

On the scent of the sixth sense

Jacobson's Organ: And the Remarkable Nature of Smell

by Lyall Watson

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Jacobson's organ is an anatomical structure lying in the nasal septa of a wide range of animals. It is named after Ludwig Levin Jacobson, an eighteenth-century Danish army surgical officer with a penchant for comparative anatomy. His discovery was reported to the world by Baron Georges Cuvier, of the Musée d'Histoire Naturelle in Paris. "The organ consists of a long narrow bag of gland-like substance," he told his students in 1811, "surrounded by a cartilaginous case of the same form, located on the floor of the nasal cavity, on each side, very near the ridge on which rests the inferior border of the cartilaginous portion of the nasal septum ... M. Jacobson has examined this organ in various animals which possess it ... we find it most developed in rodents, next in ruminants. The carnivores have less, and in monkeys it becomes so small that we are prepared to see it vanish completely in man."

Although Jacobson noted well-developed nerves passing dorsally from the organ, he concluded that the organ was secretory. But he remained puzzled as to

why it should provide secretion to the nose and mouth, with which it is connected via the nasopalatine canal.

We now know that Jacobson's organ functions as a secondary organ of smell, its distinct nerves passing not to the olfactory bulb of the brain but to an accessory olfactory bulb. With connections to the regions of the brain that control sexual behaviour and functioning, Jacobson's organ is used by most species to allow the animal to determine the state of sexual readiness in potential mates. The stallion's dramatic flaring of the lips after tasting the mare's urine is a well-known example of how the lumen of the organ becomes suffused with sexual pheromones.

Lyall Watson's easy, flowing text picks its way through the comparative anatomy, biochemistry and evolutionary biology of olfactory communication in the animal kingdom in a most readable way. Jacobson's organ and its role in animal behaviour are described in some detail. Interspersed are vignettes about Linnaeus's classification of odours, together with literary references and anecdotes describing some of the enigmas that constitute human olfaction. Watson reminds us of the remarkable olfactory powers of Helen Keller, the blind and deaf American author who could recognize people by their odour; the lustful recall of Napoleon Bonaparte's pleasure in the smell of Josephine's body; and the *mémoire involontaire* described by Marcel Proust, when the aroma of a dunked madeleine biscuit unleashed a flood of childhood memories.

Without realizing it, the reader is invited

to consider what Watson calls "the sixth sense" as a category of perception dependent upon Jacobson's organ for its sensory input. "We have Jacobson's Organ," he writes. "It is present in almost every human nose so far examined. And it appears to be functional: a miniprobe inserted into the appropriate pits on either side of the nasal septum registers a measurable potential in the presence of steroidal pheromones." He cites the powers of the *ombiasy*, or local herbal healers, of Madagascar: a healer sniffs out a solution to a particular patient's condition "by wandering with an open mind, until something stops him, until a particular plant catches his attention, and gives a whole new slant to the idea of an elective procedure, by offering itself as the remedy". He adds that we should approach the plant world with flared lips "in a way that opens up the duct to Jacobson's Organ".

What Watson omits to inform us is that the presence of a functional Jacobson's organ in humans is highly contentious. Despite almost two centuries of comparative anatomical research since Jacobson's day, there remains no unequivocal evidence for the presence of a functioning Jacobson's organ in any Old World monkey, ape or human. True, one study has reported the presence of pits on either side of the nasal septum in most of a sample of 1,000 people, but another, involving 1,842 adults, found paired nasal pits in just 13 per cent of them. Another has reported apparent evoked potentials from these pits when they were bathed in putative human pheromones, but the possibility that this was the result of stimulation of the trigeminal nerve was not addressed. Some studies have reported the presence of bipolar receptor cells in the organ's lining, similar to those found in the olfactory mucosa, whereas others have explicitly failed to find such receptors. An accessory olfactory bulb — a prerequisite for the functioning of Jacobson's organ — has not been described for any Old World primate, including humans.

To the critical scientist, the case for the existence of a functional Jacobson's organ has yet to be made. Much of the support for its existence in humans has come from a company that markets pheromone-enriched perfumes, allegedly acting via the organ and its pathways to the sexual centres of the brain. I await independent corroboration. Maybe Watson's book is well ahead of its time; even he thinks it might be, as he reveals by admitting that discourse on the sixth sense is speculative.

This is not a book for the serious scientist. Its uncritical approach will only fuel further speculation about the supposed supernatural powers of the sense of smell. ■

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A whiff of the past

The Ancient Egyptians valued perfumes and cosmetics highly, and the Egyptian climate, with its regular supply of water and abundant sunshine, was well suited to producing floral fragrances. The priestess Ihat, seen here sniffing a lotus, Egypt's most valued aromatic

flower, is featured in *Sacred Luxuries: Fragrance, Aromatherapy and Cosmetics in Ancient Egypt* by Egyptologist Lise Manniche, with photographs by Werner Forman

(Opus, £24.95, \$30.95).

