

All in the mind

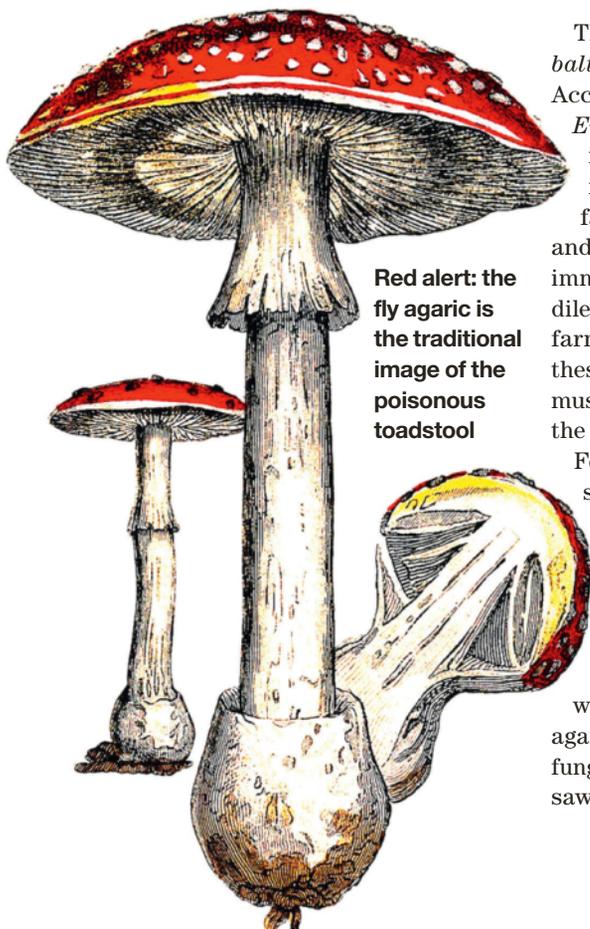
From Regency medicine men to the technicolour world of The Beatles, the history of psychedelic mushrooms is richer than we might expect, says Deborah Nicholls-Lee

IN 1799, the physician Everard Brande was called to treat a family that had begun acting strangely after feasting on a mushroom stew made with fungi foraged from London's Green Park. Eight-year-old Edward, who had eaten the biggest portion, had abnormally dilated pupils and was 'attacked with fits of immoderate laughter' followed by 'vertigo' and 'a great degree of stupor,' reported Brande. His account of the event, published in *The Medical and Physical Journal* in 1800, was the first written evidence of the effects of the extraordinary hallucinogens growing in plain sight in Britain's parks, fields and hedgerows—and which still grow there to this day.

With their tawny, pointed hoods and slender stalks, liberty caps (*Psilocybe semilanceata*)—the focus of Brande's paper—are not the only native fungi that risk taking consumers on unexpected trips. There's also the wavy cap (*Psilocybe cyanescens*), flashing the deep gills of its wide, undulating canopy. As with many psychoactive mushrooms, it's partial to growing in rhododendron groves and stains blue when bruised, indicating the presence of the psychedelic compound psilocybin.



The banded mottlegill thrives in manure, but previously infiltrated button mushroom beds



Red alert: the fly agaric is the traditional image of the poisonous toadstool

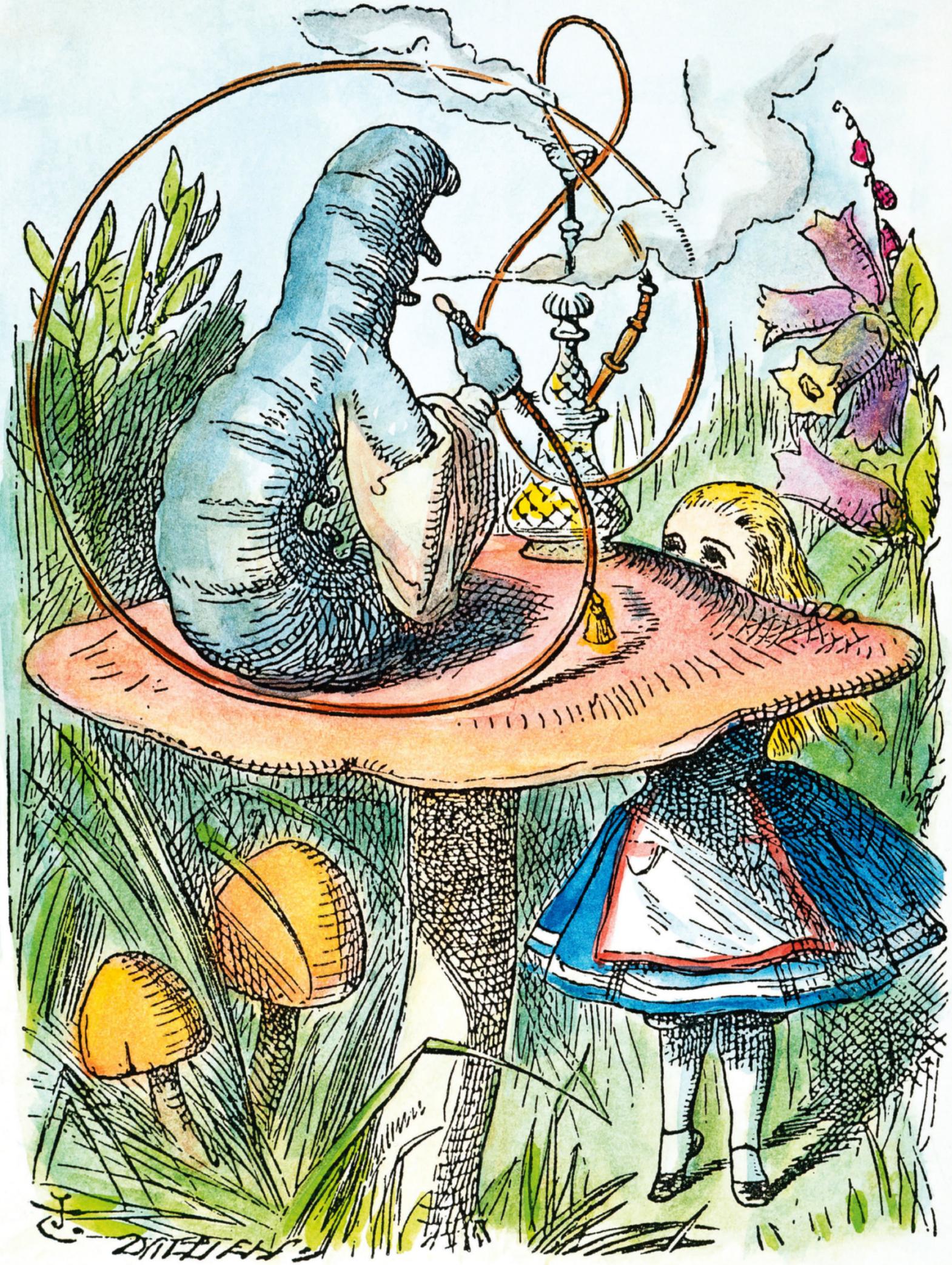
The banded mottlegill (*Panaeolus subbalteatus*) is another impish specimen. According to Christian Rätsch's 2005 *Encyclopedia of Psychoactive Plants*, it thrives in manure and 'is found chiefly in the immediate vicinity of horse stud farms'. It is empathogenic, aphrodisiac and visionary—qualities that may not be immediately helpful to equestrians. Its predilection for manure was once a problem for farmers, who needed sharp eyes to spot these imposters sneaking into their button mushroom beds, their spores lingering in the dung or borne on the wind.

Fortunately, modern farmers are wise to such antics. 'Sterilisation is really important in mushroom growing,' explains Lorraine Caley, co-author of 2024's *Project Mushroom: A Modern Guide to Growing Fungi* and the co-founder of Sussex-based mushroom growers (and Chelsea Flower Show Gold-medal winners) Caley Brothers. Ms Caley guards against unwanted visitors by growing her fungi on a substrate of boiled coffee grounds, sawdust from a local sawmill, compacted

using heat and steam, and straw 'soaked overnight in a lime bath' to raise its pH level.

More nefarious species abound, however. Aspiring foragers are at the fungi's mercy, with false chanterelles (*Hygrophoropsis aurantiaca*) thrown into the mix. These have a slightly darker-orange hue than their edible relative and reportedly supply strange hallucinations alongside a sore tummy. For fear of poisoning, legends and literature have taught us to steer clear of the ruby-red fly agaric (*Amanita muscaria*) and its rarer, dappled-brown relative, the panther cap (*Amanita pantherina*). The muscimol they contain slows the heart, causes sweating and salivation and, coupled with the fungi's psychoactive ibotenic acid content, can deliver delirium and vivid dreams. Unsurprising, then, that it's thought to have inspired the giant magic mushroom in Lewis Carroll's surreal 1865 story *Alice's Adventures in Wonderland*, occupied by a cantankerous hookah-smoking caterpillar. 'One side will →

The long and short of it: a hookah-smoking caterpillar tells Alice that the magic mushroom will make her grow taller... or shorter





‘He was “attacked with fits of immoderate laughter” followed by “vertigo” and “a great degree of stupor”’

London’s green spaces are home to hallucinogenic liberty caps—as one family discovered after foraging for a feast in Green Park

make you grow taller, and the other side will make you grow shorter,’ he reveals as he dismounts the mushroom and disappears. ‘And now which is which?’ wonders Alice. As with any drug-induced experience, the outcome is uncertain.

The mind-expanding organisms of the British Isles go beyond fungi. Naturalised opium poppies (*Papaver somniferum*) are widely dispersed; and seeds and pollen found in Scotland suggest that black henbane’s (*Hyoscyamus niger*) distinctive purple-veined flowers of buttery yellow, nicknamed ‘Devil’s eyes’, have been blooming here since the Neolithic period. Henbane was also known to the Romans, with Pliny the Elder describing it as ‘of the nature of wine and therefore offensive to understanding’. More recent reports of its effects describe seeing hazy, swaying objects; animals ‘with contorted grimaces’ (sound familiar, Lewis Carroll?); and being ‘flung into a flaring drunkenness, a witches’ cauldron of madness’.

Seventeenth-century sources suggest that henbane did, indeed, form part of a potent



Delirium and vivid dreams await the consumer of the rare panther cap

cocktail stirred up by witches. By combining ingredients such as mandrake, poisonous datura and the native psychedelic of deadly nightshade (*Atropa belladonna*), they brewed their mystical ‘flying ointments’. Rubbing them on the skin and then mounting a broom, the supposed witches are said to have experienced an extraordinary out-of-body feeling, as if soaring through the air.

‘There are many examples of intoxication in the animal world,’ too, writes Merlin Sheldrake in 2020’s *Entangled Life: How Fungi Make Our Worlds, Change Our Minds and Shape Our Futures*. ‘Birds eat inebriating berries, lemurs lick millipedes, moths drink the nectar of psychoactive flowers—and it is likely that we have been using mind-altering drugs longer than we have been human.’

Across the Atlantic, Matthew Meyer of the Department of Plant Pathology at Ohio State University, US, is researching why Nature might supply these extraordinary properties, focusing on fungi that make psilocybin. ‘Genetic evidence,’ he states, ‘shows that this trait



Brain wave: the undulating canopy of the wavy cap is often seen among rhododendrons

evolved multiple times in unrelated species and even spread between them... 'strong signs' that the production of psilocybin, which evolved about 40–60 million years ago, 'offers a real advantage' to these species.

Psilocybin is probably part of 'a survival strategy' to deter predators in search of nutrition, Mr Meyer explains. 'When insects, slugs or other small animals consume it, the compound may interact with their nervous systems by binding to serotonin receptors, potentially reducing their appetite, altering behaviour or causing harm.' An unusual 'pseudo-ring' molecular structure 'enables it to reach animal brains efficiently,' he adds, whereas the strange effects it has on animal movement may help distribute spores.

For humans, consuming these species can have serious side effects, from confusion and fear to paranoia and vomiting. Yet cave art in Algeria suggests that the ritual consumption of psychoactive fungi may be more than 9,000 years old. The Aztecs even served them at Emperor Ahuizotl's coronation in 1486, referring to them as 'god's flesh'. Today, controlled doses of magic mushrooms are back on the menu, as modern medicine explores their potential to treat depression, addiction and anorexia, as well as diseases such as Alzheimer's and Parkinson's.

'Most of mental illness will be treated with psilocybin therapy in the future,' predicts Dr Robin Carhart-Harris, founder of the Centre for Psychedelic Research at Imperial College London. Psilocybin, he notes, 'stimulates the serotonin system to induce plasticity', enabling changes to take place in the mind and allowing new ways of thinking to emerge. Citing a depression trial published in *The Lancet Psychiatry* in 2016, he adds: 'About half became entirely depression free within



False alarm: the false chanterelle's darker hue distinguishes it from its edible relative

the first few weeks of the trial.' Legal restrictions, funding issues and the stigma of working with psychedelics can pose challenges in getting treatments over the line, with native organisms such as the liberty cap mushroom still mired in mystery and myth. Fungal molecules with psychoactive properties, writes Mr Sheldrake, 'have found themselves entangled within human life in complicated ways exactly because they confound our concepts and structures, including the most fundamental concept of all: that of our selves.' 🍄

Culture trip

- The 'stoned ape theory', proposed by ethnobotanist Terence McKenna in his 1992 book *Food of the Gods*, posited that our ancestors' taste for magic mushrooms kick-started a revolution in human cognition. Scientists gave it short shrift, but hallucinogens such as psilocybin, mescaline (found in the peyote cacti) and LSD (derived from lysergic acid, found in ergot, a fungus that grows on grains) have certainly added colour to British culture
- In 1954's *The Doors of Perception*, writer and philosopher Aldous Huxley describes his psychedelic experience taking mescaline, crediting it with opening a door to a more creative and less self-centred life. The drug inspired his final work, 1962's *The Island*—a novel about a permissive utopia where psychedelics are used to increase social bonds and enlightenment, in a counterpoint to the dark dystopia of his *Brave New World*



- The Beatles took their first acid trip in about 1965 and began infusing songs such as *Tomorrow Never Knows* and *Strawberry Fields Forever* with psychedelically leaning lyrics and mind-bending beats. In 1967, *Lucy in the Sky with Diamonds* invited listeners to take flight in a marmalade-skied world of towering 'cellophane flowers of yellow and green' and 'rocking-horse people' eating 'marshmallow pies'. Despite the suggestive acronym of the song's name, any connection to the drug was denied. Psychedelia reached new heights the following year with the animated film *Yellow Submarine*, featuring the Fab Four pitted against baddies known as the Blue Meanies—a nickname for the *Panaeolus cyanescens*, one of the strongest magic mushrooms
- English art-design group Hipgnosis united art and music with its psychedelic album covers for British rock and metal legends Led Zeppelin, Black Sabbath and Pink Floyd, the cover of whose trippy *The Dark Side of the Moon* in 1973, picturing a prism splitting light, became one of the most famous in rock history