

BOOKS & ARTS



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On the scent

For Marcel Proust, the madeleine evoked childhood memories — a new treatment of the science of smell attempts to take our everyday experience of odour to a more insightful level, explains **Gary Beauchamp**.

What the Nose Knows: The Science of Scent in Everyday Life

by Avery Gilbert

Crown Publishers: 2008. 304 pp.

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In 2004, the Nobel Prize for Physiology or Medicine was awarded to Linda Buck and Richard Axel for their work on the science of smell. They discovered the family of more than a thousand olfactory receptors that recognize the volatile compounds that make up our scented world. To researchers in the field, this honour was neither surprising nor unanticipated. Many outsiders wondered: what is the social, biological and medical significance of this breakthrough that makes it so noteworthy?

Avery Gilbert's engaging book *What the Nose Knows* attempts to answer this question. Focusing on our experiences of scent in everyday life, it proclaims the importance and curious nature of the human sense of smell. Until the last chapter, which speculates on the future, Gilbert has little to say about the biological science underlying olfaction. He has even less to say about odours in other mammals and insects, where they have a greater role in regulating social and

sexual activity than in humans. What this book lacks in basic biological science, it makes up for in psychological analysis, complemented throughout with literary allusions that Gilbert skilfully uses to illustrate his insights.

Gilbert draws on his personal experience, both anecdotal and scientific. He asks how many odours there are and how we might determine them, and describes the principles of perfumery. He addresses the psychological aspects of odour phobias and multiple chemosensory disorder, and explores odour memory within the literature of Marcel Proust. Gilbert seems especially fond of stories of the smell of dead bodies and human gaseous emanations. The book is perhaps overly larded with short, albeit fascinating, stories and olfactory anecdotes, and lighter on synthesis. Citations to the psychological literature abound, but they are listed at the end and the reader must flick back and forth to find a source.

The story of odorizing the movie experience is delightfully told. The 'battle of the smellies' between the scientifically based Smell-O-Vision, pushed by the impresario Mike Todd, and its rival AromaRama illuminates both the entrepreneurial spirit of the 1950s and the scientific and technological aspects of odour choice and

delivery. The difficult task of odour removal is highlighted by cinema that, in the words of one reviewer, was filled with scent "strong enough to give a bloodhound a headache".

Gilbert adopts a strong position on matters of controversy, sometimes trying hard to arouse disagreement. He persuasively dismantles the idea of Proust as poster boy for the profundity of odour memory, but I remain convinced that major research efforts to understand the phenomenon are still needed. When I encounter the scent of my grandfather's garage, I am not only reminded of the place — I am briefly transported there. Gilbert, too, calls attention to this power: "Like a nightclub mentalist, the mind presents us with a memory it picked from our pocket when we weren't looking." The neural pathways unique to olfaction are probably involved but do not completely explain the experience.

Similarly, I question Gilbert's argument that smell makes a greater contribution to flavour than does taste. First, it is unclear what metric would be useful in measuring this. And there are many reasons to believe that taste — sweet, sour, salty, bitter and umami or savoury — is more potent as far as food selection and intake are concerned. Smell permits one to discriminate strawberry from cherry, but taste provides

the information necessary to decide whether an object should be taken into the body or expelled.

Many years ago, when working with Gilbert at the Monell Chemical Senses Center in Philadelphia, I recognized his way with words as

well as with scientific research. *What the Nose Knows* melds the academic and business worlds of smell into an entertaining and illuminating rumination on this almost magical sense that, even with a Nobel Prize to its credit, still holds many mysteries. ■

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Playing to win

Starting With Serotonin: How a High-Rolling Father of Drug Discovery Repeatedly Beat the Odds

by Ann G. Sjoerdsma

Improbable Books: 2008. 640 pp. \$27.50

Science is a gamble. Publication, applying for grants, student admissions and corporate relationships all involve high-stakes bets, a mixture of skill and luck, and often a bit of bluffing. Which game is science most like? It's not a slot machine, mindlessly addictive. In dark moments it may seem like roulette, with its powerful house advantage and long odds. Sometimes it's a horse race, when one thoroughbred laboratory noses out another in isolating a long-sought gene or subatomic particle. For Albert Sjoerdsma, sometimes called the father of clinical pharmacology, science was most like craps.

Craps, an intricate dice game that can involve many players and interweaving rounds of betting, is a thinking person's pastime. Winning depends on an understanding of probability and being able to weigh complex constellations of risks and payouts. In *Starting with Serotonin*, Sjoerdsma's biographer daughter Ann Sjoerdsma argues that craps was her father's favourite game of chance — and the key theme in his scientific life.

Albert Sjoerdsma came to the table with a modest stack of chips. Born in 1924 and raised near Chicago in Illinois, he grew up with little money or social sophistication, but with a first-class brain and a mountain of confidence. He was a rough-and-tumble child, more likely to be found playing sports or getting into mischief than curled up with his nose in a book. Yet his grades were nearly perfect, and he was accepted at the University of Chicago under president Robert Hutchins, whose innovative programmes helped to train some of the best minds of the late twentieth century. Sjoerdsma was cocky and sometimes disrespectful, especially when faced with arbitrary displays of power. His daughter describes him as a maverick, a clichéd but apt term.

"Craps was Sjoerdsma's favourite game of chance — and the key theme in his scientific life."

Rather than fold with a bachelor's degree, Sjoerdsma stayed in the game, taking an MD and a PhD at Chicago. He then went east to Bethesda, Maryland, where he joined the National Institutes of Health (NIH) in 1951. After two years of residency at the Public Health Service's Marine Hospital in Baltimore, Sjoerdsma landed a position at the National Heart Institute back in Bethesda. There, he formed a team that became known locally as the "wild bunch", a group of brilliant, hard-working and hard-playing researchers.

Sjoerdsma began exploring ways of reducing high blood pressure, leading to his investigation of the then recently discovered neurotransmitter serotonin. His analysis of its effects on different organ systems and metabolic pathways led him into a strongly applied style of pharmacology, in which he largely eschewed lab-based studies in favour of whole patients, and focused on bridging the gap between laboratory science and clinical medicine.

He was a pioneer in the development of monoamine oxidase inhibitors as antidepressants, such as iproniazid, originally developed as an anti-tuberculosis drug. With colleague Sidney Udenfriend, he found that monoamine oxidase was a major pathway for serotonin in both mice and humans, and that inhibitors such as iproniazid raised blood serotonin levels. This established the physiological basis of the antidepressant action of these drugs. Sjoerdsma's 20 years at NIH coincided with the 'golden age' of its intramural research, an era of Nobel prizes, headline-grabbing breakthroughs and major contributions to science.

In 1972, he parlayed his successes as a bench scientist into a job as director of a new research centre in Strasbourg, France, set up by the pharmaceutical company Richardson-Merrell. His blunt, incisive intellectual and administrative style was polarizing in genteel Europe. He

won many devoted friends and colleagues — and lost some, too. But there was no arguing with his successes. The biggest was terfenadine (Seldane), the first antihistamine that did not cause drowsiness. Developed in the 1970s, it was a blockbuster drug until heart arrhythmias surfaced in some users.

Sjoerdsma remained with Richardson-Merrell through the 1980s, until a merger moved the company to Kansas City, Kansas, and gave the management over to a group of businessmen who knew everything about marketing and nothing about science. Sjoerdsma felt the house had changed the rules mid-game. Stripped of his title, and eventually even of his parking space, he felt as if he had lost the shirt off his back.

Ann Sjoerdsma's dual role, as daughter and as professional journalist, creates both windows and blind spots as she examines her father's life. She explains the science and integrates it into Sjoerdsma's career choices and decisions. She draws on interviews she conducted with her father and with his friends and colleagues. The numerous quotations from Sjoerdsma himself, set in italics and without attribution, make it seem as though he is looking over his daughter's shoulder, adding a story or colourful detail, or murmuring assent.

His assent is crucial, for her primary concern is to tell her father's version of his story. In Sjoerdsma's world, the US Food and Drug Administration is a stifling regulatory monster, and it is drugs, more than patients, that live or die. Sometimes he comes across as callous, whereas at other times he is a champion of humanitarian medicine, such as when he developed a therapy for African sleeping sickness. The author rarely questions such views or their motives. Also, she never inquires deeply into Sjoerdsma's emotions.

Particularly striking is the minor role of family in this life portrait. The other Sjoerdsmas feature from time to time, but we never get much sense of how Albert treated them or how

