

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.

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

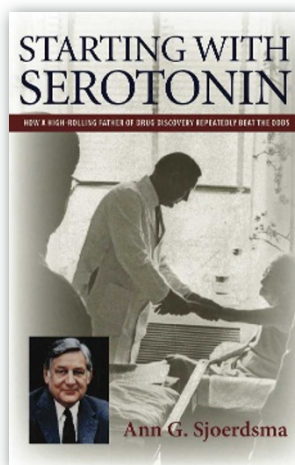
won many devoted friends and colleagues — and lost some, too. But there was no arguing with his successes. The biggest was terfenadine (Seldane), the first antihistamine that did not cause drowsiness. Developed in the 1970s, it was a blockbuster drug until heart arrhythmias surfaced in some users.

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



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

he integrated work and family life. Understandably, the daughter's loyalty seems to trump the journalist's objectivity.

Yet perhaps only she could have played the theme of gambling so well, arguing that her father's strategy was the same at the bench and at the table. He played to win, not to get rich. He was disciplined and used gambling as a test of his willpower. Sjoerdsma's strategy was conservative, but he was willing to take big risks and to bet high stakes when the odds were good. As the author says, he repeatedly beat the odds.

Do not read *Starting With Serotonin* for a story of the selfless thirst for knowledge. Rather, read it for the strategy — both experimental and mercantile — and the passion for competition. Sjoerdsma did it for the love of the game, for better and for worse. ■

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national government schemes. Phipps argues that progress has been limited by targeting “the problem with girls”, namely that they are gender-stereotyped and fail to recognize the attraction of a career in science. The most successful campaigns described address underlying reasons for girls' career choices, such as the expectations of parents and peer group, and pressures from wider society and culture. Less successful were initiatives that attempted to make science ‘girl-friendly’, for example an after-school club that taught computing skills through topics such as celebrity, fashion and music. As Phipps points out, this widely encountered approach reinforces the stereotypes that such campaigns are seeking to challenge.

Phipps presents statistics to show that universities are among the worst institutions in the United Kingdom in terms of gender equality. Women who choose a career in science may receive support from many professional women's groups and networks. Yet participation is often low owing to limited funding and lack of time to participate. Phipps assesses that the success of initiatives has been limited by focusing on helping women to survive and thrive in existing masculine environments, rather than challenging the underlying work culture and perception of the ideal scientist as a masculine figure: rational, competitive, independent and technically skilled.

If we fail to challenge the interaction between patriarchy and the professionals, Phipps argues, then increasing the numbers of women within technical professions “will not bring about the hoped-for transformation”. In law and medicine, despite the fact that women make up a growing and significant proportion, there remains a marked pay gap, and the working culture is largely unchanged. The book does not provide any quick solutions: increased flexibility in working hours and better maternity pay support a few highly motivated women, usually white and middle-class, to develop their careers. These initiatives also underline society's expectation that women will take on caring, domestic roles as well as professional ones.

We all know talented women who have dropped out of science from a feeling of “not being good enough” to do research or to lead a research group. Phipps's book puts this inner voice to rest by showing that such feelings arise from one's experience of society, culture and capitalism, not one's abilities as a scientist. ■

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Challenging stereotypes

Women in Science, Engineering and Technology: Three Decades of UK Initiatives

by Alison Phipps

Trentham Books: 2008. 184 pp.
£16.99, €25.50

The lack of women, especially senior women, in science departments is familiar. Less widely appreciated is the effort that has gone into addressing this under-representation. *Women in Science, Engineering and Technology* presents a history of around 150 initiatives to encourage women's participation in science, engineering, construction and technology in the United Kingdom during the past three decades. Alison Phipps, director of gender studies at the University of Sussex, UK, has compiled a valuable resource for activists, policy-makers and educational practitioners, also providing social and political context and analysis.

To a woman working in science, rather than one working for women in science, the book is much more than a reference manual. It puts our experience in context — within the global economy and the women's movement. Phipps makes a compelling case that achieving fundamental change depends on understanding this context and she urges closer communication between educators, academics and social scientists.

Phipps describes how the shift from manufacturing to knowledge-based economies has created demand for skilled workers in science and technology. As in many countries, attracting more women into technical jobs has been identified as a priority for raising Britain's competitive position in the global economy.

Phipps distinguishes between economic and moral motivations to promote gender equality in science, and alerts us to the dangers of relying on the current alignment between the interests of the economy and women's rights. Economic incentives may change with the political climate, leaving women in a vulnerable position if their skills are no longer valued. Also, the ‘business case’ for equality does not concern itself with the underlying reasons for gender inequality, and undermines the idea of equality as an end in itself.

Encouragement for women to pursue careers in science begins in the classroom. *Women in Science, Engineering and Technology* compares grassroots initiatives in schools with corporate-led and



Schoolgirl Amy's depiction of a typical scientist (left) changed after a visit to a laboratory (right).