

**Saudi Arabia detentions: Living inside 'five-star prison'**



Riyadh's palatial Ritz-Carlton hotel, branded as "a retreat for those who simply desire the royal treatment", now finds itself transformed into a nerve centre for an audacious manoeuvre by an ambitious crown prince. It's not the treatment more than 200 of Saudi Arabia's richest and most powerful ever expected, and certainly never desired, when 32-year old Mohammed Bin Salman launched what was billed as an unprecedented drive against corruption and abuse of power and privilege in the

kingdom. Three weeks on, Riyadh's most prestigious hotel is still the talk of the town. But since the midnight raids which snared at least 11 princes and some of the biggest Saudi billionaires, only snippets have surfaced. Rumours swirl around Riyadh and many capitals beyond about what's really happening inside this gilded prison. No one goes in or out of its swirling black metal gates now without official permission. Just past midnight last week, we were allowed to drive in under police escort, down a sweeping avenue towards the sprawling complex washed in golden light. As we alighted, we were greeted by some of the impeccable hotel staff still offering round the clock five star service. But there was a sterner reception from Saudi officials now involved in this crackdown: no faces to be filmed by our crew; no conversations recorded during a first visit by journalists. A stay lasting a few hours, surrounded by officials, could never yield a full account. But it provides glimpses of life inside. Even in the dead of night there are huddles of men, dressed in traditional white robes and red and white chequered headdress, speaking in hushed tones in dark corners of the cavernous lobby. Hardly anyone raises their eyes. Only an occasional tinkle of silver spoons on porcelain tea cups or glasses of foaming café lattes breaks an eerie silence. **Who are the 'special guests'?** The mood, around the same hour on 4 November, must have been starkly different when some of Saudi Arabia's most privileged elite were forcibly checked in. "They didn't believe what was happening," says an official who identifies himself as belonging to the "Special Committee" pursuing this anti-corruption operation. "They thought it was just a show which wouldn't last long." "Sure they were angry," he admits, with barely concealed satisfaction. "If you tell someone 'you are a thief', they get angry. Imagine if they are a VIP." We're sitting in one of the lobby's elegant clusters of sofas and plush chairs along with an official from the public prosecutor's office, and what's described as an independent human rights society. We're provided with a briefing, on the condition that no-one is quoted by name. Why bring them here? "We were afraid some people would have escaped so we had to keep them inside", is the explanation for this strange, if not shocking, fate for people they refer to as "special guests". There's been no official announcement of this Saudi 'who's who' list. But high profile names had surfaced quickly, including the well-known and wealthy Prince Alwaleed bin Talal who owns shares in everything from Twitter and Apple to the Four Seasons Hotel and London's Savoy. The crown prince's cousin Miteb bin Abdullah, who headed the elite National Guard, is now said to spend his nights in the Ritz too. And why these people, not others, which led to assertions that this was more of a ruthless move against royal rivals and critics? "Everyone here has a file," replies the sombre-faced official from the Public Prosecutor's Office. "Everything is documented." Over the past two years, under the crown prince's direction, a team has been compiling alleged evidence in great secrecy with some documents dating back decades. Then, once a new anti-corruption committee was announced by royal decree, the money hunters made their move. Questions about legality are met with references to Saudi law and the independence of the Public Prosecutor. The judicial official clarifies that this is still "a pre-investigation". "We're asking people who took the money to give it back," he says. "It's a friendly process," chimes in the anti-corruption official who says everyone was told "we'll show you the evidence and we'll solve the problem". **Medical crises and mistreatment rumours** An image is painted of a process taking place behind closed doors, mainly inside hotel rooms where 201 detainees are now said to spend most of their time. Most, we are told, want to avoid running into others. Most want to just focus on finding a way out of here. The mood now is described as "very serious". An official rattles off the Ritz-Carlton's new register of guests which includes experts from government ministries, the treasury, stock market, ex-bankers, specialists in money laundering, justice, as well as real estate. They're said to be on shift 24 hours a day, seven days a week to help process these cases. Some stay in the hotel and some work from their own offices. Along with medical teams and security guards, more than 500 people are now registered as staying at Ritz-Carlton, at the Kingdom's expense. As of a few days ago, seven suspects had walked free. Accounts provided inside the hotel, and confirmed by sources outside, say they had been able to clarify what was in their file and prove their innocence. Official sources say 4% of the accused say they'll take their case to court. But 95% of people on the list are now reportedly ready to come to a deal. That would mean handing over significant amounts of cash or assets to the Saudi treasury in exchange for their freedom. A businessman in Riyadh, who has seen some of the documents, had told me 1,900 bank accounts, including ones belonging to family members of suspects, were frozen. I ask officials in the Ritz-Carlton about reports of cash and assets totalling 800 billion dollars. "Even if we get 200 billion back, that would be good," replies the official from the Special Committee. His zeal is palpable. "You see this," he says as he picks up a gold-rimmed coffee cup to explain his point. "It should cost 10 dollars. But with corruption, it costs 100 dollars." Then he cites examples from his files including unfinished schools, and hospitals which cost 100 million dollars whose price tag should have been less than a third of that. Outside this inner sanctum, rumours surface about mistreatment and medical crises. "Some guests are old, and some suffer from diabetes, heart problems, or other conditions," the human rights official explains in our briefing. He says a health centre is staffed around the clock by doctors and nurses, rooms are checked, and special medicines are brought from homes. It's not hard to imagine the extraordinary anger and stress which must also fill this hotel. Saudis who once held sway in the kingdom are now being held captive against their will. "If you do surgery, there will be pain," says the anti-corruption official matter-of-factly. "And some people outside are angry because their bosses, or their family members, are in here." But he insists that "when it comes to percentages, 99% of Saudis are happy". **I stay in my room** It's hard to be scientific about public opinion here. But conversations outside the Ritz's metal gates underline there is broad support for tackling what is known to be rampant corruption. "It's like losing your watch and then you find it," a young real estate developer tells me. "It's your watch, so you want it back." "Our documents are going through government offices more quickly," remarks a prominent business executive who says no-one dares ask for bribes now. But there's anxiety too. "It's a nightmare," exclaims a Saudi doctor. "My son's boss is inside and we're all worried." She speaks of rumours of abuse during interrogations and of heart doctors being called in. In my Ritz briefing, we only hear of what are called "lifestyle problems". "They can have everything they want in this five star plus hotel," one official says. "But we can't bring special food from a special country," he adds. When I ask for more details, I'm told of a request for Russian caviar. Others are said to have asked for their own barber, their own masseuse. Saudis used to calling the shots have had their mobiles taken away. Now they can only make calls on what's described as a hotphone in their rooms. Lawyers and family members are being rung. There are also calls and visits from officials working in their own companies so they can keep business running. Visitors enter through back doors to guard their privacy. Emails can also be arranged. In the early hours of the morning, a few men are working out in the gym, a shimmering swimming pool is empty, and music blares in an empty bowling alley. I'm offered a meeting with a suspect chosen by our escorts. "I'm spending most of my time in my room with my lawyer focusing on my case," a Saudi man with a grey-flecked beard tells me as he sits next to a television broadcasting Premier League football. "I speak to my family on the phone every day but prefer not to have them visit me here." My escorts tell me not to ask about his case. In such conditions, surrounded by officials in charge of his fate, I don't ask many questions. As we leave, he quickly speaks up. "I'm sorry that I forgot our traditions," he says with an apologetic smile. "I should have offered you something to eat or drink." *BBC*

**Flies more germ-laden than suspected**



Scientists have discovered that flies carry more diseases than suspected. The house fly and the blowfly together harbour more than 600 different bacteria, according to a DNA analysis. Many are linked with human infections, including stomach bugs, blood poisoning and pneumonia. Flies can spread bacteria from place-to-place on their legs, feet and wings, experiments show. In fact, every step taken by a fly can transfer live bacteria, researchers said. "People had some notion that there were pathogens that were carried by flies but had no idea of the extent

to which this is true and the extent to which they are transferred," Prof Donald Bryant of Penn State University, a co-researcher on the study, told BBC News. Outbreaks DNA sequencing techniques were used to study the collection of microbes found in and on the bodies of the house fly (*Musca domestica*) and the blowfly (*Chrysomya megacephala*). The house fly, which is ubiquitous around the world, was found to harbour 351 types of bacteria. The blowfly, which is found in warmer climates, carried 316. A large number of these bacteria were carried by both types of fly. The researchers, who published their study in the journal *Scientific Reports*, say flies may have been overlooked by public health officials as a source of disease outbreaks. "We believe that this may show a mechanism for pathogen transmission that has been overlooked by public health officials, and flies may contribute to the rapid transmission of pathogens in outbreak situations," said Prof Bryant. "It will really make you think twice about eating that potato salad that's been sitting out at your next picnic," he added. However, the researchers believe flies could have their uses - acting as early warning systems for disease or even living drones sent into tight spaces to search for microbes. "In fact, the flies could be intentionally released as autonomous bionic drones into even the smallest spaces and crevices and, upon being recaptured, inform about any biotic material they have encountered," said Stephan Schuster, research director at Nanyang Technological University, Singapore. House flies are well known for their poor hygiene habits - visiting rubbish tips and feeding on all sorts of decaying food, animal corpses and faecal matter. They are suspected of carrying a range of human, animal and plant diseases. Blow flies are one of the most common flies found around dead animals. They are common in urban areas and are often found near meat-processing plants, rubbish dumps and slaughterhouses. *BBC*

**High-energy 'ghost particles' absorbed by Earth**

Neutrinos are known as "ghost particles", because they are known to travel through solid objects with ease. But a new study demonstrates that some of these sub-atomic particles are stopped in their tracks when they encounter our planet. Neutrinos interact so weakly with matter that a single one can pass through a light-year (10 trillion km) of lead without hitting an atom. The results come from the IceCube experiment, located in Antarctica. It's an important measurement that's consistent with the Standard Model - the theory that describes the behaviour of fundamental forces and particles, such as neutrinos. The neutrinos seen by the IceCube detector had very high energies. This was a critical factor since the higher the energy, the more likely the neutrinos are to interact with matter and therefore be absorbed by the Earth. IceCube consists of an array of 5,160 basketball-sized optical sensors called Digital Optical Modules (DOMs) that are encased within a cubic kilometre of very clear Antarctic ice near the South Pole. The experiment's sensors do not directly observe neutrinos, but instead measure flashes of blue light known as Cherenkov radiation. These flashes are emitted by other particles such as muons, which are produced when neutrinos interact with the ice. By measuring the light patterns from these interactions in or near the detector array, IceCube can estimate the neutrinos' directions and energies. The team found there were fewer energetic neutrinos making it all the way through Earth to the IceCube detector than those that reached it from less obstructed paths - such as near-horizontal trajectories. "Understanding how neutrinos interact is key to the operation of IceCube," said Francis Halzen, chief scientist for IceCube and a professor of physics at the University of Wisconsin-Madison. The results will allow team members to calculate something called the neutrino "cross-section" with a high degree of accuracy. The cross-section describes the probability that neutrinos of a given energy will interact with matter. "We were of course hoping for some new physics to appear, but we unfortunately find that the Standard Model, as usual, withstands the test," said Prof Halzen. The finding, published in *Nature* journal, provides the first cross-section measurements for a neutrino energy range that is up to 1,000 times higher than previous measurements at particle accelerators. Most of the neutrinos selected for this study were more than a million times more energetic than those produced by more familiar sources, such as the Sun or nuclear power plants. The analysis could also be of interest to geophysicists who would like to use neutrinos to image the Earth's interior, though this will require more data than was used in the current study. Most of the neutrinos used in the study were generated in the Earth's atmosphere, through a process initiated by cosmic rays. But the results also include a small number of "astrophysical neutrinos", which are produced by unknown sources beyond the Earth's atmosphere. Another neutrino experiment, known as the Deep Underground Neutrino Experiment (DUNE), is currently in development, and is due to switch on in the 2020s. *BBC*



**Teenage brains 'not wired for high stakes'**



Brain immaturity during adolescence could explain why some teenagers fail to respond to incentives such as cash rewards. Adults are good at putting maximum mental effort into the things that matter most. But, brain circuits are still developing in teenagers, making it harder for them to tackle meeting their goals, say US psychologists. Attempts to improve student grades with money have had mixed success. The research, published in the journal, *Nature Communications*, shows that brain connectivity continues to develop throughout

adolescence, affecting teenagers' ability to perform when the stakes are high. In the study, researchers at Harvard University used functional magnetic resonance imaging (fMRI), which measures brain activity by detecting changes linked to blood flow. Young people, aged 13 to 20, were brain scanned while they played a computer game. They played for high stakes, when they could earn \$1 for correct responses or lose 50 cents for incorrect responses, and for low stakes, when they could earn 20 cents or lose 10 cents. Lead researcher Katie Insel said older adolescents were able to boost their performance when the stakes were high. However, younger adolescents performed similarly for low and high stakes outcomes. "These findings demonstrate that brain connectivity continues to develop across adolescence," she told BBC News. "This means that as teens age, they become better at adjusting brain connectivity across motivational contexts, which in turn allows them to do better when working towards a high-value goal." Past studies have shown that connections between different parts of the growing brain take years to develop. The last bit of the brain to reach full maturity is the prefrontal cortex, which is responsible for things like planning, controlling emotions and empathy. *BBC*