During the scourge of the Plague of the Black Death, which swept across Europe in the fourteenth and fifteenth centuries, vast quantities of perfumes, scented herbs, pot pourri of dried flower petals and fragrant woods were sniffed, daubed, crushed, strewn, sprinkled and burned in a vain attempt to exclude the plague from the air and so to keep it away from the body. In the Dark and Early Middle Ages it would have been quite natural to believe that in every breath which enters the body there could lurk a pestilence and in sweetening it the scourge could be driven out. We still call the disease that kills more people in the world each year than any other disease by a name which means ‘bad air’ (malaria). It was to be a further four or five centuries before the role of micro-organisms in disease transmission was to be discovered. Other than Divine Intervention (a robust immune system notwithstanding!) the only palliative against the plague available to doctors was a sweet odour. They ordered huge fires of pine, fir and other scented woods to be lit in the streets – one for every eight houses — and kept alight night and day. Sometimes flowers of sulphur would be thrown onto the flames, filling the air with thick yellow acrid fumes which made the eyes and nose stream and tore at the throat. Recognising their own vulnerability the doctors dressed in long coats of leather, into which had been rubbed honey-scented beeswax, and wore gloves with long thick gauntlets (Fig. 1.1). Over their heads they wore curious masks, with windows of the finest glass, which bore bee-like projections that were regularly filled with fresh herbs and dried petals. When a patient was examined, the doctor would probe about the poor wretch’s axilla or groin with his cane to locate an artery and once found the cane would be used as a sounding stick to transmit the beat from the pulse to the doctor’s ear which would be pressed to the other end, as touching a sick person was considered dangerous. Sometimes the end of the cane would contain a small perforated chamber into
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which further scented unguents could be placed. If the patient was a nobleman, or someone of rank, the physician would have no option but to feel the pulse with one hand but the other would hold a ‘pomum ambre’, or pomander, to his own nose. Early pomanders were small sandalwood boxes or cloth sachets filled with amber, incense and sulphur, and they would be sniffed enthusiastically while the examination was in progress. If the physician was a man of substance he would have had a plague torch carried in front of him, as he made his bird-like way along the street (Fig. 1.2). Into the small burner at the top of the torch would be placed some charcoal onto which the physician’s assistant would sprinkle resins and gums to perfume the air for his master. Around the house of the dead would be sprinkled plenty of plague water – water to which some aromatic substance had been added – in a futher attempt at a cordon sanitaire. Eau de Cologne is one such plague water which has survived – in name, at least – until the present day. During the plague centuries herbalists and apothecaries could hardly keep up the supply of fresh aromata from the country and abroad, compounding pastilles to be sucked to perfume the breath and making pot pourri for every conceivable use. Let Daniel Defoe tell the story in his own words (1754):

This immediately filled everybody’s mouths with one preparation or another... so we perhaps as the physicians directed, in order to prevent infection by the breath of others; insomuch that if we came to go into a church, when it was anything full of people, there would be such a mixture of smells at the entrance, that if it was more strong, though perhaps not so unwholesome, than if you were going into an apothecary or druggist’s shop; in a word, the whole church was like a smelling bottle, in one corner it was all perfumes, in another aromatics, balsamics and variety of drugs, and herbs; in another salts and spirits, as everyone furnished for their own preservation.

The idea that bad odours cause disease goes back to two of the most famous names in medical history. The Arabian physician Avicenna (980–1037) noticed, very perceptively, that the odour of urine changed during sickness and he used this new found knowledge in his diagnoses, as an increasing number of doctors do today. From this observation developed the idea that it was these odours, which were so clearly related to the disease suffered by their producer, that actually caused the disease and their expulsion in the urine was part of the recovery. Several centuries before him the Greek physician Galen took the view, correctly, that odours were
Fig. 1.1 Plague doctor's dress, eighteenth century France. From: Traite de la peste, by Maurice of Toulon-sur-Mer. Published by P. Pliche, Geneva, 1721. (The bird bill-like face mask commonly used during the plague may have been the origin of the name ‘quack’ as a slang for doctor. According to George Crabbe (1754–1832)

‘Void of all honor, avaricious, rash
The daring tribe compound their boasted trash,
Tincture of syrup, lotion, drop, or pill;
All tempt the sick to trust the lying bill.’)

(Photograph courtesy of the Wellcome Institute Library, London.)
perceived in the brain and further, incorrectly, that they gained direct access to the centre of the brain via the olfactory nerves which he assumed to be hollow. Despite the fact that Aristotle had before him argued for the scent receptors to be placed in the lining of the nose, Galen’s notion survived for over one thousand years. Despite the advances made in understanding the aetiology of disease in the seventeenth and eighteenth centuries, English judges as late as the nineteenth century would take nosegays of sweetly smelling herbs with them when they visited jail, to ward off jail-fever (typhus). They were no more successful than the perfume masks of the plague doctors had been, five centuries before!

During the last decades of the middle ages, peoples’ concepts of cleanliness and hygiene were changing. Few people, other than the wealthy landlords, had access to baths and servants to fill and heat them. Most people were verminous, their unwashed clothes providing ample refuges for fleas, lice, ticks and mites. During the seventeenth century, in the reigns of Louis XIII and Louis XIV, when linen first appeared in the European courts, cleanliness came, to an even greater extent than before, to be a matter of appearance. Scented white powder was rubbed into collars, cuffs and bands, and wigs were enthusiastically powdered to quell stench. As one French observer a century before put it ‘They taint everything with their false wigs, sprinkled with powder of Cyprus to combat even worse smells’ (Vigarello, 1988). Clothes were seldom washed; white powder and ample perfume were all that was required to give the impression of cleanliness. Since the thirteenth and fourteenth centuries, when the plague had closed down Europe’s grand communal bath houses, the body was seldom washed. By the seventeenth century the ‘clean’ body smelled richly of expensive perfume, much as it had done several millennia before when the Ancient Egyptians and Myceneans likewise used perfume to conceal dirt (Neufeld, 1970, Shenmerdine, 1985).

During the centuries from the end of the Dark Ages until the Industrial Revolution, when European culture was experimenting with perfumes for disease protection and to provide a semblance of cleanliness, philosophers argued and debated man’s place in the plethora of nature. At times in European history it was clear, perhaps never clearer than when moralists and theologians were emerging in the Renaissance. It can be seen from their writings that their main purpose was to define the special status of man and to justify his domain over other creatures. The Bible supported them by regarding human ascendancy as central to the Divine Plan. Creatures
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Fig. 1.2 Plague torch carried in times of plague. A pot-pourri of fragrant herbs was burned in the tiny brazier at the top of the stick so that the bearer was accompanied – and, it was believed, protected from the pestilence – by the scented fumes. (Photograph courtesy of the Wellcome Institute Library, London.)
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were provided for the use of man; God created man for himself and all others for man. Francis Bacon is reported as saying

Man, if we look to the final causes, may be regarded as the centre of the world in as much that if man were taken away from the world, the rest would seem to be all astray, without aim or purpose.

And as the writer of Genesis puts it (IX 2–3):

The fear of you and the dread of you all shall be upon every beast of the earth and upon every fowl of the air, upon all that moveth upon the earth and upon all the fishes of the sea; into your hand are they delivered. Every moving thing that liveth shall be meat for you.

In every man there lurked a trace of what Plato called ‘The wild beast within us’. Religion and morality attempted to curb these undesirable traits and to raise man above the brute creation. Any characteristic shared with the animals diminished man’s glorious image and made him no better than the animals over which he had been set to reign. He was unique; a creature of God’s will, which was set far apart from the beasts of the field whose outward signs of civility, decorum and politeness were so marked that Descartes developed his famous doctrine that animals were mere machines, while man alone combined matter and intellect. The lives of animals, with their earthy and undecorous habits – including an olfactory interest in the bodies of their fellows – were something to be scorned.

Then came Charles Darwin. When he proposed that mankind had evolved from a primate stock, and was related to the apes which were often exhibited in zoos, a moralistic and theological eruption of overwhelming proportions ensued. The theory of evolution was attractive to the newly educated of the Protestant world, who were quick to accept a philosophy which distanced themselves from the orthodoxy of Rome. Today the theory of evolution – for it still remains just that – is widely accepted, though periodically bouts of religious fundamentalist fervour demands that if it is not to be banned from school curricula then at least equal time should be given to alternative philosophies. Man is an animal and is very closely related to the chimpanzee with which creature he shares 99 per cent of his genetic material. Perhaps the hominids have been identifiably distinct from the chimpanzee’s line for only 5 ± 1.5 million years, and the genus Homo distinguishable for between half a million and one hundred thousand years only (Cronin, 1983). Genetically we are closely related but the gulf of behavioural, cultural and intellectual
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differences which separates us is of fathomless depth. In some respects a hypothetical observer from another planet would notice many similarities between man and chimpanzee; both are active, playful creatures with inquisitive minds. Both vocalise and seem to express mood with facial expressions, and both take great interest and delight in their young. Old individuals, past the nubile age, are venerated by the group, and intertribal warfare is not uncommon. Both have acute vision and hearing, and dextrous, tactile fingers. But as far as their reactions to the smells of their felow are concerned, the observer would notice a clear difference between the species. He would note that, particularly for Westernised man where hygiene facilities allow, body odour is regarded as unpleasant and distasteful, with great efforts being expended in its removal. Not only is soap and water used to prise free the fatty scented secretions from the skin but tufts of hair which grace the most scented regions are routinely shaved off. His flamboyant use of perfumes, however, would tell our observer that the human sense of smell is far from defunct and he might become confused when he compared the role of genital odour which accompanies copulation in chimpanzees with the general disgust expressed by humans when confronted with the same odour. His confusion would mount still further if he should find out that the most sought-after ingredients for man’s perfumes have, since the beginning of recorded history, been the sex attractant odorous secretions from various species of mammals. If he read the history books he would note that at the time of her death the walls of the Empress Josephine’s rooms were so heavily impregnated with the sexual lure of the Himalayan musk deer that the workmen engaged in refurbishing them were quite overcome with nausea and fainting attacks. He might stop to wonder why a primate which seeks out privacy for mating, and consorts with a single female for long periods of time and which copulates far more frequently than the chimpanzee should use sex attractants of deer, civets and beavers and not those of its own species when it has batteries of its own scent producing glands. In fact, man has more scent glands upon his body than any other higher primate, and women have higher numbers than men. Our observer could hardly be blamed if he returned to his home planet wondering just how on earth the olfactory biology of these two very closely related creatures could have diverged so far so quickly. But it was on earth, and because man is an animal subject to the forces of natural selection like all other animals, that it happened.

This book is an examination of the biology and culture of human
odour. I am more concerned to investigate the significance of odours to our lives in its many forms – including our use of perfumes and incense – than to consider the molecular events which occur in our noses when a particular odorant is sampled and identified. Fascinating as this is, my emphasis is on the influence that odours have on our brains, our psyches and on various aspects of our physiology. I believe that the most curious feature of our sense of smell is that while we generally relish the sweet scents of a summer garden, or the bouquet from a fine wine we do not generally relish in the natural scents of our fellows. This intrigues me for I find the existence of an effective – even highly discriminatory – sensory system which apparently serves little obvious biological function to be quite unexpected. That our recent ancestors used their noses to assist them in the hunt is acknowledged so I can accept that modern man still retains the vestige of a once useful system, just as he retains an appendix, a coccyx and other vestiges of structures once biologically useful and now rendered redundant. If the human nose is vestigial, with powers only a fraction of what they were in our distant ancestry, why are humans so concerned about odours? Why is the nose not treated like the appendix – accepted for what it is and left alone? Many poets regularly pay homage to the pleasures gained from the sense of smell but I know of none who writes moving verses about the coccyx or the appendix. The nose is often regarded as an equivalent to the monkey’s tail, which gradually disappeared when it was no longer needed. I believe this is a false equation, though as will become apparent, it is ironic that the tail shrank and the nose developed its own particular role under the influence of a common set of environmental pressures.

Is the conundrum of the human nose zoological or cultural? For centuries people have questioned whether human cultural attributes have contributed to his evolution. Largely this argument has been maintained on epistemological grounds – cultural anthropologists generally know little of comparative zoology and animal biology, and zoologists have steered clear of embracing a supposed evolutionary force (culture) which is not overtly subject to the pressures of natural selection. Mercifully this barrier is being eroded and each side has much to learn from the other, for the precepts and tenets of behavioural biology can be reconciled with those of anthropology. It is worth reviewing the central ideas in anthropology to show just how closely the two disciplines lie together. The first idea is that human behaviour varies enormously between societies and is, to a very great extent, shaped by those things which individuals learn as a
**Excerpt**

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result of growing up in, and living in, a particular society. This is culture. Secondly, cultures are specific to the peoples in which they are found, reflecting the specific ecological and other constraints of their environment. Thirdly, value judgements which an observer may make about a particular culture are relative only to that culture and not to any other. Finally, culture develops not directly as a result of human biology; it has its own internal dynamics which shape it and modify it for the particular adaptive needs of a particular society. The first three of these ideas are entirely compatible with our understanding of behavioural biology as it applies to the animal kingdom; only the last is incompatible. Of this Irons (1979) says

If culture evolves in its own terms without responding to human attempts to shape it, and at the same time determines the form of human behaviour, then it is hard to see how evolved behavioural tendencies could cause behaviour to assume the form that maximises inclusive fitness.

This is the crux of the matter, for it is the inclusive fitness of the individuals comprising a society which will determine whether or not the society persists and flourishes. Culture has evolved over about 35 000 generations of humans since the genus _Homo_ first differentiated; that it has contributed to its success is not in doubt, but it is not the sole determinant of success. The difficulty of resolving the problem can be overcome by adding to the four basic ideas of anthropology the expectation that most forms of behaviour will be either biologically adaptive or will be expressions of evolved tendencies which were adaptive earlier in our evolutionary history. In this book I shall look at several aspects of our sense of smell that can be regarded as expressions of evolved tendencies having a positive selective advantage at some earlier time in our evolutionary past. For example I shall argue that during the Miocene epoch, man’s primate ancestors started to band together in order to hunt the large ungulates which evolved in association with the grassy plains, and that this gregarious habit posed a threat to the integrity of the pair-bonds which existed between males and females by allowing the oestrous-advertising odour signals of the females to be perceived by all the males in the band. To retain the sociobiological advantages which the pair-bonds afforded the young it was necessary for the information present in the signals to be scrambled by the brain until it was meaningless. The universal use of a small number of ingredients of incense by people of all cultures may be attributed to the odours of the resin alcohols, which mimic those of the ancient signals, and unconsciously stimulate the deepest parts of the brain.
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Similarly, the finest perfumes contain hints, or notes, of a urinary nature which unconsciously stir the ancient memory traces of sex attractant pheromones since sex attractant pheromones are expelled from the body in urine. These two cultural uses of odours may be seen to be firmly rooted in the evolutionary biology of our species and serve as a telling instance of the interaction of biological and cultural variables.

Writing a few years after the publication of his synthetic treatment combining genetics, behaviour and ecology into a theory of socio-biology, E. O. Wilson (1979) addressed the growing, and welcome, bridge between zoology and anthropology:

It is healthful for anthropologists to tell biologists that their ideas are too simple to explain the really important qualities of human social behaviour, and for biologists to tell anthropologists that they will never have a satisfying explanation of that behaviour in the absence of evolutionary theory and population biology ... Anthropology will become more biological, and biology will become more anthropological. The seam between the two subjects will disappear, and both will be richer in content.

The sense of smell is a good place to start; it is as uniquely human to humans as it is animate to animals. The ethnological and anthropological literature abounds with descriptions of customs and practices which are essentially cultural, but are capable of being fitted into a context of a previous adaptive significance. Thus when Captain Beechy of HMS Blossom reported in 1831 that eskimos greeted one another by rubbing noses and then licking the palms of their hands and rubbing them first over their own faces and then over that of the guests, one is forced to recall the greetings ceremonies of many mammals which sniff and lick one another. Rother in 1890 described the greeting of the hill people from Khyoungtha in India

Their mode of kissing is strange; instead of pressing lip to lip they apply the mouth and nose to the cheek, and give a strong inhalation. In their language they do not say ‘Give me a kiss’ but they say ‘Smell me’.

If they could talk, most mammals would say the same. These two simple examples of cultural differences in greetings behaviour, developed independently under different social circumstances, are clearly linked to a biological phenomenon – that of the indelible odour envelope which accompanies every one of us wherever we go. I believe zoology has something to offer to ethnography, just as a study of man’s cultures may help to resolve some zoological puzzles.