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STUDIES
IN THE
PSYCHOLOGY OF SEX

VOLUME IV

SEXUAL SELECTION IN MAN

I. TOUCH. II. SMELL. III. HEARING. IV. VISION.

BY

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SMELL.

I.

The Primitiveness of Smell—The Anatomical Seat of the Olfactory Centres—Predominance of Smell among the Lower Mammals—Its Diminished Importance in Man—The Attention Paid to Odors by Savages.

The first more highly organized sense to arise on the diffused tactile sensitivity of the skin is, in most cases, without doubt that of smell. At first, indeed, olfactory sensibility is not clearly differentiated from general tactile sensibility; the pit of thickened and ciliated epithelium or the highly mobile antennæ which in many lower animals are sensitive to odorous stimuli are also extremely sensitive to tactile stimuli; this is, for instance, the case with the snail, in whom at the same time olfactive sensibility seems to be spread over the whole body.^[24] The sense of smell is gradually specialized, and when taste also begins to develop a kind of chemical sense is constituted. The organ of smell, however, speedily begins to rise in importance as we ascend the zoölogical scale. In the lower vertebrates, when they began to adopt a life on dry land, the sense of smell seems to have been that part of their sensory equipment which proved most useful under the new conditions, and it developed with astonishing rapidity. Edinger finds that in the brain of reptiles the "area olfactoria" is of enormous extent, covering, indeed, the greater part of the cortex, though it may be quite true, as Herrick remarks, that, while smell is preponderant, it is perhaps not correct to attribute an exclusively olfactory tone to the cerebral activities of the *Sauropsida* or even the *Ichthyopsida*. Among most mammals, however, in any case, smell is certainly the most highly developed of the senses; it gives the first information of remote objects that concern them; it gives the most precise information concerning the near objects that concern them; it is the sense in terms of which most of their mental operations must be conducted and their emotional impulses reach consciousness. Among the apes it has greatly lost importance and in man it has become almost rudimentary, giving place to the supremacy of vision.

Prof. G. Elliot Smith, a leading authority on the brain, has well summarized the facts concerning the predominance of the olfactory region in the mammal brain, and his conclusions may be quoted. It should be premised that Elliot Smith divides the brain into rhinencephalon and neopallium. Rhinencephalon designates the regions which are pre-eminently olfactory in function: the olfactory bulb, its peduncle, the tuberculum olfactorium and locus perforatus, the pyriform lobe, the paraterminal body, and the whole hippocampal formation. The neopallium is the dorsal cap of the brain, with frontal, parietal, and occipital areas, comprehending all that part of the brain which is the seat of the higher associative activities, reaching its fullest development in man.

"In the early mammals the olfactory areas form by far the greater part of the cerebral hemisphere, which is not surprising when it is recalled that the forebrain is, in the primitive brain, essentially an appendage, so to speak, of the smell apparatus. When the cerebral hemisphere comes to occupy such a dominant position in the brain it is perhaps not unnatural to find that the sense of smell is the most influential and the chief source of information to the animal; or, perhaps, it

would be more accurate to say that the olfactory sense, which conveys general information to the animal such as no other sense can bring concerning its prey (whether near or far, hidden or exposed), is much the most serviceable of all the avenues of information to the lowly mammal leading a terrestrial life, and therefore becomes predominant; and its particular domain—the forebrain—becomes the ruling portion of the nervous system.

"This early predominance of the sense of smell persists in most mammals (unless an aquatic mode of life interferes and deposes it: compare the *Cetacea*, *Sirenia*, and *Pinnipedia*, for example) even though a large neopallium develops to receive visual, auditory, tactile, and other impressions pouring into the forebrain. In the *Anthropoidea* alone of nonaquatic mammals the olfactory regions undergo an absolute (and not only relative, as in the *Carnivora* and *Ungulata*) dwindling, which is equally shared by the human brain, in common with those of the other *Simiidae*, the *Cercopithecidae*, and the *Cebidae*. But all the parts of the rhinencephalon, which are so distinct in macrosmatic mammals, can also be recognized in the human brain. The small ellipsoidal olfactory bulb is moored, so to speak, on the cribriform plate of the ethmoid bone by the olfactory nerves; so that, as the place of attachment of the olfactory peduncle to the expanding cerebral hemisphere becomes removed (as a result of the forward extension of the hemisphere) progressively farther and farther backward, the peduncle becomes greatly stretched and elongated. And, as this stretching involves the gray matter without lessening the number of nerve-fibres in the olfactory tract, the peduncle becomes practically what it is usually called—*i.e.*, the olfactory 'tract.' The tuberculum olfactorium becomes greatly reduced and at the same time flattened; so that it is not easy to draw a line of demarcation between it and the anterior perforated space. The anterior rhinal fissure, which is present in the early human foetus, vanishes (almost, if not altogether) in the adult. Part of the posterior rhinal fissure is always present in the 'incisura temporalis,' and sometimes, especially in some of the non-European races, the whole of the posterior rhinal fissure is retained in that typical form which we find in the anthropoid apes." (G. Elliot Smith, in *Descriptive and Illustrated Catalogue of the Physiological Series of Comparative Anatomy Contained in the Museum of the Royal College of Surgeons of England*, second edition, vol. ii.) A full statement of Elliot Smith's investigations, with diagrams, is given by Bullen, *Journal of Mental Science*, July, 1899. It may be added that the whole subject of the olfactory centres has been thoroughly studied by Elliot Smith, as well as by Edinger, Mayer, and C. L. Herrick. In the *Journal of Comparative Neurology*, edited by the last named, numerous discussions and summaries bearing on the subject will be found from 1896 onward. Regarding the primitive sense-organs of smell in the various invertebrate groups some information will be found in A. B. Griffiths's *Physiology of the Invertebrata*, Chapter XI.

The predominance of the olfactory area in the nervous system of the vertebrates generally has inevitably involved intimate psychic associations between olfactory stimuli and the sexual impulse. For most mammals not only are all sexual associations mainly olfactory, but the impressions received by this sense suffice to dominate all others. An animal not only receives adequate sexual excitement from olfactory stimuli, but those stimuli often suffice to counterbalance all the evidence of the other senses.

We may observe this very well in the case of the dog. Thus, a young dog, well known to me, who had never had connection with a bitch, but was always in the society of its father, once met the latter directly after the elder dog had been with a bitch. He immediately endeavored to behave toward the elder dog, in spite of angry repulses, exactly as a dog behaves toward a bitch in heat.

The messages received by the sense of smell were sufficiently urgent not only to set the sexual mechanism in action, but to overcome the experiences of a lifetime. There is an interesting chapter on the sense of smell in the mental life of the dog in Giessler's *Psychologie des Geruches*, 1894, Chapter XI, Passy (in the appendix to his memoir on olfaction, *L'Année Psychologique*, 1895) gives the result of some interesting experiments as to the effects of perfume on dogs; civet and castoreum were found to have the most powerfully exciting effect.

The influences of smell are equally omnipotent in the sexual life of many insects. Thus, Féré has found that in cockchafers sexual coupling failed to take place when the antennæ, which are the organs of smell, were removed; he also found that males, after they had coupled with females, proved sexually attractive to other males (*Comptes Rendus de la Société de Biologie*, May 21, 1898). Féré similarly found that, in a species of *Bombyx*, males after contact with females sometimes proved attractive to other males, although no abnormal relationships followed. (*Soc. de Biol.*, July 30, 1898.)

With the advent of the higher apes, and especially of man, all this has been changed. The sense of smell, indeed, still persists universally and it is still also exceedingly delicate, though often neglected.^[25] It is, moreover, a useful auxiliary in the exploration of the external world, for, in contrast to the very few sensations furnished to us by touch and by taste, we are acquainted with a vast number of smells, though the information they give us is frequently vague. An experienced perfumer, says Piesse, will have two hundred odors in his laboratory and can distinguish them all. To a sensitive nose nearly everything smells. Passy goes so far as to state that he has "never met with any object that is really inodorous when one pays attention to it, not even excepting glass," and, though we can scarcely accept this statement absolutely,—especially in view of the careful experiments of Ayrton, which show that, contrary to a common belief, metals when perfectly clean and free from traces of contact with the skin or with salt solutions have no smell,—odor is still extremely widely diffused. This is especially the case in hot countries, and the experiments of the Cambridge Anthropological Expedition on the sense of smell of the Papuans were considerably impeded by the fact that at Torres Straits everything, even water, seemed to have a smell. Savages are often accused more or less justly of indifference to bad odors. They are very often, however, keenly alive to the significance of smells and their varieties, though it does not appear that the sense of smell is notably more developed in savage than in civilized peoples. Odors also continue to play a part in the emotional life of man, more especially in hot countries. Nevertheless both in practical life and in emotional life, in science and in art, smell is, at the best, under normal conditions, merely an auxiliary. If the sense of smell were abolished altogether the life of mankind would continue as before, with little or no sensible modification, though the pleasures of life, and especially of eating and drinking, would be to some extent diminished.

In New Ireland, Duffield remarks (*Journal of the Anthropological Institute*, 1886, p. 118), the natives have a very keen sense of smell; unusual odors are repulsive to them, and "carbolic acid drove them wild."

The New Caledonians, according to Foley (*Bulletin de la Société d'Anthropologie*, November 6, 1879), only like the smells of meat and fish which are becoming "high," like *popoya*, which smells of fowl manure, and *kava*, of rotten eggs. Fruits and vegetables which are beginning to go bad seem the best to them, while the fresh and natural odors which we prefer seem merely to say to them: "We are not yet eatable." (A taste for putrefying food, common among savages, by no

means necessarily involves a distaste for agreeable scents, and even among Europeans there is a widespread taste for offensively smelling and putrid foods, especially cheese and game.)

The natives of Torres Straits were carefully examined by Dr. C. S. Myers with regard to their olfactory acuteness and olfactory preferences. It was found that acuteness was, if anything, slightly greater than among Europeans. This appeared to be largely due to the careful attention they pay to odors. The resemblances which they detected among different odorous substances were frequently found to rest on real chemical affinities. The odors they were observed to dislike most frequently were asafœtida, valerianic acid, and civet, the last being regarded as most repulsive of all on account of its resemblance to fœcal odor, which these people regard with intense disgust. Their favorite odors were musk, thyme, and especially violet. (*Report of the Cambridge Anthropological Expedition to Torres Straits*, vol. ii, Part II, 1903.)

In Australia Lumholtz (*Among Cannibals*, p. 115) found that the blacks had a keener sense of smell than he possessed.

In New Zealand the Maoris, as W. Colenso shows, possessed, formerly at all events, a very keen sense of smell or else were very attentive to smell, and their taste as regarded agreeable and disagreeable odors corresponded very closely to European taste, although it must be added that some of their common articles of food possessed a very offensive odor. They are not only sensitive to European perfumes, but possessed various perfumes of their own, derived from plants and possessing a pleasant, powerful, and lasting odor; the choicest and rarest was the gum of the *taramea* (*Aciphylla Colensoi*), which was gathered by virgins after the use of prayers and charms. Sir Joseph Banks noted that Maori chiefs wore little bundles of perfumes around their necks, and Cook made the same observation concerning the young women. References to the four chief Maori perfumes are contained in a stanza which is still often hummed to express satisfaction, and sung by a mother to her child:—

"My little neck-satchel of sweet-scented moss,
My little neck-satchel of fragrant fern,
My little neck-satchel of odoriferous gum,
My sweet-smelling neck-locket of sharp-pointed *taramea*."

In the summer season the sleeping houses of Maori chiefs were often strewed with a large, sweet-scented, flowering grass of powerful odor. (W. Colenso, *Transactions of the New Zealand Institute*, vol. xxiv, reprinted in *Nature*, November 10, 1892.)

Javanese women rub themselves with a mixture of chalk and strong essence which, when rubbed off, leaves a distinct perfume on the body. (Stratz, *Die Frauenkleidung*, p. 84.)

The Samoans, Friedländer states (*Zeitschrift für Ethnologie*, 1899, p. 52), are very fond of fragrant and aromatic odors. He gives a list of some twenty odorous plants which they use, more especially as garlands for the head and neck, including ylang-ylang and gardenia; he remarks that of one of these plants (cordyline) he could not himself detect the odor.

The Nicobarese, Man remarks (*Journal of the Anthropological Institute*, 1889, p. 377), like the natives of New Zealand, particularly dislike the smell of carbolic acid. Both young men and

women are very partial to scents; the former say they find their use a certain passport to the favor of their wives, and they bring home from the jungle the scented leaves of a certain creeper to their sweethearts and wives.

Swahili women devote much attention to perfuming themselves. When a woman wishes to make herself desirable she anoints herself all over with fragrant ointments, sprinkles herself with rose-water, puts perfume into her clothes, strews jasmine flowers on her bed as well as binding them round her neck and waist, and smokes *ûdi*, the perfumed wood of the aloe; "every man is glad when his wife smells of *ûdi*" (Velten, *Sitten und Gebräuche der Suaheli*, pp. 212-214).

Notes

[24] Emile Yung, "Le Sens Olfactif de l'Escargot (Helix Pomata)," *Archives de Psychologie*, November, 1903.

[25] The sensitiveness of smell in man generally exceeds that of chemical reaction or even of spectral analysis; see Passy, *L'Année Psychologique*, second year, 1895, p. 380.

II.

Rise of the Study of Olfaction—Cloquet—Zwaardemaker—The Theory of Smell—The Classification of Odors—The Special Characteristics of Olfactory Sensation in Man—Smell as the Sense of Imagination—Odors as Nervous Stimulants—Vasomotor and Muscular Effects—Odorous Substances as Drugs.

During the eighteenth century a great impetus was given to the physiological and psychological study of the senses by the philosophical doctrines of Locke and the English school generally which then prevailed in Europe. These thinkers had emphasized the immense importance of the information derived through the senses in building up the intellect, so that the study of all the sensory channels assumed a significance which it had never possessed before. The olfactory sense fully shared in the impetus thus given to sensory investigation. At the beginning of the nineteenth century a distinguished French physician, Hippolyte Cloquet, a disciple of Cabanis, devoted himself more especially to this subject. After publishing in 1815 a preliminary work, he issued in 1821 his *Osphrésiologie, ou Traité des odeurs, du sens et des organes de l'Olfaction*, a complete monograph on the anatomy, physiology, psychology, and pathology of the olfactory organ and its functions, and a work that may still be consulted with profit, if indeed it can even yet be said to be at every point superseded. After Cloquet's time the study of the sense of smell seems to have fallen into some degree of discredit. For more than half a century no important progress was made in this field. Serious investigators seemed to have become shy of the primitive senses generally, and the subject of smell was mainly left to those interested in "curious" subjects. Many interesting observations were, however, incidentally made; thus Laycock, who was a pioneer in so many by-paths of psychology and anthropology, showed a special interest in the olfactory sense, and frequently touched on it in his *Nervous Diseases of Women* and

elsewhere. The writer who more than any other has in recent years restored the study of the sense of smell from a by-path to its proper position as a highway for investigation is without doubt Professor Zwaardemaker, of Utrecht. The invention of his first olfactometer in 1888 and the appearance in 1895 of his great work *Die Physiologie des Geruchs* have served to give the physiology of the sense of smell an assured status and to open the way anew for much fruitful investigation, while a number of inquirers in many countries have had their attention directed to the elucidation of this sense.

Notwithstanding, however, the amount of work which has been done in this field during recent years, it cannot be said that the body of assured conclusions so far reached is large. The most fundamental principles of olfactory physiology and psychology are still somewhat vague and uncertain. Although sensations of smell are numerous and varied, in this respect approaching the sensations of vision and hearing, smell still remains close to touch in the vagueness of its messages (while the most sensitive of the senses, remarks Passy, it is the least precise), the difficulty of classifying them, the impossibility of so controlling them as to found upon them any art. It seems better, therefore, not to attempt to force the present study of a special aspect of olfaction into any general scheme which may possibly not be really valid.

The earliest and most general tendency in regard to the theory of smell was to regard it as a kind of chemical sense directly stimulated by minute particles of solid substance. A vibratory theory of smell, however, making it somewhat analogous to hearing, easily presents itself. When I first began the study of physiology in 1881, a speculation of this kind presented itself to my mind. Long before Philipp von Walther, a professor at Landshut, had put forward a dynamic theory of olfaction (*Physiologie des Menschen*, 1807-8, vol. ii, p. 278). "It is a purely dynamic operation of the odorous substance in the olfactory organ," he stated. Odor is conveyed by the air, he believed, in the same way as heat. It must be added that his reasons for this theory will not always bear examination. More recently a similar theory has been seriously put forward in various quarters. Sir William Ramsay tentatively suggested such a theory (*Nature*, vol. xxv, p. 187) in analogy with light and sound. Haycraft (*Proceedings of the Royal Society of Edinburgh*, 1883-87, and *Brain*, 1887-88), largely starting from Mendelieff's law of periodicity, similarly sought to bring smell into line with the higher senses, arguing that molecules with the same vibration have the same smell. Rutherford (*Nature*, August 11, 1892, p. 343), attaching importance to the evidence brought forward by von Brunn showing that the olfactory cells terminate in very delicate short hairs, also stated his belief that the different qualities of smell result from differences in the frequency and form of the vibrations initiated by the action of the chemical molecules on these olfactory cells, though he admitted that such a conception involved a very subtle conception of molecular vibration. Vaschide and Van Melle (Paris Academy of Sciences, December 26, 1899) have, again, argued that smell is produced by rays of short wave-lengths, analogous to light-rays, Röntgen rays, etc. Chemical action is however, a very important factor in the production of odors; this has been well shown by Ayrton (*Nature*, September 8, 1898). We seem to be forced in the direction of a chemico-vibratory theory, as pointed out by Southerden (*Nature*, March 26, 1903), the olfactory cells being directly stimulated, not by the ordinary vibrations of the molecules, but by the agitations accompanying chemical changes.

The vibratory hypothesis of the action of odors has had some influence on the recent physiologists who have chiefly occupied themselves with olfaction. "It is probable," Zwaardemaker writes (*L'Année Psychologique*, 1898), "that aroma is a physico-chemical attribute

of the molecules"; he points out that there is an intimate analogy between color and odor, and remarks that this analogy leads us to suppose in an aroma ether vibrations of which the period is determined by the structure of the molecule.

Since the physiology of olfaction is yet so obscure it is not surprising that we have no thoroughly scientific classification of smells, notwithstanding various ambitious attempts to reach a classification. The classification adopted by Zwaardemaker is founded on the ancient scheme of Linnæus, and may here be reproduced:—

- I. Ethereal odors (chiefly esters; Rimmel's fruity series).
- II. Aromatic odors (terpenes, camphors, and the spicy, herbaceous, rosaceous, and almond series; the chemical types are well determined: cineol, eugenol, anethol, geraniol, benzaldehyde).
- III. The balsamic odors (chiefly aldehydes, Rimmel's jasmin, violet, and balsamic series, with the chemical types: terpineol, ionone, vanillin).
- IV. The ambrosiacal odors (ambergris and musk).
- V. The alliaceous odors, with the cacodylic group (asafœtida, ichthyol, etc.).
- VI. Empyreumatic odors.
- VII. Valerianaceous odors (Linnæus's *Odores hircini*, the capryl group, largely composed of sexual odors).
- VIII. Narcotic odors (Linnæus's *Odores tetri*).
- IX. Stenches.

A valuable and interesting memoir, "Revue Générale sur les Sensations Olfactives," by J. Passy, the chief French authority on this subject, will be found in the second volume of *L'Année Psychologique*, 1895. In the fifth issue of the same year-book (for 1898) Zwaardemaker presents a full summary of his work and views, "Les Sensations Olfactives, leurs Combinaisons et leurs Compensations." A convenient, but less authoritative, summary of the facts of normal and pathological olfaction will be found in a little volume of the "Actualités Médicales" series by Dr. Collet, *L'Odorat et ses Troubles*, 1904. In a little book entitled *Wegweiser zu einer Psychologie des Geruches* (1894) Giessler has sought to outline a psychology of smell, but his sketch can only be regarded as tentative and provisional.

At the outset, nevertheless, it seems desirable that we should at least have some conception of the special characteristics which mark the great and varied mass of sensations reaching the brain through the channel of the olfactory organ. The main special character of olfactory images seems to be conditioned by the fact that they are intermediate in character between those of touch or taste and those of sight or sound, that they have much of the vagueness of the first and something of the richness and variety of the second. Æsthetically, also, they occupy an intermediate position between the higher and the lower senses.^[26] They are, at the same time, less practically useful than either the lower or the higher senses. They furnish us with a great mass of what we may call by-sensations, which are of little practical use, but inevitably become intimately mixed with the experiences of life by association and thus acquire an emotional significance which is often very considerable. Their emotional force, it may well be, is connected with the fact that their anatomical seat is the most ancient part of the brain. They lie in a remote almost disused storehouse of our minds and show the fascination or the repulsiveness of all vague and remote things. It is for this reason that they are—to an extent that is remarkable when we consider that

they are much more precise than touch sensations—subject to the influence of emotional associations. The very same odor may be at one moment highly pleasant, at the next moment highly unpleasant, in accordance with the emotional attitude resulting from its associations. Visual images have no such extreme flexibility; they are too definite to be so easily influenced. Our feelings about the beauty of a flower cannot oscillate so easily or so far as may our feelings about the agreeableness of its odor. Our olfactory experiences thus institute a more or less continuous series of by-sensations accompanying us through life, of no great practical significance, but of considerable emotional significance from their variety, their intimacy, their associational facility, their remote ancestral reverberations through our brains.

It is the existence of these characteristics—at once so vague and so specific, so useless and so intimate—which led various writers to describe the sense of smell as, above all others, the sense of imagination. No sense has so strong a power of suggestion, the power of calling up ancient memories with a wider and deeper emotional reverberation, while at the same time no sense furnishes impressions which so easily change emotional color and tone, in harmony with the recipient's general attitude. Odors are thus specially apt both to control the emotional life and to become its slaves. With the use of incense religions have utilized the imaginative and symbolical virtues of fragrance. All the legends of the saints have insisted on the odor of sanctity that exhales from the bodies of holy persons, especially at the moment of death. Under the conditions of civilization these primitive emotional associations of odor tend to be dispersed, but, on the other hand, the imaginative side of the olfactory sense becomes accentuated, and personal idiosyncrasies of all kinds tend to manifest themselves in the sphere of smell.

Rousseau (in *Emile*, Bk. II) regarded smell as the sense of the imagination. So, also, at an earlier period, it was termed (according to Cloquet) by Cardano. Cloquet frequently insisted on the qualities of odors which cause them to appeal to the imagination; on their irregular and inconstant character; on their power of intoxicating the mind on some occasions; on the curious individual and racial preferences in the matter of odors. He remarked on the fact that the Persians employed asafoetida as a seasoning, while valerian was accounted a perfume in antiquity. (Cloquet, *Osphrésiologie*, pp. 28, 45, 71, 112.) It may be added, as a curious example familiar to most people of the dependence of the emotional tone of a smell on its associations, that, while the exhalations of other people's bodies are ordinarily disagreeable to us, such is not the case with our own; this is expressed in the crude and vigorous dictum of the Elizabethan poet, Marston, "Every man's dung smell sweet i' his own nose." There are doubtless many implications, moral as well as psychological, in that statement.

The modern authorities on olfaction, Passy and Zwaardemaker, both alike insist on the same characteristics of the sense of smell: its extreme acuity and yet its vagueness. "We live in a world of odor," Zwaardemaker remarks (*L'Année Psychologique*, 1898, p. 203), "as we live in a world of light and of sound. But smell yields us no distinct ideas grouped in regular order, still less that are fixed in the memory as a grammatical discipline. Olfactory sensations awake vague and half-understood perceptions, which are accompanied by very strong emotion. The emotion dominates us, but the sensation which was the cause of it remains unperceived." Even in the same individual there are wide variations in the sensitiveness to odors at different times, more especially as regards faint odors; Passy (*L'Année Psychologique*, 1895, p. 387) brings forward some observations on this point.

Maudsley noted the peculiarly suggestive power of odors; "there are certain smells," he remarked, "which never fail to bring back to me instantly and visibly scenes of my boyhood"; many of us could probably say the same. Another writer (E. Dillon, "A Neglected Sense," *Nineteenth Century*, April, 1894) remarks that "no sense has a stronger power of suggestion."

Ribot has made an interesting investigation as to the prevalence and nature of the emotional memory of odors (*Psychology of the Emotions*, Chapter XI). By "emotional memory" is meant the spontaneous or voluntary revivability of the image, olfactory or other. (For the general question, see an article by F. Pillon, "La Mémoire Affective, son Importance Théorique et Pratique," *Revue Philosophique*, February, 1901; also Paulhan, "Sur la Mémoire Affective," *Revue Philosophique*, December, 1902 and January, 1903.) Ribot found that 40 per cent. of persons are unable to revive any such images of taste or smell; 48 per cent. could revive some; 12 per cent. declared themselves capable of reviving all, or nearly all, at pleasure. In some persons there is no necessary accompanying revival of visual or tactile representations, but in the majority the revived odor ultimately excites a corresponding visual image. The odors most frequently recalled were pinks, musk, violets, heliotrope, carbolic acid, the smell of the country, of grass, etc. Piéron (*Revue Philosophique*, December, 1902) has described the special power possessed by vague odors, in his own case, of evoking ancient impressions.

Dr. J. N. Mackenzie (*American Journal of the Medical Sciences*, January, 1886) considers that civilization exerts an influence in heightening or encouraging the influence of olfaction as it affects our emotions and judgment, and that, in the same way, as we ascend the social scale the more readily our minds are influenced and perhaps perverted by impressions received through the sense of smell.

Odors are powerful stimulants to the whole nervous system, causing, like other stimulants, an increase of energy which, if excessive or prolonged, leads to nervous exhaustion. Thus, it is well recognized in medicine that the aromatics containing volatile oils (such as anise, cinnamon, cardamoms, cloves, coriander, and peppermint) are antispasmodics and anæsthetics, and that they stimulate digestion, circulation, and the nervous system, in large doses producing depression. The carefully arranged plethysmographic experiments of Shields, at the Johns Hopkins University, have shown that olfactory sensations, by their action on the vasomotor system, cause an increase of blood in the brain and sometimes in addition stimulation of the heart; musk, wintergreen, wood violet, and especially heliotrope were found to act strongly in these ways.^[27]

Féré's experiments with the dynamometer and the ergograph have greatly contributed to illustrate the stimulating effects of odors. Thus, he found that smelling musk suffices to double muscular effort. With a number of odorous substances he has found that muscular work is temporarily heightened; when taste stimulation was added the increase of energy, notably when using lemon was "colossal." A kind of "sensorial intoxication" could be produced by the inhalation of odors and the whole system stimulated to greater activity; the visual acuity was increased, and electric and general excitability heightened.^[28] Such effects may be obtained in perfectly healthy persons, though both Shields and Féré have found that in highly nervous persons the effects are liable to be much greater. It is doubtless on this account that it is among civilized peoples that attention is chiefly directed to perfumes, and that under the conditions of modern life the interest in olfaction and its study has been revived.

It is the genuinely stimulant qualities of odorous substances which led to the widespread use of the more potent among them by ancient physicians, and has led a few modern physicians to employ them still. Thus, vanilla, according to Eloy, deserves to be much more frequently used therapeutically than it is, on account of its excitomotor properties; he states that its qualities as an excitant of sexual desire have long been recognized and that Fonsagrives used to prescribe it for sexual frigidity.^[29]

Notes

- [26] The opinions of psychologists concerning the æsthetic significance of smell, not on the whole very favorable, are brought together and discussed by J. V. Volkelt, "Der Æsthetische Wert der niederen Sinne," *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, 1902, ht. 3.
- [27] T. E. Shields, "The Effect of Odors, etc., upon the Blood-flow," *Journal of Experimental Medicine*, vol. i, November, 1896. In France, O. Henry and Tardif have made somewhat similar experiments on respiration and circulation. See the latter's *Les Odeurs et les Parfums*, Chapter III.
- [28] Féré, *Sensation et Mouvement*, Chapter VI; *ib.*, *Comptes Rendus de la Société de Biologie*, November 3, December 15 and 22, 1900.
- [29] Eloy, art. "Vanille," *Dictionnaire Encyclopédique des Sciences Médicales*.

III.

The Specific Body Odors of Various Peoples—The Negro, etc.—The European—The Ability to Distinguish Individuals by Smell—The Odor of Sanctity—The Odor of Death—The Odors of Different Parts of the Body—The Appearance of Specific Odors at Puberty—The Odors of Sexual Excitement—The Odors of Menstruation—Body Odors as a Secondary Sexual Character—The Custom of Salutation by Smell—The Kiss—Sexual Selection by Smell—The Alleged Association between Size of Nose and Sexual Vigor—The Probably Intimate Relationship between the Olfactory and Genital Spheres—Reflex Influences from the Nose—Reflex Influences from the Genital Sphere—Olfactory Hallucinations in Insanity as Related to Sexual States—The Olfactive Type—The Sense of Smell in Neurasthenic and Allied States—In Certain Poets and Novelists—Olfactory Fetichism—The Part Played by Olfaction in Normal Sexual Attraction—In the East, etc.—In Modern Europe—The Odor of the Armpit and its Variations—As a Sexual and General Stimulant—Body Odors in Civilization Tend to Cause Sexual Antipathy unless some Degree of Tumescence is Already Present—The Question whether Men or Women are more Liable to Feel Olfactory Influences—Women Usually more Attentive to Odors—The Special Interest in Odors Felt by Sexual Inverts.

In approaching the specifically sexual aspect of odor in the human species we may start from the fundamental fact—a fact we seek so far as possible to disguise in our ordinary social relations—that all men and women are odorous. This is marked among all races. The powerful odor of

many, though not all, negroes is well known; it is by no means due to uncleanly habits, and Joest remarks that it is even increased by cleanliness, which opens the pores of the skin; according to Sir H. Johnston, it is most marked in the armpits and is stronger in men than in women. Pruner Bey describes it as "ammoniacal and rancid; it is like the odor of the he-goat." The odor varies not only individually, but according to the tribe; Castellani states that the negress of the Congo has merely a slight "*goût de noisette*" which is agreeable rather than otherwise. Monbuttu women, according to Parke, have a strong Gorgonzola perfume, and Emin told Parke that he could distinguish the members of different tribes by their characteristic odor. In the same way the Nicobarese, according to Man, can distinguish a member of each of the six tribes of the archipelago by smell. The odor of Australian blacks is less strong than that of negroes and has been described as of a phosphoric character. The South American Indians, d'Orbigny stated, have an odor stronger than that of Europeans, though not as strong as most negroes; it is marked, Latham states, even among those who, like the Araucanos, bathe constantly. The Chinese have a musky odor. The odor of many peoples is described as being of garlic.^[30]

A South Sea Islander, we are told by Charles de Varigny, on coming to Sydney and seeing the ladies walking about the streets and apparently doing nothing, expressed much astonishment, adding, with a gesture of contempt, "and they have no smell!" It is by no means true, however, that Europeans are odorless. They are, indeed, considerably more odorous than are many other races,—for instance, the Japanese,—and there is doubtless some association between the greater hairiness of Europeans and their marked odor, since the sebaceous glands are part of the hair apparatus. A Japanese anthropologist, Adachi, has published an interesting study on the odor of Europeans,^[31] which he describes as a strong and pungent smell,—sometimes sweet, sometimes bitter,—of varying strength in different individuals, absent in children and the aged, and having its chief focus in the armpits, which, however carefully they are washed, immediately become odorous again. Adachi has found that the sweat-glands are larger in Europeans than in the Japanese, among whom a strong personal odor is so uncommon that "armpit stink" is a disqualification for the army. It is certainly true that the white races smell less strongly than most of the dark races, odor seeming to be correlated to some extent with intensity of pigmentation, as well as with hairiness; but even the most scrupulously clean Europeans all smell. This fact may not always be obvious to human nostrils, apart from intimate contact, but it is well known to dogs, to whom their masters are recognizable by smell. When Hue traveled in Tibet in Chinese disguise he was not detected by the natives, but the dogs recognized him as a foreigner by his smell and barked at him. Many Chinese can tell by smell when a European has been in a room.^[32] There are, however, some Europeans who can recognize and distinguish their friends by smell. The case has been recorded of a man who with bandaged eyes could recognize his acquaintances, at the distance of several paces, the moment they entered the room. In another case a deaf and blind mute woman in Massachusetts knew all her acquaintances by smell, and could sort linen after it came from the wash by the odor alone. Governesses have been known to be able when blindfolded to recognize the ownership of their pupil's garments by smell; such a case is known to me. Such odor is usually described as being agreeable, but not one person in fifty, it is stated, is able to distinguish it with sufficient precision to use it as a method of recognition. Among some races, however this aptitude would appear to be better developed. Dr. C. S. Myers at Sarawak noted that his Malay boy sorted the clean linen according to the skin-odor of the wearer.^[33] Chinese servants are said to do the same, as well as Australians and natives of Luzon.^[34]

Although the distinctively individual odor of most persons is not sufficiently marked to be generally perceptible, there are cases in which it is more distinct to all nostrils. The most famous case of this kind is that of Alexander the Great, who, according to Plutarch, exhaled so sweet an odor that his tunics were soaked with aromatic perfume (*Convivialium Disputationum*, lib. I, quest. 6). Malherbe, Cujas, and Haller are said to have diffused a musky odor. The agreeable odor of Walt Whitman has been remarked by Kennedy and others. The perfume exhaled by many holy men and women, so often noted by ancient writers (discussed by Görres in the second volume of his *Christliche Mystik*) and which has entered into current phraseology as a merely metaphorical "odor of sanctity," was doubtless due, as Hammond first pointed out, to abnormal nervous conditions, for it is well known that such conditions affect the odor, and in insanity, for instance, the presence is noted of bodily odors which have sometimes even been considered of diagnostic importance. J. B. Friedreich, *Allgemeine Diagnostik der Psychischen Krankheiten*, second edition, 1832, pp. 9-10, quotes passages from various authors on this point, which he accepts; various writers of more recent date have made similar observations.

The odor of sanctity was specially noted at death, and was doubtless confused with the *odor mortis*, which frequently precedes death and by some is regarded as an almost certain indication of its approach. In the *British Medical Journal*, for May and June, 1898, will be found letters from several correspondents substantiating this point. One of these correspondents (Dr. Tuckey, of Tywardreath, Cornwall) mentions that he has in Cornwall often seen ravens flying over houses in which persons lay dying, evidently attracted by a characteristic odor.

It must be borne in mind, however, that, while every person has, to a sensitive nose, a distinguishing odor, we must regard that odor either as but one of the various sensations given off by the body, or else as a combination of two or more of these emanations. The body in reality gives off a number of different odors. The most important of these are: (1) the general skin odor, a faint, but agreeable, fragrance often to be detected on the skin even immediately after washing; (2) the smell of the hair and scalp; (3) the odor of the breath; (4) the odor of the armpit; (5) the odor of the feet; (6) the perineal odor; (7) in men the odor of the preputial smegma; (8) in women the odor of the mons veneris, that of vulvar smegma, that of vaginal mucus, and the menstrual odor. All these are odors which may usually be detected, though sometimes only in a very faint degree, in healthy and well-washed persons under normal conditions. It is unnecessary here to take into account the special odors of various secretions and excretions.^[35]

It is a significant fact, both as regards the ancestral sexual connections of the body odors and their actual sexual associations to-day, that, as Hippocrates long ago noted, it is not until puberty that they assume their adult characteristics. The infant, the adult, the aged person, each has his own kind of smell, and, as Monin remarks, it might be possible, within certain limits, to discover the age of a person by his odor. Jorg in 1832 pointed out that in girls the appearance of a specific smell of the excreta indicates the establishment of puberty, and Kaan, in his *Psychopathia Sexualis*, remarked that at puberty "the sweat gives out a more acrid odor resembling musk." In both sexes puberty, adolescence, early manhood and womanhood are marked by a gradual development of the adult odor of skin and excreta, in general harmony with the secondary sexual development of hair and pigment. Venturi, indeed, has, not without reason, described the odor of the body as a secondary sexual character.^[36] It may be added that, as is the case with the pigment in various parts of the body in women, some of these odors tend to become exaggerated in sympathy with sexual and other emotional states.

The odor of the infant is said to be of butyric acid; that of old people to resemble dry leaves. Continent young men have been said by many ancient writers to smell more strongly than the unchaste, and some writers have described as "seminal odor"—an odor resembling that of animals in heat, faintly recalling that of the he-goat, according to Venturi—the exhalations of the skin at such times.

During sexual excitement, as women can testify, a man very frequently, if not normally, gives out an odor which, as usually described, proceeds from the skin, the breath, or both. Grimaldi states that it is as of rancid butter; others say it resembles chloroform. It is said to be sometimes perceptible for a distance of several feet and to last for several hours after coitus. (Various quotations are given by Gould and Pyle, *Anomalies and Curiosities of Medicine*, section on "Human Odors," pp. 397-403.) St. Philip Neri is said to have been able to recognize a chaste man by smell.

During menstruation girls and young women frequently give off an odor which is quite distinct from that of the menstrual fluid, and is specially marked in the breath, which may smell of chloroform or violets. Pouchet (confirmed by Raciborski, *Traité de la Menstruation*, 1868, p. 74) stated that about a day before the onset of menstruation a characteristic smell is exuded. Menstruating girls are also said sometimes to give off a smell of leather. Aubert, of Lyons (as quoted by Galopin), describes the odor of the skin of a woman during menstruation as an agreeable aromatic or acidulous perfume of chloroform character. By some this is described as emanating especially from the armpits. Sandras (quoted by Raciborski) knew a lady who could always tell by a sensation of faintness and *malaise*—apparently due to a sensation of smell—when she was in contact with a menstruating woman. I am acquainted with a man, having strong olfactory sympathies and antipathies, who detects the presence of menstruation by smell. It is said that Hortense Baré, who accompanied her lover, the botanist Commerson, to the Pacific disguised as a man, was recognized by the natives as a woman by means of smell.

Women, like men, frequently give out an odor during coitus or strong sexual excitement. This odor may be entirely different from that normally emanating from the woman, of an acid or hircine character, and sufficiently strong to remain in a room for a considerable period. Many of the ancient medical writers (as quoted by Schurigius, *Parthenologia*, p. 286) described the goaty smell produced by venery, especially in women; they regarded it as specially marked in harlots and in the newly married, and sometimes even considered it a certain sign of defloration. The case has been recorded of a woman who emitted a rose odor for two days after coitus (McBride, quoted by Kiernan in an interesting summary, "Odor in Pathology," *Doctor's Magazine*, December, 1900). There was, it is said (*Journal des Savans* 1684, p. 39, quoting from the *Journal d'Angleterre*) a monk in Prague who could recognize by smell the chastity of the women who approached him. (This monk, it is added, when he died, was composing a new science of odors.)

Gustav Klein (as quoted by Adler, *Die Mangelhafte Geschlechtsempfindungen des Weibes*, p. 25) argues that the special function of the glands at the vulvar orifice—the *glandulae vestibulares majores*—is to give out an odorous secretion to act as an attraction to the male, this relic of sexual periodicity no longer, however, playing an important part in the human species. The vulvar secretion, however, it may be added, still has a more aromatic odor than the vaginal secretion, with its simple mucous odor, very clearly perceived during parturition.

It may be added that we still know extremely little concerning the sexual odors of women among primitive peoples. Ploss and Bartels are only able to bring forward (*Das Weib*, 1901, bd. 1, p. 218) a statement concerning the women of New Caledonia, who, according to Moncelon, when young and ardent, give out during coitus a powerful odor which no ablution will remove. In abnormal states of sexual excitement such odor may be persistent, and, according to an ancient observation, a nymphomaniac, whose periods of sexual excitement lasted all through the spring-time, at these periods always emitted a goatlike odor. It has been said (G. Tourdes, art. "Aphrodisie," *Dictionnaire Encyclopédique des Sciences Médicales*) that the erotic temperament is characterized by a special odor.

If the body odors tend to develop at puberty, to be maintained during sexual life, especially in sympathy with conditions of sexual disturbance, and to become diminished in old age, being thus a kind of secondary sexual character, we should expect them to be less marked in those cases in which the primary sexual characters are less marked. It is possible that this is actually the case. Hagen, in his *Sexuelle Osphrésiologie*, quotes from Roubaud's *Traité de l'Impuissance* the statement that the body odor of the castrated differs from that of normal individuals. Burdach had previously stated that the odor of the eunuch is less marked than that of the normal man.

It is thus possible that defective sexual development tends to be associated with corresponding olfactory defect. Heschl^[37] has reported a case in which absence of both olfactory nerves coincided with defective development of the sexual organs. Féré remarks that the impotent show a repugnance for sexual odors. Dr. Kiernan informs me that in women after oöphorectomy he has noted a tendency to diminished (and occasionally increased) sense of smell. These questions, however, await more careful and extended observation.

A very significant transition from the phenomena of personal odor to those of sexual attraction by personal odor is to be found in the fact that among the peoples inhabiting a large part of the world's surface the ordinary salutation between friends is by mutual smelling of the person. In some form or another the method of salutation by applying the nose to the nose, face, or hand of a friend in greeting is found throughout a large part of the Pacific, among the Papuans, the Eskimo, the hill tribes of India, in Africa, and elsewhere.^[38] Thus, among a certain hill tribe in India, according to Lewin, they smell a friend's cheek: "in their language, they do not say, 'Give me a kiss,' but they say 'Smell me.'" And on the Gambia, according to F. Moore, "When the men salute the women, they, instead of shaking their hands, put it up to their noses, and smell twice to the back of it." Here we have very clearly a recognition of the emotional value of personal odor widely prevailing throughout the world. The salutation on an olfactory basis may, indeed, be said to be more general than the salutation on a tactile basis on which European handshaking rests, each form involving one of the two most intimate and emotional senses. The kiss may be said to be a development proceeding both from the olfactory and the tactile bases, with perhaps some other elements as well, and is too complex to be regarded as a phenomenon of either purely tactile or purely olfactory origin.^[39]

As the sole factor in sexual selection olfaction must be rare. It is said that Asiatic princes have sometimes caused a number of the ladies to race in the seraglio garden until they were heated; their garments have then been brought to the prince, who has selected one of them solely by the odor.^[40] There was here a sexual selection mainly by odor. Any exclusive efficacy of the olfactory sense is rare, not so much because the impressions of this sense are inoperative, but

because agreeable personal odors are not sufficiently powerful, and the olfactory organ is too obtuse, to enable smell to take precedence of sight. Nevertheless, in many people, it is probable that certain odors, especially those that are correlated with a healthy and sexually desirable person, tend to be agreeable; they are fortified by their association with the loved person, sometimes to an irresistible degree; and their potency is doubtless increased by the fact, to which reference has already been made, that many odors, including some bodily odors, are nervous stimulants.

It is possible that the sexual associations of odors have been still further fortified by a tendency to correlation between a high development of the olfactory organ and a high development of the sexual apparatus. An association between a large nose and a large male organ is a very ancient observation and has been verified occasionally in recent times. There is normally at puberty a great increase in the septum of the nose, and it is quite conceivable, in view of the sympathy, which, as we shall see, certainly exists between the olfactory and sexual region, that the two regions may develop together under a common influence.

The Romans firmly believed in the connection between a large nose and a large penis. "Noscitur e naso quanta sit hasta viro," stated Ovid. This belief continued to prevail, especially in Italy, through the middle ages; the physiognomists made much of it, and licentious women (like Joanna of Naples) were, it appears, accustomed to bear it in mind, although disappointment is recorded often to have followed. (See *e.g.*, the quotations and references given by J. N. Mackenzie, "Physiological and Pathological Relations between the Nose and the Sexual Apparatus in Man." *Johns Hopkins Hospital Bulletin*, No. 82, January, 1898; also Hagen, *Sexuelle Osphrésiologie*, pp. 15-19.) A similar belief as to the association between the sexual impulse in women and a long nose was evidently common in England in the sixteenth century, for in Massinger's *Emperor of the East* (Act II, Scene I) we read,

"Her nose, which by its length assures me
Of storms at midnight if I fail to pay her
The tribute she expects."

At the present day, a proverb of the Venetian people still embodies the belief in the connection between a large nose and a large sexual member.

The probability that such an association tends in many cases to prevail is indicated not only by the beliefs of antiquity, when more careful attention was paid to these matters, but by the testimony of various modern observers, although it does not appear that any series of exact observations have yet been made.

It may be noted that Marro, in his careful anthropological study of criminals (*I Caratteri dei Delinquenti*), found no class of criminals with so large a proportion alike of anomalies of the nose and anomalies of the genital organs as sexual offenders.

However this may be, it is less doubtful that there is a very intimate relation both in men and women between the olfactory mucous membrane of the nose and the whole genital apparatus, that they frequently show a sympathetic action, that influences acting on the genital sphere will affect the nose, and occasionally, it is probable, influences acting on the nose reflexly affect the

genital sphere. To discuss these relationships would here be out of place, since specialists are not altogether in agreement concerning the matter. A few are inclined to regard the association as extremely intimate, so that each region is sensitive even to slight stimuli applied to the other region, while, on the other hand, many authorities ignore altogether the question of the relationship. It would appear, however, that there really is, in a considerable number of people at all events, a reflex connection of this kind. It has especially been noted that in many cases congestion of the nose precedes menstruation.

Bleeding of the nose is specially apt to occur at puberty and during adolescence, while in women it may take the place of menstruation and is sometimes more apt to occur at the menstrual periods; disorders of the nose have also been found to be aggravated at these periods. It has even been possible to control bleeding of the nose, both in men and women, by applying ice to the sexual regions. In both men and women, again, cases have been recorded in which sexual excitement, whether of coitus or masturbation, has been followed by bleeding of the nose. In numerous cases it is followed by slight congestive conditions of the nasal passages and especially by sneezing. Various authors have referred to this phenomenon; I am acquainted with a lady in whom it is fairly constant.^[41] Féré records the case of a lady, a nervous subject, who began to experience intense spontaneous sexual excitement shortly after marriage, accompanied by much secretion from the nose.^[42] J. N. Mackenzie is acquainted with a number of such cases, and he considers that the popular expression "bride's cold" indicates that this effect of strong sexual excitement is widely recognized.

The late Professor Hack, of Freiburg, in 1884, called general medical attention to the intimate connection between the nose and states of nervous hyperexcitability in various parts of the body, although such a connection had been recognized for many centuries in medical literature. While Hack and his disciples thus gave prominence to this association, they undoubtedly greatly exaggerated its importance and significance. (Sir Felix Semon, *British Medical Journal*, November 9, 1901.) Even many workers who have more recently further added to our knowledge have also, as sometimes happens with enthusiasts, unduly strained their own data. Starting from the fact that in women during menstruation examination of the nose reveals a degree of congestion not found during the rest of the month, Fliess (*Die Beziehungen zwischen Nase und Weiblichen Geschlechtsorganen*, 1897), with the help of a number of elaborate and prolonged observations, has reached conclusions which, while they seem to be hazardous at some points, have certainly contributed to build up our knowledge of this obscure subject. Schiff (*Wiener klinische Wochenschrift*, 1900, p. 58, summarized in *British Medical Journal*, February 16, 1901), starting from a skeptical standpoint, has confirmed some of Fliess's results, and in a large number of cases controlled painful menstruation by painting with cocaine the so-called "genital spots" in the nose, all possibility of suggestion being avoided. Ries, of Chicago, has been similarly successful with the method of Fliess (*American Gynecology*, vol. iii, No. 4, 1903). Benedikt (*Wiener medicinische Wochenschrift*, No. 8, 1901, summarized in *Journal of Medical Science*, October, 1901), while pointing out that the nose is not the only organ in sympathetic relation with the sexual sphere, suggests that the mechanism of the relationship is involved in the larger problem of the harmony in growth and in nutrition of the different parts of the organism. In this way, probably, we may attach considerable significance to the existence of a kind of erectile tissue in the nose.

An interesting example of a reflex influence from the nose affecting the genital sphere has been brought forward by Dr. E. S. Talbot, of Chicago: "A 56-year-old man was operated on (September 1, 1903) for the removal of the left cartilage of the septum of the nose owing to a previous traumatic fracture at the sixteenth year. No pain was experienced until two years ago, when a continual soreness occurred at the apical end of the fracture during the winter months. The operation was decided upon fearing more serious complications. The parts were cocainized. No pain was experienced in the operation except at one point at the lower posterior portion near the floor of the nose. A profound shock to the general system followed. The reflex influence of the pain upon the genital organs caused semen to flow continually for three weeks. Treatment of general motor irritability with camphor monobromate and conium, on consultation with Dr. Kiernan, checked the flow. The discharge produced spinal neurasthenia. The legs and feet felt heavy. Erythromelalgia caused uneasiness. The patient walked with difficulty. The tired feeling in the feet and limbs was quite noticeable four months after the operation, although the pain had, to a great extent diminished." (Chicago Academy of Medicine, January, 1904, and private letter.)

J. N. Mackenzie has brought together a great many original observations, together with interesting quotations from old medical literature, in his two papers: "The Pathological Nasal Reflex" (*New York Medical Journal*, August 20, 1887) and "The Physiological and Pathological Relations between the Nose and the Sexual Apparatus of Man" (*Johns Hopkins Hospital Bulletin*, January 1, 1898). A number of cases have also been brought together from the literature by G. Endriss in his Inaugural Dissertation, *Die bisherigen Beobachtungen von Physiologischen und Pathologischen Beziehungen der oberen Luftwege zu den Sexualorganen*, Teil. II, Würzburg, 1892.

The intimate association between the sexual centers and the olfactory tract is well illustrated by the fact that this primitive and ancient association tends to come to the surface in insanity. It is recognized by many alienists that insanity of a sexual character is specially liable to be associated with hallucinations of smell.

Many eminent alienists in various countries are very decidedly of the opinion that there is a special tendency to the association of olfactory hallucinations with sexual manifestations, and, although one or two authorities have expressed doubt on the matter, the available evidence clearly indicates such an association. Hallucinations of smell are comparatively rare as compared to hallucinations of sight and hearing; they are commoner in women than in men and they not infrequently occur at periods of sexual disturbance, at adolescence, in puerperal fever, at the change of life, in women with ovarian troubles, and in old people troubled with sexual desires or remorse for such desires. They have often been noted as specially frequent in cases of excessive masturbation.

Krafft-Ebing, who found olfactory hallucinations common in various sexual states, considers that they are directly dependent on sexual excitement (*Allgemeine Zeitschrift für Psychiatrie*, bd. 34, ht. 4, 1877). Conolly Norman believes in a distinct and frequent association between olfactory hallucinations and sexual disturbance (*Journal of Mental Science*, July, 1899, p. 532). Savage is also impressed by the close association between sexual disturbance or changes in the reproductive organs and hallucinations of smell as well as of touch. He has found that persistent hallucinations of smell disappeared when a diseased ovary was removed, although the patient remained insane. He considers that such hallucinations of smell are allied to reversions. (G. H.

Savage, "Smell, Hallucinations of," Tuke's *Dictionary of Psychological Medicine*; cf. the same author's manual of *Insanity and Allied Neuroses*.) Matusch, while not finding olfactory hallucinations common at the climacteric, states that when they are present they are connected with uterine trouble and sexual craving. He finds them more common in young women. (Matusch, "Der Einfluss des Climacterium auf Entstehung und Form der Geistesstörung," *Allgemeine Zeitschrift für Psychiatrie*, vol. xlvi, ht. 4). Féré has related a significant case of a young man in whom hallucinations of smell accompanied the sexual orgasm; he subsequently developed epilepsy, to which the hallucination then constituted the aura (*Comptes Rendus de la Société de Biologie*, December, 1896). The prevalence of a sexual element in olfactory hallucinations has been investigated by Bullen, who examined into 95 cases of hallucinations of smell among the patients in several asylums. (In a few cases there were reasons for believing that peripheral conditions existed which would render these hallucinations more strictly illusions.) Of these, 64 were women. Sixteen of the women were climacteric cases, and 3 of them had sexual hallucinations or delusions. Fourteen other women (chiefly cases of chronic delusional insanity) had sexual delusions. Altogether, 31 men and women had sexual delusions. This is a large proportion. Bullen is not, however, inclined to admit any direct connection between the reproductive system and the sense of smell. He finds that other hallucinations are very frequently associated with the olfactory hallucinations, and considers that the co-existence of olfactory and sexual troubles simply indicates a very deep and widespread nervous disturbance. (F. St. John Bullen, "Olfactory Hallucinations in the Insane," *Journal of Mental Science*, July, 1899.) In order to elucidate the matter fully we require further precise inquiries on the lines Bullen has laid down.

It may be of interest to note, in this connection, that smell and taste hallucinations appear to be specially frequent in forms of religious insanity. Thus, Dr. Zurcher, in her inaugural dissertation on Joan of Arc (*Jeanne d'Arc*, Leipzig, 1895, p. 72), estimates that on the average in such insanity nearly 50 per cent, of the hallucinations affect smell and taste; she refers also to the olfactory hallucinations of great religious leaders, Francis of Assisi, Katherina Emmerich, Lazzaretti, and the Anabaptists.

It may well be, as Zwaardemaker has suggested in his *Physiologie des Geruchs*, that the nasal congestion at menstruation and similar phenomena are connected with that association of smell and sexuality which is observable throughout the whole animal world, and that the congestion brings about a temporary increase of olfactory sensitiveness during the stage of sexual excitation.^[43] Careful investigation of olfactory acuteness would reveal the existence of such menstrual heightening of its acuity.

In a few exceptional, but still quite healthy people, smell would appear to possess an emotional predominance which it cannot be said to possess in the average person. These exceptional people are of what Binet in his study of sexual fetichism calls olfactive type; such persons form a group which, though of smaller size and less importance, is fairly comparable to the well-known groups of visual type, of auditory type, and of psychomotor type. Such people would be more attentive to odors, more moved by olfactory sympathies and antipathies, than are ordinary people. For these, it may well be, the supremacy accorded to olfactory influences in Jäger's *Entdeckung der Seele*, though extravagantly incorrect for ordinary persons, may appear quite reasonable.

It is certain also that a great many neurasthenic people, and particularly those who are sexually neurasthenic, are peculiarly susceptible to olfactory influences. A number of eminent poets and

novelists—especially, it would appear, in France—seem to be in this case. Baudelaire, of all great poets, has most persistently and most elaborately emphasized the imaginative and emotional significance of odor; the *Fleurs du Mal* and many of the *Petits Poèmes en Prose* are, from this point of view, of great interest. There can be no doubt that in Baudelaire's own imaginative and emotional life the sense of smell played a highly important part; and that, in his own words, odor was to him what music is to others. Throughout Zola's novels—and perhaps more especially in *La Faute de l'Abbé Mouret*—there is an extreme insistence on odors of every kind. Prof. Leopold Bernard wrote an elaborate study of this aspect of Zola's work^[44]; he believed that underlying Zola's interest in odors there was an abnormally keen olfactory sensibility and large development of the olfactory region of the brain. Such a supposition is, however, unnecessary, and, as a matter of fact, a careful examination of Zola's olfactory sensibility, conducted by M. Passy, showed that it was somewhat below normal.^[45] At the same time it was shown that Zola was really a person of olfactory psychic type, with a special attention to odors and a special memory for them; as is frequently the case with perfumers with less than normal olfactory acuity he possessed a more than normal power of discriminating odors; it is possible that in early life his olfactory acuity may also have been above normal. In the same way Nietzsche, in his writings, shows a marked sensibility, and especially antipathy, as regards odors, which has by some been regarded as an index to a real physical sensibility of abnormal keenness; according to Möbius, however, there was no reason for supposing this to be the case.^[46] Huysmans, who throughout his books reveals a very intense preoccupation with the exact shades of many kinds of sensory impressions, and an apparently abnormally keen sensibility to them, has shown a great interest in odors, more especially in an oft-quoted passage in *A Rebours*. The blind Milton of "Paradise Lost" (as the late Mr. Grant Allen once remarked to me), dwells much on scents; in this case it is doubtless to the blindness and not to any special organic predisposition that we must attribute this direction of sensory attention.^[47] Among our older English poets, also, Herrick displays a special interest in odors with a definite realization of their sexual attractiveness.^[48] Shelley, who was alive to so many of the unusual æsthetic aspects of things, often shows an enthusiastic delight in odors, more especially those of flowers. It may, indeed, be said that most poets—though to a less degree than those I have mentioned—devote a special attention to odors, and, since it has been possible to describe smell as the sense of imagination, this need not surprise us. That Shakespeare, for instance, ranked this sense very high indeed is shown by various passages in his works and notably by Sonnet LIV: "O, how much more doth beauty beauteous seem?"—in which he implicitly places the attraction of odor on at least as high a level as that of vision.^[49]

A neurasthenic sensitiveness to odors, specially sexual odors, is frequently accompanied by lack of sexual vigor. In this way we may account for the numerous cases in which old men in whom sexual desire survives the loss of virile powers—probably somewhat abnormal persons at the outset—find satisfaction in sexual odors. Here, also, we have the basis for olfactory fetichism. In such fetichism the odor of the woman alone, whoever she may be and however unattractive she may be, suffices to furnish complete sexual satisfaction. In many, although not all, of those cases in which articles of women's clothing become the object of fetichistic attraction, there is certainly an olfactory element due to the personal odor attaching to the garments.^[50]

Olfactory influences play a certain part in various sexually abnormal tendencies and practices which do not proceed from an exclusively olfactory fascination. Thus, *cunnilingus* and *fellatio* derive part of their attraction, more especially in some individuals, from a predilection for the odors of the sexual parts. (See, e.g., Moll, *Untersuchungen über die Libido Sexualis*, bd. 1, p.

134.) In many cases smell plays no part in the attraction; "I enjoy *cunnilingus*, if I like the girl very much," a correspondent writes, "*in spite* of the smell." We may associate this impulse with the prevalence of these practices among sexual inverts, in whom olfactory attractions are often specially marked. Those individuals, also, who are sexually affected by the urinary and alvine excretions ("*renifleurs*," "*stereoraires*," etc.) are largely, though not necessarily altogether, moved by olfactory impressions. The attraction was, however, exclusively olfactory in the case of the young woman recorded by Moraglia (*Archivio di Psichiatria*, 1892, p. 267), who was irresistibly excited by the odor of the fermented urine of men, and possibly also in the case narrated to Moraglia by Prof. L. Bianchi (*ib.* p. 568), in which a wife required flatus from her husband.

The sexual pleasure derived from partial strangulation (discussed in the study of "Love and Pain" in a previous volume) may be associated with heightened olfactory sexual excitation. Dr. Kiernan, who points this out to me, has investigated a few neuropathic patients who like to have their necks squeezed, as they express it, and finds that in the majority the olfactory sensibility is thus intensified.

Even in ordinary normal persons, however, there can be no doubt that personal odor tends to play a not inconsiderable part in sexual attractions and sexual repulsions. As a sexual excitant, indeed, it comes far behind the stimuli received through the sense of sight. The comparative bluntness of the sense of smell in man makes it difficult for olfactory influence to be felt, as a rule, until the preliminaries of courtship are already over; so that it is impossible for smell ever to possess the same significance in sexual attraction in man that it possesses in the lower animals. With that reservation there can be no doubt that odor has a certain favorable or unfavorable influence in sexual relationships in all human races from the lowest to the highest. The Polynesian spoke with contempt of those women of European race who "have no smell," and in view of the pronounced personal odor of so many savage peoples as well as of the careful attention which they so often pay to odors, we may certainly assume, even in the absence of much definite evidence, that smell counts for much in their sexual relationships. This is confirmed by such practices as that found among some primitive peoples—as, it is stated, in the Philippines—of lovers exchanging their garments to have the smell of the loved one about them. In the barbaric stages of society this element becomes self-conscious and is clearly avowed; personal odors are constantly described with complacency, sometimes as mingled with the lavish use of artificial perfumes, in much of the erotic literature produced in the highest stages of barbarism, especially by Eastern peoples living in hot climates; it is only necessary to refer to the *Song of Songs*, the *Arabian Nights*, and the Indian treatises on love. Even in some parts of Europe the same influence is recognized in the crudest animal form, and Krauss states that among the Southern Slavs it is sometimes customary to leave the sexual parts unwashed because a strong odor of these parts is regarded as a sexual stimulant. Under the usual conditions of life in Europe personal odor has sunk into the background; this has been so equally under the conditions of classic, mediæval, and modern life. Personal odor has been generally regarded as unæsthetic; it has, for the most part, only been mentioned to be reprobated, and even those poets and others who during recent centuries have shown a sensitive delight and interest in odors—Herrick, Shelley, Baudelaire, Zola, and Huysmans—have seldom ventured to insist that a purely natural and personal odor can be agreeable. The fact that it may be so, and that for most people such odors cannot be a matter of indifference in the most intimate of all relationships, is usually only to be learned casually and incidentally. There can be no doubt, however, that, as Kiernan points out, the extent to which

olfaction influences the sexual sphere in civilized man has been much underestimated. We need not, therefore, be surprised at the greater interest which has recently been taken in this subject. As usually happens, indeed, there has been in some writers a tendency to run to the opposite extreme, and we cannot, with Gustav Jäger, regard the sexual instinct as mainly or altogether an olfactory matter.

Of the Padmini, the perfect woman, the "lotus woman," Hindu writers say that "her sweat has the odor of musk," while the vulgar woman, they say, smells of fish (*Kama Sutra of Vatsyayana*). Ploss and Bartels (*Das Weib*, 1901, p. 218) bring forward a passage from the Tamil *Kokkôgam*, minutely describing various kinds of sexual odor in women, which they regard as resting on sound observation.

Four things in a woman, says the Arab, should be perfumed: the mouth, the armpits, the pudenda, and the nose. The Persian poets, in describing the body, delighted to use metaphors involving odor. Not only the hair and the down on the face, but the chin, the mouth, the beauty spots, the neck, all suggested odorous images. The epithets applied to the hair frequently refer to musk, ambergris, and civet. (*Anis El-Ochchâq* translated by Huart, *Bibliothèque de l'Ecole des Hautes Etudes*, fasc. 25, 1875.)

The Hebrew *Song of Songs* furnishes a typical example of a very beautiful Eastern love-poem in which the importance of the appeal to the sense of smell is throughout emphasized. There are in this short poem as many as twenty-four fairly definite references to odors,—personal odors, perfumes, and flowers,—while numerous other references to flowers, etc., seem to point to olfactory associations. Both the lover and his sweetheart express pleasure in each other's personal odor.

"My beloved is unto me," she sings, "as a bag of myrrh
That lieth between my breasts;
My beloved is unto me as a cluster of henna flowers
In the vineyard of En-gedi."

And again: "His cheeks are as a bed of spices [or balsam], as banks of sweet herbs." While of her he says: "The smell of thy breath [or nose] is like apples."

Greek and Roman antiquity, which has so largely influenced the traditions of modern Europe, was lavish in the use of perfumes, but showed no sympathy with personal odors. For the Roman satirists, like Martial, a personal odor is nearly always an unpleasant odor, though, there are a few allusions in classic literature recognizing bodily smell as a sexual attraction. Ovid, in his *Ars Amandi* (Book III), says it is scarcely necessary to remind a lady that she must not keep a goat in her armpits: "*ne trux caper iret in alas*." "*Mulier tum bene olet ubi nihil olet*" is an ancient dictum, and in the sixteenth century Montaigne still repeated the same saying with complete approval.

A different current of feeling began to appear with the new emotional movement during the eighteenth century. Rousseau called attention to the importance of the olfactory sense, and in his educational work, *Emile* (Bk. II), he referred to the odor of a woman's "*cabinet de toilette*" as not so feeble a snare as is commonly supposed. In the same century Casanova wrote still more

emphatically concerning the same point; in the preface to his *Mémoires* he states: "I have always found sweet the odor of the women I have loved"; and elsewhere: "There is something in the air of the bedroom of the woman one loves, something so intimate, so balsamic, such voluptuous emanations, that if a lover had to choose between Heaven and this place of delight his hesitation would not last for a moment" (*Mémoires*, vol. iii). In the previous century, in England, Sir Kenelm Digby, in his interesting and remarkable *Private Memoirs*, when describing a visit to Lady Venetia Stanley, afterward his wife, touches on personal odor as an element of attraction; he had found her asleep in bed and on her breasts "did glisten a few drops of sweatlike diamond sparks, and had a more fragrant odor than the violets or primroses whose season was newly passed."

In 1821 Cadet-Devaux published, in the *Revue Encyclopédique*, a study entitled "De l'atmosphère de la Femme et de sa Puissance," which attracted a great deal of attention in Germany as well as in France; he considered that the exhalations of the feminine body are of the first importance in sexual attraction.

Prof. A. Galopin in 1886 wrote a semiscientific book, *Le Parfum de la Femme*, in which the sexual significance of personal odor is developed to its fullest. He writes with enthusiasm concerning the sweet and health-giving character of the natural perfume of a beloved woman, and the mischief done both to health and love by the use of artificial perfumes. "The purest marriage that can be contracted between a man and a woman," he asserts (p. 157) "is that engendered by olfaction and sanctioned by a common assimilation in the brain of the animated molecules due to the secretion and evaporation of two bodies in contact and sympathy."

In a book written during the first half of the nineteenth century which contains various subtle observations on love we read, with reference to the sweet odor which poets have found in the breath of women: "In reality many women have an intoxicatingly agreeable breath which plays no small part in the love-compelling atmosphere which they spread around them" (*Eros oder Wörterbuch über die Physiologie*, 1849, Bd. 1, p. 45).

Most of the writers on the psychology of love at this period, however, seem to have passed over the olfactory element in sexual attraction, regarding it probably as too unæsthetic. It receives no emphasis either in Sénancour's *De l'Amour* or Stendhal's *De l'Amour* or Michelet's *L'Amour*.

The poets within recent times have frequently referred to odors, personal and other, but the novelists have more rarely done so. Zola and Huysmans, the two novelists who have most elaborately and insistently developed the olfactory side of life, have dwelt more on odors that are repulsive than on those that are agreeable. It is therefore of interest to note that in a few remarkable novels of recent times the attractiveness of personal odor has been emphasized. This is notably so in Tolstoy's *War and Peace*, in which Count Peter suddenly resolves to marry Princess Helena after inhaling her odor at a ball. In d'Annunzio's *Trionfo della Morte* the seductive and consoling odor of the beloved woman's skin is described in several passages; thus, when Giorgio kissed Ippolita's arms and shoulders, we are told, "he perceived the sharp and yet delicate perfume of her, the perfume of the skin that in the hour of joy became intoxicating as that of the tuberose, and a terrible lash to desire."

When we are dealing with the sexual significance of personal odors in man there is at the outset an important difference to be noticed in comparison with the lower mammals. Not only is the significance of odor altogether very much less, but the focus of olfactory attractiveness has been displaced. The centre of olfactory attractiveness is not, as usually among animals, in the sexual region, but is transferred to the upper part of the body. In this respect the sexual olfactory allurements in man resembles what we find in the sphere of vision, for neither the sexual organs of man nor of woman are usually beautiful in the eyes of the opposite sex, and their exhibition is not among us regarded as a necessary stage in courtship. The odor of the body, like its beauty, in so far as it can be regarded as a possible sexual allurements, has in the course of development been transferred to the upper parts. The careful concealment of the sexual region has doubtless favored this transfer. It has thus happened that when personal odor acts as a sexual allurements it is the armpit, in any case normally the chief focus of odor in the body, which mainly comes into play, together with the skin and the hair.

Aubert, of Lyons, noted that during menstruation the odor of the armpits may become more powerful, and describes it as being at this time an aromatic odor of acidulous or chloroform character. Galopin remarks that, while some women's armpits smell of sheep in rut, others, when exposed to the air, have a fragrance of ambergris or violet. Dark persons (according to Gould and Pyle) are said sometimes to exhale a prussic acid odor, and blondes more frequently musk; Galopin associates the ambergris odor more especially with blondes.

While some European poets have faintly indicated the woman's armpit as a centre of sexual attraction, it is among Eastern poets that we may find the idea more directly and naturally expressed. Thus, in a Chinese drama ("The Transmigration of Yo-Chow," *Mercure de France*, No. 8, 1901) we find a learned young doctor addressing the following poem to his betrothed:—

"When I have climbed to the bushy summit of Mount Chao,
I have still not reached to the level of your odorous armpit.
I must needs mount to the sky
Before the breeze brings to me
The perfume of that embalmed nest!"

This poet seems, however, to have been carried to a pitch of enthusiasm unusual even in China, for his future mother-in-law, after expressing her admiration for the poem, remarks: "But who would have thought one could find so many beautiful things under my daughter's armpit!"

The odor of the armpit is the most powerful in the body, sufficiently powerful to act as a muscular stimulant even in the absence of any direct sexual association. This is indicated by an observation made by Féré, who noticed, when living opposite a laundry, that an old woman who worked near the window would, toward the close of the day, introduce her right hand under the sleeve of the other to the armpit and then hold it to her nose; this she would do about every five minutes. It was evident that the odor acted as a stimulant to her failing energies. Féré has been informed by others who have had occasion to frequent workrooms that this proceeding is by no means uncommon among persons of both sexes. (Féré, *L'Instinct Sexuel*, second edition, p. 135.) I have myself noticed the same gesture very deliberately made in the street by a young English woman of the working class, under circumstances which suggested that it acted as an immediate stimulant in fatigue.

Huysmans—who in his novels has insisted on odors, both those of a personal kind and perfumes, with great precision—has devoted one of the sketches, "Le Gousset," in his *Croquis Parisiens* (1880) to the varying odors of women's armpits. "I have followed this fragrance in the country," he remarks, "behind a group of women gleaners under the bright sun. It was excessive and terrible; it stung your nostrils like an unstoppered bottle of alkali; it seized you, irritating your mucous membrane with a rough odor which had in it something of the relish of wild duck cooked with olives and the sharp odor of the shallot. On the whole, it was not a vile or repugnant emanation; it united, as an anticipated thing, with the formidable odors of the landscape; it was the pure note, completing with the human animals' cry of heat the odorous melody of beasts and woods." He goes on to speak of the perfume of feminine arms in the ball-room. "There the aroma is of ammoniated valerian, of chlorinated urine, brutally accentuated sometimes, even with a slight scent of prussic acid about it, a faint whiff of overripe peaches." These "spice-boxes," however, Huysmans continues, are more seductive when their perfume is filtered through the garments. "The appeal of the balsam of their arms is then less insolent, less cynical, than at the ball where they are more naked, but it more easily uncages the animal in man. Various as the color of the hair, the odor of the armpit is infinitely divisible; its gamut covers the whole keyboard of odors, reaching the obstinate scents of syringa and elder, and sometimes recalling the sweet perfume of the rubbed fingers that have held a cigarette. Audacious and sometimes fatiguing in the brunette and the black woman, sharp and fierce in the red woman, the armpit is heady as some sugared wines in the blondes." It will be noted that this very exact description corresponds at various points with the remarks of more scientific observers.

Sometimes the odor of the armpit may even become a kind of fetich which is craved for its own sake and in itself suffices to give pleasure. Féré has recorded such a case, in a friend of his own, a man of 60, with whom at one time he used to hunt, of robust health and belonging to a healthy family. On these hunting expeditions he used to tease the girls and women he met (sometimes even rather old women) in a surprising manner, when he came upon them walking in the fields with their short-sleeved chemises exposed. When he had succeeded in introducing his hand into the woman's armpit he went away satisfied, and frequently held the hand to his nose with evident pleasure. After long hesitation Féré asked for an explanation, which was frankly given. As a child he had liked the odor, without knowing why. As a young man women with strong odors had stimulated him to extraordinary sexual exploits, and now they were the only women who had any influence on him. He professed to be able to recognize continence by the odor, as well as the most favorable moment for approaching a woman. Throughout life a cold in the head had always been accompanied by persistent general excitement. (Féré, *L'Instinct Sexuel*, 1902, p. 134.)

We not only have to recognize that in the course of evolution the specific odors of the sexual region have sunk into the background as a source of sexual allurements, we have further to recognize the significant fact that even those personal odors which are chiefly liable under normal circumstances to come occasionally within the conscious sexual sphere, and indeed purely personal odors of all kinds, fail to exert any attraction, but rather tend to cause antipathy, unless some degree of tumescence has already been attained. That is to say, our olfactory experiences of the human body approximate rather to our tactile experiences of it than to our visual experiences. Sight is our most intellectual sense, and we trust ourselves to it with comparative boldness without any undue dread that its messages will hurt us by their personal intimacy; we even court its experiences, for it is the chief organ of our curiosity, as smell is of a dog's. But smell with us has ceased to be a leading channel of intellectual curiosity. Personal

odors do not, as vision does, give us information that is very largely intellectual; they make an appeal that is mainly of an intimate, emotional, imaginative character. They thus tend, when we are in our normal condition, to arouse what James calls the antisexual instinct.

"I cannot understand how people do not see how the senses are connected," said Jenny Lind to J. A. Symonds (Horatio Brown, *J. A. Symonds*, vol. i, p. 207). "What I have suffered from my sense of smell! My youth was misery from my acuteness of sensibility."

Mantegazza discusses the strength of olfactory antipathies (*Fisiologia dell' Odio*, p. 101), and mentions that once when ill in Paraguay he was nursed by an Indian girl of 16, who was fresh as a peach and extremely clean, but whose odor—"a mixture of wild beast's lair and decayed onions"—caused nausea and almost made him faint.

Moll (*Untersuchungen über die Libido Sexualis*, bd. i, p. 135) records the case of a neuropathic man who was constantly rendered impotent by his antipathy to personal body odors. It had very frequently happened to him to be attracted by the face and appearance of a girl, but at the last moment potency was inhibited by the perception of personal odor.

In the case of a man of distinguished ability known to me, belonging to a somewhat neuropathic family, there is extreme sensitiveness to the smell of a woman, which is frequently the most obvious thing to him about her. He has seldom known a woman whose natural perfume entirely suits him, and his olfactory impressions have frequently been the immediate cause of a rupture of relationships.

It was formerly discussed whether strong personal odor constituted adequate ground for divorce. Hagen, who brings forward references on this point (*Sexuelle Osphrésiologie*, pp. 75-83), considers that the body odors are normally and naturally repulsive because they are closely associated with the capryl group of odors, which are those of many of the excretions.

Olfactory antipathies are, however, often strictly subordinated to the individual's general emotional attitude toward the object from which they emanate. This is illustrated in the case, known to me, of a man who on a hot day entering a steamboat with a woman to whom he was attached seated himself between her and a man, a stranger. He soon became conscious of an axillary odor which he concluded to come from the man and which he felt as disagreeable. But a little later he realized that it proceeded from his own companion, and with this discovery the odor at once lost its disagreeable character.

In this respect a personal odor resembles a personal touch. Two intimate touches of the hand, though of precisely similar physical quality, may in their emotional effects be separated by an immeasurable interval, in dependence on our attitude toward the person from whom they proceed.

Personal odor, in order to make its allurements felt, and not to arouse antipathy, must, in normal persons, have been preceded by conditions which have inhibited the play of the antisexual instinct. A certain degree of tumescence must already have been attained. It is even possible, when we bear in mind the intimate sympathy between the sexual sphere and the nose, that the olfactory organ needs to have its sensibility modified in a form receptive to sexual messages,

though such an assumption is by no means necessary. It is when such a faint preliminary degree of tumescence has been attained, however it may have been attained,—for the methods of tumescence, as we know, are innumerable,—that a sympathetic personal odor is enabled to make its appeal. If we analyze the cases in which olfactory perceptions have proved potent in love, we shall nearly always find that they have been experienced under circumstances favorable for the occurrence of tumescence. When this is not the case we may reasonably suspect the presence of some degree of perversion.

In the oft-quoted case of the Austrian peasant who found that he was aided in seducing young women by dancing with them and then wiping their faces with a handkerchief he had kept in his armpit, we may doubtless regard the preliminary excitement of the dance as an essential factor in the influence produced.

In the same way, I am acquainted with the ease of a lady not usually sensitive to simple body odors (though affected by perfumes and flowers) who on one occasion, when already in a state of sexual erethism, was highly excited when perceiving the odor of her lover's axilla.

The same influence of preliminary excitement may be seen in another instance known to me, that of a gentleman who when traveling abroad fell in with three charming young ladies during a long railway journey. He was conscious of a pleasurable excitement caused by the prolonged intimacy of the journey, but this only became definitely sexual when the youngest of the ladies, stretching before him to look out of the window and holding on to the rack above, accidentally brought her axilla into close proximity with his face, whereupon erection was caused, although he himself regards personal odors, at all events when emanating from strangers, as indifferent or repulsive.

A medical correspondent, referring to the fact that with many men (indeed women also) sexual excitement occurs after dancing for a considerable time, remarks that he considers the odor of the woman's sweat is here a considerable factor.

The characteristics of olfaction which our investigation has so far revealed have not, on the whole, been favorable to the influence of personal odors as a sexual attraction in civilized men. It is a primitive sense which had its flowering time before men arose; it is a comparatively unæsthetic sense; it is a somewhat obtuse sense which among Europeans is usually incapable of perceiving the odor of the "human flower"—to use Goethe's phrase—except on very close contact, and on this account, and on account of the fact that it is a predominantly emotional sense, personal odors in ordinary social intercourse are less likely to arouse the sexual instinct than the antisexual instinct. If a certain degree of tumescence is required before a personal odor can exert an attractive influence, a powerful personal odor, strong enough to be perceived before any degree of tumescence is attained, will tend to cause repulsion, and in so doing tend, consciously or unconsciously, to excite prejudice against personal odor altogether. This is actually the case in civilization, and most people, it would appear, view with more or less antipathy the personal odors of those persons to whom they are not sexually attracted, while their attitude is neutral in this respect toward the individuals to whom they are sexually attracted.^[51] The following statement by a correspondent seems to me to express the experience of the majority of men in this respect: "I do not notice that different people have different smells. Certain women I have known have been in the habit of using particular scents, but no associations could be aroused if I were to smell the same scent now, for I should not identify it. As a boy I was very fond of scent, and I

associate this with my marked sexual proclivities. I like a woman to use a little scent. It rouses my sexual feelings, but not to any large extent. I dislike the smell of a woman's vagina." While the last statement seems to express the feeling of many if not most men, it may be proper to add that there seems no natural reason why the vulvar odor of a clean and healthy woman should be other than agreeable to a normal man who is her lover.

In literature it is the natural odor of women rather than men which receives attention. We should expect this to be the case since literature is chiefly produced by men. The question as to whether men or women are really more apt to be sexually influenced in this way cannot thus be decided. Among animals, it seems probable, both sexes are alike influenced by odors, for, while it is usually the male whose sexual regions are furnished with special scent glands, when such occur, the peculiar odor of the female during the sexual season is certainly not less efficacious as an allurement to the male. If we compare the general susceptibility of men and women to agreeable odors, apart from the question of sexual allurement, there can be little doubt that it is most marked among women. As Groos points out, even among children little girls are more interested in scents than boys, and the investigations of various workers, especially Garbini, have shown that there is actually a greater power of discriminating odors among girls than among boys. Marro has gone further, and in an extended series of observations on girls before and after the establishment of puberty—which is of considerable interest from the point of view of the sexual significance of olfaction—he has shown reason to believe that girls acquire an increased susceptibility to odors when sexual life begins, although they show no such increased powers as regards the other senses.^[52] On the whole, it would appear that, while women are not apt to be seriously affected, in the absence of any preliminary excitation, by crude body odors, they are by no means insusceptible to the sexual influence of olfactory impressions. It is probable, indeed, that they are more affected, and more frequently affected, in this way, than are men.

Edouard de Goncourt, in his novel *Chérie*—the intimate history of a young girl, founded, he states, on much personal observation—describes (Chapter LXXXV) the delight with which sensuous, but chaste young girls often take in strong perfumes. "Perfume and love," he remarks, "impart delights which are closely allied." In an earlier chapter (XLIV) he writes of his heroine at the age of 15: "The intimately happy emotion which the young girl experienced in reading *Paul et Virginie* and other honestly amorous books she sought to make more complete and intense and penetrating by soaking the book with scent, and the love-story reached her senses and imagination through pages moist with liquid perfume."

Carbini (*Archivio per l'Antropologia*, 1896, fasc. 3) in a very thorough investigation of a large number of children, found that the earliest osmo-gustative sensations occurred in the fourth week in girls, the fifth week in boys; the first real and definite olfactory sensations appeared in the fifteenth month in girls, in the sixteenth in boys; while experiments on several hundred children between the ages of 3 and 6 years showed the girls slightly, but distinctly, superior to the boys. It may, of course, be argued that these results merely show a somewhat greater precocity of girls. I have summarized the main investigations into this question in *Man and Woman*, revised and enlarged edition, 1904, pp. 134-138. On the whole, they seem to indicate greater olfactory acuteness on the part of women, but the evidence is by no means altogether concordant in this sense. Popular and general scientific opinion is also by no means always in harmony. Thus, Tardif, in his book on odors in relation to the sexual instinct, throughout assumes, as a matter of course, that the sense of smell is most keen in men; while, on the other hand, I note that in a

pamphlet by Mr. Martin Perls, a manufacturing perfumer, it is stated with equal confidence that "it is a well-known fact that ladies have, even without a practice of long standing, a keener sense of smell than men," and on this account he employs a staff of young ladies for testing perfumes by smell in the laboratory by the glazed paper test.

It is sometimes said that the use of strong perfumes by women indicates a dulled olfactory organ. On the other hand, it is said that the use of tobacco deadens the sensitiveness of the masculine nose. Both these statements seem to be without foundation. The use of a large amount of perfume is rather a question of taste than a question of sensory acuteness (not to mention that those who live in an atmosphere of perfume are, of course, only faintly conscious of it), and the chemist perfumer in his laboratory surrounded by strong odors can distinguish them all with great delicacy. As regards tobacco, in Spain the *cigarreras* are women and girls who live perpetually in an atmosphere of tobacco, and Señora Pardo Bazan, who knows them well, remarks in her novel, *La Tribuna*, which deals with life in a tobacco factory, that "the acuity of the sense of smell of the *cigarreras* is notable, and it would seem that instead of blunting the nasal membrane the tobacco makes the olfactory nerves keener."

"It was the same as if I was in a sweet apple garden, from the sweetness that came to me when the light wind passed over them and stirred their clothes," a woman is represented as saying concerning a troop of handsome men in the Irish sagas (*Cuchulain of Muirthemne*, p. 161). The pleasure and excitement experienced by a woman in the odor of her lover is usually felt concerning a vague and mixed odor which may be characteristic, but is not definitely traceable to any specific bodily sexual odor. The general odor of the man she loves, one woman states, is highly, sometimes even overwhelmingly, attractive to her; but the specific odor of the male sexual organs which she describes as fishy has no attraction. A man writes that in his relations with women he has never been able to detect that they were influenced by the axillary or other specific odors. A woman writes: "To me any personal odor, as that of perspiration, is very disagreeable, and the healthy *naked* human body is very free from any odor. Fresh perspiration has no disagreeable smell; it is only by retention in the clothing that it becomes objectionable. The faint smell of smoke which lingers round men who smoke much is rather exciting to me, but only when it is *very* faint. If at all strong it becomes disagreeable. As most of the men who have attracted me have been great smokers, there is doubtless a direct association of ideas. It has only once occurred to me that an indifferent unpleasant smell became attractive in connection with some particular person. In this case it was the scent of stale tobacco, such as comes from the end of a cold cigar or cigarette. It was, and is now, very disagreeable to me, but, for the time and in connection with a particular person, it seemed to me more delightful and exciting than the most delicious perfume. I think, however, only a very strong attraction could overcome a dislike of this sort, and I doubt if I could experience such a twist-round if it had been a personal odor. Stale tobacco, though nasty, conveys no mentally disagreeable idea. I mean it does not suggest dirt or unhealthiness."

It is probably significant of the somewhat considerable part which, in one way or another, odors and perfumes play in the emotional life of women, that, of the 4 women whose sexual histories are recorded in Appendix B of vol. iii of these *Studies*, all are liable to experience sexual effects from olfactory stimuli, 3 of them from personal odors (though this fact is not in every case brought out in the histories as recorded), while of the 8 men not one has considered his olfactory experiences in this respect as worthy of mention.

The very marked sexual fascination which odor, associated with the men they love, exerts on women has easily passed unperceived, since women have not felt called upon to proclaim it. In sexual inversion, however, when the woman takes a more active and outspoken part than in normal love, it may very clearly be traced. Here, indeed, it is often exaggerated, in consequence of the common tendency for neurotic and neurasthenic persons to be more than normally susceptible to the influence of odors. In the majority of inverted women, it may safely be said, the odor of the beloved person plays a very considerable part. Thus, one inverted woman asks the woman she loves to send her some of her hair that she may intoxicate herself in solitude with its perfume (*Archivio di Psicopatie Sessuali*, vol. i, fasc. 3, p. 36). Again, a young girl with some homosexual tendencies, was apt to experience sexual emotions when in ordinary contact with schoolfellows whose body odor was marked (Féré, *L'Instinct Sexuel*, p. 260). Such examples are fairly typical.

That the body odor of men may in a large number of cases be highly agreeable and sexually attractive is shown by the testimony of male sexual inverts. There is abundant evidence to this effect. Raffalovich (*L'Uranisme et l'Unisexualité*, p. 126) insists on the importance of body odors as a sexual attraction to the male invert, and is inclined to think that the increased odor of the man's own body during sexual excitement may have an auto-aphrodisiacal effect which is reflected on the body of the loved person. The odor of peasants, of men who work in the open air, is specially apt to be found attractive. Moll mentions the case of an inverted man who found the "forest, mosslike odor" of a schoolfellow irresistibly attractive.

The following passage from a letter written by an Italian marquis has been sent to me: "Bonifazio stripped one evening, to give me pleasure. He has the full, rounded flesh and amber coloring which painters of the Giorgione school gave to their S. Sebastians. When he began to dress, I took up an old *fascia*, or girdle of netted silk, which was lying under his breeches, and which still preserved the warmth of his body. I buried my face in it, and was half inebriated by its exquisite aroma of young manhood and fresh hay. He told me he had worn it for two years. No wonder it was redolent of him. I asked him to let me keep it as a souvenir. He smiled and said: 'You like it because it has lain so long upon my *panoia*.' 'Yes, just so,' I replied; 'whenever I kiss it, thus and thus, it will bring you back to me.' Sometimes I tie it round my naked waist before I go to bed. The smell of it is enough to cause a powerful erection, and the contact of its fringes with my testicles and phallus has once or twice produced an involuntary emission."

I may here reproduce a communication which has reached me concerning the attractiveness of the odor of peasants: "One predominant attraction of these men is that they are pure and clean; their bodies in a state of healthy normal function. Then they possess, if they are temperate, what the Greek poet Straton called the *φουδική χρωτὸς* (a quality which, according to this authority, is never found in women). This 'natural fair perfume of the flesh' is a peculiar attribute of young men who live in the open air and deal with natural objects. Even their perspiration has an odor very different from that of girls in ball-rooms: more refined, ethereal, pervasive, delicate, and difficult to seize. When they have handled hay—in the time of hay-harvest, or in winter, when they bring hay down from mountain huts—the youthful peasants carry about with them the smell of 'a field the Lord hath blessed.' Their bodies and their clothes exhale an indefinable fragrance of purity and sex combined. Every gland of the robust frame seems to have accumulated scent from herbs and grasses, which slowly exudes from the cool, fresh skin of the lad. You do not perceive it in a room. You must take the young man's hands and bury your face in them, or be covered

with him under the same blanket in one bed, to feel this aroma. No sensual impression on the nerves of smell is more poignantly impregnated with spiritual poetry—the poetry of adolescence, and early hours upon the hills, and labor cheerfully accomplished, and the harvest of God's gifts to man brought home by human industry. It is worth mentioning that Aristophanes, in his description of the perfect Athenian Ephebus, dwells upon his being redolent of natural perfumes."

In a passage in the second part of *Faust* Goethe (who appears to have felt considerable interest in the psychology of smell) makes three women speak concerning the ambrosiacal odor of young men.

In this connection, also, I note a passage in a poem ("Appleton House") by our own English poet Marvell, which it is of interest to quote:—

"And now the careless victors play,
Dancing the triumphs of the hay,
When every mower's wholesome heat
Smells like an Alexander's sweat.
Their females fragrant as the mead
Which they in fairy circles tread,
When at their dance's end they kiss,
Their new-mown hay not sweeter is."

Notes

- [30] R. Andree, "Völkergeruch," in *Ethnographische Parallelen*, Neue Folge, 1889, pp. 213-222, brings together many passages describing the odors of various peoples. Hagen, *Sexuelle Oosphrésiologie*, pp. 166 *et seq.*, has a chapter on the subject; Joest, supplement to *International Archiv für Ethnographie*, 1893, p. 53, has an interesting passage on the smells of various races, as also Waitz, *Introduction to Anthropology*, p. 103. Cf. Sir H. H. Johnston, *British Central Africa*, p. 395; T. H. Parke, *Experiences in Equatorial Africa*, p. 409; E. H. Man, *Journal of the Anthropological Institute*, 1889, p. 391; Brough Smyth, *Aborigines of Victoria*, vol. i, p. 7; d'Orbigny, *L'Homme Américain*, vol. i, p. 87, etc.
- [31] B. Adachi "Geruch der Europaer," *Globus*, 1903, No. 1.
- [32] Hagen quotes testimonies on this point, *Sexuelle Oosphrésiologie*, p. 173. The negro, Castellani states, considers that Europeans have a smell of death.
- [33] Reports of the Cambridge Anthropological Expedition, vol. ii, p. 181.
- [34] Waitz, *Introduction to Anthropology*, p. 103.
- [35] Monin, *Les Odeurs du Corps Humain*, second edition, Paris, 1886, discusses briefly but comprehensively the normal and more especially the pathological odors of the body and of its secretions and excretions.
- [36] Venturi, *Degenerazione Psicho-sessuale*, p. 417.
- [37] Quoted by Féré, *L'Instinct Sexuel*, 1902, p. 133.
- [38] H. Ling Roth, "On Salutations," *Journal of the Anthropological Institute*, November, 1889.

- [39] See Appendix A: "The Origins of the Kiss."
- [40] See, *e.g.*, passage quoted by I. Bloch, *Beiträge zur Ätiologie der Psychopathia Sexualis*, Teil II, p. 205.
- [41] It must at the same time be remembered that the more or less degree of exposure involved by sexual intercourse is itself a cause of nasal congestion and sneezing.
- [42] Féré, *Pathologie des Emotions*, p. 81
- [43] J. N. Mackenzie similarly suggests (*Johns Hopkins Hospital Bulletin*, No. 82, 1898) that "irritation and congestion of the nasal mucous membrane precede, or are the excitants of, the olfactory impression that forms the connecting link between the sense of smell and erethism of the reproductive organs exhibited in the lower animals."
- [44] *Les Odeurs dans les Romans de Zola*, Montpellier, 1889.
- [45] Toulouse, *Emile Zola*, pp. 163-165, 173-175.
- [46] P. J. Möbius, *Das Pathologische bei Nietzsche*.
- [47] Moll has a passage on the sense of smell in the blind, more especially in sexual respects, *Untersuchungen über die Libido Sexualis*, bd. 1, pp. 137 *et seq.*
- [48] See, for instance, his poem, "Love Perfumes all Parts," in which he declares that "Hands and thighs and legs are all richly aromatical." And compare the lyrics entitled "A Song to the Maskers," "On Julia's Breath," "Upon Julia's Unlacing Herself," "Upon Julia's Sweat," and "To Mistress Anne Soame."
- [49] There are various indications that Goethe was attentive to the attraction of personal odors; and that he experienced this attraction himself is shown by the fact that, as he confessed, when he once had to leave Weimar on an official journey for two days he took a bodice of Frau von Stein's away in order to carry the scent of her body with him.
- [50] Hagen has brought together from the literature of the subject a number of typical cases of olfactory fetichism, *Sexuelle Osphrésiologie*, 1901, pp. 82 *et seq.*
- [51] Moll's inquiries among normal persons have also shown that few people are conscious of odor as a sexual attraction. (*Untersuchungen über die Libido Sexualis*. Bd. I, p. 133.)
- [52] Marro, *La, Pubertà*, 1898, Chapter II. Tardif found in boys that perfumes exerted little or no influence on circulation and respiration before puberty, though his observations on this point were too few to carry weight.

IV.

The Influence of Perfumes—Their Aboriginal Relationship to Sexual Body Odors—This True even of the Fragrance of Flowers—The Synthetic Manufacture of Perfumes—The Sexual Effects of Perfumes—Perfumes perhaps Originally Used to Heighten the Body Odors—The Special Significance of the Musk Odor—Its Wide Natural Diffusion in Plants and Animals and Man—Musk a Powerful Stimulant—Its Widespread Use as a Perfume—Peau d'Espagne—The Smell of Leather and its Occasional Sexual Effects—The Sexual Influence of the Odors of Flowers—The Identity of many Plant Odors with Certain Normal and Abnormal Body Odors—The Smell of Semen in this Connection.

So far we have been mainly concerned with purely personal odors. It is, however, no longer possible to confine the discussion of the sexual significance of odor within the purely animal limit. The various characteristics of personal odor which have been noted—alike those which tend to make it repulsive and those which tend to make it attractive—have led to the use of artificial perfumes, to heighten the natural odor when it is regarded as attractive, to disguise it when it is regarded as repellent; while at the same time, happily covering both of these impulses, has developed the pure delight in perfume for its own agreeableness, the æsthetic side of olfaction. In this way—although in a much less constant and less elaborate manner—the body became adorned to the sense of smell just as by clothing and ornament it is adorned to the sense of sight.

But—and this is a point of great significance from our present standpoint—we do not really leave the sexual sphere by introducing artificial perfumes. The perfumes which we extract from natural products, or, as is now frequently the case, produce by chemical synthesis, are themselves either actually animal sexual odors or allied in character or composition, to the personal odors they are used to heighten or disguise. Musk is the product of glands of the male *Moschus moschiferus* which correspond to preputial sebaceous glands; castoreum is the product of similar sexual glands in the beaver, and civet likewise from the civet; ambergris is an intestinal calculus found in the rectum of the cachelot.^[53] Not only, however, are nearly all the perfumes of animal origin, in use by civilized man, odors which have a specially sexual object among the animals from which they are derived, but even the perfumes of flowers may be said to be of sexual character. They are given out at the reproductive period in the lives of plants, and they clearly have very largely as their object an appeal to the insects who secure plant fertilization, such appeal having as its basis the fact that among insects themselves olfactory sensibility has in many cases been developed in their own mating.^[54] There is, for example, a moth in which both sexes are similarly and inconspicuously marked, but the males diffuse an agreeable odor, said to be like pineapple, which attracts the females.^[55] If, therefore, the odors of flowers have developed because they proved useful to the plant by attracting insects or other living creatures, it is obvious that the advantage would lie with those plants which could put forth an animal sexual odor of agreeable character, since such an odor would prove fascinating to animal creatures. We here have a very simple explanation of the fundamental identity of odors in the animal and vegetable worlds. It thus comes about that from a psychological point of view we are not really entering a new field when we begin to discuss the influence of perfumes other than those of the animal body. We are merely concerned with somewhat more complex or somewhat more refined sexual odors; they are not specifically different from the human odors and they mingle with them harmoniously. Popular language bears witness to the truth of this statement, and the normal and abnormal human odors, as we have already seen, are constantly compared to artificial, animal, and plant odors, to chloroform, to musk, to violet, to mention only those similitudes which seem to occur most frequently.

The methods now employed for obtaining the perfumes universally used in civilized lands are three: (1) the extraction of odoriferous compounds from the neutral products in which they occur; (2) the artificial preparation of naturally occurring odoriferous compounds by synthetic processes; (3) the manufacture of materials which yield odors resembling those of pleasant smelling natural objects. (See, *e.g.*, "Natural and Artificial Perfumes," *Nature*, December 27,

1900.) The essential principles of most of our perfumes belong to the complex class of organic compounds known as terpenes. During recent years a number of the essential elements of natural perfumes have been studied, in many cases the methods of preparing them artificially discovered, and they are largely replacing the use of natural perfumes not only for soaps, etc., but for scent essences, though it appears to be very difficult to imitate exactly the delicate fragrance achieved by Nature. Artificial musk was discovered accidentally by Bauer when studying the butyltoluenes contained in a resin extractive. Vanillin, the odoriferous principle of the vanilla bean, is an aldehyde which was first artificially prepared by Tiemann and Haarmann in 1874 by oxidizing coniferin, a glucoside contained in the sap of various coniferæ, but it now appears to be usually manufactured from eugenol, a phenol contained in oil of cloves. Piperonal, an aldehyde closely allied to vanillin, is used in perfumery under the name of heliotropin and is prepared from oil of sassafras and oil of camphor. Cumarine, the material to which tonka bean, sweet woodruff, and new-mown hay owe their characteristic odors, was synthetically prepared by W. H. Parkin in 1868 by heating sodiosalicylic aldehyde with acetic anhydride, though now more cheaply prepared from an herb growing in Florida. Irone, which has the perfume of violets, was isolated in 1893 from a ketone contained in orris-root; and ionone, another ketone which has a very closely similar odor of fresh violets and was isolated after some years' further work, is largely used in the preparation of violet perfume. Irone and ionone are closely similar in composition to oil of turpentine which when taken into the body is partly converted into perfume and gives a strong odor of violets to the urine. "Little has yet been accomplished toward ascertaining the relation between the odor and the chemical constitution of substances in general. Hydrocarbons as a class possess considerable similarity in odor, so also do the organic sulphides and, to a much smaller extent, the ketones. The subject waits for some one to correlate its various physiological, psychological and physical aspects in the same way that Helmholtz did for sound. It seems, as yet, impossible to assign any probable reason to the fact that many substances have a pleasant odor. It may, however, be worth suggesting that certain compounds, such as the volatile sulphides and the indoles, have very unpleasant odors because they are normal constituents of mammalian excreta and of putrefied animal products; the repulsive odors may be simply necessary results of evolutionary processes." (*Loc. cit.*, *Nature*, December 27, 1900.)

Many of the perfumes in use are really combinations of a great many different odors in varying proportions, such as oil of rose, lavender oil, ylang-ylang, etc. The most highly appreciated perfumes are often made up of elements which in stronger proportion would be regarded as highly unpleasant.

In the study and manufacture of perfumes Germany and France have taken the lead in recent times. The industry is one of great importance. In France alone the trade in perfumes amounts to £4,000,000.

It is doubtless largely owing to the essential and fundamental identity of odors—to the chemical resemblances even of odors from the most widely remote sources—that we find that perfumes in many cases have the same sexual effects as are primitively possessed by the body odors. In northern countries, where the use of perfumes is chiefly cultivated by women, it is by women that this sexual influence is most liable to be felt. In the South and in the East it appears to be at least equally often experienced by men. Thus, in Italy Mantegazza remarks that "many men of strong sexual temperament cannot visit with impunity a laboratory of essences and perfumes."^[56] In the East we find it stated in the Islamic book entitled *The Perfumed Garden of Sheik Nefzaoui* that

the use of perfumes by women, as well as by men, excites to the generative act. It is largely in reliance on this fact that in many parts of the world, especially among Eastern peoples and occasionally among ourselves in Europe, women have been accustomed to perfume the body and especially the vulva.^[57]

It seems highly probable that, as has been especially emphasized by Hagen, perfumes were primitively used by women, not as is sometimes the case in civilization, with the idea of disguising any possible natural odor, but with the object of heightening and fortifying the natural odor.^[58] If the primitive man was inclined to disparage a woman whose odor was slight or imperceptible,—turning away from her with contempt, as the Polynesian turned away from the ladies of Sydney: "They have no smell!"—women would inevitably seek to supplement any natural defects in this respect, and to accentuate their odorous qualities, in the same way as by corsets and bustles, even in civilization, they have sought to accentuate the sexual salencies of their bodies. In this way we may, as Hagen suggests, explain the fact that until recent times the odors preferred by women have not been the most delicate or exquisite, but the strongest, the most animal, the most sexual: musk, castoreum, civet, and ambergris.

In that interesting novel—dealing with the adventures of a Jewish maiden at the Persian court of Xerxes—which under the title of *Esther* has found its way into the Old Testament we are told that it was customary in the royal harem at Shushan to submit the women to a very prolonged course of perfuming before they were admitted to the king: "six months with oil of myrrh and six months with sweet odors." (*Esther*, Chapter II, v. 12.)

In the *Arabian Nights* there are many allusions to the use of perfumes by women with a more or less definitely stated aphrodisiacal intent. Thus we read in the story of Kamaralzaman: "With fine incense I will perfume my breasts, my belly, my whole body, so that my skin may melt more sweetly in thy mouth, O apple of my eye!"

Even among savages the perfuming of the body is sometimes practiced with the object of inducing love in the partner. Schellong states that the Papuans of Kaiser Wilhelm's Land rub various fragrant plants into their bodies for this purpose. (*Zeitschrift für Ethnologie*, 1899, ht. i, p. 19.) The significance of this practice is more fully revealed by Haddon when studying the Papuans of Torres Straits among whom the initiative in courtship is taken by the women. It was by scenting himself with a pungent odorous substance that a young man indicated that he was ready to be sued by the girls. A man would wear this scent at the back of his neck during a dance in order to attract the attention of a particular girl; it was believed to act with magical certainty, after the manner of a charm (*Reports of the Cambridge Anthropological Expedition to Torres Straits*, vol. v, pp. 211, 222, and 328).

The perfume which is of all perfumes the most interesting from the present point of view is certainly musk. With ambergris, musk is the chief member of Linnæus's group of *Odores ambrosiacæ*, a group which in sexual significances, as Zwaardemaker remarks, ranks besides the capryl group of odors. It is a perfume of ancient origin; its name is Persian^[59] (indicating doubtless the channel whence it reached Europe) and ultimately derived from the Sanskrit word for testicle in allusion to the fact that it was contained in a pouch removed from the sexual parts of the male musk-deer. Musk odors, however, often of considerable strength, are very widely distributed in Nature, alike among animals and plants. This is indicated by the frequency with

which the word "musk" forms part of the names of animals and plants which are by no means always nearly related. We have the musk-ox, the musky mole, several species called musk-rat, the musk-duct, the musk-beetle; while among plants which have received their names from a real or supposed musky odor are, besides several that are called musk-plant, the musk-rose, the musk-hyacinth, the musk-mallow, the musk-orchid, the musk-melon, the musk-cherry, the musk-pear, the musk-plum, muskat and muscatels, musk-seed, musk-tree, musk-wood, etc.^[60] But a musky odor is not merely widespread in Nature among plants and the lower animals, it is peculiarly associated with man. Incidentally we have already seen how it is regarded as characteristic of some races of man, especially the Chinese. Moreover, the smell of the negress is said to be musky in character, and among Europeans a musky odor is said to be characteristic of blondes. Laycock, in his *Nervous Diseases of Women*, stated his opinion that "the musk odor is certainly the sexual odor of man"; and Féré states that the musk odor is that among natural perfumes most nearly approaching the odor of the sexual secretions. We have seen that the Chinese poet vaunts the musky odor of his mistress's armpits, while another Oriental saying concerning the attractive woman is that "her navel is filled with musk." Persian literature contains many references to musk as an attractive body odor, and Firdusi speaks of a woman's hair as "a crown of musk," while the Arabian poet Motannabi says of his mistress that "her hyacinthine hair smells sweeter than Scythian musk." Galopin stated that he knew women whose natural odor of musk (and less frequently of ambergris) was sufficiently strong to impart to a bath in less than an hour a perfume due entirely to the exhalations of the musky body; it must be added that Galopin was an enthusiast in this matter.

The special significance of musk from our present point of view lies not only in the fact that we here have a perfume, widely scattered throughout nature and often in an agreeable form, which is at the same time a very frequent personal odor in man. Musk is the odor which not only in the animals to which it has given a name, but in many others, is a specifically sexual odor, chiefly emitted during the sexual season. The sexual odors, indeed, of most animals seem to be modifications of musk. The Sphinx moth has a musky odor which is confined to the male and is doubtless sexual. Some lizards have a musky odor which is heightened at the sexual season; crocodiles during the pairing season emit from their submaxillary glands a musky odor which pervades their haunts. In the same way elephants emit a musky odor from their facial glands during the rutting season. The odor of the musk-duck is chiefly confined to the breeding season.^[61] The musky odor of the negress is said to be heightened during sexual excitement.

The predominance of musk as a sexual odor is associated with the fact that its actual nervous influence, apart from the presence of sexual association, is very considerable. Féré found it to be a powerful muscular stimulant. In former times musk enjoyed a high reputation as a cardiac stimulant; it fell into disuse, but in recent years its use in asthenic states has been revived, and excellent results, it has been claimed, have followed its administration in cases of collapse from Asiatic cholera. For sexual torpor in women it still has (like vanilla and sandal) a certain degree of reputation, though it is not often used, and some of the old Arabian physicians (especially Avicenna) recommended it, with castoreum and myrrh, for amenorrhœa. Its powerful action is indicated by the experience of Esquirol, who stated that he had seen cases in which sensory stimulation by musk in women during lactation had produced mania. It has always had the reputation, more especially in the Mohammedan East, of being a sexual stimulant to men; "the noblest of perfumes," it is called in *El Ktab*, "and that which most provokes to venery."

It is doubtless a fact significant of the special sexual effects of musk that, as Laycock remarked, in cases of special idiosyncrasy to odors, musk appears to be that odor which is most liked or disliked. Thus, the old English physician Whytt remarked that "several delicate women who could easily bear the stronger smell of tobacco have been thrown into fits by musk, ambergris, or a pale rose."^[62] It may be remarked that in the *Perfumed Garden of Sheik Nefzaoui* it is stated that it is by their sexual effects that perfumes tend to throw women into a kind of swoon, and Lucretius remarks that a woman who smells castoreum, another animal sexual perfume, at the time of her menstrual period may swoon.^[63]

Not only is musk the most cherished perfume of the Islamic world, and the special favorite of the Prophet himself, who greatly delighted in perfumes ("I love your world," he is reported to have said in old age, "for its women and its perfumes"),^[64] it is the only perfume generally used by the women of a land in which the refinements of life have been carried so far as Japan, and they received it from the Chinese.^[65]

Moreover, musk is still the most popular of European perfumes. It is the perfumes containing musk, Piesse states in his well-known book on the *Art of Perfumery*, which sell best. It is certainly true that in its simple form the odor of musk is not nowadays highly considered in Europe. This fact is connected with the ever-growing refinement in accordance with which the specific odors of the sexual regions in human beings tend to lose their primitive attractiveness and bodily odors generally become mingled with artificial perfumes and so disguised. But, although musk in its simple form, and under its ancient name, has lost its hold in Europe, it is an interesting and significant fact that it is still the perfumes which contain musk that are the most widely popular.

Peau d'Espagne may be mentioned as a highly complex and luxurious perfume, often the favorite scent of sensuous persons, which really owes a large part of its potency to the presence of the crude animal sexual odors of musk and civet. It consists of wash-leather steeped in ottos of neroli, rose, santal, lavender, verbena, bergamot, cloves, and cinnamon, subsequently smeared with civet and musk. It is said by some, probably with a certain degree of truth, that Peau d'Espagne is of all perfumes that which most nearly approaches the odor of a woman's skin; whether it also suggests the odor of leather is not so clear.

There is, however, no doubt that the smell of leather has a curiously stimulating sexual influence on many men and women. It is an odor which seems to occupy an intermediate place between the natural body odors and the artificial perfumes for which it sometimes serves as a basis; possibly it is to this fact that its occasional sexual influence is owing, for, as we have already seen, there is a tendency for sexual allurements to attach to odors which are not the specific personal body odors but yet are related to them. Moll considers, no doubt rightly, that shoe fetichism, perhaps the most frequent of sexual fetichistic perversions, is greatly favored, if, indeed, it does not owe its origin to, the associated odor of the feet and of the shoes.^[66] He narrates a case of shoe fetichism in a man in which the perversion began at the age of 6; when for the first time he wore new shoes, having previously used only the left-off shoes of his elder brother; he felt and smelt these new shoes with sensations of unmeasured pleasure; and a few years later began to use shoes as a method of masturbation.^[67] Näcke has also recorded the case of a shoe fetichist who declared that the sexual attraction of shoes (usually his wife's) lay largely in the odor of the leather.^[68] Krafft-Ebing, again, brings forward a case of shoe fetichism in which the significant fact is mentioned

that the subject bought a pair of leather cuffs to smell while masturbating.^[69] Restif de la Bretonne, who was somewhat of a shoe fetichist, appears to have enjoyed smelling shoes. It is not probable that the odor of leather explains the whole of shoe fetichism,—as we shall see when, in another "Study," this question comes before us—and in many cases it cannot be said to enter at all; it is, however, one of the factors. Such a conclusion is further supported by the fact that by many the odor of new shoes is sometimes desired as an adjuvant to coitus. It is in the experience of prostitutes that such a device is not infrequent. Näcke mentions that a colleague of his was informed by a prostitute that several of her clients desired the odor of new shoes in the room, and that she was accustomed to obtain the desired perfume by holding her shoes for a moment over the flame of a spirit lamp.

The direct sexual influence of the odor of leather is, however, more conclusively proved by those instances in which it exists apart from shoes or other objects having any connection with the human body. I have elsewhere in these "Studies"^[71] recorded the case of a lady, entirely normal in sexual and other respects, who is conscious of a considerable degree of pleasurable sexual excitement in the presence of the smell of leather objects, more especially of leather-bound ledgers and in shops where leather objects are sold. She thinks this dates from the period when, as a child of 9, she was sometimes left alone for a time on a high stool in an office. A possible explanation in this case lies in the supposition that on one of these early occasions sexual excitement was produced by the contact with the stool (in a way that is not infrequent in young girls) and that the accidentally associated odor of leather permanently affected the nervous system, while the really significant contact left no permanent impression. Even on such a supposition it might, however, still be maintained that a real potency of the leather odor is illustrated by this case, and this is likewise suggested by the fact that the same subject is also sexually affected by various perfumes and odorous flowers not recalling leather.^[70]

It has been suggested to me by a lady that the odor of leather suggests that of the sexual organs. The same suggestion is made by Hagen,^[72] and I find it stated by Gould and Pyle that menstruating girls sometimes smell of leather. The secret of its influence may thus be not altogether obscure; in the fact that leather is animal skin, and that it may thus vaguely stir the olfactory sensibilities which had been ancestrally affected by the sexual stimulus of the skin odor lies the probable foundation of the mystery.

In the absence of all suggestion of personal or animal odors, in its most exquisite forms in the fragrance of flowers, olfactory sensations are still very frequently of a voluptuous character. Mantegazza has remarked that it is a proof of the close connection between the sense of smell and the sexual organs that the expression of pleasure produced by olfaction resembles the expression of sexual pleasures.^[73] Make the chastest woman smell the flowers she likes best, he remarks, and she will close her eyes, breathe deeply, and, if very sensitive, tremble all over, presenting an intimate picture which otherwise she never shows, except perhaps to her lover. He mentions a lady who said: "I sometimes feel such pleasure in smelling flowers that I seem to be committing a sin."^[74] It is really the case that in many persons—usually, if not exclusively, women—the odor of flowers produces not only a highly pleasurable, but a distinctly and specifically sexual, effect. I have met with numerous cases in which this effect was well marked. It is usually white flowers with heavy, penetrating odors which exert this influence. Thus, one lady (who is similarly affected by various perfumes, forget-me-nots, ylang-ylang, etc.) finds that a number of flowers produce on her a definite sexual effect, with moistening of the pudenda. This effect is especially

produced by white flowers like the gardenia, tuberose, etc. Another lady, who lives in India, has a similar experience with flowers. She writes: A scent to cause me sexual excitement must be somewhat heavy and *penetrating*. Nearly all white flowers so affect me and many Indian flowers with heavy, almost pungent scents. (All the flower scents are quite unconnected with me with any individual.) Tuberose, lilies of the valley, and frangipani flowers have an almost intoxicating effect on me. Violets, roses, mignonette, and many others, though very delicious, give me no sexual feeling at all. For this reason the line, 'The lilies and languors of virtue for the roses and raptures of vice' seems all wrong to me. The lily seems to me a very sensual flower, while the rose and its scent seem very good and countrified and virtuous. Shelley's description of the lily of the valley, 'whom youth makes so fair and *passion* so pale,' falls in much more with my ideas. "I can quite understand," she adds, "that leather, especially of books, might have an exciting effect, as the smell has this *penetrating* quality, but I do not think it produces any special feeling in me." This more sensuous character of white flowers is fairly obvious to many persons who do not experience from them any specifically sexual effects. To some people lilies have an odor which they describe as sexual, although these persons may be quite unaware that Hindu authors long since described the vulvar secretion of the *Padmini*, or perfect woman, during coitus, as "perfumed like the lily that has newly burst."^[75] It is noteworthy that it was more especially the white flowers—lily, tuberose, etc.—which were long ago noted by Cloquet as liable to cause various unpleasant nervous effects, cardiac oppression and syncope.^[76]

When we are concerned with the fragrances of flowers it would seem that we are far removed from the human sexual field, and that their sexual effects are inexplicable. It is not so. The animal and vegetable odors, as, indeed, we have already seen, are very closely connected. The recorded cases are very numerous in which human persons have exhaled from their skins—sometimes in a very pronounced degree—the odors of plants and flowers, of violets, of roses, of pineapple, of vanilla. On the other hand, there are various plant odors which distinctly recall, not merely the general odor of the human body, but even the specifically sexual odors. A rare garden weed, the stinking goosefoot, *Chenopodium vulvaria*, it is well known, possesses a herring brine or putrid fish odor—due, it appears, to propylamin, which is also found in the flowers of the common white thorn or mayflower (*Crataegus oxyacantha*) and many others of the *Rosaceæ*—which recalls the odor of the animal and human sexual regions.^[77] The reason is that both plant and animal odors belong chemically to the same group of capryl odors (Linnæus's *Odores hircini*), so called from the goat, the most important group of odors from the sexual point of view. Caproic and capryl acid are contained not only in the odor of the goat and in human sweat, and in animal products as many cheeses, but also in various plants, such as Herb Robert (*Geranium robertianum*), and the Stinking St. John's worts (*Hypericum hircinum*), as well as the *Chenopodium*. Zwaardemaker considers it probable that the odor of the vagina belongs to the same group, as well as the odor of semen (which Haller called *odor aphrodisiacus*), which last odor is also found, as Cloquet pointed out, in the flowers of the common berberry (*Berberis vulgaris*) and in the chestnut. A very remarkable and significant example of the same odor seems to occur in the case of the flowers of the henna plant, the white-flowered Lawsonia (*Lawsonia inermis*), so widely used in some Mohammedan lands for dyeing the nails and other parts of the body. "These flowers diffuse the sweetest odor," wrote Sonnini in Egypt a century ago; "the women delight to wear them, to adorn their houses with them, to carry them to the baths, to hold them in their hands, and to perfume their bosoms with them. They cannot patiently endure that Christian and Jewish women shall share the privilege with them. It is very remarkable that the perfume of the henna flowers, when closely inhaled, is almost entirely lost in a very decided

spermatic odor. If the flowers are crushed between the fingers this odor prevails, and is, indeed, the only one perceptible. It is not surprising that so delicious a flower has furnished Oriental poetry with many charming traits and amorous similes." Such a simile Sonnini finds in the *Song of Songs*, i. 13-14.^[78]

The odor of semen has not been investigated, but, according to Zwaardemaker, artificially produced odors (like cadaverin) resemble it. The odor of the leguminous fenugreek, a botanical friend considers, closely approaches the odor given off in some cases by the armpit in women. It is noteworthy that fenugreek contains cumarine, which imparts its fragrance to new-mown hay and to various flowers of somewhat similar odor. On some persons these have a sexually exciting effect, and it is of considerable interest to observe that they recall to many the odor of semen. "It seems very natural," a lady writes, "that flowers, etc., should have an exciting effect, as the original and by far the pleasantest way of love-making was in the open among flowers and fields; but a more purely physical reason may, I think, be found in the exact resemblance between the scent of semen and that of the pollen of flowering grasses. The first time I became aware of this resemblance it came on me with a rush that here was the explanation of the very exciting effect of a field of flowering grasses and, perhaps through them, of the scents of other flowers. If I am right, I suppose flower scents should affect women more powerfully than men in a sexual way. I do not think anyone would be likely to notice the odor of semen in this connection unless they had been greatly struck by the exciting effects of the pollen of grasses. I had often noticed it and puzzled over it." As pollen is the male sexual element of flowers, its occasionally stimulating effect in this direction is perhaps but an accidental result of a unity running through the organic world, though it may be perhaps more simply explained as a special form of that nasal irritation which is felt by so many persons in a hay-field. Another correspondent, this time a man, tells me that he has noted the resemblance of the odor of semen to that of crushed grasses. A scientific friend who has done much work in the field of organic chemistry tells me he associates the odor of semen with that produced by diastasic action on mixing flour and water, which he regards as sexual in character. This again brings us to the starchy products of the leguminous plants. It is evident that, subtle and obscure as many questions in the physiology and psychology of olfaction still remain, we cannot easily escape from their sexual associations.

Notes

[53] H. Beauregard, *Matière Médicale Zoölogique: Histoire des Drogues d'origine Animate*, 1901.

[54] Professor Plateau, of Ghent, has for many years carried on a series of experiments which would even tend to show that insects are scarcely attracted by the colors of flowers at all, but mainly influenced by a sense which would appear to be smell. His experiments have been recorded during recent years (from 1887) in the *Bulletins de l'Académie Royale de Belgique*, and have from time to time been summarized in *Nature*, e.g., February 5, 1903.

[55] David Sharp, *Cambridge Natural History: Insects*, Part II, p. 398.

[56] Mantegazza, *Fisiologia dell' Amore*, 1873, p. 176.

[57] Mantegazza (*L'Amour dans l'Humanité*, p. 94) refers to various peoples who practice this last custom. Egypt was a great centre of the practice more than 3000 years ago.

- [58] Hagen, *Sexuelle Osphrésologie*, 1901, p. 226. It has been suggested to me by a medical correspondent that one of the primitive objects of the hair, alike on head, mons veneris, and axilla, was to collect sweat and heighten its odor to sexual ends.
- [59] The names of all our chief perfumes are Arabic or Persian: civet, musk, ambergris, attar, camphor, etc.
- [60] Cloquet (*Osphrésologie*, pp. 73-76) has an interesting passage on the prevalence of the musk odor in animals, plants, and even mineral substances.
- [61] Laycock brings together various instances of the sexual odors of animals, insisting on their musky character (*Nervous Diseases of Women*; section, "Odors"). See also a section in the *Descent of Man* (Part II, Chapter XVIII), in which Darwin argues that "the most odoriferous males are the most successful in winning the females." Distant also has an interesting paper on this subject, "Biological Suggestions," *Zoölogist*, May, 1902; he points out the significant fact that musky odors are usually confined to the male, and argues that animal odors generally are more often attractive than protective.
- [62] R. Whytt, *Works*, 1768, p. 543.
- [63] Lucretius, VI, 790-5.
- [64] Mohammed, said Ayesha, was very fond of perfumes, especially "men's scents," musk and ambergris. He used also to burn camphor on odoriferous wood and enjoy the fragrant smell, while he never refused perfumes when offered them as a present. The things he cared for most, said Ayesha, were women, scents, and foods. Muir, *Life of Mahomet*, vol. iii, p. 297.
- [65] H. ten Kate, *International Centralblatt für Anthropologie*, Ht. 6, 1902. This author, who made observations on Japanese with Zwaardemaker's olfactometer, found that, contrary to an opinion sometimes stated, they have a somewhat defective sense of smell. He remarks that there are no really native Japanese perfumes.
- [66] Moll: *Die Konträre Sexualempfindung*, third edition, 1890, p. 306.
- [67] Moll: *Libido Sexualis*, bd. 1, p. 284.
- [68] P. Näcke, "Un Cas de Fetichisme de Souliers," *Bulletin de la Société de Médecine Mentale de Belgique*, 1894.
- [69] *Psychopathia Sexualis*, English edition, p. 167.
- [70] Philip Salmuth (*Observationes Medicæ*, Centuria II, no. 63) in the seventeenth century recorded a case in which a young girl of noble birth (whose sister was fond of eating chalk, cinnamon, and cloves) experienced extreme pleasure in smelling old books. It would appear, however, that in this case the fascination lay not so much in the odor of the leather as in the mouldy odor of worm-eaten books; "*fætore veterum liborum, a blattis et tineis exesorum, situque prorsus corruptorum*" are Salmuth's words.
- [71] *Studies in the Psychology of Sex*, vol. iii, "Appendix B, History VIII."
- [72] *Sexuelle Osphrésologie*, p. 106.
- [73] Mantegazza, *Fisiologia dell' Amore*, p. 176.
- [74] In this connection I may quote the remark of the writer of a thoughtful article in the *Journal of Psychological Medicine*, 1851: "The use of scents, especially those allied to the musky, is one of the luxuries of women, and in some constitutions cannot be indulged without some danger to the morals, by the excitement to the ovaria which results. And although less potent as aphrodisiacs in their action on the sexual system of women than of men, we have reason to think that they cannot be used to excess with impunity by most."
- [75] *Kama Sutra* of Vatsyayana, 1883, p. 5.

[76] Cloquet, *Osphrésiologie*, p. 95.

[77] In Normandy the *Chenopodium*, it is said, is called "conio," and in Italy *erba connina* (con, cunnus), on account of its vulvar odor. The attraction of dogs to this plant has been noted. In the same way cats are irresistibly attracted to preparations of valerian because their own urine contains valerianic acid.

[78] Sonnini, *Voyage dans la Haute et Basse Egypte*, 1799, vol. i. p. 298.

V.

The Evil Effects of Excessive Olfactory Stimulation—The Symptoms of Vanillism—The Occasional Dangerous Results of the Odors of Flowers—Effects of Flowers on the Voice.

The reality of the olfactory influences with which we have been concerned, however slight they may sometimes appear, is shown by the fact that odors, both agreeable and disagreeable, are stimulants, obeying the laws which hold good for stimulants generally. They whip up the nervous energies momentarily, but in the end, if the excitation is excessive and prolonged, they produce fatigue and exhaustion. This is clearly shown by Féré's elaborate experiments on the influences of odors, as compared with other sensory stimulants, on the amount of muscular work performed with the ergograph.^[79] Commenting on the remark of Bernardin de Saint-Pierre, that "man uses perfumes to impart energy to his passion," Féré remarks: "But perfumes cannot keep up the fires which they light." Their prolonged use involves fatigue, which is not different from that produced by excessive work, and reproduces all the bodily and psychic accompaniments of excessive work.^[80] It is well known that workers in perfumes are apt to suffer from the inhalation of the odors amid which they live. Dealers in musk are said to be specially liable to precocious dementia. The symptoms generally experienced by the men and women who work in vanilla factories where the crude fruit is prepared for commerce have often been studied and are well known. They are due to the inhalation of the scent, which has all the properties of the aromatic aldehydes, and include skin eruptions,^[81] general excitement, sleeplessness, headache, excessive menstruation, and irritable bladder. There is nearly always sexual excitement, which may be very pronounced.^[82]

We are here in the presence, it may be insisted, not of a nervous influence only, but of a direct effect of odor on the vital processes. The experiments of Tardif on the influence of perfumes on frogs and rabbits showed that a poisonous effect was exerted;^[83] while Féré, by incubating fowls' eggs in the presence of musk, found repeatedly that many abnormalities occurred, and that development was retarded even in the embryos that remained normal; while he obtained somewhat similar results by using essences of lavender, cloves, etc.^[84] The influence of odors is thus deeper than is indicated by their nervous effects; they act directly on nutrition. We are led, as Passy remarks, to regard odors as very intimately related to the physiological properties of organic substances, and the sense of smell as a detached fragment of generally sensibility, reacting to the same stimuli as general sensibility, but highly specialized in view of its protective function.

The reality and subtlety of the influence of odors is further shown, by the cases in which very intense effects are produced even by the temporary inhalation of flowers or perfumes or other odors. Such cases of idiosyncrasy in which a person—frequently of somewhat neurotic temperament—becomes acutely sensitive to some odor or odors have been recorded in medical literature for many centuries. In these cases the obnoxious odor produces congestion of the respiratory passages, sneezing, headache, fainting, etc., but occasionally, it has been recorded, even death. (Dr. J. N. Mackenzie, in his interesting and learned paper on "The Production of the so-called 'Rose Cold,' etc.," *American Journal of Medical Sciences*, January, 1886, quotes many cases, and gives a number of references to ancient medical authors; see also Layet, art. "Odeur," *Dictionnaire Encyclopédique des Sciences Médicales*.)

An interesting phenomenon of the group—though it is almost too common to be described as an idiosyncrasy—is the tendency of the odor of certain flowers to affect the voice and sometimes even to produce complete loss of voice. The mechanism of the process is not fully understood, but it would appear that congestion and paresis of the larynx is produced and spasm of the bronchial tube. Botallus in 1565 recorded cases in which the scent of flowers brought on difficulty of breathing, and the danger of flowers from this point of view is well recognized by professional singers. Joal has studied this question in an elaborate paper (summarized in the *British Medical Journal*, March 3, 1895), and Dr. Cabanès has brought together (*Figaro*, January 20, 1894) the experiences of a number of well-known singers, teachers of singing, and laryngologists. Thus, Madame Renée Richard, of the Paris Opera, has frequently found that when her pupils have arrived with a bunch of violets fastened to the bodice or even with a violet and iris sachet beneath the corset, the voice has been marked by weakness and, on using the laryngoscope, she has found the vocal cords congested. Madame Calvé confirmed this opinion, and stated that she was specially sensitive to tuberose and mimosa, and that on one occasion a bouquet of white lilac has caused her, for a time, complete loss of voice. The flowers mentioned are equally dangerous to a number of other singers; the most injurious flower of all is found to be the violet. The rose is seldom mentioned, and artificial perfumes are comparatively harmless, though some singers consider it desirable to be cautious in using them.

Notes

[79] Féré, *Travail et Plaisir*, Chapter XIII.

[80] *Travail et Plaisir*, p. 175. It is doubtless true of the effects of odors on the sexual sphere. Féré records the case of a neurasthenic lady whose sexual coldness toward her husband only disappeared after the abandonment of a perfume (in which heliotrope was apparently the chief constituent) she had been accustomed to use in excessive amounts.

[81] It is perhaps significant that many colors are especially liable to produce skin disorders, especially urticaria; a number of cases have been recorded by Joal, *Journal de Médecine*, July 10, 1899.

[82] Layet, art. "Vanillisme," *Dictionnaire Encyclopédique des Sciences Médicales*; cf. Audeoud, *Revue Médicale de la Suisse Romande*, October 20, 1899, summarized in the *British Medical Journal*, 1899.

[83] E. Tardif, *Les Odeurs et Parfums*, Chapter III.

[84] Féré, *Société de Biologie*, March 28, 1896.

VI.

The Place of Smell in Human Sexual Selections—It has given Place to the Predominance of Vision largely because in Civilized Man it Fails to Act at a Distance—It still Plays a Part by Contributing to the Sympathies or the Antipathies of Intimate Contact.

When we survey comprehensively the extensive field we have here rapidly traversed, it seems not impossible to gain a fairly accurate view of the special place which olfactory sensations play in human sexual selection. The special peculiarity of this group of sensations in man, and that which gives them an importance they would not otherwise possess, is due to the fact that we here witness the decadence of a sense which in man's remote ancestors was the very chiefest avenue of sexual allurements. In man, even the most primitive man,—to some degree even in the apes,—it has declined in importance to give place to the predominance of vision.^[85] Yet, at that lower threshold of acuity at which it persists in man it still bathes us in a more or less constant atmosphere of odors, which perpetually move us to sympathy or to antipathy, and which in their finer manifestations we do not neglect, but even cultivate with the increase of our civilization.

It thus comes about that the grosser manifestations of sexual allurements by smell belong, so far as man is concerned, to a remote animal past which we have outgrown and which, on account of the diminished acuity of our olfactory organs, we could not completely recall even if we desired to; the sense of sight inevitably comes into play long before it is possible for close contact to bring into action the sense of smell. But the latent possibilities of sexual allurements by olfaction, which are inevitably embodied in the nervous structure we have inherited from our animal ancestors, still remain ready to be called into play. They emerge prominently from time to time in exceptional and abnormal persons. They tend to play an unusually larger part in the psychic lives of neurasthenic persons, with their sensitive and comparatively unbalanced nervous systems, and this is doubtless the reason why poets and men of letters have insisted on olfactory impressions so frequently and to so notable a degree; for the same reason sexual inverts are peculiarly susceptible to odors. For a different reason, warmer climates, which heighten all odors and also favor the growth of powerfully odorous plants, lead to a heightened susceptibility to the sexual and other attractions of smell even among normal persons; thus we find a general tendency to delight in odors throughout the East, notably in India, among the ancient Hebrews, and in Mohammedan lands.

Among the ordinary civilized population in Europe the sexual influences of smell play a smaller and yet not altogether negligible part. The diminished prominence of odors only enables them to come into action, as sexual influences, on close contact, when, in some persons at all events, personal odors may have a distinct influence in heightening sympathy or arousing antipathy. The range of variation among individuals is in this matter considerable. In a few persons olfactory sympathy or antipathy is so pronounced that it exerts a decisive influence in their sexual relationships; such persons are of olfactory type. In other persons smell has no part in constituting sexual relationships, but it comes into play in the intimate association of love, and acts as an

additional excitant; when reinforced by association such olfactory impressions may at times prove irresistible. Other persons, again, are neutral in this respect, and remain indifferent either to the sympathetic or antipathetic working of personal odors, unless they happen to be extremely marked. It is probable that the majority of refined and educated people belong to the middle group of those persons who are not of predominantly olfactory type, but are liable from time to time to be influenced in this manner. Women are probably at least as often affected in this manner as men, probably more often.

On the whole, it may be said that in the usual life of man odors play a not inconsiderable part and raise problems which are not without interest, but that their demonstrable part in actual sexual selection—whether in preferential mating or in assortative mating—is comparatively small.

Notes

[85] Moll has a passage on this subject, *Untersuchungen über die Libido Sexualis*. Bd. I, pp. 376-381.