may start panicking, regardless of the views of economists, many of whom worry the plan is excessive. Given the uncertainty over post-pandemic demand for large industries such as air travel, now that CEOs can see that Zoom is often a decent alternative, understimulation is a bigger risk than overstimulation, says the boss of a big private-equity firm.

The other danger is the vaccine rollout. American states are jabbing arms at a decent clip; only Britain has done a better job so far among big countries. But nine in ten Americans have yet to receive a single dose, let alone the full two. A large share may refuse to be vaccinated. And the emergence of virulent new viral strains could mean the transition from pandemic to no pandemic will not be binary but gradual. American business may need to cope with a messier scenario of partial lockdowns



Unions v big tech

Labour coders

An old force takes root in a younger industry

FOR DECADES America's labour movement has been losing steam. Trade unions represent only 7% of private-sector workers. No significant piece of pro-union legislation has passed in recent years. Right-to-work laws, which undermine the clout of organised labour, have spread to 27 states. Now the union movement has been showing signs of life in, of all places, the technology industry.

Last month software engineers and other workers at Alphabet, Google's parent company, announced a new Alphabet Workers Union (AWU), to "protect...workers, our global society, and our world". The union has not sought official status but charges 1% of total compensation and has just collected the first round of dues from its 800 or so members—given their plush salaries, a good-size pot to spend on lawyers. And on February 8th union-eligible workers at an Amazon warehouse in Alabama were mailed 5,800 ballots. If a majority back the creation of a union by late March, the facility will become the e-commerce giant's first unionised one in America.

Amazon's and Alphabet's unions seem worlds away. The warehouse staff hark back to labour's blue-collar roots. The AWU looks to some as a vehicle for wokeness; it is certainly a rarity in computing (see chart on next page). But the two strands of unionisation are interwoven. Google's coddled coders are intent on improving conditions for lower-paid data-centre workers and other TVCs (temp, vendors and contractors). "No lone wolf should howl alone without a pack," declares a developer on AWU's website. On February 5th the union filed a labour complaint against Modis, an outsourcing unit of Adecco. AWU alleges that Modis illegally suspended a data-centre worker for questioning a ban on discussing pay.

Alphabet can afford to improve the lot of TVCs if it has to. It can also, up to a point, humour its progressive software engineers; no serious financial harm has come of having to abandon bidding for contracts such as one to provide cloud-computing services to the Pentagon, to which some peacenik Googlers objected.

Amazon has more to lose. A good deal for Alabaman workers may inspire others to clamour for the same rights. Collective-bargaining demands, on the timing of shifts, expanding capacity or automating jobs, may dent Amazon's flexibility and

Patients discharged

North America, recovery of credit metrics to 2019 levels*



*Report published in September 2020 †Made in July 2020
Source: "U.S. Corporate Credit Outlook 2021: Economic And Political Transition", S&P Global



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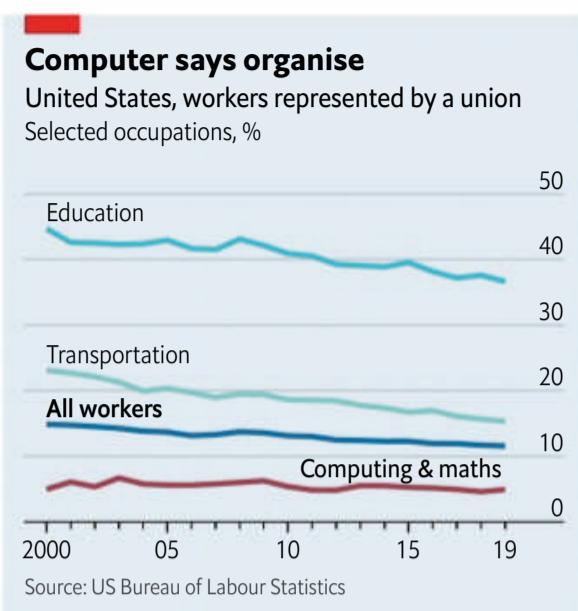
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speed, says Mark Shmulik of Bernstein, a broker. That could eat away at its already-thin profit margins on retail operations, possibly forcing it to pass extra costs onto customers, who could shop elsewhere.

AWU and the Alabaman workers are spurring others. "Workers across the digital economy are feeling the moment," says Tom Smith, national organising director for Communications Workers of America (CWA), an 83-year-old union. The CWA recently formed the Campaign to Organise Digital Employees. CODE-CWA, as it is known for short, is targeting all of tech, including notoriously harsh conditions in the video-game industry, where 60-hour "crunch" weeks ahead of big releases are common. Mr Smith says more tech workers will unveil union labour efforts shortly. Geeks of the world are, it seems, uniting. ■

Anglo-German business ties

From bad to wurst

BERLIN

Deutschland AG tries to get to grips with Brexit

"WE FEEL BETRAYED," laments Petra Braun, a southern German who with her partner, Peter Wengerdt, runs Hansel & Pretzel, a German deli and bakery in Richmond, a suburb of London. Since leaving the European Union just over a month ago, Britain's once-welcoming government has made it hair-raisingly complicated and costly to import sausages, marzipan, quark cheese, apple sauce and other authentic staples. This year she has yet to receive any of the weekly deliveries of goods from her homeland.

The flipside of headaches for the likes of Ms Braun, whose small business employs 15 people, is a migraine for big German exporters, some of which furnish the ingredients for her fare. Deutschland AG

was never a huge fan of Brexit. But the trade deal rushed through before the transition period ended at midnight on December 31st put German bosses' minds at ease. A month into the new regime, "supply-chain problems are hitting German companies very hard", says Joachim Lang of the BDI, the main association of German industry.

And it will get worse. Trade has slowed because of covid-19. As soon as it picks up again, commercial ties are in for a "massive stress test", warns Mr Lang. In April British customs will introduce new rules (such as pre-notification and health paperwork for products of animal origin), followed in July by physical checks.

On February 9th the Association of German Chambers of Industry and Commerce said that 60% of the 1,200 German companies trading with Britain it surveyed consider their current business situation in Britain to be bad. Nearly as many expect further deterioration this year. One in six have either already shifted investments away from Britain or are planning to do so. They see the bureaucracy related to customs as their biggest business risk, followed by logistics and legal uncertainty.

Were it not for the pandemic these problems would make headlines in Germany, says Ulrich Hoppe, head of the German-British Chamber of Industry and Commerce in London. In January DB Schenker, a German logistics giant, stopped shipping consignments to Britain for a week. About 90% of them had incomplete or inaccurate customs forms, explains Maximilian Floegel of DB Schenker. The main stumbling block has been the proof of origin from the EU required under the trade agreement between the bloc and Britain. This is finicky to get for, say, a shoe made in Italy with a sole imported from China. DB Schenker set up a Brexit task-force to help clients with the customs bureaucracy. But, says Mr Floegel, "the problem remains acute."

In December BMW, which pre-emptively moved engine production from Britain to Germany in 2019, warned that a no-deal Brexit would cost hundreds of millions of euros, which the carmaker would pass on to clients in Britain and on the continent. At least BMW had the resources to prepare for January's customs checks and to stockpile car parts in Britain. The pocket multinationals of Germany's Mittelstand face an even bigger cross-channel struggle.

Take Schott, a 250-year-old maker of sheet music for which Britain is the second-biggest market. The family company started to get anxious at the end of last year about tariffs levied on each classical piece. Delays at the border could leave British orchestras that rent its sheet music unable to get the scores in time for rehearsals, once these resume. This won't be the last of Brexit's unintended consequences. ■

Privatisations in India

Flogging the family lead

The state promises to unload its dusty companies. For real this time

THE HINDU pantheon of gods has no shortage of deities with multiple arms. India's government, with a hand in industries from energy and steel to finance and travel, would fit right in. A long infatuation with central planning transformed state-run business into a sprawling industrial empire encompassing 5% of the economy. But acquiring appendages is easier than managing them. Profits as a percentage of revenues are just over 1% at state-run companies, compared with 7-9% for the private sector. Many are a loss-making burden on the public purse—more family lead than family silver.

In 2016 the Indian government under the then newish administration of Narendra Modi reviewed the 331 firms under central-government control. It prepared a list of 28 that it believed could be sold without controversy. The most prominent were Air India, the flag carrier, steel- and cement-makers, big energy companies, a hotel operator and an assortment of entities whose time had passed, such as Scooters India (which last produced a scooter in 1997).

Five years later the number of companies controlled by the state, far from shrinking, has swelled to 348. In January Scooters India did fall off the list—by finally shutting down. The value of most survivors has shrivelled. State banks are saddled with bad loans. State energy companies have fallen victim to the shale and renewables revolutions. Air India's rotten service has turned off customers. A note buried in the government's 816-page survey of its holdings disclosed that production at the state-run condom-maker fell from 1.85bn units in 2018 to 820m in 2019.

This month India's finance minister, Nirmala Sitharaman, has pledged to start offloading the leaden assets—in earnest this time. The initial list to be put on the block contains 13 companies, including two unnamed state banks. The biggest are Air India, Life Insurance Company of India (LIC, often seen as the government's emergency bail-out provider) and Bharat Petroleum, a large refiner. Unviable companies that cannot be sold, Ms Sitharaman promised, will be shut down.

Such commitments make longtime India-watchers roll their eyes. Trade unions and bureaucrats have little to gain from transactions which undermine their jobs and authority. On the rare occasions where a past sale actually generated returns for

► the buyers, the bankers and officials involved were hauled before the authorities and grilled about selling too cheaply. Ms Sitharaman's announcement has already led to an outcry from Mr Modi's political opponents, for whom state ownership of the economy's commanding heights is a point of pride—never mind that those heights look distinctly unHimalayan.

Government officials have been meeting business groups to say this time is different. People close to those encounters say the effort could be charitably described as sloppy. But that it is being done at all

suggests a degree of sincerity on the part of Mr Modi's administration that previous efforts lacked. The reason is India's covid-battered finances. Without the \$24bn Ms Sitharaman hopes to raise from the asset sales, the central government's fiscal gap would expand from about 9.5% to 12% of GDP, putting India's sovereign rating at greater risk of a downgrade.

Between LIC and Bharat Petroleum, which has a market capitalisation of \$12bn and is half-owned by the state, the government could be two-thirds of the way towards its goal, bankers in Mumbai report.

An accounting firm has been engaged to prepare LIC's books, a necessary first step for a planned initial public offering. Tata Sons, a big conglomerate, is said to be interested in Air India, which it used to own before nationalisation in the 1950s. Three bidders have their eyes on Bharat, including two global private-equity funds.

The first buyer in the new era of privatisation could be inadvertent. There is some speculation that the cash-strapped government may grant Cairn Energy, a British firm, a state-owned oilfield as part of a settlement over retroactive taxes. ■

Bartleby Diary of a plague year

A columnist confronts the pandemic

IT HAS BEEN a year since the pandemic started to affect Western societies. Here is how one columnist coped as the months unfolded.

February/March: In the beginning, all was confusion. In the early stages a "last days of Saigon" feel pervaded the city centre. The trains and offices became steadily less crowded; more and more shops closed for lack of staff. Parents turned into hunter-gatherers, desperately foraging in the supermarket aisles for the last supplies of pasta. Successful scavengers' trolleys overflowed with rolls of toilet paper. People were braced for dystopia.

Office workers hastily caught up on the disaster-recovery plans they had previously ignored and were grateful if they were able to get a good broadband connection. Bartleby remembered that he had left all his research back at the office and made a sheepish return to a near-empty building. Heading back out with a rucksack of books and papers, he felt like a very nerdish barbarian participating in the sack of Rome.

April: Some individuals were still struggling to master Zoom etiquette. Faced with an editorial meeting on a bank holiday, Bartleby combined it with a soothing river walk. At some point, his phone (while still in his pocket) became unmuted, meaning that his heavy trudge, and heavy breathing, was audible to every other participant on the call. In blissful ignorance, he returned home to a blizzard of emails, tweets and WhatsApp messages telling him to shut up. Sure enough, "you're on mute" and "please mute yourself" became the breakout phrases of 2020.

May: Perhaps the best month of the lockdown. The British weather was good, with the sunniest spring on record,

making it possible to work in the garden. The novelty of working from home had yet to wear off, and the absence of the daily commute was still a blessing.

June: A "Groundhog Day" syndrome had set in. Every day seemed the same; weekends lost their meaning. The main dilemma for the month was whether to cancel the summer holiday, or to hold on in the hope that the decline in covid-19 cases was permanent. The prospect of any break in routine seemed absurdly alluring.

July: Foreign holiday cancelled. Start to fantasise about ways of shortening Zoom meetings. How about a countdown clock, like the ones on television game shows, as speakers approach the one-minute mark, with a loud buzzer at the end? Hint to all participants: when the person chairing the meeting asks, "Does anyone else have any comments?", the correct answer is invariably "No".

August: Rain ruins short domestic holiday. Restaurants reopen and Britons recreate the feasts of Bacchanalia. "Eat, drink and be merry for tomorrow we get locked down" seems to be the (prescient)

motto. Meetings no shorter on return to work. More extreme measures clearly required: a mild electric shock for those who speak for more than two minutes? Or the "raise hand" button could be converted into a "thumbs down" function. If more than half the participants press it, the speaker is cut off.

September: Just as *The Economist* organises weekly in-person gatherings so staff can start the process of returning to work, cases begin to rise. Tip for readers: if Bartleby is invited to a summer party in 2021, it is a sign of the impending apocalypse.

October: Head back to now-empty office to pick up more books. Feel like archaeologist analysing ancient civilisation. *In this era, humans sat in glass booths so they could be observed at all times. They also gathered in "meeting rooms" to take part in religious ceremonies conducted by a priest known as the "manager", who recited a long list of meaningless tasks penitents must undertake.*

November: British government imposes new national lockdown on November 5th. From this year on, the date will no longer be commemorated as "Guy Fawkes night" but as "Boris Johnson day". All citizens will celebrate by wearing masks, washing their hands obsessively and avoiding their neighbours.

December: The house has lights, and a tree. But the real meaning of Christmas now becomes clear: no more Zoom meetings for at least a week. Not just silent nights, but silent days as well.

January: The vaccines are on their way to save us. Perhaps at some point in 2021 Bartleby will be back on the London underground, crammed in like a sardine while waiting for the platform to clear at Earl's Court. Suddenly, social isolation doesn't seem so bad after all.



Schumpeter | Alpha pipers

The cult of an Elon Musk or a Jack Ma has its perks—but also perils



IAM BECOME meme, Destroyer of shorts.” This recent tweet by Elon Musk struck a messianic tone that his disciples lap up. The past month has boosted the cult status of the uber-entrepreneur. The GameStop saga gave him ammunition in his long-running battle with short-sellers, while also positioning him as a champion of the little guy taking on Wall Street. This week fans were spellbound by the announcement that Mr Musk’s electric-car maker, Tesla, had invested \$1.5bn in bitcoin and would start accepting the cryptocurrency as a form of payment. Earlier, a barrage of cheeky tweets from Mr Musk about dogecoin (“the people’s crypto”) had sent serious investors scrambling to learn more about a digital currency that started as a joke.

Impish humour is a Musk hallmark, but the impact of his missives is no joke. They can set herds stampeding. His bitcoin announcement propelled it to new heights. Tesla’s market value briefly climbed above \$830bn, near its peak. The history of business is littered with Pied Pipers but, as Peter Atwater, a social psychologist, points out, none has matched Mr Musk for the number of things he has helped turn red-hot, from cars and crypto to space travel and Clubhouse, a live-podcasting app he appeared on. That invites two questions. What makes the Musk scent so intoxicating to so many? And what are the pros and cons of being a cult CEO?

Larger-than-life business figures enjoy various degrees of celebrity. One category includes chief executives of big firms who, while charismatic, fail to inspire feverish devotion. Jeff Bezos, Amazon’s outgoing boss, commands admiration on Wall Street and envy in other corner offices, but is too restrained to attract drooling groupies. Similarly, in his 20 years running GE, Jack Welch earned a reputation (since disputed) for red-toothed success, but was too cold-blooded to mesmerise the masses.

The second group comprises tycoons who achieve cultlike status but whose businesses scarcely warrant the adulation. Their trademark is often shameless self-promotion. Richard Branson has spent decades cultivating an image as a corporate hippy-cum-pirate who takes on complacent incumbents in industries from aviation to finance. Donald Trump touted himself as the arch-dealmaker. Both have hordes of wide-eyed fans. Neither has built a business that comes close to \$10bn in value or is built for stability.

The third category is more exclusive: those who build both cults of personality and huge businesses. Joining Mr Musk in this club is Jack Ma, the founder of Alibaba, China’s tech titan. Millions of Chinese college students and other wannabe entrepreneurs bought into the image he cultivated, of a humble teacher turned philanthropic tech titan with a splash of cultural cool (he once appeared as a tai chi master in a martial-arts film). Admiration of Mr Ma has often verged on religious fervour. In 2015 a group of online merchants created a shrine to him, to bring them good luck on “singles day”, an e-shopping festival.

Messrs Musk and Ma walk a trail blazed by an Indian business legend: Dhirubhai Ambani, who founded Reliance Industries, a petrochemicals-to-telecoms conglomerate. The son of a village schoolteacher who cut his teeth trading polyester yarn, Ambani pioneered the equity cult. His trick, in a country where companies had long relied mostly on banks for funding, was to see the untapped potential lower down the pyramid. He toured India, convincing middle-class savers that they, too, could join the capitalist class. When Reliance went public in 1977 it attracted 58,000 punters. The shareholders he drew in have done well: the share price has gained 275,000% since the flotation. When 30,000 of them turned up to pay homage at one general meeting, it had to be moved to a park. These days only Warren Buffett attracts zealots in such numbers (or did before covid-19).

Cult status confers perks. Equity is cheaper when those buying it are devout retail investors, not hard-headed institutions. Small investors are also more patient, heeding calls to “keep the faith” during profitless investment splurges. Marketing costs are low; Mr Musk can use social media to burnish his (and Tesla’s) brand for nothing. Fans are willing to overlook flaws that more dispassionate consumers won’t. Tesla’s build quality is hardly world-class and regulators, most recently China’s, frequently flag up concerns. Yet it is hard to see that reflected in the firm’s sales or share price. Lastly, mass appeal means political clout. Ambani’s popularity helped him bend India’s trade policy to his advantage. Mr Musk’s helps explain soft treatment by governments and regulators, over rogue tweets or reopening factories in the pandemic.

But combining star power and scale is not risk-free. Mr Musk forged his reputation as a David, fomenting rebellions against Detroit and Wall Street elites. But now he is a Goliath: the world’s richest man who runs its most valuable carmaker. Playing both roles is a dangerous game. This is made more so by being a cultural icon, which leaves him more vulnerable to changing social taste—and taste can change in a trice online.

Ye shall fund you no idols

Sentiment could turn if his devotees start to doubt he has their interests at heart. Ambani was able to bat away repeated allegations of financial manipulation; he beat back short-sellers with help from a group of brokers known as “Friends of Reliance”. Mr Musk may not be so lucky. Acolytes who piled into GameStop stock after his “Gamestonk!!” rallying cry on January 26th were buying near the top. His recent crypto-talk looks self-serving in light of Tesla’s bitcoin move.

Finally, political advantage can turn into a bane. Just ask Mr Ma, who, overestimating his power, publicly chided Chinese regulators last year. Irked, Beijing scuppered the planned listing of Ant, Alibaba’s financial affiliate, and is forcing it to restructure. Joining the ranks of cult CEOs may lower your cost of funding. But it raises the cost of miscalculation. ■



Come out, come out, wherever you are!

If life exists beyond Earth, science may find it soon

TEEGARDEN'S STAR is a tiny, dim object in the zodiacal constellation of Aries. It has a tenth of the sun's mass and emits most of its light in the infrared part of the spectrum. That makes it too faint to see with the naked eye, even though it is only 12 light-years away. So far, so unremarkable. But when astronomers at Calar Alto Observatory, in Spain, started scrutinising it, they spotted tiny wobbles in its motion. In 2019, after three years of careful measurement, they concluded that these are a consequence of the gravitational fields of two planets tugging the star around. The innermost, Teegarden b, has roughly the same mass as Earth, receives a similar amount of illumination from its host star and is probably rocky.

At the moment, Teegarden b tops the Habitable Exoplanets Catalogue (HEC), a list of planets beyond the solar system maintained by Abel Méndez and his colleagues at the University of Puerto Rico, Arecibo. They are looking for Earthlike worlds which, among other things, lie in

the zones around stars that might support terrestrial-type life. This means, in practice, planets that are the correct distance from their parent stars to be able to maintain liquid water on their surfaces without that water either freezing or boiling. For water, the medium in which biochemical reactions take place on Earth, is assumed to be a precondition for the existence of life elsewhere, too.

Warm bodies

The existence of the HEC, compilation of which began in 2011, is one manifestation of a renewed surge of interest in answering, once and for all, the question of whether life is a phenomenon that exists only on Earth, or is widespread. Until recently, that question was unanswerable. But astrobiologists, as the diverse band of scientists now trying to do so describe themselves, are increasingly confident that an answer will be found within a couple of decades.

There are, broadly, three ways of doing this. One is to look from a distance, using

telescopes to examine systems such as that orbiting Teegarden's star. The second, if the object of interest is close enough, is to visit it, as is happening with the arrival this month of Mars-bound craft launched by America, China and the United Arab Emirates. And the third is to search for radio signals or other signs of technology, on the assumption that at least some life elsewhere has followed the trajectory of life on Earth and generated technically adept species.

The first two exoplanets were discovered in 1992. Now, more than 4,000 are known. It seems likely that every one of the billions of stars in the Milky Way, Earth's home galaxy, is the centre of a system that includes one or more planets, and also that lots of these planets orbit in habitable zones. Because they are big, and therefore easy to spot, a lot of the planets discovered so far are gas giants larger even than Jupiter. These seem unlikely places for life to establish itself. But an increasing number of bodies close in size to Earth are turning up, too (see chart on following page).

A study published recently in the *Astronomical Journal* suggests that about half of the sun-like stars in the Milky Way are circled by at least one rocky planet capable of sustaining liquid water on its surface. This amounts to 300 potentially habitable worlds. That calculation implies the presence of at least four such favoured orbs within 30 light-years of the solar system, with the closest at most 20 light-years ►

► away. There is, then, plenty to study.

Just because a planet is a rocky world orbiting within its star's habitable zone does not, though, automatically make it a good candidate. Some such, for instance, are known to be "water worlds", with deep oceans and no continents. These might support life if it arrived from elsewhere, but the chances that biology could start from scratch in such a place seem slim. How life begins is unknown. But it is a fair bet that it needs the concentration of certain chemicals in a way that is difficult to achieve in the swirling volume of an ocean.

Similarly, just because an object could have liquid water on its surface in a habitable zone does not mean such water actually exists. Earth's moon, for example, is within the habitable zone of the sun and yet is almost waterless.

An important task, then, is to understand not only where a planet is in its star system, but what it is made of—whether it has an all-covering ocean, an ocean interspersed with continents, a covering of ice, or is all dry land. Also, whether it has an atmosphere. And that will be done by a new generation of instruments.

Chart toppers

The first of these, the James Webb Space Telescope, is the creation of NASA, America's space agency. It has a mirror 6.5 metres across, which gives it a light-collecting area more than six times greater than that of the Hubble Space Telescope, currently in orbit, which has a mirror a mere 2.4 metres in diameter. The plan is to launch it into orbit this October and to use it for detailed spectrographic observations of exoplanetary atmospheres. It will hunt, in particular, for molecules such as oxygen and methane that are produced by biological processes on Earth.

Teegarden b is a prime candidate for such study, but is by no means the only one. Potentially habitable planets within telescope range are turning up thick and fast. In 2020 alone, four new Earth-size exoplanets entered the HEC top ten.

In January of that year, for example, astronomers using another NASA instrument, the Transiting Exoplanet Survey Satellite (TESS), announced the discovery of that probe's first entry into the HEC. This planet, TOI-700d, is one of three orbiting a star called TOI-700, which has 40% of the mass of the sun and is 100 light-years away. TOI-700d is 20% bigger than Earth, completes an orbit every 37 days and receives 86% of the energy from its star that Earth gets from the sun. It currently sits in second place on the HEC list. And in March two further top-tenners were added by astronomers using the European Southern Observatory's instruments at La Silla, in Chile. They were orbiting in the habitable zone of a star called GJ 1061, which, like Teegar-

den's, is 12 light-years from Earth.

The fourth of 2020's additions to the HEC top ten was announced in April. It was the result of reanalysis of measurements taken by *Kepler*, a now-defunct NASA space telescope (it operated from 2009 to 2018) that, in its heyday, found more than 2,000 new planets. This re-examination uncovered a hitherto-overlooked body, dubbed Kepler-1649c, which is almost the same size as Earth, takes 19.5 days to orbit its star, and receives 75% of the light that Earth gets from the sun. Kepler-1649c jumped straight into the charts at number five.

Other top-tenners have been on the list for longer. One of particular interest is Proxima Centauri b (number six). It weighs in at 1.3 times Earth's mass and has an 11-day orbit around its star, Proxima Centauri, which, at a mere 4.2 light-years away, is the sun's closest stellar neighbour. But the most striking star to supply HEC candidates is TRAPPIST-1. This is 41 light-years from Earth and is orbited by seven potentially habitable planets of similar density to Earth, one of which, TRAPPIST-1d, is in the HEC top ten, at number four.

At its most recent update, the HEC listed 60 worlds, some two dozen of which are thought to be of rocky composition and similar in size to Earth. The rest are so-called "super Earths", which have masses larger than Earth's but less than those of the solar system's ice giants, Uranus and Neptune. There are doubts about the habitability of super Earths, since they probably have thick atmospheres and may even be composed almost entirely of gas. For the moment, though, it seems sensible to keep them under scrutiny.

Because of the limits of current observing technology, which finds it easier to see signs of planets when they circle dimmer stars, almost all these promising exoplanets orbit what are known as M-type stars—or, colloquially, red dwarfs. Red dwarfs are smaller and dimmer than F-, G- and K-types, known as orange and yellow

dwarfs (the sun is G-type). They are by far the most common stars in the Milky Way (some estimates suggest they make up three-quarters of the total), so the easy success in finding so many potentially habitable worlds circling them suggests that these sorts of planets are abundant.

Atmospheric conditions

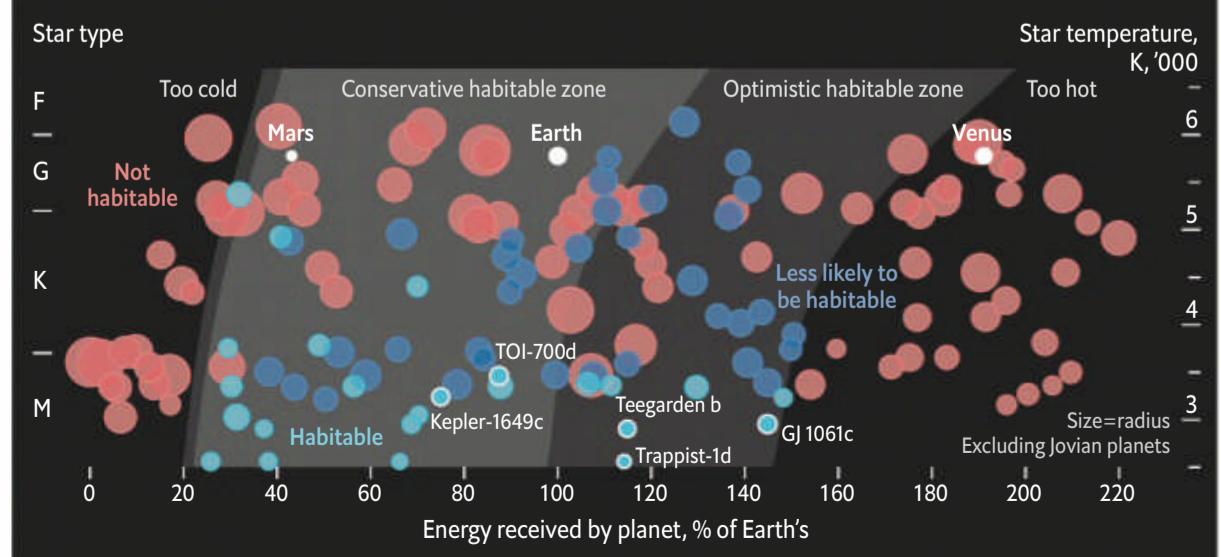
Astrobiologists are already making simple follow-up measurements of some planets. In 2015 a super Earth called K2-18b turned up. It is 124 light-years away, has nine times Earth's mass and orbits its M-type star once every 33 days. In 2019 the Hubble Space Telescope looked at starlight streaming through this planet's atmosphere. Spectroscopic analysis indicated the presence there of a fair amount of water vapour—a first for an exoplanet in a habitable zone.

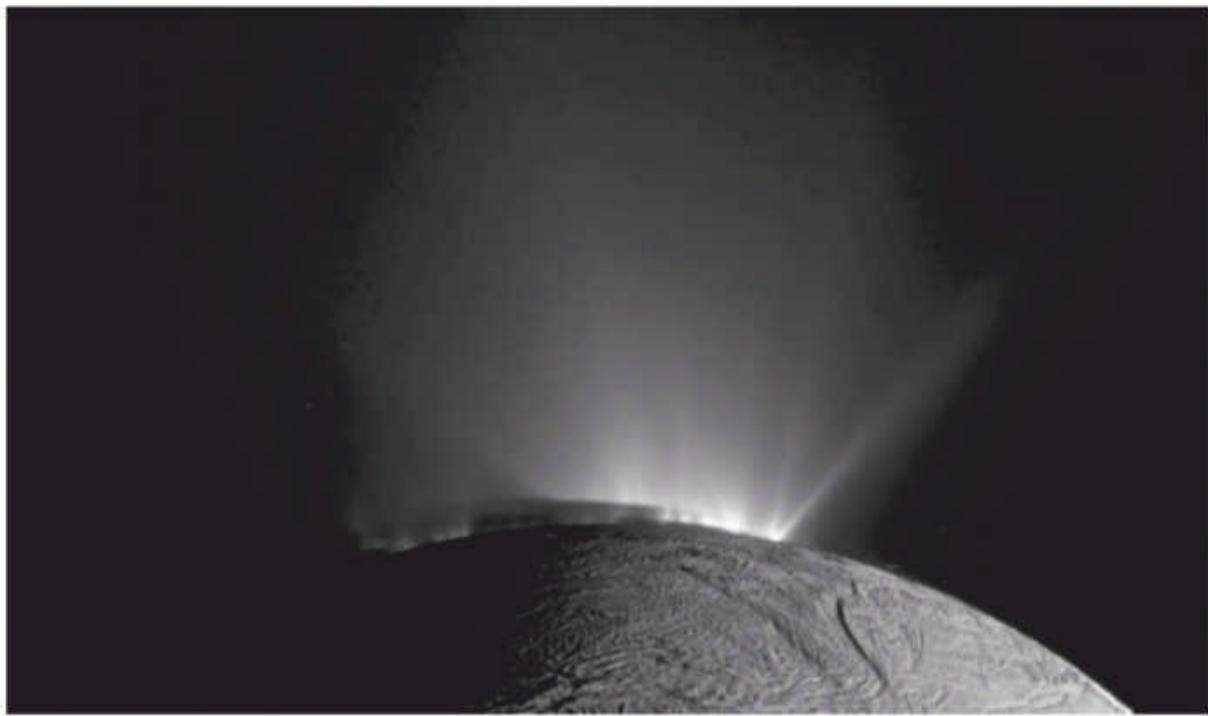
That was a useful start, says Giovanna Tinetti, an astrophysicist at University College, London who led the study. But, as she observes, "current instrumentation is just not good enough really to go beyond saying, 'Oh, there is some water vapour in the atmosphere'." That leaves plenty of questions. What type of object is K2-18b? Is it a world covered by an ocean, or perhaps a thick layer of ice like the icy moons of Jupiter and Saturn? Is the atmosphere pure water vapour or mostly hydrogen with a dash of water and perhaps some other elements?

Future observations with the James Webb telescope will fill in some of these gaps. However, Dr Tinetti highlights the need for catalogues of the properties of exoplanetary atmospheres, against which astronomers can compare their latest finds. To this end she is working on ARIEL, a mission planned by the European Space Agency (ESA) to characterise the properties of a set of around 1,000 diverse exoplanets.

Once a potentially habitable planet is found, life on Earth provides clues about how to detect life on it. For example, as James Lovelock, a British chemist, proposed in 1965, the presence of gases in ►

Habitable-zone exoplanets





The geysers of Enceladus

► chemical disequilibrium with their surroundings could be a sign of life. Oxygen is a reactive gas that would not build up in Earth's atmosphere in normal conditions. As a by-product of photosynthesis, however, it is being replenished continuously. Given the presence of so much oxygen, the simultaneous persistence of methane in Earth's atmosphere is also inexplicable without lifeforms that keep producing the gas. Normal abiotic chemistry would otherwise quickly deplete it.

Other gases likely to be biosignatures include nitrous oxide, methyl chloride, isoprene, ammonia and phosphine. Indeed, Sara Seager, an astrobiologist and astrophysicist at the Massachusetts Institute of Technology, has identified more than 14,000 small, volatile molecules, of which a quarter are produced by life and others potentially so. This greatly increases the number of potential quarry for future astrobiologists to hunt. Meanwhile, laboratory experiments and computer models that can characterise the sources and life cycles of these gases in different types of atmospheres will help the understanding of future data collected about exoplanets.

The edge of reason

Other biosignatures might come from a planet's surface. On Earth, a phenomenon called the red edge is a sign of oxygenic photosynthesis. Chlorophyll, the plant pigment that captures the light which provides the energy for photosynthesis, absorbs most visible frequencies emitted by the sun but reflects the longer wavelengths of infrared light. This sharp change in reflectance can be spotted easily from space.

With due acknowledgment that photosynthetic life on other planets would almost certainly employ other pigments, tuned to absorb the electromagnetic frequencies emitted from their parent stars in the way that chlorophyll is tuned to sun-

light, this method could be adopted to look for "plants" elsewhere. Near an M-type star, for example, some astrobiologists' models suggest that planetary vegetation tuned to local conditions could reflect yet longer wavelengths than those reflected by Earth. Alternatively, a planet might be dominated by light-harvesting organisms similar to Earth's purple bacteria, which thrive in anoxic conditions and produce sulphur as the waste product of their photosynthesis, rather than oxygen. Yet other pigments, each with its own spectral signature, might have jobs beyond photosynthesis, such as protection against harsh radiation.

None of this study will be easy, particularly when the molecules under investigation are dozens or hundreds of light-years away. The James Webb telescope will begin by looking for biosignatures in the atmospheres of planets around M-type stars, but may struggle to do the same for those orbiting brighter G-types. Examining the surfaces of planets, understanding atmospheric dynamics, looking for continents and detecting surface biosignatures will have to wait until direct-imaging technology is sensitive enough to reach across the light-years and record something useful.

That might happen by the mid 2030s, when three ground-based telescopes with mirrors 25-40 metres wide, which should start operating later this decade, get into full swing. These are the Giant Magellan Telescope, in Chile, the Extremely Large Telescope, also in Chile, and the Thirty Metre Telescope, proposed for Hawaii. Their observations may be complemented by images taken by two proposed NASA spacecraft, LUVOIR and HabEx. If approved, these could fly in the late 2030s. LUVOIR would be a general-purpose successor to the James Webb. HabEx would be designed specifically to take pictures of habitable planets.

Finding one particular chemical on another planet will never be a clear cut indica-

tor of life. Volcanoes also produce some of the molecules associated with biology, so the risk of false positives is high. Even oxygen is not foolproof. It can be generated abiotically when water molecules are split into their constituents by high-energy radiation from a parent star. Conversely, a planet with life on it may not yet have detectable levels of oxygen in its atmosphere (which was indeed the case with Earth for much of its early history). For astronomers, this means placing potential detections of biomolecules into the wider context of the planet under study.

Building catalogues of non-biological sources of gases will help to fine-tune models and give astrobiologists a better chance of weeding out false positives. But Charles Cockell, an astrobiologist at Edinburgh University, says a more robust approach would be to collect spectrographic data from lots of exoplanets and thereby create better statistical confidence in individual detections. If astronomers had atmospheric data from tens of thousands of them, for example, and a thousand showed strong signals for oxygen, that would build confidence about the oxygen being from biological sources, rather than the results simply being false positives.

This, though, is to assume the process of detection itself is robust. An instructive tale here is the recent debate over whether or not there is phosphine in the atmosphere of Venus—for this is a gas which, on Earth, is created only by living organisms (some of them, admittedly, human chemists). In September, a group of astronomers announced that Venusian air contained 20 parts per billion of phosphine. Others who subsequently scrutinised these results raised red flags. Some questioned the way the original team had processed the data. Some tried to find evidence for phosphine in independent data sets, and failed. Partly in response to those criticisms, the original team later reanalysed the data themselves, and concluded there was, after all, only a tentative detection of one part per billion of phosphine present on Venus.

Venus sky trap

Spectroscopic analysis of Venus's atmosphere in this way can be viewed as a test-bed for the harder task of doing the same to the atmospheres of exoplanets. In the case of Venus, though, if the signs do end up looking good, it will be possible to go and check directly—the second of the broad approaches to astrobiology. That the Venusian atmosphere may have a biomarker in it came as a surprise even to those optimistic about finding life elsewhere. Most such eyes are turned to Mars, with a side-bet on the icy moons of Jupiter and Saturn.

Mars has already generated a couple of intriguing results. One was from the so-called labelled-release experiments car- ►

ried on board *Vikings 1* and *2*, which landed successfully on Mars in 1976. These mixed samples of Martian regolith with organic compounds of the sort consumed by microbes on Earth. Those compounds were labelled with radioactive carbon atoms, and any gas evolving from the experimental mixture was tested for radioactivity, to see if those compounds were being metabolised. The results suggested metabolic activity in the regolith at both landing sites, which were over 6,000km apart. They were discounted at the time as being the product of some unknown abiotic reaction, because other experiments showed no sign of organic compounds in the regolith. But they have never been explained.

The other result that has not quite gone away was the analysis in 1996 of a meteorite blown off the surface of Mars by an asteroid impact and collected in Antarctica. This contained several features, including putative microfossils, unusual grains of magnetite of a type made biologically on Earth, and organic compounds, that were taken at the time as possible signs of life. All are now known to have alternative, and more widely believed, explanations. But, at the time, the meteorite's discovery stimulated interest in the possibility of life on Mars.

Wild rovers

And there has, indeed, been an intensive programme of investigation of the place since the 1990s, using orbiters, landers and wheeled surface vehicles known as rovers. This has followed up the discovery by the *Viking* missions of what looked like water-carved topography, by showing that parts of Mars are covered with sedimentary rocks, and that these include clay minerals, which, on Earth, often form in the presence of water. This demonstrates, to most people's satisfaction, that the planet did once play host to bodies of liquid water.

NASA's next Mars rover, *Perseverance*, scheduled to arrive there on February 18th, will look in some of the rocks it encounters for fossilised remnants of microbial mats called stromatolites. It will also, by collecting and bottling for future retrieval the most interesting samples it finds, be the first step in a decade-long multi-agency mission to bring samples of Martian rock back to Earth. Then, in 2023, *Perseverance* will be followed by a rover from ESA called *Rosalind Franklin*. This will drill a few metres under the Martian surface to search for microbes, both fossilised and living.

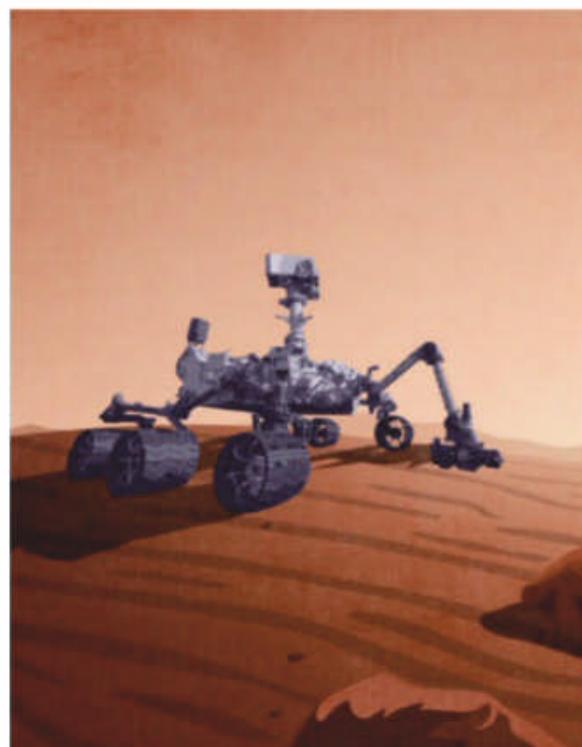
The idea of life on Mars goes back at least as far as 1877, when Giovanni Schiaparelli, an Italian astronomer, thought he saw dark lines on the planet, which he interpreted as water-carrying channels with vegetation growing along their banks. These turned out to be optical illusions, but the idea stuck. That there might be life on some of the moons of Jupiter and Saturn is a

more recent suggestion, stimulated by the discovery by probes sent to orbit those planets that some of their ice-covered moons appear to have subsurface oceans of liquid water.

This thought is taken seriously enough for NASA to be laying plans for missions to Europa, a moon of Jupiter, and Enceladus, a moon of Saturn. The idea is to sample water in the plumes of geysers erupting from these moons (see picture on previous page), and test it for chemicals that might indicate life. NASA also plans to launch a drone called *Dragonfly* on Titan, another moon of Saturn, to search its surface for molecules that might be life's precursors.

If it turns out that somewhere else in the solar system either has, or had, life, one further question needs to be answered. This is, is it the same as life on Earth? One school of thought, known as panspermia, suggests that life might not have evolved *in situ* everywhere that it is found, but could instead spread from place to place. This would be easier within systems of planets than between them. If organisms live on other bodies in the solar system it should be possible to work out from their biochemistry whether they share an ancestor with those on Earth—and it might even be possible to do this with fossils, if enough of their chemical structure is preserved.

Either answer to the panspermia question would be interesting. If any life on Venus, Mars or the Jovian or Saturnian moons had separate origins from life on Earth, it would suggest that biology starts up easily. If it started on only one of them, and then spread from place to place within the solar system, that would give a boost to the idea of it spreading between star systems, too, since two examples are now known of rocks from elsewhere entering and then departing from the solar system, either of which might have carried bacteria-like organisms deep within it, in cold storage.



The third approach to astrobiology, besides looking for biosignatures and visiting promising planets and moons, is to scan the cosmos for signs of technology elsewhere. This is, perhaps, the most flaky tactic. But it is also the most far reaching. It is flaky because the history of life on Earth, at least, suggests that the path from primordial soup to engineering prowess is a long and winding one. It is far reaching because such prowess might manifest itself in ways such as radio signals that can be detected at greater distances than any natural sign of life.

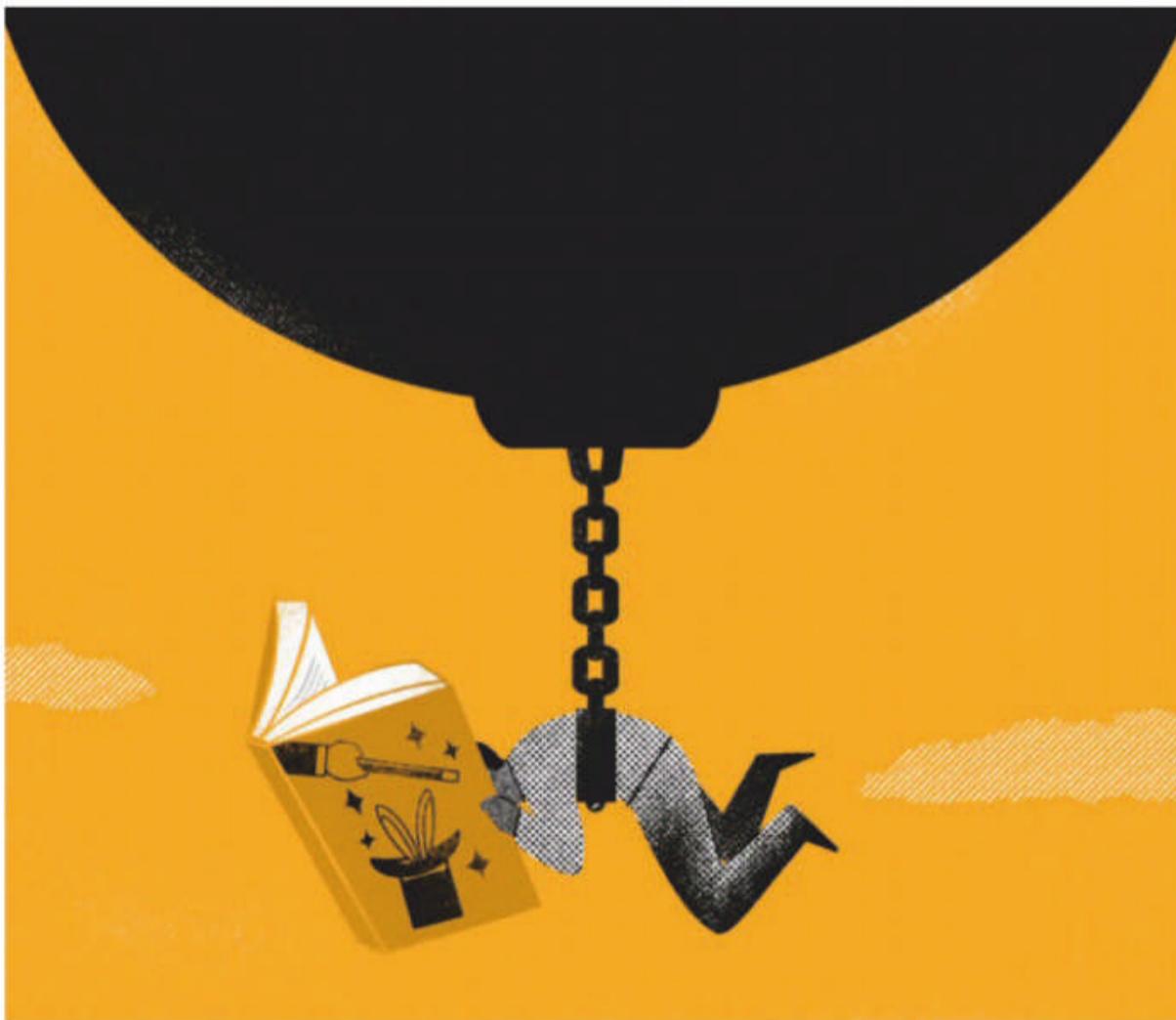
People have been listening for radio signals from ET almost since the invention of radio telescopes. There have been a couple of false alarms, but nothing definite. The use of lasers for communication on Earth has raised suggestions of looking for signals from these, too—or even taking the initiative and beaming messages by laser towards promising nearby planetary systems. And real optimists wonder whether super-advanced civilisations might engage in engineering projects large enough to leave a footprint in the spectrum of their home stars. Again, there have been false alarms provoked by this thought. But nothing concrete.

Hope springs eternal

For the moment, then, sheer weight of numbers suggests that the most likely place to find evidence of alien life remains the Habitable Exoplanets Catalogue or some future, similar, compilation. Numbers increase the chance of a lucky strike. They also allow the application of statistics to the problem, for it is likely that, rather than looking for yes/no answers to the question of life elsewhere, researchers will have to search for probabilities. This could mean measuring the levels of several gases, each with a different likelihood of having come from a biological source, and combining those data with an understanding of environmental context. The hope would be that life-bearing anomalies would stick out like sore thumbs, in the manner of Dr Cockell's putative oxygen-rich planets.

As to whether astrobiologists actually believe life exists elsewhere, that is not exactly a scientific question, but it is pertinent to their motives. David Grinspoon, a veteran of the field who is part of the Planetary Sciences Institute, an American research organisation, puts it thus: "I think there's widespread belief in extraterrestrial life now among scientists, even though we don't have specific evidence for it."

Dr Grinspoon observes that astrobiology is where exoplanetology was when he was a student in the 1980s—patiently waiting for the right tools to become available. Exoplanets made the transition from belief to reality with aplomb. Whether ET will follow suit remains to be seen. ■



Emerging economies

Some pleasant fiscal arithmetic

HONG KONG

Governments in the rich world have stopped worrying about their debt. What about those elsewhere?

FINANCE MINISTERS of yesteryear would have been shocked by the amount of borrowing their successors must now contemplate. But they would have been just as gobsmacked by how cheap that borrowing has turned out to be. In many countries, the interest rate on government debt is expected to remain below the nominal growth rate of the economy for the foreseeable future. In other words, the “growth-corrected interest rate”, as some economists call it, will be negative. That will be the case in all rich countries in 2023, according to projections published earlier this month by S&P Global, a rating agency.

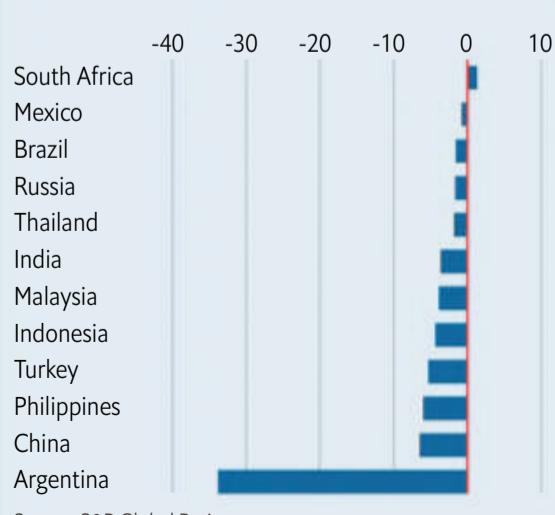
This scenario has prompted some economists, such as Olivier Blanchard, a former chief economist of the IMF, to rethink the fiscal limits of countries like America, Japan and the euro members. Governments should not “focus on some magic number for the debt-to-GDP ratio”, Mr Blanchard said last month in a lecture hosted by Ashoka University in India. These numbers “have been counterproductive in the past; they would be even more [so] now”.

It is not only in rich countries, however,

that the fiscal arithmetic looks topsy-turvy. In 53 of the 60 biggest emerging economies, the interest rate is likely to fall short of the growth rate. In some cases, spectacularly so. S&P expects the growth-corrected interest rate in 2023 to be -3.6% in India,

A snowball's chance

Effective interest rate on government debt minus nominal GDP growth, percentage points
2023 forecast



-6.5% in China and -33.8% in Argentina (see chart 1).

That raises an obvious question: should emerging economies also rethink their fiscal limits? Some have been quick to do so. India's budget this month envisaged a deficit of 9.5% of GDP this fiscal year (the overall deficit, which includes state finances, could reach 15% of GDP, reckons JPMorgan Chase, a bank) and offered no plan to bring it below the 3% limit prescribed by past fiscal rules. The latest economic survey by the government's chief economic adviser points out that India's interest rate has been below its growth rate “by norm, not by exception”. Quoting from Mr Blanchard's work, the survey tries to “provide the intellectual anchor for the government to be more relaxed about debt and fiscal spending during a growth slowdown or an economic crisis”. But although doveish fiscal maths is the norm in many emerging economies, finance ministers must also worry about the exceptions to it.

When interest rates fall short of growth rates, the budgetary algebra becomes a little contrary. Governments can keep debt steady, relative to the size of the economy, even if they consistently overspend, as long as their budget deficits are not too large. If their deficits (excluding interest payments) exceed this limit temporarily, their debt ratio will rise temporarily. But it will then gradually decline to its previous level. If their deficits move to a permanently higher level, the debt ratio also settles at a higher level. But it will not snowball, be-

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cause the power of compound interest is offset by the power of compound growth.

To grasp the weirdness, ponder the following scenario. Suppose a government can keep debt stable at 60% of GDP with a deficit, before interest payments, of 3%. Then suppose a pandemic strikes, pushing debt to 80% of GDP. You might think that this higher debt is harder to sustain, requiring a tighter budget than before the pandemic. You would be wrong. To stabilise the new debt ratio, the government needs a 4% deficit instead.

Although this fiscal mathematics is peculiar, it is not novel. The growth-corrected interest rate has been less than zero in emerging economies 75% of the time, according to Paolo Mauro and Jing Zhou of the IMF, who have looked as far back as the data allow. Economists have nonetheless been wary of taking this arithmetic too literally. Emerging economies have traditionally borrowed in hard currencies, such as the dollar. If their exchange rate weakens, their foreign-currency debts can increase sharply, relative to the size of their economies, even if interest rates remain modest. The cost of borrowing can also rise quickly if investors fear default, a fear that can become self-fulfilling. And this rise in interest rates may not be gentle or early enough to provide much prior warning.

In recent decades, most emerging economies have found it easier to borrow in their own currencies. That makes their debt safer because their central banks can, in theory, print the money owed to creditors if need be. But the fear of some kind of default still lingers. Wenxin Du of the University of Chicago and Jesse Schreger of Columbia University have compared the yields on local-currency bonds to those on American Treasuries "swapped" into the same emerging-market currency via derivatives. This allows them to disentangle credit risk from currency risk. They find that emerging-market bonds typically pay a premium, which presumably represents compensation for the risk of default (or some other form of expropriation, such as new taxes or capital controls). This premium spiked in March 2020 before returning to less alarming levels (see chart 2).

Borrowing in rupiah or pesos introduces other dangers. If investors fear a fall in the currency, they demand a higher interest rate. This is especially likely if the investors are foreigners with obligations in other currencies. Countries like Indonesia borrow mostly in their own currency (over 60% of government debt is in rupiah) but not from their own people (over half of its debt is owed to non-residents).

Even if government debt is sustainable, it may not be desirable. Economists have long worried that public borrowing can crowd out private investment (or hurt the trade balance). That is less of a concern if

the government spends on investment. (India's central government, for example, has budgeted a 26% increase in capital spending in the coming fiscal year.) It is also less of a worry if the economy is operating below capacity: public spending can then "crowd in" additional investment by improving incomes and profit prospects.

But before embarking on a spending spree, a conscientious government must bear other considerations in mind. Is the economy below capacity because of a lack of spending, rather than public-health restrictions? Are inflation expectations contained? Is monetary easing unable to revive demand instead? If the answers are yes, governments can spend with greater conviction. But in fact the answers vary across the emerging world. China is probably near full capacity. Inflation is too high in Argentina and Turkey. Most central banks have room to cut interest rates (though India worries that cuts will not work until its troubled banks regain their footing).

Crowding out, if it happens, is probably more damaging in emerging markets. They have less capital per person than richer economies, which should leave them with more rewarding investment opportunities. The low interest rate paid by their governments is not necessarily a sign that the return on capital is low. It may also reflect regulations forcing banks to load up on government paper. This kind of financial repression, once widespread, persists in places like India and Argentina.

Mr Blanchard seems more cautious about emerging markets than some of those who cite his work. His Ashoka lecture showed a "prudent level of tentativeness that I find very appealing", said his host, Arvind Subramanian, himself a former adviser to India's government. Mr Blanchard thinks policymakers in the rich and poor world alike should ask themselves two hard questions: how high might interest rates rise, relative to growth rates, in a plausible stress case? And how tight a budget would be politically possible in response? The answers give a rough indica-

tion of the debt ratio a country can comfortably expect to sustain.

That ratio is likely to be lower for many emerging economies than for advanced ones, he believes. They may find it harder to rustle up tax revenue in a pinch. And their interest rates have a higher possible peak, even if their average is lower once growth is deducted. In the past, conventional wisdom maintained that the safe debt limit was 60% of GDP for advanced economies and 40% for emerging ones. "These were nonsensical numbers," Mr Blanchard said after his lecture. "But the inequality was right." ■

Commodities

Twin peaks

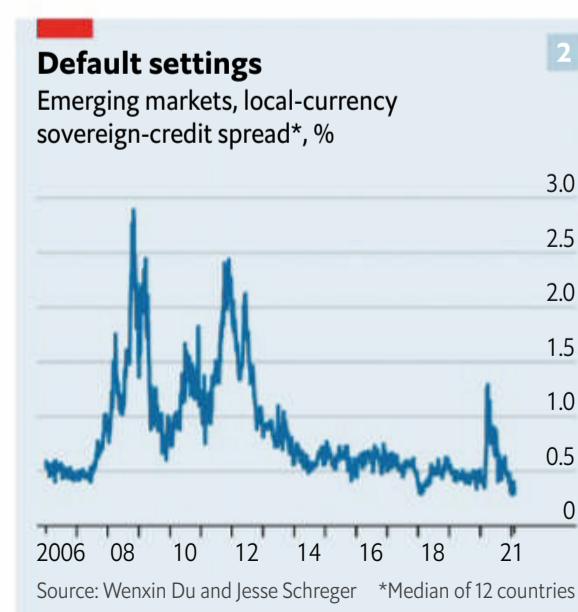
NEW YORK

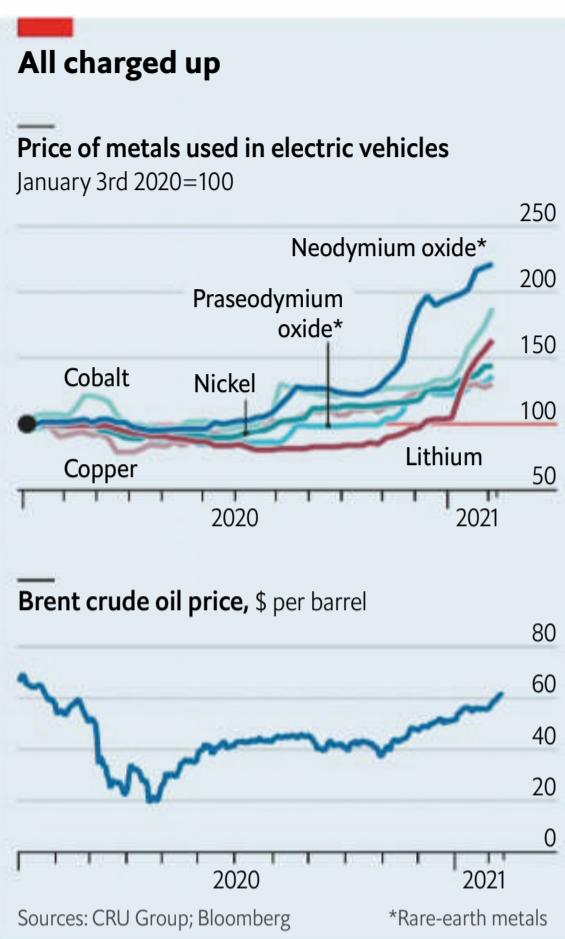
Why the prices of both oil and the metals that seek to replace it are rising

OIL IS MAKING a comeback, at least on the face of it. On February 8th the price of Brent crude rose above \$60 a barrel for the first time in more than a year. Battery metals, too, are enjoying a run-up. The prices of cobalt, lithium and some rare-earth metals have soared since late 2020, with copper and nickel enjoying a longer climb. It is tempting to see the surge as evidence of competing bets about the fuels of the future. For both oil and battery metals, the reality is more complex.

Some of the rise in oil prices is, of course, linked to expectations about demand. Oil investors have taken hope that rising Chinese demand might be matched elsewhere. In India, consumption of liquefied petroleum gas, widely used as a cooking fuel, is up. In America, President Joe Biden's proposed stimulus of \$1.9trn may bring a jump in economic activity and therefore oil demand. However, the pace of economic recovery is not assured. The faltering roll-out of vaccines and the emergence of new, more contagious strains of covid-19 continue to weigh on oil markets. Indeed climbing oil prices have much more to do with constraints in supply than with confidence in demand.

Most important, Saudi Arabia, the de facto leader of the Organisation of the Petroleum Exporting Countries, looks determined to support prices. In January the kingdom said it would cut production by an additional 1m barrels a day in February and March. Elsewhere, output continues to be restrained. Among some African producers, supply is starting to suffer from deferred investment in new projects and declining output from existing ones. In America, crude output in January was 13%





lower than a year before, according to Goldman Sachs, a bank. Exports from Iran seem unlikely to pick up quickly. In an interview with CBS News aired on February 7th, Mr Biden said he had no immediate plans to lift sanctions on the country.

For battery metals, demand has helped boost prices. Much of the interest is coming from China: in December sales of plug-in electric vehicles there surpassed 224,000, a record high and 9.4% of total vehicle sales. That has supported demand for cobalt, lithium and rare-earth minerals such as neodymium and praseodymium. But constraints on supply have played an important role, too.

Covid-19 disrupted ports in South Africa, from where much of the world's cobalt is shipped, and in China, the world's biggest miner and exporter of rare-earth metals. Nickel mines in Indonesia were also pandemic-struck. In New Caledonia, a small group of Pacific islands that is the world's fourth-biggest producer of nickel, protests in December demanding public control of national resources blockaded several mines that are part-owned by foreign firms.

As the 2020s continue, you might expect the prices of oil and battery metals to diverge, as demand for crude ebbs and that for electric cars and other green technologies jumps. However, there may well be a period when supply constraints mean that the values of oil and battery metals continue to rise in concert.

Start with oil. In the past, higher prices prompted more spending on projects, which increased production and lowered prices. There are already signs that this mechanism is breaking down. In recent

years dismal returns and fear of regulation have made investors wary of capital expenditures. Their disdain for spending has intensified, thanks to covid-19's rapid depression of demand and the election of Mr Biden. Since taking office in January, he has announced a temporary moratorium on new drilling leases on federal lands, as well as plans for stricter regulation of methane emissions and greater scrutiny of pipelines. None of this has a huge, immediate effect on oil supply, but serves to make investors even more sceptical of any big increase in companies' capital programmes. In January BlackRock, the world's largest asset manager, urged companies to disclose how their strategies align with a carbon-neutral economy by 2050. Little wonder that in recent weeks ExxonMobil and other oil supermajors, shaken by large annual losses, have reiterated pledges of capital discipline.

Meanwhile a wave of green enthusiasm is sweeping the markets. Tesla, an electric-vehicle maker, is more valuable than the eight next-biggest carmakers combined. JPMorgan Chase, a bank, reckons the share of electric vehicles (excluding hybrids) in global new vehicle sales will rise from 3% in 2020 to 15% in 2030. Electric cars account for about a quarter of demand for cobalt, a similar share for neodymium and praseodymium, and nearly half of the demand for lithium, according to CRU Group, a consultancy. Other green technologies are supporting prices, too. Copper is essential not only for electric cars, but also for solar panels, wind turbines and 5G infrastructure. The recent rally may therefore be a sign of a strange pattern to come: higher prices for both oil and the metals that may help replace it. ■

Bank bosses

Fresh blood

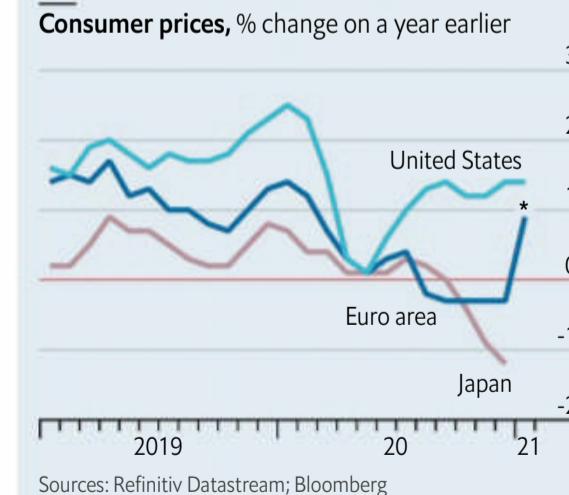
Europe's banks need new chiefs. Where to find them?

EUROPEAN BANKS' fourth-quarter earnings, releases of which are clustered around early February, have been surprisingly perky. Those with trading arms, such as UBS or BNP Paribas, rode on buoyant markets. State support helped contain bad loans; few banks needed to top up provisions. Markets should keep them busy and, as the economy recovers, loan volumes should rise. Many banks plan to resume dividends this year.

Yet the chronic illness that has dogged the industry for years remains. Interest rates are rock-bottom, compressing lending margins. Lenders must set aside lots of capital to placate watchdogs, which depresses returns. Costs are sky-high; hard-hit by the financial and euro-area crises, lenders have under-invested in digitisation. And Europe has too many banks, which constrains scale and profits. UBS forecasts the European sector's return on tangible equity (ROTE) will hit 8% by 2022—above last year's 5.6%, but still below its cost of capital of 10%. Its price-to-book ratio hovers around 0.5, below its lowest point in 2009.

Much of that has been outside bosses' control. The current cohort, drafted in to restore lenders to health in the 2010s, has also managed to lift core capital ratios. But reviving profits and valuations—a must if

Gaining purchase



Inflation expectations, five-year swap rate, %



Picking up pace

Inflation is likely to jump in the coming months, as last year's oil-price drop falls out of the annual comparison. Prices spiked in the euro area in January, owing in part to the expiration of a temporary value-added-tax cut in Germany. Will the pickup be sustained? Investors are bullish in America, where a huge stimulus package is in the works. In the euro area and Japan, though, inflation is expected to stay subdued.

► banks are to raise capital on public markets—requires a strategic rethink that “wartime” CEOs have shown little will or skill for. A growing chorus of pundits, investors and board members want fresh faces to embrace the mission.

This is not to say that Europe’s bank bosses are entrenched (save some exceptions: Frédéric Oudéa has run Société Générale, a French lender, for 12 years). The average boss at a big European bank has been in post for four years, compared with seven in America. Succession planning at some banks, including Standard Char-

tered, is said to be under way. But the same tired cast seems to be shuffled around. Of the nine European banks that changed chiefs in 2020, seven picked either a male insider or a male banker from a local rival. Andrea Orcel, chosen to lead UniCredit, an Italian bank, last month, helped build it up decades ago. Ralph Hamers, UBS’s new boss, came from ING, a Dutch bank.

One problem is that the pool of candidates is drying up. When Mary-Caroline Tillman of Russell Reynolds Associates, a headhunter, worked on bank CEO searches ten years ago, her shortlists included 15-20

qualified candidates. Today she typically finds five or six. A lot of industry stars are now too old; a few others have lost their sheen. Many suitable executives do not want the top job, which comes with more scrutiny from the press than elsewhere. It is also less richly rewarded. Last year James Gorman, who runs Morgan Stanley, an American bank, was paid \$33m. ING faced public criticism in 2018 when it proposed raising Mr Hamers’s pay to €3m (\$3.6m).

Recruiting outsiders is also hard. Aspiring CEOs must be vetted by European regulators, implying a ton of banking experi-

Buttonwood Crossbar challenge

Lessons in betting against bubbles from the Big Short

HE NOW RUNS a chain of hotels in his native Ghana. But in the 1990s Tony Yeboah played football at a high level, his two seasons at Leeds United sandwiched between longer spells in the Bundesliga. In England he is fondly remembered for a wonder-goal against Wimbledon FC. Watch it on YouTube. Trapping a high ball expertly on his chest, he juggles between defenders before smashing the ball off the crossbar into the net.

Great goals stay in the mind long after the game-to-game grind of a championship win fades from memory. So it is with investing. Success often comes down to the compounding of incremental gains over time. The trades that capture the imagination, though, are the bold ones with big payoffs. Among the biggest and boldest was “The Big Short”, a bet against subprime mortgages before the 2008 crash, and also the title of a book by Michael Lewis (and, later, a film).

That episode feels relevant again. The recent spectacular run-up in stock prices and the attendant mania in pockets of the financial markets have the word “bubble” on many investors’ lips. A new paper* by Aaron Brown of New York University and Richard Dewey of Royal Bridge Capital, a hedge fund, re-examines the Big Short and sounds a note of caution. It argues that the bet against subprime mortgages was far riskier than is often appreciated. The paper has a subtler message, too: the way in which a trading idea is expressed is as important as the insight that underpins it.

People who lived through it can scarcely forget the subprime crisis. Still, here’s a recap. In the mid-2000s, house prices were rising rapidly in many rich countries. In America, much of the growth in mortgage lending was to “subprime” borrowers with low credit scores.

These mortgages were pooled and turned into securities. The riskiest tranches of these pooled mortgages took the first losses, providing a buffer for the AAA-rated tranches. Such was the demand for AAA bonds that standards slipped. Just about anyone could get a subprime mortgage.

America’s housing boom had all the hallmarks of a bubble: cheap money, a build-up of debt and a belief that there was no risk. If you were so minded, how could you bet against it? A handful of clever people worked out that subprime bonds were likely to suffer a higher rate of default than was suggested by their price or credit rating. So they bet against the riskiest tranches of the worst pools. They entered into agreements with banks, called credit-default swaps (CDS), which insured specific mortgage bonds against default. In 2007 and 2008, default rates soared. The CDS insurance was triggered. The payoff was as spectacular as a Tony Yeboah goal.

Why didn’t more people bet this way? Mr Brown and Mr Dewey spoke to investors who considered the short sub-

prime trade, but passed on it. One turn-off was the Big Short’s steeply negative “cost of carry”: the premium on CDS insurance was high. Moreover, mortgage CDS were illiquid instruments, making it tricky to get out of the trade. A high cost of carry is a big bar when the payday might be years away—if it comes at all. The banks that were the counterparties to the CDS could be dragged under. Maybe the government would make good all mortgage-holders when the bust came. History did not play out this way. But investors could not be sure at the time.

Traders found other ways to bet against the bubble. One was to sidestep the negative-carry problem by buying risky tranches of subprime securities, with double-digit yields, and at the same time taking out insurance on “safe” AAA tranches using CDS with a fairly low premium. The bet here was that a housing bust would blow up both risky and safe tranches; but while waiting for the apocalypse you could benefit from positive carry. Perhaps the safest way to profit from a bubble is the pick-up-the-pieces trade, in this case buying mortgage bonds at fire-sale prices after the bust.

A subtext of the Brown-Dewey paper is that conviction can be your enemy. Knowing for sure that something is very askew may not be enough to make you money. Still, the precariousness of the Big Short is a big part of its legend. Yes, things might have played out differently. And if Tony Yeboah’s shot were an inch higher, then it would not have been a goal. But it was not a fluke. He had scored an equally spectacular goal against Liverpool a month earlier. That one went in off the crossbar, too.



* “Toil and Trouble: Don’t Get Burned Shorting Bubbles”, February 2021.

ence, says Elena Carletti of Bocconi University, who also sits on UniCredit's board. In America Wells Fargo is the only big bank subject to such rules. Language can create barriers, too. After falling out with Jean Pierre Mustier, its French boss who is due to step down in April, UniCredit's board is said to have favoured Italian-speakers.

There is hope, however. Industry veterans praise a class of bankers climbing up the ranks, including Slawomir Krupa (head of Société Générale's markets unit), Christian Meissner (Credit Suisse's new wealth-management chief) and Nicolas Namias

(the new boss of Natixis, an investment bank). Headhunters, meanwhile, are grooming bright executives in adjacent industries, such as payments or insurance.

Whether they make it to the top or not largely depends on banks' boards, many of which pay lip service to transformation but plump for boring candidates. That partly reflects their own staid composition. Career bankers with little tech nous often dominate, even though regulators do not necessarily require that non-executive directors have banking expertise. To cure ailing banks, boards too need new blood. ■

Trade policy in America

Rinse and repeat

WASHINGTON, DC

What washing machines tell you about the links between tariffs and competition

AMERICAN WASHING-MACHINE makers received a parting gift from President Donald Trump. Days before leaving office, he extended tariffs on imported machines by two years. The move was a victory for Whirlpool, an appliance-maker that has sought protection for nearly a decade. The saga is a case study of the impact of protectionism on competition at home.

American businesses can ask the government for three types of protection from foreign rivals: anti-dumping duties, if imports are being sold below cost; countervailing duties, if foreign competition is subsidised; or safeguard tariffs, if imports are surging. Petitions succeed around 60% of the time; in 2016 just over 7% of America's product lines were affected by a temporary trade barrier. (That compares with about 4% in the European Union.)

When Whirlpool first sought help in 2011, it accused its South Korean competitors, Samsung and LG, of selling at prices that were too low. (Its rivals said its failure to innovate was the problem.) The United States International Trade Commission (USITC), which follows trade-remedy law written to protect producers, not consumers, found for Whirlpool. That led to tariffs of up to 82% on some washing machines from South Korea and Mexico (where Samsung had a factory).

Only six years before that, Whirlpool had used the promise of competition from Samsung and LG to justify consolidation at home. Trustbusters had been suspicious of its acquisition of Maytag, an American rival, which united more than 70% of domestic production of household washing machines. But, partly because they were assured of stiff foreign competition, they let the deal go ahead. William Kovacic,

then a member of the Federal Trade Commission, was so peeved by the case that he now argues that merger approvals should require companies to waive their right to seek tariff protection.

But the duties Whirlpool had secured were easy to dodge. When Samsung and LG started sending machines from their factories in China to America, Whirlpool asked the USITC to hit imports from there, too. Accused of undercutting again, the South Korean firms protested that "bundled pricing" distorted the facts. Washing machines often looked like they were sold at low margins, but in fact were being bundled together with driers, which were sold at high margins. When seen as an integrated unit, an apparently low-return washing-ma-



Heavy-duty machines

chine business could in fact be making adequate profits. But the commission ruled in favour of Whirlpool again.

The source of imports had already changed, though—to Thailand and Vietnam. So, rather than continue with the game of whack-a-mole, in 2017 Whirlpool made a bolder request: for a safeguard tariff, which hits imports whatever their source. (It is also temporary, to give domestic firms time to become competitive.) The USITC recommended tariffs of 20%, rising to 50% above a quota of 1.2m units in the first year, with the protection fading over three years. Presidents can veto such requests, but Mr Trump did not.

The new restrictions were implemented in February 2018. As the law intended, imports fell, and American production rose. According to a study by Aaron Flaaen of the Federal Reserve and Ali Hortaçsu and Felix Tintelnot of the University of Chicago, retail prices of washing machines also rose, by 12%—with those of dryers rising in step. Whirlpool made some investments, including in a new training centre in Clyde, Ohio. A review of the tariffs in 2019 found that its profitability increased.

Yet Whirlpool came back for more. In November last year its lawyers complained that the tariff was meant to give it three fat years of profits to recover from the harm caused by imports. But Samsung and LG had brought in machines before the tariff came in, dampening its effect. Then came covid-19. Had the USITC known what market conditions would be, Whirlpool's lawyers argued, it would surely have recommended greater protection.

By then Samsung and LG had opened factories in America. (How much of this, and the resulting jobs, reflects the tariff is up for debate, but it may have speeded up the decision to set up shop in America.) The Korean firms argued that they were now part of the domestic industry—and did not need tariffs. They pointed out that the domestic industry was clearly thriving: around 80% of washing machines bought in America were now home-made. Still, the USITC decided that, without an extension, cheap imports would flood in. Mr Trump did not disagree, so the tariffs will remain until 2023. (Whirlpool says the decision reflects its efforts to ensure fair trade and to protect employees.)

The result will be close to a decade of protection, arguably at the cost of customers' wallets. But Whirlpool has little recourse for protection left, and now faces stiff competition at home. In November a representative of LG said its new factory in Tennessee had in some cases shrunk the gap between order and delivery from 12 weeks to a few days. Canny use of tariffs might help some producers some of the time. But competition cannot be avoided for ever. ■

Free exchange | Targeting practice

China leads the world in precision-guided central banking. Does it work?



IN ECONOMICS TEXTBOOKS, central banks wield power by raising or lowering interest rates. That depiction, always a little simplistic, is now badly out of date. Since the financial crisis of 2007-09, and especially since the onset of the covid-19 pandemic, central bankers have dramatically expanded their arsenals. They have bought trillions of dollars in assets—mostly government bonds—to keep economies and financial systems from freezing up. And they have become more hands-on, trying to steer cash to “real” businesses, not just to markets. These actions reflect both the severity of the economic shock and the constraints on monetary policy in rich countries, where short-term policy rates are already at or below zero. But when it comes to unconventional interventions, it is a central bank in a very different situation—managing the world’s strongest major economy—that is by far the busiest.

In contrast with other central banks, the People’s Bank of China (PBOC) has refrained from expanding its balance-sheet. Yet it is ever more determined to guide money flows. Since 2014 it has introduced at least ten separate targeted tools to that end, and tweaked them constantly. There have been credit facilities for small businesses and farmers, new money for the construction of affordable housing, adjustments to banks’ required reserves if they lend to favoured sectors, plus caps on loans to risky industries from property to steel. Such is the scope of activity that economists in China now distinguish between two kinds of monetary policy: “aggregate policies”, like interest rates, that affect the whole economy and “structural policies” that support this or that sector. As central banks elsewhere gravitate towards more targeted actions, China’s record with structural monetary policy deserves attention.

The pandemic has illustrated the merits of targeted monetary policy. Back-stopped by central-bank facilities, Chinese banks deferred loan repayments for millions of companies and issued credit to those on the frontlines, such as makers of medical supplies. A similar response has been seen in the rich world. But in China the point of targeting goes beyond emergency relief. It is used to achieve other goals: in a report published on February 8th the PBOC said structural policies were like “drip irrigation” for the economy, helping channel financial support towards technological innovation and environmental protection.

The big attraction of structural monetary policy for China is that, in theory, it tackles a dilemma at the heart of the financial system: credit growth is needed to sustain rapid economic growth, but overall debt levels are already very high, particularly among state-owned companies. In explicitly encouraging banks to lend to less-indebted companies in promising sectors, policymakers have a set of three objectives: generating more growth, with less debt, while also modernising the economy.

To hear it from the PBOC, the experience has been a resounding success. It says it has catalysed 15.1trn yuan (\$2.4trn) in “inclusive loans” (credit to very small businesses), more than double the amount three years ago, reaching some 32m firms in all. The average interest rate on these loans in December was 5.1%, not much higher than the interest rate on government debt. Small businesses, left to fend for themselves, would never enjoy such good terms.

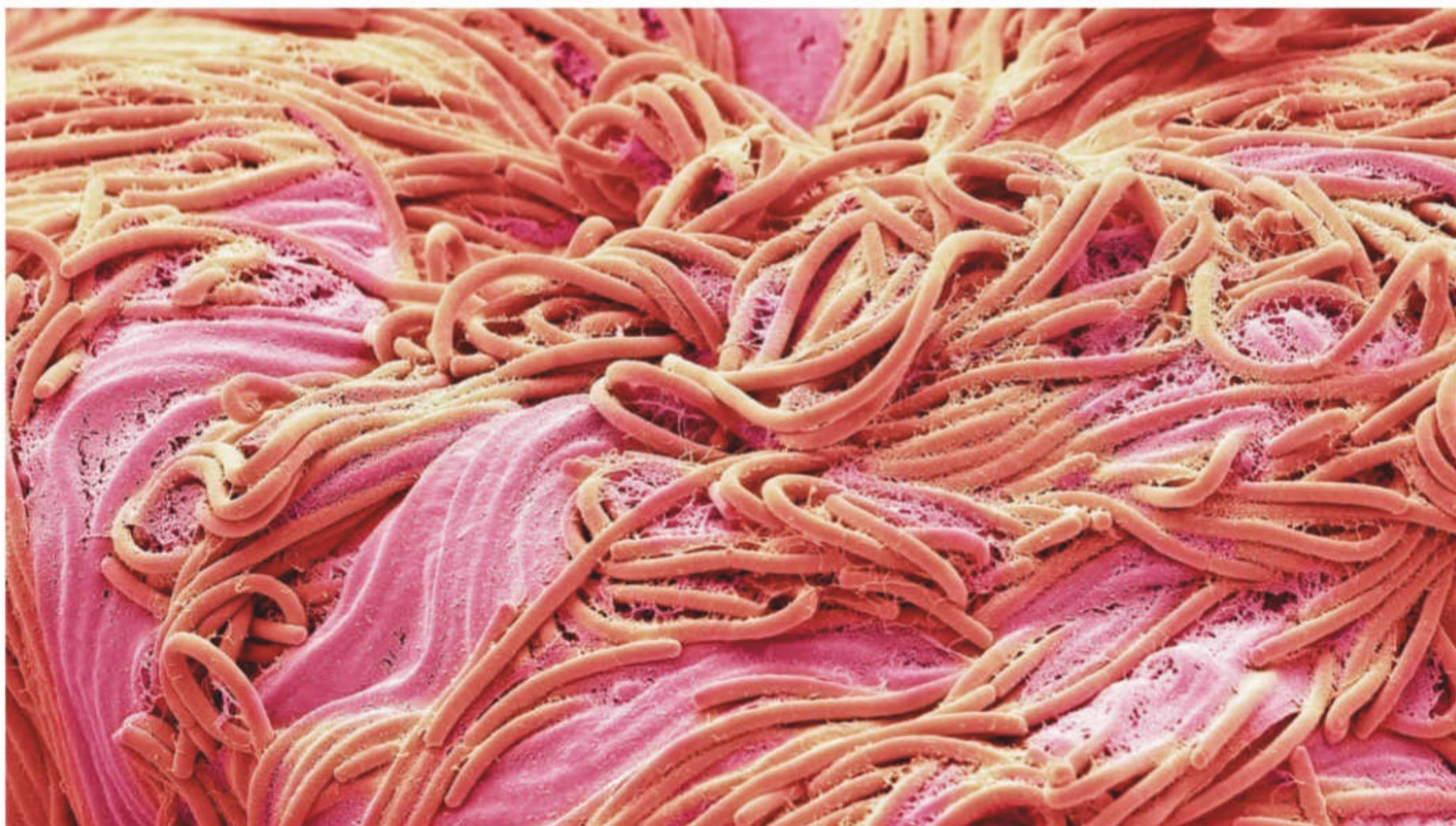
But a closer look at the data raises questions about the efficacy of targeting. The overall shape of the economy has changed little. The liability-to-asset ratio for state firms—a measure of their indebtedness—is only slightly lower than it was five years ago, when the PBOC ramped up its structural policies. Moreover, the jump in “inclusive loans” is misleading. Small firms, broadly defined, account for just a quarter of overall bank lending, little changed over the years. Without targeting, perhaps the imbalances would have been even worse. But it is hard to escape the conclusion that the practice has had a marginal impact on financial flows.

Despite the PBOC’s official bluster about structural monetary policy, many economists who work in its regional branches are more sceptical. They have started to crank out research papers, mostly in Chinese, on the topic. Fu Hongrui and Zhong Zhenzhen argue that communication is a stumbling block. For central banks to hit their mark, it helps if companies and investors understand their intent, so that they have the confidence to push in the same direction. The PBOC, however, provides only basic information about its targeted operations, with scant details about who actually receives its credit. This, argue the researchers, blunts the benefits. In another paper Yin Xingshan and two other PBOC economists argue that structural monetary policies do not get at the roots of China’s problems. True solutions would include transforming state-owned companies into profit-focused entities and increasing competition in the banking sector. The central bank on its own will struggle to cure the economy’s “chronic disease”.

Structural weaknesses

The PBOC, which lacks formal independence, cannot very well say no when the government wants it to be more activist. It has taken to describing “precision” as one of the core aims of its policies. But some of its economists worry about the consequences. Chen Ge, a central-bank researcher, enumerates a series of risks. To obtain special loans from the PBOC, banks need to post collateral. There is little to stop them throwing ineligible loans into the mix. The central bank thus faces balance-sheet hazards if some of the dodgier assets go bad. Moreover, it is hard to monitor whether banks use the credit as promised. And if companies and banks become more reliant on the PBOC for direct support, it will grow progressively harder to unwind the interventions.

The answer, Mr Chen concludes, is for the government to step in and do more with its fiscal space, taking weight off the PBOC—a prescription that will sound weirdly familiar to central bankers elsewhere. The PBOC may be following a different path. But it is arriving at a similar destination. ■



The American Association for the Advancement of Science

Both ends against the middle

CYBERSPACE

This year's meeting of the AAAS included sessions on the microbes in mouths and intestines, precision treatments for cancer, and skyscrapers made of wood

ITHINK IT'S unlikely that any condition in the body is one where the microbiome isn't involved." That is the considered opinion of Iain Chapple, one of the speakers at this week's meeting of the American Association for the Advancement of Science (AAAS), held online this year instead of in Phoenix, Arizona, as originally planned. Dr Chapple was, until 2020, head of dentistry at Birmingham University, in Britain, and is still an active researcher in the field. Mouths are notorious breeding grounds for hostile bacteria, as anyone who has ever had a toothache can attest. But even a healthy mouth is inhabited by lots of bugs (see above).

Meanwhile, at the other end of the alimentary canal, the large intestine contains so many microbes that they probably outnumber the cells of the human body. Both bacterial populations have coevolved with their hosts for millions of years, so Dr Chapple is almost certainly right about the intimate connection between them and the body. A pair of sessions at the AAAS discussed some of the latest relevant findings.

Dr Chapple has been seeking a link be-

tween gum disease and rheumatoid arthritis. In periodontitis, to give gum disease its proper name, the number of bacteria in the crevice between a tooth and its surroundings rises from thousands to millions. The gums being well supplied with blood vessels, such bacteria can hitch a ride to the rest of the body. This fact has been linked not only with arthritis, but also with diabetes, Alzheimer's disease and, according to Purnima Kumar of Ohio State University, who helped to organise the session in question, over 50 other conditions.

Gummed up

Rheumatoid arthritis comes in many forms, but all involve the immune system attacking the body's joints. Dr Chapple's studies indicate that *Porphyromonas gingivalis*, one of the hitchhiking bacteria, can provoke such a reaction. The next step, he

suggests, is to look at a group of arthritis-free individuals who have periodontitis and see whether they subsequently develop arthritis more frequently than average members of the population.

The arthritis link is still tentative. That with diabetes is not. Bacteria associated with periodontitis have long been known to disrupt the body's ability to absorb glucose, resulting in the heightened levels of that sugar in the bloodstream which are diabetes's distinctive feature. The connection seems to work the other way around, too. High glucose levels disrupt the body's inflammatory system, leading to a host of complications, including gum disease.

In new research, Dr Kumar has mapped networks of connections between various bacterial species and the components of the immune system with which they interact. She has done this in three groups of people: those with periodontitis, those with both periodontitis and diabetes, and those with neither. Her work has shown that these networks break down completely in people with both diseases. That limits the immune system's influence and prevents it cleaning house. Treating people's periodontitis boosted their networks, but did so more slowly in those with diabetes.

Both the arthritis and the diabetes connections are interesting. But the most intriguing possible connection of all is that between periodontitis and Alzheimer's disease. Mark Ryder of the University of California, San Francisco, thinks they are linked by substances known as gingipains. ►

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78 Wooden skyscrapers

These cause the entanglement of neuronal proteins called tau. Tau tangles are a symptom of Alzheimer's, and people with this illness have high levels of gingipains in their hippocampi, a pair of brain regions involved in memory formation. Small-scale trials suggest that gingipain inhibitors may improve cognition, but bigger samples are needed for conclusive results. Dr Ryder has therefore launched a trial involving 570 patients, the results of which are expected by the end of the year.

An army marches in its stomach

At the other end of the alimentary canal, evidence is accumulating of a connection between the microbiome and another neurological illness, Parkinson's disease. This started with the observation that many people who develop Parkinson's first experience digestive difficulties such as constipation. That prompted the discovery that certain species of gut bacteria are often present in abnormally large numbers in those with Parkinson's.

One such species is *E. coli* (see below). This is a common bug, but according to Timothy Sampson, a researcher at Emory University School of Medicine in Atlanta, Georgia, only in Parkinson's patients is it found attached to the inner surface of the colon. The protein it attaches itself with is called Curli, and Curli bears a strong similarity to alpha synuclein, a protein the accumulation of which in the brain causes Parkinson's-related symptoms. Molecules of alpha synuclein spur the production of more of their kind, and this accelerates the spread of the disease, so this discovery has provoked speculation that Curli-bearing *E. coli* could be provoking the body to behave in self-destructive ways.

Dr Sampson has tested this hypothesis in mice. He bred a strain of *E. coli* that cannot make Curli and injected mice with it, while injecting others with unmodified bacteria. Those that received Curli-producing bacteria expressed higher levels of synuclein and demonstrated symptoms like involuntary rigidity which, when seen in people, are associated with Parkinson's disease. That is tantalising. Should this result hold up in future trials, Dr Sampson hopes it might be possible to identify those who are susceptible to Parkinson's long before they begin to show symptoms.

Digestive troubles also seem linked to autism—a link strengthened when Sarkis Mazmanian of the California Institute of Technology studied the gut floras of people with autism and identified elevated levels of several relevant bacterial products. Speaking at the meeting, Dr Mazmanian discussed his research on one of these substances, 4-ethylphenol (4EP). This is trans-

formed by the body into 4-ethylphenylsulphate (4EPS). In studies in mice, he has shown that 4EPS activates brain regions linked to emotional behaviours and may also reduce connectivity between neurons in important ways. He and his team claim, as well, that mice with 4EP-producing bacteria in their guts display social behaviour which mirrors symptoms of autism in human beings. In particular, the animals seem more anxious (they are more likely than their peers to hug the walls of an enclosed space), and less sociable (their communicative squeaks are shorter).

This work is controversial. Some have questioned the statistical robustness of Dr Mazmanian's earlier papers; others, the very notion that murine behaviour can say anything useful about a complex human condition. Overcoming that second objection means experimenting on people. And this is what Rosa Krajmalnik-Brown of Arizona State University is doing. Having found that certain microbes are consistently absent from children with autism, she and her team attempted a wholesale repopulation by emptying the guts of several autistic infants of their resident flora and inoculating faecal enemas taken from healthy contemporaries.

This study yielded intriguing results. The diversity of microbes in her patients' guts increased throughout a ten-week period of treatment. That led to positive consequences which remained in some children even two years after the treatment had finished. As might be expected, their gastrointestinal symptoms abated. But their behaviour improved, too.

Dr Krajmalnik-Brown is well aware of the limitations of this investigation. For one thing, it involved no controls, so the possibility exists that she was observing a

placebo effect. Nor were food journals kept for the children after the initial treatment had concluded, so a change in diet may have been responsible for the positive results. She hopes to correct some of these gaps in larger trials that are now under way with the aim of getting regulatory approval for the procedure as a form of treatment. She also hopes to make therapeutic microbial cocktails in the laboratory, rather than relying on natural samples.

One further matter of interest in the microbiomes at opposite ends of the alimentary canal is the extent to which they interact. Does the mouth, for instance, dictate which microbes make their way down to the gut? Or does it wield its influence only when the microbiome in the gut allows it to do so? Or is there no link at all? At the moment, these are questions without answers. But mapping the microbial connections between the canal's two ends will surely provide material for many conferences to come. ■

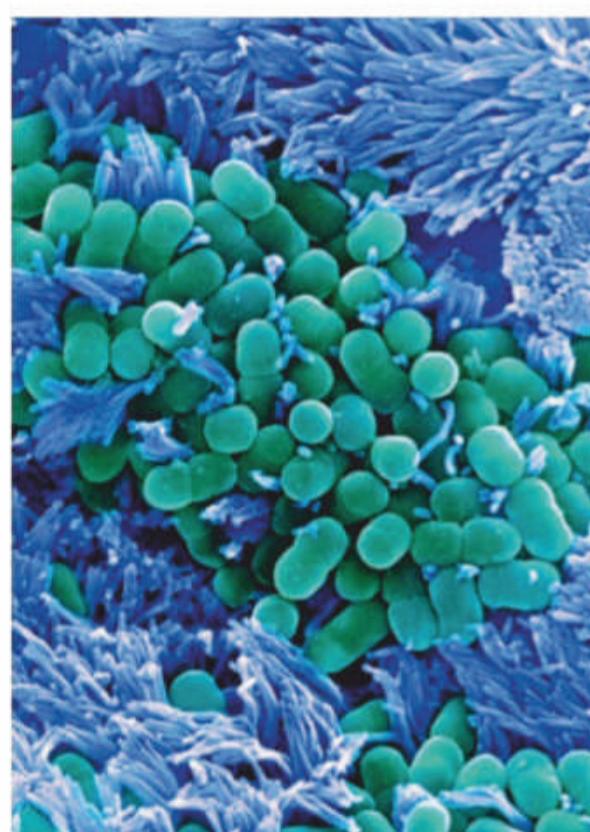
Oncology

Precisely!

Studying cancer genomes gene by gene could lead to better treatments

PRECISION MEDICINE holds that, because people are unique, so too are their diseases. It aims to prescribe treatments tailored to the genetic and biochemical characteristics of individual patients. Achieving this, in the context of oncology, is the purpose of the Cancer Dependency Map (DepMap), which is being developed jointly by the Wellcome Sanger Institute, near Cambridge, in Britain, and the Broad Institute in the city in Massachusetts of that name. Cancer is a good candidate for the application of precision medicine, because it arises when previously well-behaved cells start reproducing uncontrollably, usually as a result of a mutation in their genetic code. Numerous mutations can have this result, so many tailored treatments may be possible. DepMap seeks to find both mutations and treatments

The first step, as Jesse Boehm, who runs the Broad's side of the project, explained to this week's AAAS meeting, is to grow cancerous tissue in laboratories, where it can be studied at researchers' convenience. Before DepMap began, around 1,700 lines of lab-grown cancer cells were available. To try to increase this number, the project's scientists turned to social media. Working with American cancer charities they encouraged patients across the country to send in biopsies of their tumours. That has



Gutsy bacteria



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given them more than 2,000 new samples, from which they have been able to create more than 400 extra cell lines. Encouragingly, 30% of these represent cancers that are either rare or occur mostly in children—both groups that researchers need more examples of.

Once the cancerous cells have been persuaded to start growing in DepMap's Petri dishes, the next step is to examine them for weaknesses. So far, the teams have tested around 6,000 drugs—about half the number ever licensed for any disease—against more than 500 cancers. They have already turned up some promising candidates. Te-poxalin, an arthritis medicine for pets, appears to kill cancers in which a gene called *ABCB1* is overactive. Disulfiram, used to treat alcoholism, seems toxic to certain tumours that lack genes involved with the processing of heavy metals.

New technology means it is not only drugs which can be analysed systematically. Matthew Garnett, of the Sanger Institute, discussed using CRISPR-CAS9 to do the same for genes. CRISPR-CAS9 is a set of chemical scissors employed by bacteria to chop up and deactivate DNA introduced by viruses that prey on them. Repurposed as an all-purpose DNA-cutting device, it has become one of biology's most useful tools.

Cut to the chase

Dr Garnett described how researchers at the Sanger had used CRISPR-CAS9 to disable, one by one, nearly every gene in hundreds of cancer-cell lines. This permitted them to discover which genes are essential for a tumour's survival and might therefore make promising targets for new drugs. He gave the example of *WRN*, a gene involved in fixing damaged DNA. Cancer cells are often already deficient in DNA-repair mechanisms, and some seem reliant on *WRN* for survival. Based on those results, Dr Garnett said, drug companies are already developing drugs designed to suppress either *WRN* itself, or the protein it produces.

Deconstructing cancer cells' genomes has yielded other insights, too. Dr Boehm noted that examining the rate at which genes are expressed—that is, used to make proteins—is often more useful for predicting vulnerabilities than looking for mutations in the genetic code. This, he said, is especially true of some childhood cancers, which often exhibit few mutations.

An encouraging start, then. But there is a long way to go. Dr Boehm estimated that, despite having analysed all the genes and thousands of drugs for around 1,000 different sorts of cancer, the project remains about 90% unfinished. This may be an underestimate. As Fiona Behan, another of the Sanger's DepMap researchers, pointed out, besides examining individual genes in isolation, disabling several at once may also yield useful insights. In that case,

though, the number of possible combinations would be astronomical.

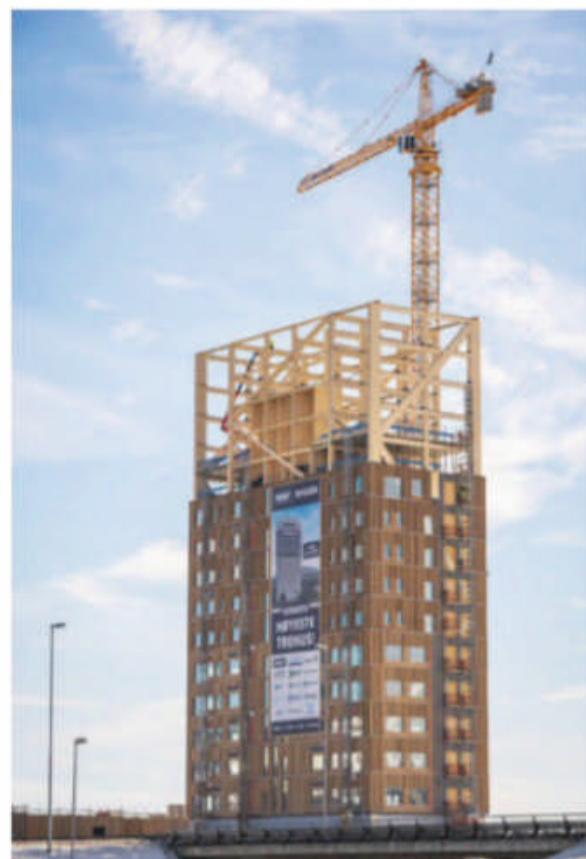
Moreover, not all results in Petri dishes bear fruit in human beings. Andrea Califano of Columbia University observed that cancer cells which have adapted to grow in laboratories often have different patterns of gene expression from those that grow in bodies. Nevertheless, as Dr Garnett told the meeting, the success rate for developing new cancer drugs is, at the moment, depressingly low. If DepMap can uncover plausible targets for developers to aim at, that may start to change. ■

Sustainable construction

Urban growth

The AAAS hears about cities made of wooden buildings

MORE THAN half the world's population dwell in cities, and by 2050 the UN expects that proportion to reach 68%. This means more homes, roads and other infrastructure. In India alone, the equivalent of a city the size of Chicago will have to be developed every year to meet demand for housing. Such a construction boom does, though, bode ill for tackling climate change, because making steel and concrete, two of the most common building materials, generates around 8% of the world's anthropogenic carbon-dioxide emissions. If cities are to expand and become greener at the same time, they will have to be made from something else.



A block of wood

As it happens, Chicago might become part of the answer. In recent years, as architects have become increasingly interested in modern timber-construction methods, wooden buildings have been getting steadily taller. The current record is held by the 85-metre-tall Mjostarnet building in Norway (see picture), completed in 2019. But this would be dwarfed by the River Beech Tower, a 228-metre edifice proposed for a site beside the Chicago river.

As the AAAS meeting heard this week, wood is one of the most promising sustainable alternatives to steel and concrete. It is not, however, everyday lumber, chipboard or plywood that is attracting the interest of architects. Rather, it is a material called engineered timber. This is a composite of different layers, each designed to meet the requirements of specific components such as floors, panels, cross-braces and beams. Besides engineering the shape of a component, designers can align the grains in the layers to provide levels of strength that rival steel, in a product that is up to 80% lighter. Engineered timber is, moreover, usually prefabricated into large sections of a building in a factory. That cuts down on the number of deliveries that have to be made to a construction site.

All this makes a big difference to carbon-dioxide emissions. Michael Ramage of the University of Cambridge told the meeting of a 300-square-metre four-storey wooden building constructed in that city. Erecting this generated 126 tonnes of CO₂. Had it been made with concrete the tally would have risen to 310 tonnes. If steel had been used, emissions would have topped 498 tonnes. Indeed, from one point of view, this building might actually be viewed as "carbon negative". When trees grow they lock carbon up in their wood—in this case the equivalent of 540 tonnes of CO₂. Preserved in Cambridge rather than recycled by beetles, fungi and bacteria, that carbon represents a long-term subtraction of CO₂ from the atmosphere.

If building with wood takes off, it does raise concern about there being enough trees to go round. But with sustainably managed forests that should not be a problem, says Dr Ramage. A family-sized apartment requires about 30 cubic metres of timber, and he estimates Europe's sustainable forests alone grow that amount every seven seconds. Nor is fire a risk, for engineered timber does not burn easily. According to a report by the Potsdam Institute for Climate Impact Research, in Germany, large structural timbers are fire resistant because their inner cores are protected by a charring layer if burnt. It is therefore hard for a fire to destroy them. And, for extra incombustibility, fireproofing layers can be added to the timber. All in all, then, it looks as if wood as a building material may get a new lease of life. ■



Scientists and aliens

Black-sky thinking

An astronomer sees evidence of life elsewhere—and takes on his fellow scientists

THE OBJECT came hurtling in from deep space, from the direction of Vega, a star 25 light-years away. It crossed the orbital plane of the solar system, within which the Earth and the other planets revolve around the sun, on September 6th 2017. Now under the influence of the sun's gravitation, the object accelerated to around 200,000 mph as it made its closest approach to the star on September 9th. Its trajectory then took it out of the solar system. A month after the object had arrived, it was well on its way back to interstellar space, moving towards the constellation of Pegasus.

As it catapulted past the sun and began to head off, no one on Earth had any idea of the object's existence. Astronomers at the Haleakala Observatory in Maui only discovered it on October 19th; it was hidden in the data collected by their network of telescopes, as a point of light that travelled too fast to be trapped by the sun's gravity. They gave it a name: 'Oumuamua.'

In the weeks after this discovery, astronomers quickly confirmed that 'Oumuamua (which loosely means "scout")

Extraterrestrial. By Avi Loeb. *Houghton Mifflin Harcourt*; 240 pages; \$27. *John Murray*; £20

in Hawaiian) was the first interstellar object recorded as having passed through the solar system. Initially it was thought most likely to have been an asteroid or a comet; but as 2017 drew to a close, the available data continued to puzzle scientists. Their analyses indicated that 'Oumuamua was small (around 400 metres long) and shiny (perhaps ten times shinier than any asteroid or comet seen before). It seemed to have an elongated, cigar-like shape, at least five to ten times longer than it was wide. (Later it was generally deemed to have been

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flatter, like a pancake, as in the impression in the picture.) Astronomers had never seen anything like it.

In addition to these physical peculiarities, 'Oumuamua had travelled along a path through the solar system that could not be explained by the gravity of the sun alone. "This, for me, was the most eye-brow-raising bit of data we accumulated over the roughly two weeks we were able to observe 'Oumuamua," writes Avi Loeb, an astronomer, in "Extraterrestrial", his account of the interstellar visitation. "This anomaly about 'Oumuamua...would soon lead me to form a hypothesis about the object that put me at odds with most of the scientific establishment."

For, after studying the available evidence, Mr Loeb concluded that the simplest explanation for the exotic strangeness of 'Oumuamua was that it had been created by an intelligent civilisation beyond Earth.

More things in heaven and Earth

By definition, scientists are meant to follow wherever the evidence leads them. Personal biases and prejudices can cloud the judgments of those seeking to understand the rules of nature—but the methods of modern scientific research, developed over hundreds of years and keenly honed in the past century, seek to reduce the impact of subjective human factors that could otherwise impede progress.

Observations and data are the material

on which scientists build their hypotheses. Those hypotheses are then ritually torn apart by other scientists and—if they can withstand sustained critiques and are not contradicted by further evidence from the real world—they might lay claim to being true. In science, changing your mind in the light of fresh information is seen as a good thing. If a new conjecture gathers supporting evidence and eventually supplants years of previous thinking on a topic, scientists are duty-bound to abandon the defunct ideas and embrace the new ones. The more radically an idea diverges from the mainstream, however, the greater the scrutiny it will inevitably face. Carl Sagan, an American astronomer, once summed this up: “Extraordinary claims require extraordinary evidence.”

That is the theory, at least. But like any profession, the path of scientific research can be influenced (both positively and negatively) by fashions and personalities, which can also determine who receives funding and which ideas get heard. Take the search for extraterrestrial intelligence, commonly known as SETI. Since the 1960s astronomers have been listening to the skies for any signs of radio signals sent out by technologically capable life beyond Earth. For most of its existence, though, SETI has been marginalised, dismissed as a lesser use of time and resources than the more prestigious study of black holes, subatomic particles, stars, galaxies and other “real” physics. The steadfastly radio-silent skies have not burnished SETI’s image as a discipline to be taken seriously.

Mr Loeb says he has always found the hostility to SETI bizarre. Modern mainstream theoretical physicists, he points out, accept the study of spatial dimensions beyond the three (length, breadth and depth) with which people are familiar. Experimental evidence for these dimensions, however, does not exist. Similarly, many leading cosmologists think that this universe is one among an infinite number of others that exist together in a “multiverse”. But, again, experimental evidence for that proposition does not exist. String theory, the putative “theory of everything” that is meant to bind together the physics of the cosmos with that of subatomic particles, is considered scientific even though there is no direct evidence to prove it is real.

E.T. go home

Compared with these abstract theories, the notion that there could be life elsewhere in the universe, when it is known to exist on Earth, should not seem so radical a subject of study. Mr Loeb thinks resistance to it comes from two sources. First, the “laughable” popular narratives in which aliens lay waste to Earth’s cities and possess superhuman wisdom. He is no fan of science fiction that ignores the laws of physics.



Loeb's visions

But the more important reason, he says, is a conservatism within science, which is sustained by the desire of individual scientists to keep risk low and funding high:

By limiting interpretations or placing blinders on our telescopes, we risk missing discoveries...The scientific community's prejudice or closed-mindedness—however you want to describe it—is particularly pervasive and powerful when it comes to the search for alien life, especially intelligent life. Many researchers refuse to even consider the possibility that a bizarre object or phenomenon might be evidence of an advanced civilisation.

The fact that accusations of conservatism in mainstream science are being levelled by an astronomer situated at the very heart of the scientific establishment may seem ironic. Mr Loeb has, after all, spent most of his career at prestigious American institutions, including a recent spell as the head of the astronomy department at Harvard University. He is also chairman of the board on physics and astronomy of the US National Academies.

His prominent status in astronomy circles has ensured that Mr Loeb's radical hypothesis has attracted widespread attention. All the same, and as he reports in his book, it would be “putting the matter mildly” to say that his idea has been met with disapproval by his scientific colleagues. Writing in *Nature Astronomy* in July 2019, a research team assembled by the International Space Science Institute concluded that it had found “no compelling evidence to favour an alien explanation for ‘Oumuamua’”. It dismissed Mr Loeb's theory as one not based on fact.

This is not his first brush with scientific celebrity. In 2016 he was the astrophysical brain behind Breakthrough Starshot, a \$100m project funded by Yuri Milner, a Russian tech billionaire, the goal of which

is to dispatch a fleet of tiny probes called Starchips to Alpha Centauri, the nearest star to the sun. They are to be equipped with cameras able to relay any signs of life they might find back to Earth. Mr Loeb worked out that it might be possible to accelerate a Starchip to around 20% of the speed of light if it were fitted with an ultra-thin sail and a 100-gigawatt laser were directed towards it for a few minutes. So launched, the Starchips would in theory make the 4.4-light-year journey to Alpha Centauri in between 20 and 30 years.

The Breakthrough Starshot project was announced a year before the discovery of ‘Oumuamua. The hunt for life elsewhere may well have been on Mr Loeb's mind when he was contemplating the object's most intriguing anomaly: the weird way it had moved past the sun.

In June 2018 scientists reported that ‘Oumuamua's trajectory had deviated slightly from the one it might have been expected to follow if it had been determined purely by the sun's gravitational attraction. As it passed the sun the object was pushed away by an unexplained force. Comets sometimes behave like this when they get close to the sun, but in their case the force is easy to explain: a tail of dust and gas is ejected from the ball of ice as it is heated by the sun, which gives the object a rocket-like push. Yet no such tail was detected near ‘Oumuamua.

Sailing close to the sun

Mr Loeb had another hypothesis: perhaps sunlight was bouncing off the object's surface like the wind off a thin sail. A thin, sturdy, light sail, of the sort that he had himself proposed for the Breakthrough Starshot project, would be technically feasible for a more advanced civilisation. In any case, such a sail could not occur naturally; it would have to be engineered by intelligent beings.

He may or may not be right about ‘Oumuamua. But that hardly seems to make much difference to what is ultimately the main thesis of his book. Conservatism may not be unique to astrophysics, he argues, but it is “depressing and concerning” given the huge number of anomalies still perceived in the universe. Mr Loeb is surely correct that scientists studying the vastness of the cosmos should entertain risky ideas more often, for the universe is undoubtedly more wild and unexpected than any extremes conjured by the human imagination. “Extraterrestrial” considers the possibility of intelligent life elsewhere, but its core message, an update to Sagan's maxim, is aimed squarely at life on Earth: “Extraordinary conservatism keeps us extraordinarily ignorant.” ■

To read a profile of Avi Loeb in *1843 magazine*, go to economist.com/1843/aliens

Robert Maxwell

A made-up life

Fall. By John Preston. *HarperCollins*; 352 pages; \$28.99. *Viking*; £18.99

UNUSUALLY FOR him, Robert Maxwell arrived alone on November 1st 1991 to board his superyacht, the *Lady Ghislaine*, in Gibraltar for an impromptu cruise. Even more unusually, he seemed to be in a good mood, despite the pressure he was under as he feverishly shuffled assets in a vain bid to stave off the collapse of his media empire. Four days later, a Spanish rescue helicopter was winching his bloated body from the sea off Gran Canaria, using a sling meant to save cattle from floods because he was too heavy for an ordinary harness. Even in death, Maxwell was larger than life.

A botched first autopsy fed speculation about how the publishing tycoon had died. Had he simply fallen into the water, or was it suicide? Could he have been bumped off? When it emerged a few weeks later that £350m (then \$603m) was missing from the pension fund of one of his two main companies, Mirror Group Newspapers, and tens of millions more from the other, Maxwell Communication Corporation, both the dire state of his wildly over-leveraged businesses and his criminal attempts to hold on to them were revealed. Had he lived, the 68-year-old would have wound up in a prison cell.

There have been many biographies of Maxwell, but the story of this monstrous, enigmatic, bullying, narcissistic crook of gigantic appetites, who at his peak was one

of the most recognisable businessmen in the world, may well be largely unknown to anyone under 40. John Preston tells it with great verve and the benefit of extensive interviews with, among others, Maxwell's one-time rival Rupert Murdoch, who says he always regarded him as "an absolute fraud and a charlatan", and three of Maxwell's children—though not Ghislaine, his youngest, who is in jail in New York awaiting trial on charges linked to her relationship with the sexual abuser Jeffrey Epstein.

Maxwell was born in 1923 to a Jewish family in Solotvino, a salt-mining town in what was then Czechoslovakia, where anti-Semitism was institutionalised. Ludvik Hoch, as he was originally called, grew up in desperate poverty with a brutal father. Narrowly escaping death after joining the anti-Nazi resistance, he somehow ended the second world war as a notably ruthless young British officer with a talent for languages, a Military Cross pinned to his chest by Field-Marshal Montgomery, and a new name. With his energy, complete absence of scruple and eye for the main chance—all his subsequent success was based on his insight that, after the war, there would be huge demand across Europe for scientific publishing, which his company, Pergamon, could supply—he realised he could make serious money.

Mr Preston zips through Maxwell's business and political journey (he was briefly a Labour MP who drove the House of Commons mad with his refusal ever to shut up). His resilience was extraordinary. He powered on despite losing half a lung to cancer, the death of two children and, in 1971, being deemed not fit "to exercise proper stewardship of a publicly quoted company" in a government report.

The portrait that emerges is more subtly drawn than previous ones. For all his bombast, chicanery and revolting personal habits, and his vile treatment of pretty much everyone who was beholden to him, not least his family, it is hard not to feel a stab of pity for Maxwell as the end draws near. He seems always to have been running away from his terrible childhood, assuming new identities as he went. He abandoned Judaism until late in life, yet was haunted by awful guilt for not having been able to save family members from the death camps. He was incapable of personal friendship (perhaps the only exception was the man who used to dye his hair and eyebrows). Ceaseless activity masked his essential loneliness.

Maxwell left a trail of wreckage: this reviewer's father was one of the Mirror Group pensioners he stole from. But was he any worse than the cynical lawyers, bankers, politicians—and some journalists—who fawned on, flattered and abetted a man long nicknamed the "Bouncing Czech"? Peter Jay, a former economics editor of the

Times and British ambassador in Washington, who spent three miserable years as Maxwell's "chief of staff", has perhaps the book's best insight: "There was something not so much amoral about him, as pre-moral. It was as if he was literally uncivilised, like some great woolly mammoth stalking through a primeval forest wholly unaware of things like good and evil."

And the mystery of his death? Mr Preston does not rule out suicide, but his family think it more likely that he fell while peeing over the side of the boat in the small hours, as he was wont to do. ■

Caste and gender in India

Death traps

The Good Girls. By Sonia Faleiro. *Grove*; 352 pages; \$26. *Bloomsbury Circus*; £16.99

AT THE END of May 2014 a photograph went viral on Twitter. It showed two girls hanged on a tree in Uttar Pradesh, in India. Their relatives were refusing to hand over the bodies to the state authorities, who they believed would never deliver justice for Padma and Lalli, inseparable cousins aged 16 and 14.

Like millions of others, Sonia Faleiro was horrified two years earlier by a gang rape on a bus in Delhi, where she grew up. That crime triggered protests and, ultimately, changes in policy. She set out to investigate what rapidly became the country's most high-profile case since then.

The outrage in Delhi showed that, in India, "the wheels of justice move only under pressure from the powerful". Violent crime was unremarkable; Uttar Pradesh, India's "murder capital" and most populous state, recorded 12,361 abduction and kidnap incidents in 2014. But the low-caste Shakya family would not let their loss be dismissed by police whom they saw as inept and corrupt, and who were dominated by the Yadav caste then running the state government. The family eventually filed official allegations against three local brothers and two policemen. Amid the furore, all five were taken into custody.

International coverage followed the domestic kind. Television crews swarmed into the girls' village of Katra Sadatganj; politicians' helicopters landed among its tobacco and mint crops. Narendra Modi was sworn in as prime minister two days before the girls were found, but the "good days" that he promised seemed remote in a place where most households lacked running water and electricity. *Forbes* magazine's



Paper tiger

► latest global power list included several Indian women; meanwhile, two girls hung like “dangling puppets” in fields that were their only toilet. The gulf between India, nascent superpower, and its rural population—two-thirds of the total—was glaring.

After police bungling and a botched post-mortem, the Central Bureau of Investigation took over the case. They found no proof of rape. The family’s eyewitness accounts—describing four Yadav men snatching the girls—were contradictory. Ms Faleiro, previously the author of an acclaimed book about Mumbai’s dance bars,

asks probing questions. Why had Lalli’s father bought a phone for Padma that auto-recorded calls? Where was his own phone, which held evidence of a conversation between Lalli and a local youth who now stood accused of rape and murder? Why were the girls’ bodies unmarked?

The truth that emerges underscores “the powerlessness of the poor” and the stranglehold of the caste system and honour codes. If the Delhi case highlighted the dangers of public spaces, the hangings showed that “an Indian woman’s first challenge was surviving her own home”. Asked

how he might have defended the girls’ tainted reputations, Lalli’s father replied, “We would have killed them.” Mr Modi emphasised women’s safety, yet took a fortnight to acknowledge the girls’ deaths.

Ms Faleiro’s pithy, cliffhanging chapters fuse true crime with big-picture analysis, blending data with interviews and detail. The result is a sobering portrait of a country where progress has been undermined by inequality, short-termist politics and Mr Modi’s divisive Hindu nationalism. It is a powerful indictment of a society failing its most vulnerable members. ■

Johnson At a loss for words

English lacks many useful expressions. Here are some it could borrow

IMAGINE A FRIEND is heading out to face a difficult task. As a last word of encouragement before they disappear, you want to buck them up. What might you say? If you are speaking English, the likeliest choice is “good luck”.

If you stop to think about it, that is a little odd. Though you might indeed hope luck smiles on your friend, neither they nor you can do much about the tumbling dice. What you really want to wish them is fortitude, not fortune. Which is why the French, in this situation, say “bon courage”, not “good luck”. A French expression for “good luck” (*bonne chance*) exists, too, but you are more likely to wish that to someone who needs luck specifically—perhaps heading to the racetrack rather than a tough appointment.

Mark Liberman, a linguist at the University of Pennsylvania, noted recently on the Language Log blog that English does not allow you to pair any old adjective with any old noun in a fixed expression. You may wish someone “good morning”, “good afternoon” or “good night”, but not “good weekend”. You can say that phrase if you like, but your neighbour would look at you quizzically if you lob it over the fence on a Friday evening. In other languages it is perfectly conventional.

Special occasions are another way in which pleasantries differ. English-speakers wish each other a happy birthday, but speakers of many other languages say “congratulations”, as if (to the English ear) the birthday girl had done something impressive merely by surviving another year. The Dutch also say “gefeliciteerd” to members of the family, including the one who really deserves congratulating: the mother. This is close to obligatory, whereas it would constitu-

te a strange (if charming) surprise in English. Dutch-speakers miss the habit when living among Anglophones.

It is natural to be critical of languages that lack expressions you consider indispensable. For instance, the Scandinavian languages lack a word for “please”, one of the first taught in other tongues because it softens what otherwise might be a brusque-sounding request from a novice speaker. But Scandinavians are not rude: they achieve the same end through other, longer formulations, from “May I ask for?” in public to tacking on “so you are sweet” in a request to an intimate. Meanwhile, Scandinavians must wonder why Anglophones do not wish each other something like the Swedish “tack för senast” when they see a friend again (meaning “thank you for the previous time we saw each other”). It is odd, even rude, to omit this, and having no English equivalent is vexing for those who are used to it.

It is tempting to draw deep cultural conclusions from the presence of this or the absence of that in a language. But impressions can be misleading. The Ital-

ians wish each other “buon lavoro”—basically “have a good workday”—though their culture is not known to be especially work-focused. And German has the delightful “Feierabend!”, used to wish someone well as they leave work, though Germans are not known for a love of knocking off and relaxing. To conform with stereotypes, at least, the two languages should swap those expressions.

Yet some idioms really do say something about a culture. The expansiveness of Japanese’s “sumimasen” reveals a lot about Japan: though usually translated as “sorry” or “excuse me”, it is used in a much broader range of situations than those corollaries. A detailed online guide to Japanese culture recommends it as the single word of Japanese to know if you learn just one. The Japanese might say it when someone holds a door for them, or even for interrupting someone’s journey in the lift by getting on at an intermediate floor. They are not cravenly apologetic, but their society values displays of respect for others. They must wonder why no single English word has the suppleness and coverage of *sumimasen*.

But not having a word for something doesn’t mean you can’t coin one—or borrow it. The English say *bon voyage* and *bon appétit*, and there’s no reason to stop there. When in-person work begins again, try a “buon lavoro” as your better half heads off, or a “Feierabend!” as a colleague leaves for home. When you see a friend, thank them like a Swede for the previous time you saw them, and if you break up someone’s descent in a lift, try a friendly “Sorry about that!” Congratulate your mother-in-law on your spouse’s birthday, and prepare for a delighted smile back. It may seem awkward or tricky at first, but you can make it stick if you try. *Bon courage*.



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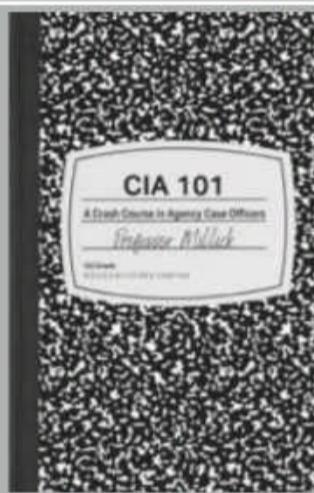
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Economic data

	Gross domestic product			Consumer prices		Unemployment rate		Current-account balance		Budget balance		Interest rates		Currency units	
	% change on year ago latest	quarter*	2020†	% change on year ago latest	2020†	%		% of GDP, 2020†		% of GDP, 2020†		10-yr gov't bonds latest,%	change on year ago, bp	per \$ Feb 10th	% change on year ago
United States	-2.5	Q4	4.0	-3.6	1.4	Jan	1.2	6.3	Jan	-2.2	-14.9	1.1	-41.0	-	
China	6.5	Q4	10.8	1.9	-0.3	Jan	2.5	5.2	Dec‡§	1.5	-5.2	3.1 §§	51.0	6.44	8.4
Japan	-5.7	Q3	22.9	-5.3	-1.2	Dec	nil	2.9	Dec	2.7	-12.2	nil	-8.0	105	4.8
Britain	-8.6	Q3	81.1	-11.4	0.6	Dec	0.9	5.0	Oct††	-1.3	-19.7	0.5	-11.0	0.72	6.9
Canada	-5.2	Q3	40.5	-5.3	0.7	Dec	0.8	9.4	Jan	-2.1	-13.5	1.0	-32.0	1.27	4.7
Euro area	-5.1	Q4	-2.8	-7.6	0.9	Jan	0.3	8.3	Dec	2.6	-9.2	-0.5	-4.0	0.82	12.2
Austria	-4.0	Q3	54.6	-6.9	1.2	Dec	1.1	5.8	Dec	2.4	-8.5	-0.3	-1.0	0.82	12.2
Belgium	-4.7	Q4	0.8	-6.2	0.3	Jan	0.4	5.8	Dec	-1.1	-9.4	-0.2	-8.0	0.82	12.2
France	-5.0	Q4	-5.3	-8.3	0.6	Jan	0.5	8.9	Dec	-2.3	-10.9	-0.2	-9.0	0.82	12.2
Germany	-3.9	Q4	0.4	-5.4	1.0	Jan	0.4	4.6	Dec	6.8	-7.0	-0.5	-4.0	0.82	12.2
Greece	-9.6	Q3	9.5	-9.9	-2.3	Dec	-1.3	16.7	Oct	-6.6	-9.2	0.8	-25.0	0.82	12.2
Italy	-6.6	Q4	-7.7	-9.1	0.2	Jan	-0.1	9.0	Dec	2.9	-11.3	0.5	-46.0	0.82	12.2
Netherlands	-2.5	Q3	34.8	-4.4	1.0	Dec	1.1	3.9	Dec	7.2	-6.9	-0.5	-18.0	0.82	12.2
Spain	-9.1	Q4	1.6	-11.4	0.5	Jan	-0.3	16.2	Dec	0.8	-12.0	0.2	-14.0	0.82	12.2
Czech Republic	-5.3	Q3	1.2	-6.6	2.3	Dec	3.1	3.2	Dec‡	1.3	-6.7	1.5	-5.0	21.3	7.8
Denmark	-3.8	Q3	22.6	-4.0	0.6	Jan	0.4	4.4	Dec	8.5	-3.6	-0.3	4.0	6.13	11.6
Norway	-0.2	Q3	19.7	-1.7	2.5	Jan	1.4	5.0	Nov‡‡	3.2	-1.3	1.2	-19.0	8.44	9.9
Poland	-1.8	Q3	35.5	-2.8	2.4	Dec	3.4	6.2	Dec§	3.6	-7.9	1.3	-79.0	3.70	5.7
Russia	-3.4	Q3	na	-3.1	5.2	Jan	3.4	5.9	Dec§	2.0	-3.8	6.6	38.0	73.9	-13.2
Sweden	-2.6	Q4	2.0	-3.2	0.5	Dec	0.4	8.2	Dec§	4.8	-3.5	0.2	14.0	8.32	16.2
Switzerland	-1.6	Q3	31.9	-3.0	-0.8	Dec	-0.7	3.5	Jan	9.1	-3.7	-0.3	32.0	0.89	10.1
Turkey	6.7	Q3	na	0.4	15.0	Jan	12.3	12.9	Nov§	-5.4	-3.4	12.5	170	7.05	-14.8
Australia	-3.8	Q3	14.0	-2.9	0.9	Q4	0.9	6.6	Dec	1.2	-7.3	1.2	17.0	1.29	16.3
Hong Kong	-3.0	Q4	11.8	-5.8	-0.6	Dec	0.3	6.6	Dec‡‡	6.2	-7.6	1.1	-40.0	7.75	0.3
India	-7.5	Q3	125	-7.9	4.6	Dec	6.6	6.5	Jan	1.3	-7.2	6.0	-43.0	72.8	-2.1
Indonesia	-2.2	Q4	na	-2.2	1.6	Jan	2.0	7.1	Q3§	-1.6	-7.2	6.2	-39.0	13,983	-2.1
Malaysia	-2.7	Q3	na	-5.3	-1.4	Dec	-1.1	4.8	Dec§	4.8	-7.4	2.8	-22.0	4.04	2.7
Pakistan	0.5	2020**	na	-2.8	5.7	Jan	9.5	5.8	2018	0.1	-8.1	10.0 †††	-133	159	-2.9
Philippines	-8.3	Q4	24.4	-9.3	4.2	Jan	2.6	8.7	Q4§	3.4	-7.8	3.1	-130	48.0	5.7
Singapore	-3.8	Q4	8.7	-5.8	nil	Dec	-0.2	3.2	Q4	18.2	-13.9	1.1	-66.0	1.33	4.5
South Korea	-1.3	Q4	4.4	-1.0	0.6	Jan	0.5	5.7	Jan§	3.8	-5.7	1.8	22.0	1,107	7.2
Taiwan	4.9	Q4	7.8	2.4	-0.2	Jan	-0.2	3.8	Dec	13.8	-1.5	0.3	-25.0	28.0	7.4
Thailand	-6.4	Q3	28.8	-6.1	-0.3	Jan	-0.8	1.5	Dec§	3.7	-6.4	1.3	23.0	29.9	4.6
Argentina	-10.2	Q3	61.7	-9.7	36.1	Dec‡	42.0	11.7	Q3§	0.6	-8.6	na	-464	88.3	-31.0
Brazil	-3.9	Q3	34.6	-4.4	4.6	Jan	3.2	14.1	Nov§‡‡	-0.7	-15.8	7.8	122	5.38	-19.9
Chile	-9.1	Q3	22.6	-6.2	3.1	Jan	3.0	10.3	Dec§‡‡	1.4	-7.9	2.6	-80.0	726	9.6
Colombia	-9.5	Q3	39.6	-7.0	1.6	Jan	2.5	13.4	Dec§	-3.6	-8.8	4.9	-72.0	3,558	-3.2
Mexico	-4.5	Q4	13.0	-8.9	3.5	Jan	3.4	4.4	Dec	2.3	-4.5	5.3	-133	20.0	-6.3
Peru	-9.4	Q3	187	-12.0	2.7	Jan	1.8	11.8	Dec§	1.0	-8.0	3.8	-10.0	3.64	-6.6
Egypt	0.7	Q3	na	3.6	4.4	Jan	5.1	7.3	Q3§	-3.6	-8.5	na	nil	15.7	0.5
Israel	-1.5	Q3	39.7	-3.6	-0.7	Dec	-0.6	4.8	Dec	3.9	-11.8	0.9	4.0	3.26	4.9
Saudi Arabia	-4.1	2020	na	-4.2	5.4	Dec	3.4	8.5	Q3	-3.7	-10.6	na	nil	3.75	nil
South Africa	-6.0	Q3	66.1	-7.3	3.1	Dec	3.3	30.8	Q3§	0.6	-16.0	8.6	-34.0	14.7	2.2

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. †††3-month moving average. §§5-year yield. †††Dollar-denominated bonds.

Markets

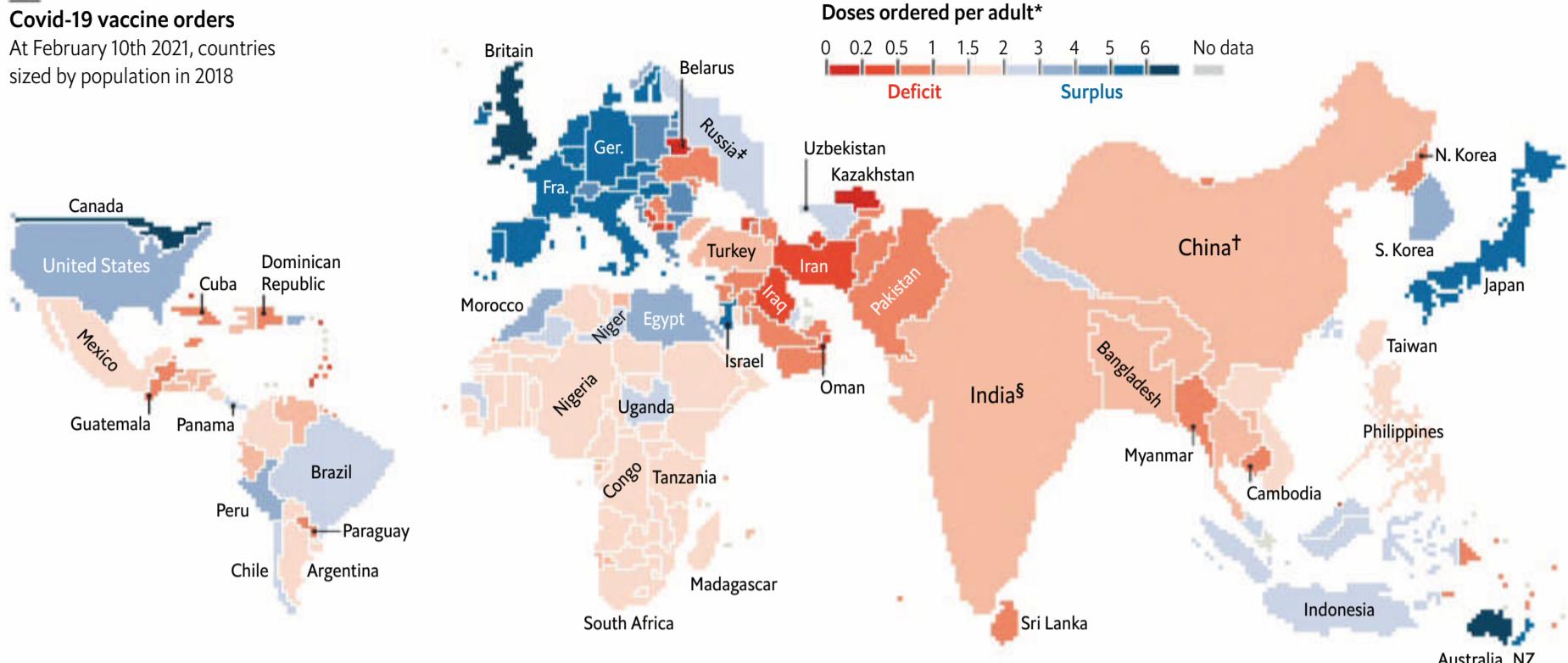
In local currency	% change on:			index	% change on:		
	Feb 10th	one week	Dec 31st 2019		Feb 10th	one week	Dec 31st 2019
United States S&P 500	3,909.9	2.1	21.0	Pakistan KSE	46,644.3	-0.6	14.5
United States NAScomp	13,972.5	2.7	55.7	Singapore STI	2,925.8	-0.1	-9.2
China Shanghai Comp	3,655.1	3.9	19.8	South Korea KOSPI	3,100.6	-0.9	41.1
China Shenzhen Comp	2,460.5	3.3	42.8	Taiwan TWI	15,802.4	0.2	31.7
Japan Nikkei 225	29,562.9	3.2	25.0	Thailand SET	1,516.9	2.4	-4.0
Japan Topix	1,930.8	3.2	12.2	Argentina MERV	51,940.9	4.2	24.6
Britain FTSE 100	6,524.4	0.3	-13.5	Brazil BVSP	118,435.3	-1.1	2.4
Canada S&P TSX	18,457.8	3.0	8.2	Mexico IPC	44,718.2	1.7	2.7
Euro area EURO STOXX 50	3,648.4	1.1	-2.6	Egypt EGX 30	11,545.0	-0.6	-17.3
France CAC 40	5,670.8	1.9	-5.1	Israel TA-125	1,681.3	1.6	4.0
Germany DAX*	13,933.0	nil	5.2	Saudi Arabia Tadawul	8,901.6	4.2	6.1
Italy FTSE/MIB	23,264.7	3.3	-1.0	South Africa JSE AS	66,150.8	5.0	15.9
Netherlands AEX	657.2	0.4	8.7	World, dev'd MSCI	2,800.7	2.3	18.8
Spain IBEX 35	8,065.4	0.7	-15.5	Emerging markets MSCI	1,422.9	2.2	27.7
Poland WIG	56,752.4	-0.3	-1.9	US corporate bonds, spread over Treasuries			

Graphic detail Covid-19 vaccines

→ Rich countries have ordered more vaccines than they need. Poorer ones with relatively old populations face dire shortages

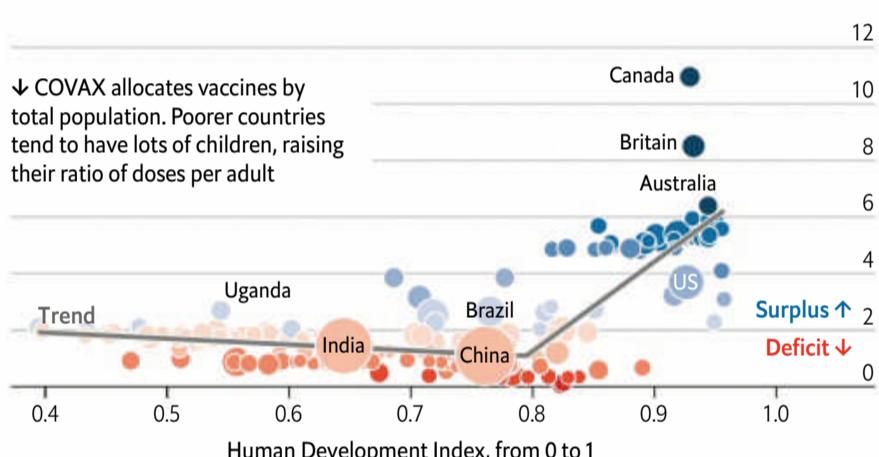
Covid-19 vaccine orders

At February 10th 2021, countries sized by population in 2018

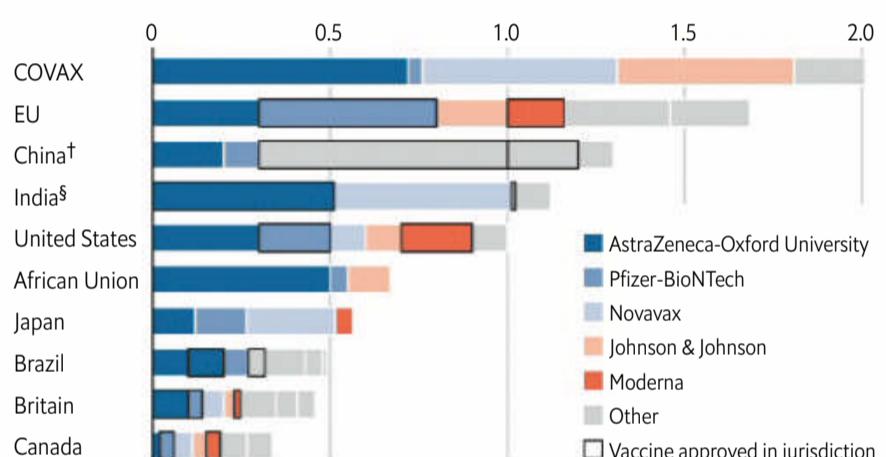


Human development v doses ordered per adult*, 2020, size=adult population

↓ COVAX allocates vaccines by total population. Poorer countries tend to have lots of children, raising their ratio of doses per adult



Total doses ordered, selected purchasers, bn



Johnson & Johnson) should get the green light soon. Two vaccines from China and a promising Russian one have also been authorised in some countries.

The makers of these eight vaccines have signed contracts to deliver 7.9bn doses this year, and say they have capacity to fulfil orders for 4.3bn more. Of these, only a small fraction have already been produced, and manufacturing delays are likely. Moreover, even after jabs leave the factory, getting them into people's arms can take months. Nonetheless, at least in theory, vaccine makers should be able to produce 2.1 shots—more than a full regimen—for each of the world's 5.8bn adults by the end of 2021. (Children are not yet eligible, pending research on safety and efficacy.)

Yet even if all goes according to plan, much of the world will suffer a longer wait, because jabs will be distributed unequally. The 54 richest countries account for 18% of adults on Earth, but 40% of vaccine orders—enough to give each of their adults 2.5 two-dose regimens. Even though the EU has contracted for more vaccines than it

can use, some member states, like Germany, have made their own deals. Canada has ordered a whopping 11 doses per adult.

Elsewhere, expected supply is tighter, at 1.5 doses ordered per adult. Russia and China can probably make do with their domestic jabs. And the Serum Institute, the world's biggest vaccine maker, plans to save half of its output for local use in India.

Many other countries are relying on COVAX, a global coalition to distribute covid-19 vaccines. It is expected to provide at least 1.8bn doses to 92 poor and middle-income countries this year, in proportion to their populations (though subsequent allocations will depend on where the pandemic is most severe). Weighting by total population favours countries with lots of children, who count when determining vaccine quantities but are unlikely to get the shots. For example, Niger, where 50% of people are aged under 15, will receive 2.1 doses for every adult from COVAX. In contrast, North Korea, whose adults make up 80% of the population, will get just 0.7 doses for each one.



Seer of the Anthropocene

Paul Crutzen, atmospheric chemist, died on January 28th, aged 87

IT WAS UNPREMEDITATED, Paul Crutzen told people afterwards, something sudden and unbidden. At the same time, it had been building up for decades. It may well resonate for centuries.

The year was 2000, and he was in Cuernavaca at a scientific meeting devoted to understanding the way that the Earth operates as a system. In one session the word "Holocene" was used again and again. An unfamiliar word to many outside science, an unexceptionable one to those within: a simple and value-free way of referring to the little sliver of geological time that began in the last throes of the most recent ice age, 11,700 years ago. But he found himself increasingly irritated by hearing the term used to encompass both the world of today and the world of the first farmers, a world of a few million people and of a few billion, a world of fires in hearths and a world of oilfields. He could not accept the view that humans just happened to occupy their period in the same way that dinosaurs happened to occupy the Jurassic and trilobites the Ordovician. And so he interrupted. "Stop saying the Holocene! We're not in the Holocene any more." Hubbub; surprise: "So where are we then, Paul?", his colleagues asked. "When are we?" He cast around, hesitated, then decided: "The Anthropocene".

The idea that humans act as a force of nature, and that the extent of that action meant the Earth had crossed a threshold into a new mode of being, was not new. But his outburst gave it wings. Partly it was a matter of timing: the full import of climate change and the lack of much success at curbing it, despite decades of effort, were beginning to sink into scientists' minds. Partly it was that "the messenger was the message". No one had done more to understand the ways that humans were changing, and could change, the nature of their planet than Paul Crutzen had.

His parents were poor. His primary-school years were spent in an Amsterdam occupied by German forces; some classmates died in the *hongerwinter* of 1944-45. His high-school exam results were

depressed by an ill-timed bout of fever, meaning he could not get a scholarship to university. Not wanting to burden his parents with fees, he went to technical school to train as a civil engineer. In the late 1950s, having married a Finnish woman he met on holiday in Switzerland, he gave up the engineering of bridges in Amsterdam for that of houses in Sweden, closer to her family.

It was there that in 1958 that he saw a computer-programming job at Stockholm University's Department of Meteorology advertised in the paper. He had no experience in programming; but then, nor did many people at the time. He got the job, took courses on the side and, in the 1960s, started out on a research career. Many of his colleagues were looking at the impact of humans on the environment, but he wanted to do pure science. So he turned to the chemistry of the stratosphere.

The problem which caught his attention was that the chemical reactions thought to destroy the ozone in the stratosphere were much slower than the sunlight-driven reactions known to create it. There thus had to be another "sink". He found it in nitrogen oxides; even in the tiny amount nature provides at the top of the atmosphere, they could catalyse ozone destruction efficiently enough to do the job. It was an elegant, brilliant idea. It was also, for a man who had started out not wanting to look at human impacts, a startlingly inopportune one.

At the time he was doing this work there was a heated debate in America over the advisability of building supersonic airliners to ply the stratosphere—the engines of which, he and others realised, could produce nitrogen oxides in ozone-layer-crashing profusion. Soon afterwards the ozone-destroying effect of nitrogen oxides produced in fireballs the size of cities was raised as a long-term consequence of nuclear war. A year later Sherry Rowland and Mario Molina showed that chlorine from CFCs, industrial chemicals used in refrigerants and aerosols, might act in the same way as nitrogen oxides, eating up ozone with terrible abandon. That finding launched a decade-long struggle to outlaw the production of CFCs—a goal written into international law in the Montreal protocol of 1987. He, Molina and Rowland shared a Nobel prize for their work in 1995.

His role in these debates provided him with an education in politics to match his earlier ones in engineering and atmospheric science. Again, he proved an adept student. When, in the mid-1970s, his friend Stephen Schneider suggested that climate scientists should brief politicians and the public systematically about the findings which were beginning to worry them, he agreed, but said it would be slow work. He and Schneider did not get their wish until the late 1980s, when the Intergovernmental Panel on Climate Change was set up: an innovation built on the success of the Montreal protocol.

For decades he studied and catalogued the ways that humans were making changes on the level that had caused his outburst in Cuernavaca. His research covered swathes of atmospheric chemistry, notably that which occurs in the huge smoky, smoggy clouds created by forest fires and unchecked industry. In the course of that work he wrote the first influential paper on the blacked-out sky, failed harvests and mass starvation of the *hongerwinter* writ large that would follow nuclear war. He was deeply committed to averting such human and ecological catastrophe. When in 1995, while running the Max Planck Institute in Mainz, he heard of his Nobel prize, he celebrated with *sekt* rather than champagne: not because of his modest, Dutch, cycling-to-work frugality, but because of France's blinkered position on nuclear testing.

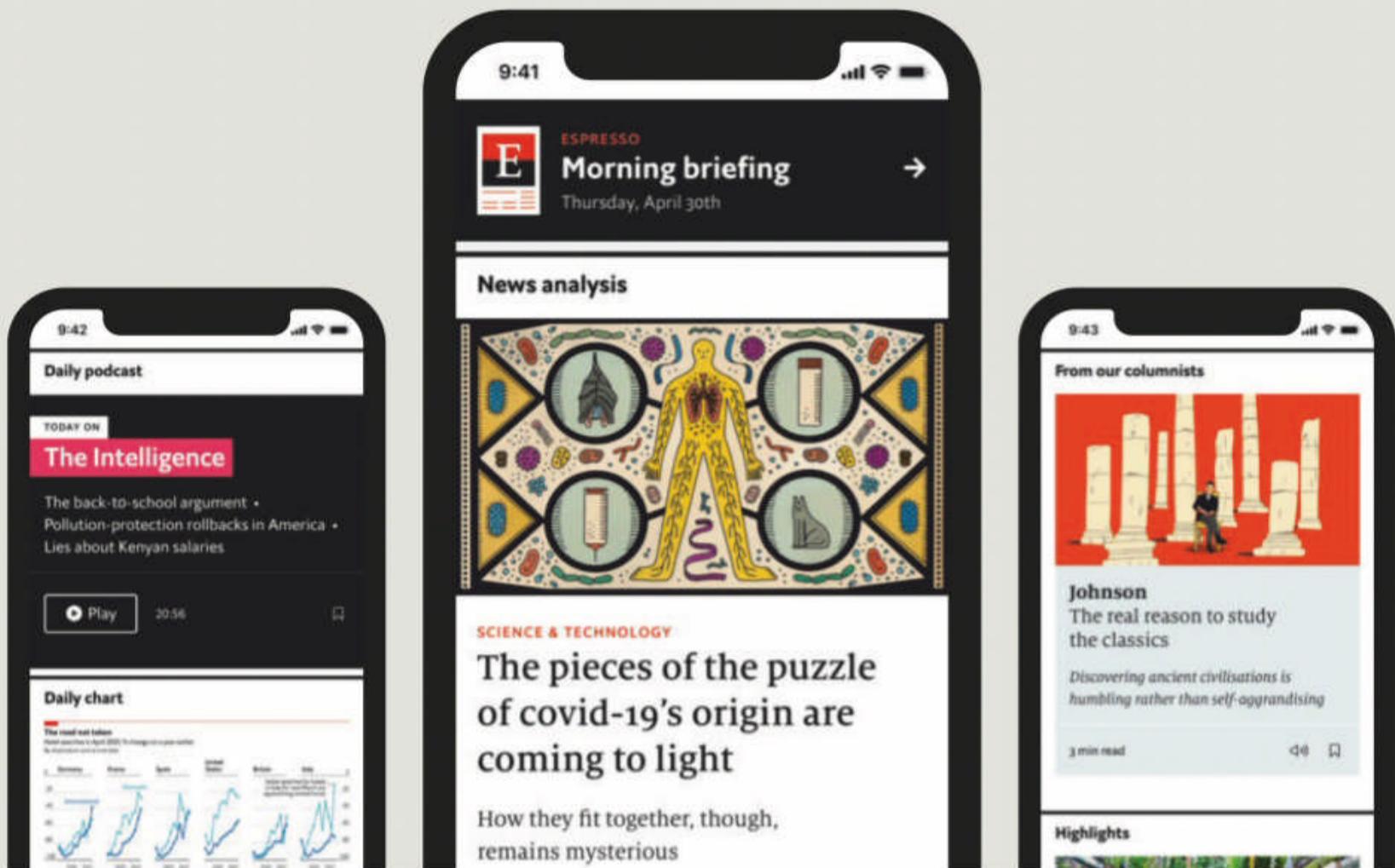
If, as seems quite likely, the International Commission on Stratigraphy eventually extends formal recognition to the idea of the Anthropocene, the fallout from such testing, now settled into sea-floor sediments, may well be chosen as the geological formation that marks its base. And it also seems likely that, for as long as that epoch lasts, those who study it will be following the lead of Paul Crutzen. ■



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