



BOOKS *et al.*

PHYSIOLOGY

Putting sleep myths to bed

From groggy teenagers to fatal narcolepsy, two tomes tackle the science of slumber

By **Adrian Woolfson**

Many of us have an ambivalent relationship with sleep. Although acknowledging its necessity, we begrudge these stolen hours of existence. Two new books provide a fresh perspective on this poorly understood phenomenon. Rather than being an “imperfection of our nature,” as extolled by physician Wilson Phillip in 1833, sleep emerges as critical to healthy bodily, mental, and emotional function.

In a charming analogy, Henry Nicholls in his book *Sleepyhead* likens the architecture of a perfect night’s sleep to the aesthetic perfection of the Taj Mahal. When undermined, it’s as though “the architectural plans have gone missing, and the resulting edifice is simply a miscellaneous jumble of marble.” Whereas Alice Gregory takes a developmental perspective of sleep in *Nodding Off*, charting its idiosyncrasies across the lifespan, Nicholls tackles the subject through the lens of pathology, being himself a lifetime sufferer of the sleep disorder narcolepsy.

In humans, the master timekeeper underwriting the architecture of sleep is a small region buried deep within the brain, known as the suprachiasmatic nucleus. The pacemaker

activity of this biological timepiece is controlled by several genes, which have names like *Period*, *Clock*, and *Timeless*. Mutations in these can transform us from night owls into morning larks or something in between. Fortunately, errant wanderings are typically adjusted by “zeitgebers”—literally, “time-givers”—principally in the form of blue light.

Nicholls meticulously details his experience of narcolepsy, from the first symptoms of excessive sleepiness at inappropriate moments, to the paroxysms of cataplexy that result in sudden, momentary paralysis. But he comes to realize that the reach of this disease is far deeper than he had ever realized, affecting his mood, dreaming, motivation, and body weight; causing hallucinations; and paradoxically resulting in disturbed nocturnal sleep. Along the way, he covers some fascinating material, from the rare prion-driven

Blue light emitted by electronics can disrupt circadian rhythms and compromise sleep.

disease known as fatal familial narcolepsy to the potentially atavistic nature of cataplexy.

In *Nodding off*, Gregory makes the point that although sleep studies typically focus on individuals, sleep is not always a solitary pastime and may be adversely affected by our choice of bedmate. Indeed, sleep researchers are now attempting to address the reality that adults often do not sleep in isolation.

The structure of sleep also changes across an individual’s lifetime. The sleep patterns of young children, for example, are profoundly influenced by their belief systems. Gregory cautions parents against sending misbehaving children to bed early because this association between sleep and punishment may inadvertently condemn them to years of insomnia.

Similarly, she explains why the Sisyphean struggle to force teenagers to wake up early is invariably destined to fail. Their pattern of melatonin release differs to those of adults and children, and the recapitulation of this phenomenon in other mammals suggests that it has been hard-wired by evolution.

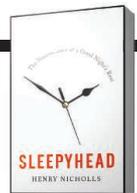
While extolling the virtues of sleep and its fundamental importance to our health, Gregory reveals some interesting tidbits, including the fact that dolphins sleep with just half of their brain at a time and that male armadillos have erections during non-REM (rapid eye movement) sleep, unlike their human counterparts, who experience this phenomenon only during REM sleep. The heterogeneity of sleep across different species indicates its essential function but also how it may be modified to perform different functions.

Although the precise function of sleep remains enigmatic, poor-quality sleep and sleep deprivation may have a profound impact on our health. In Denmark, Gregory reveals, the government has gone so far as to compensate long-term shift workers that develop breast cancer after mouse studies revealed the pro-carcinogenic effects of altered sleep.

It is noteworthy, and apparently contrary to the central thesis of these two tomes, that genius has sometimes emerged within the context of abnormal sleep patterns. The serial micronapper Leonardo da Vinci’s remarkable canon of work, for example, was achieved on a sleeping pattern comprising naps of just 15 minutes taken every 4 hours. But it was, perhaps, Salvador Dali who, in tapping into the “secret of sleeping while awake,” demonstrated most idiosyncratically how unconventional sleeping habits can extract creative insights from this enigmatic shadowland. ■

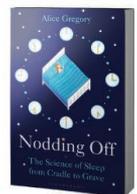
Sleepyhead

The Neuroscience of a Good Night’s Rest
Henry Nicholls
Basic Books, 2018. 368 pp.



Nodding Off

The Science of Sleep from Cradle to Grave
Alice Gregory
Bloomsbury Sigma, 2018. 304 pp.



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