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Lactose Intolerance

Studies on the global level suggest that 65% of humanity is lactose-intolerant.

- Milk has often been branded as a superfood as it is rich in most of the nutrients necessary for health.
- However, how milk came to be an integral part of the human diet has been a conundrum to scientists because most of the world can't digest the product.
- Lactose intolerance means, the individual lacks the gene to break down lactose into adulthood.
- Beyond the age of five, lactose, a sugar present in milk, cannot be naturally broken down in the stomach and this remains in the gut causing flatulence, acidity and diarrhoea.
- India is among the largest producers of milk and, by country, the largest consumer of it.
- Milk drinking, the story goes, hasn't been very popular in the roughly 3,00,000-year history of humanity.
- However, in the last 5,000 years, a genetic mutation enabled European pastoralists to produce lactase.
- Drinking milk is actually harmful in those who lacked the gene-variant but only in periods of famine and adverse environmental conditions.

Lactose persistence

- Lactase, an enzyme that breaks down lactose into a digestible form, well into adulthood, a trait called lactose persistence.
- The lactase persistence trait is more common in populations that practice cattle herding and dairy farming, and it is related to genetic selection of individuals with the ability to digest lactose.

Reference

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Kuno-Palpur National Park (KNP)

Forest officials are preparing to bring cheetahs to Kuno-Palpur National Park (KNP) in Madhya Pradesh.

- The forest officials in Kuno-Palpur National Park are facing challenges with rounding up of three of the five leopards wandering in the 5 square kilometre enclosure set up

for the cheetahs.
- The forest department has now brought in two elephants from the state's Satpura Tiger Reserve to help the veterinarians locate and tranquilise the leopards.

Cheetah reintroduction project

- Under this Cheetah reintroduction project, a source population of 8 cheetahs will be flown in from Namibia and South Africa and will be introduced at Kuno National Park, Madhya Pradesh.
- India and Namibia had signed a pact for the reintroduction of cheetahs, declared extinct in the country in 1952.

"The cheetah is the only large carnivore that got completely wiped out from India, mainly due to over-hunting and habitat loss."

- The last spotted feline died in 1948 in the Sal forests of Chhattisgarh's Koriya district.

Kuno-National Park

- It is located in the Vindhyan Hills of Central India, in the State of Madhya Pradesh.
- It is a protected area and received the status of national park in 2018.
- The protected area was established in 1981 as a wildlife sanctuary.
- It is in the Khathiar-Gir dry deciduous forests ecoregion.

Reference

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2. https://www.thehindu.com/news/national/india-set-to-be-home-of-cheetahs-after-70-years-at-madhya-pradesh-park/article65650067.ece
3. https://www.kunonationalpark.org/

Air Quality and Health in Cities

Half of world's cities had PM2.5 levels above least-stringent WHO standards last decade.

- The State of Global Air is a collaboration between the Health Effects Institute (HEI) and the Institute for Health Metrics and Evaluation (IHME).
- The report was released by US-based research organisation Health Effects Institute's (HEI) State of Global Air Initiative

Key findings

- Half of all of cities analysed across the globe had PM2.5 levels above even the least-stringent World Health Organization (WHO) standards.
- India and Indonesia recorded the most severe increase in PM2.5 pollution while China saw the greatest improvements.

- Delhi and Kolkata have the highest and second-highest levels of pollution globally in terms of Particulate Matter (PM) 2.5.
- All 20 cities with the greatest decrease in PM2.5 pollution from 2010 to 2019 were found to be located in China.
- The report also showed that cities with higher nitrous dioxide (NO2) pollution were located in large cities of countries across all income levels.
- PM 2.5 pollution was highest in low- and middle-income countries.
- There are no Indian cities in the top 20 cities most afflicted with NO2 pollution.

Reference

1. https://www.downtoearth.org.in/news/pollution/delhi-kolkata-first-second-globally-in-pm2-5-pollution-report-84368
2. https://thewire.in/environment/new-delhi-kolkata-pollution-particulate-matter-report

Flue Gas Desulfurization (FGD)

State-owned power giant NTPC said it has started capturing carbon dioxide (CO2) from the flue gas stream at its thermal plant in Vindhyachal.

Flue Gas

- Flue gas (sometimes called exhaust gas or stack gas) is the gas that emanates from combustion plants.
- It contains the reaction products of fuel and combustion air and residual substances such as particulate matter (dust), sulphur oxides, nitrogen oxides, and carbon monoxide.

Flue Gas Desulfurization

- It is a set of technologies used to remove sulphur dioxide (SO2) from flue gases.
- Flue gases produced from industrial combustion at petrol refineries, chemical manufacturing industries, mineral ore processing plants, and power stations, are removed.
- The removal of sulphur dioxide is critical to establishing a safe and clean environment where toxic emissions are kept to a safe low.
- Fossil fuels such as coal and oil often contain high amounts of sulphur.
- When these fuels are burned, around 95% or more of the sulphur is converted to sulphur dioxide (SO2) which is emitted as flue gas.
- The main source of sulphur dioxide in the air is a result of industrial activity that processes or uses materials that contain sulphur.
- Sulphur dioxide is an acidic gas that reacts easily with other substances to commonly form harmful compounds such as sulphuric acid, sulphate particles, and sulphurous acid.
- When breathed in, it can irritate the nose, throat and airways with a risk of developing more severe problems over prolonged exposure.
- Sulphur dioxide in itself is a major air pollutant which impacts all life.
- It is also a precursor of acid rain which has significant adverse impacts on forests, freshwaters and soils

Removal of Sulphur

- An alkaline-based sorbent is used to bring the pH level of the sulphur dioxide gas close to neutral.
- Scrubber systems are one of the most efficient ways of reducing sulphur dioxide emissions caused by industrial combustion.

Reference

1. https://www.business-standard.com/article/companies/ntpc-starts-capturing-co2-from-flue-gas-stream-at-vindhyachal-plant-122081900642_html
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3. https://www.howden.com/en-gb/articles/flue-gas-desulfurization-acid-rain#:~:text=Flue%20gas%20desulfurization%20(FGD)%20is,stations%20to%20name%20a%20few.

Lord Curzon

The Bardhaman municipality in West Bengal has decided to erect a statue of an erstwhile maharaja in front of the landmark Curzon Gate in the city.

Early life

- Born in 1859, George Nathaniel Curzon was a British conservative politician who was educated at the elite institutions of Eton and Oxford.
- He served as Under-Secretary of State for India (1891-1892), and for Foreign Affairs (1895-1898).
- He was the Viceroy of India from the year 1899 to 1905.
- Of all the Viceroys of India, Curzon is possibly the most criticised.

Actions taken by Curzon as viceroy of India

- In 1899, he passed the Calcutta Municipal Amendment Act which reduced the number of elected representatives in the Calcutta Corporation.
- He was also one of the more openly imperialist of viceroys, and a man who saw Britain's rule over India as critical to the survival of empire.
- In 1900, Curzon famously stated, "We could lose all our [white settlement] dominions and still survive, but if we lost India, our sun would sink to its setting."
- Curzon created a separate Muslim majority province of the North-West Frontier Province.
- He also sent a British expedition to Tibet and established a separate police service in India.
- He was also responsible for establishing the Archaeological Survey of India, in order to study and protect historical monuments.
- In 1904, he passed the Universities Act (1904) that placed Calcutta University under government control, and the Indian Official Secrets Amendment Act that reduced the freedom of the press even further.
- He is the one who partitioned Bengal in 1905, and triggered a wave of Bengali

nationalism that contributed to the wider Indian national movement.

Partition of Bengal

- Calcutta was the capital of the British Raj, and Bengal Presidency was one of the largest provinces in India.
- It encompassed the present day West Bengal, Bangladesh, Bihar, parts of Chhattisgarh, Odisha, and Assam.
- For long, the British had maintained that Bengal was too large to efficiently manage and administer.
- It was also believed that with Calcutta as the nerve centre of the educated nationalists, the resistance to colonial rule would only increase.
- In July 1905, Curzon announced the partition of Bengal into two provinces.
- East Bengal and Assam, with a population of 38 million, was predominately Muslim, while the western province, called Bengal, and was reduced to 55 million people, primarily Hindus.
- In opposition to the partition, nationalist leaders organized a campaign of boycott of British goods and institutions, and encouraged the use of local products.
- After a formal resolution was passed at a meeting in Calcutta in August 1905, the Swadeshi movement began.
- The Swadeshi movement and boycott was not restricted to Bengal, and spread to other parts of the country, including Punjab, Maharashtra, and parts of the Madras Presidency.
- In 1905, Curzon resigned and returned to England after losing a power struggle with the commander-in-chief of the British Army, Lord Kitchener.
- The protests continued after his exit, and the colonial government in 1911 announced the reunification of Bengal, and the capital of the Raj was shifted from Calcutta to Delhi.

Reference

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