CONCERNING ODOURS

Theophrastus - Enquiry into Plants (Vol. II)

Translated by Arthur F. Hort (1926)

Introductory: Of odours in general and the classification of them.

I. Odours in general, like tastes, are due to mixture: for anything which is uncompounded has no smell, just as it has no taste: wherefore simple substances have no smell, such as water air and fire: on the other hand earth is the only elementary substance which has a smell, or at least it has one to a greater extent than the others, because it is of a more composite character than they.

Of odours some are, as it were, indistinct and insipid, as is the case with tastes, while some have a distinct character. And these characters appear to correspond to those of tastes, yet they have not in all cases the same names, as we said in a former treatise; nor in general are they marked off form one another by such specific differences as are tastes: rather the differences are, one may say, in generic character, some things having a good, some an evil odour. But the various kinds of good or evil odour, although they exhibit considerable differences, have not received further distinguishing names, marking off one particular kind of sweetness or of bitterness from another: we speak of an odour as pungent, powerful, faint, sweet or heavy, though some of these descriptions apply to evil-smelling things as well as to those which have a good odour.

Putridity however is a general term, applied, one may say, to anything which is subject to decay: for anything which is decomposing has an evil odour, – unless indeed the name putridity be extended to sourness in wine because the change in wine is analogous to decomposition. The evil odour of putridity is found in all things, alike in plants in animals and in inanimate things: it attends the decay of things which are not found directly out of a substance which is decaying: for some things have also the odour of that substance, though it is not found in every case. Thus in many instances things which are produced by decaying matter have no evil odour: for insance, mushrooms which grow from dung have none: but things which grow from decay and are actually formed out of it have such an odour. To speak generally then, things that have been cooked, delicate things, and things which are least of an earthy nature have a good odour, (odour being a matter of exhalation), and it is obvious that those of an opposite character have an evil odour. But, even as many things pleasant to the taste present a certain bitterness, so many things that have a good odour have a kind of heavy scent.

Of natural odours: of those of animals and of the effect of odours of animals.

II. Every plant animal or inanimate thing that has an odour has one peculiar to itself: but in many cases it is not obvious to us because, one might almost say, our sense of smell is inferior to that of all other animals. Thus things which appear to us to have no odour give forth an odour of which other animals are conscious: for instance beasts of burden can smell the barley of Kedropolis, and refuse to eat it because of its evil odour. Also we are unaware of the odour of animals which appear to possess one. Now no animal appears to take pleasure in a good odour for its own sake, so to speak, but only in the odour of things which conduce to its nurture and enjoyment. Indeed some animals seem to be annoyed by odours, even good ones, if what is said of vultures and beetles be true; the explanation is that their natural character is antipathetic to odours. To appreciate this in particular cases one should take into consideration the temperament of the animal in question and also its power of smell.

Of smell and taste.

Now the odour of some things which have a good odour resides in things which are used for food, for instance that of stone-fruits pears and apples, the smell of which is sweet even if one does not eat them; indeed it may be said to be sweeter in that case. However, to make a general distinction, some odours exist independantly, while others are incidental; those of juices and things used for food are incidental, those of flowers exist independently. And, as was said above, things which have a good odour are generally of unpleasant, astringent or somewhat bitter taste. Again some things which have a good taste have also an evil odour, such as the carob, which is sweet (this is true of some regions, if not of all). Again the Phoenician cedar, though it is sweet to the taste, when chewed produces a sort of evil odour, though it makes the water fragrant.

Of odours in plants.

Some odours being found in plants or in their parts – as twig, leaf, bark, fruit, gum – and others, as we distinguished, in animals and in inanimate things, it is plain that the former are matured each of them in the part to which it belongs; and a good or evil odour follows according to the natural character of that part, the maturing being due to thee warmth which is found in it. On the other hand in inanimate things the odour, like the taste, is formed in and modified by the properties of the simple substances of which the thing is made.

Of artificial odours in general and their manufacture: especially of the use of perfumes in wine.

III. Next we must endeavour to speak of those odours, and also those tastes, which are artificially and deliberately produced. In either case it is

clear that improvement is always what we have in view; for that is the aim of every artificial process. Now even uncompounded substances have certain odours, which men endeavour to assist by artificial means, even as they try to assist nature in producing palatable tastes. However, to speak generally, the result is usually obtained by a mixture, and accordingly such mixtures are of two things (or classes of things), a liquid and a solid: but there are three ways in which the result may be reached (the combination being one either of like with like, or of unlike substances), according as a liquid is compounded with another liquid, a solid with another solid, or a solid with a liquid.

For tastes and odours alike are derived from these two things: the method of the makers of spices and perfume-powders is to mix solid with solid, that of those who compound unguents or flavour wines is to mix liquid with liquid: but the third method, which is the commonest, is that of the perfumer, who mixes solid with liquid, that being the way in which all perfumes and ointments are compounded. Further one must know which odours will combine well with which, and what combination makes a good blend, just as in the case of tastes: for there too those who make combinations and, as it were, season their dishes, are aiming at this same object. So much for the ingredients and the methods whereby these arts attain their ends.

The objects of the mixture is in the one case simply the production of a particular odour and the gratification of the corresponding sense, in the other there is a desire to produce, as it were, a pleasanter taste: for this instance is the object of flavouring wine with perfumes or of putting spices into it. For the two senses of taste and smell being akin to one another, each provides in a way for the enjoyment of the other: wherefore it is through things which appeal to the taste, as well as those which appeal to the sense of smell, that men try to discover fragrant odours.

The question may perhaps be raised why perfume and other fragrant things, while they give a pleasant taste to wine, yet have not this effect on any other article of food, but in all cases spoil food, whether it be cooked or not. The explanation we must take to be that this is what happens – the perfume if mixed with solid things is in any case powerful enough to deprive them of their proper taste, and at the same time it makes obtrusive its own taste, which is astingent and somewhat bitter, – all perfumeries having that character, – while, if one bites up the food, this effect is even more apparent because the food is crushed and broken up, and also because it remains longer in the mouth. But on wine neither effect is produced, since in this the taste is very strong and too generally diffused to be overpowered: also wine does not linger on the palate for any length of time, but merely touches it, so that, while it makes one conscious of its own pleasant taste, it does not make the palate feel the bitter unpalatable taste of the perfume: in fact the odour of this acts as a sort of relish to the draught. This effect indeed it has on wine which is sweet and specially needs the attention of perfume, because it has no 'relish' of its own; while with other wines the reason is that, as the effect of the mixture, the two odours combine, as it were, to form one. Wine indeed, as was said before, has a special property of assimilating odours.

Another question also suggests itself, – why it is that, while the smell of flowers and other things used for garlands, thought it is not so strong, can be perceived even at a great distance, the iris-perfume, spikenard and other fragrant solids smell stronger at a short distance: and of some of these the smell is only perceived when they are eaten, while some need even to be bruised and broken up, and others to be subjected to fire, as myrrh frankincense and anything that is burnth as incense. The explanation is that, whereas in flowers that which causes the smell is on the surface, seeing that the texture of flowers is open and they are not substantial, in all such solid substances as roots the power of producing smell is diffused through a substantial mass, while the exterior parts are dried up and of close texture: and this is why flowers emit the scent which has exhales from them to a long distance, while things like roots need an opening of their passages. Hence, when these are broken up or bruised, they are in all cases more fragrant, while, if flowers are crushed, they have a comparatively evil smell: for under such treatment roots give forth the property which belongs to them, but flowers acquire a property which is not their own. Again frankincense and myrrh, since they are by nature of even closer texture than roots, need a gentle application of fire, which, by gradually warming them, will cause the scent to be exhaled. For, if these substances are bruised or crushed, they will indeed present an odour, but it will not be so sweet nor so lasting as when they have been subjected to fire. Such are the explanations of these difficulties.

Of the oils used as the vehicle of perfumes.

IV. Now the composition and preparation of perfumes aim entirely, one may say, at making the odour last. That is why men make oil the vehicle of them, since it keeps a very long time and also is most convenient of use. By nature indeed oil is not at all well suited to take in an odour, because of its close and greasy character: and of particular oils this is specially true of the most viscous, such as almond-oil, while sesame-oil and olive-oil are the least receptive of all.

The oil most used is that derived from the Egyptian or Syrian *balanos*, since this is the least viscous; the olive-oil which is most used is that which is pressed from 'coarse olives' in the raw state, since this is thought to be the least greasy and the least coarse: this is used while it is new, not when it is old, for that which is kept above a year is useless, having become thick and viscous. This then is the kind of olive-oil which is most suitable, since it is the least greasy. Some say that for unguent the oil derived from bitter almonds is best: these are abundant in Cilicia, where an unguent is made from them. It is said that this is suitable for choice perfumes, like the oil of the Egyptian *balanos*: this is suitable in itself, however the shells of the fruit are thrown into the oil to give it a good odour: indeed they are also thrown into that which is made from bitter almonds. Once more, is it not inconsistent to seek the vehicle which has the least odour of its own, such as the oil which is pressed raw from 'coarse olives', and yet at the same time to use the above-mentioned oils as vehicles? (for oil of almonds has a pungent smell). Possibly the

explanation is that it is only by being cooked that oil acquires an evil smell. These matters then are subject for enquiry.

They use spices in the making of all perfumes; some to thicken the oil, some in order to impart their odour. For in all cases they thicken the oil to some extent to make it take the odour better, just as they treat wool for dyeing. The less powerful spices are used for the thickening, and then at a later stage they put in the one whose odour they wish to secure. For that which is put in the last always dominates, even if it is in small quantity; thus, if a pound of myrrh is put into a half-pint of oil, and at a later stage a third of an ounce of cinnamon is added, this small amount dominates.

At this one may well wonder; and also why it is that the previous addition of spices, which have an odour of their own, renders the oil more receptive: for the vehicle should be scentless, but a substance over which another substance has thus prevailed, cannot be scentless, so that it ought, one would think, to have become *less* receptive. However both facts, or rather all of them, may be accounted for in the same way: – the spices, being solid, attract to themselves the viscid part of the oil, and so it attaches itself to them; thus the density of the oil is destroyed: the oil, thus becoming thinner by the removal of its viscid part which chiefly contains the characteristic odour, becomes more receptive of the spice which is added to it, because it does not now offer resistance.

Again that odour which is due to the spices becomes less powerful as it is spent on the viscid part of the oil, while at the same time it is preserved by this because it has entirely filled up its passages. Wherefore it naturally follows that, even if the added spice is in normal quantity, its odour predominates, since it passes into a vehicle which is in itself not at all powerful and which is more receptive than itself. A corresponding account may be given of the keeping quality of the several oils, of their power of resisting fire, and other such qualities. Thus that oil which is most receptive, for instance, that of the Egyptian *balanos*, will also keep longest, and for the same reason; namely that that oil which is most receptive unites, more than others, into one single substance, as it where, with the spices. Such a substance will always last longer than others; which is also why, if exposed to fire, it is less affected than others.

Of the other oils the same applies to that of sesame, this being specially receptive; but, for the contrary reason, almond-oil soon loses its virtue and keeps for a shorter time than any other, for that oil which has been least receptive parts soonest with the property received. Sesame-oil however receives rose-perfume better than other oils because of its viscid quailty; and, when subjected to fire, it gives out a smell of sesame, as though it were being disintegrated. Such are the special characters and properties of the various oils.

Of the spices used in making perfumes and their treatment.

V. Almost all spices and sweet scents except flowers are dry hot astringent and mordant. Some also possess a certain bitterness, as we said above, as iris, myrrh, frankincense, and perfumes in general. However the

most universal qualities are astringency and the production of heat; they actually produce these effects.

All spices are given their astringent quality by exposure to fire, but some of them assume their special odours even when cold and not exposed to fire; and it also appears that, just as with vegetable dyes some are applied hot and some cold, so is it with odours. But in all cases the cooking, whether to produce the astringent quality or to impart the proper odour, is done in vessels standing in water and not in actual contact with the fire; the reason being that the heating must be gentle, and there would be considerable waste if these were in actual contact with the flames; and further the perfume would smell of burning.

However there is less waste when the perfume obtains its proper odour by exposure to fire than when it does so in a cold state, since those perfumes which are subjected to fire are first steeped either in fragrant wine or in water: for then they absorb less: while those which are treated in a cold state, being dry, absorb more, for instance bruised iris-root. Thus, if into eight and a half gallons of oil we put thirteen gallons of dry and bruised iris-root, they say that much loss is caused, while if one does not steep it too much, only about eleven pints and a half are waisted: and in the case of most perfumes the waste is less.

However the superior iris-perfume is made by using the root dry and not subjecting it to fire: for then its virtue asserts itself more completely than when it is steeped in a liquid or subjected to fire. It also comes to pass that, if the perfumes have been first steeped, their virtues are, as it were, squeezed out of them to a greater extent, because they take in and absorb less: and so, when they are making them astringent, they do not leave the spices in the oil for long, but take them out, so that they should not absorb an excessive amount.

For making each perfume they put in the suitable spices. Thus to make *kypros* they put in cardamom and *aspalathos*, having first steeped them in sweet wine. To make rose-perfume they put in ginger-grass *aspalathos* and sweet-flag: and these are steeped as in the case of *kypros*. So too into each of the others are put the spices which suit them. Into rose-perfume moreover is put a quantity of salt: this treatment is peculiar to that perfume, and involves a great deal of waste, twenty-three gallons of salt being put into eight gallons and a half of the perfume.

The manufacture of *kypros* resembles that of rose-perfume, except that, unless one soon takes out the flowers and squeezes them out, decay sets in and ruins the perfume by giving it a disagreeable smell, since they cause decay as they get soaked. Similar is also the manufacture of quince-perfume: the oil is first made astringent, and is cold when the quinces are put into it: then they take them out before they turn black, removing each batch before the next is put in: for, as long as they turn black, decay ensues because they get soaked through – just as in the case of *kypros*.

Of the various parts of plants used for perfumes, and of the composition of various notable perfumes.

VI. Perfumes are compounded from various parts of the plant, flowers leaves twigs root wood fruit and gum: and in most cases the perfume is

made from a mixture of several parts. Rose and gilli-flower perfumes are made from the flowers: so also is the perfume called *susinon*, this too being made from flowers, namely, lillies: also the perfumes named from bergamot-mint and tufted thyme, *kypros*, and also the saffron-perfume; the crocus which produces this is best in Aegina and Cilicia. Instances of those made from the leaves are the perfumes called from myrtle and drop-wort: this grows in Cyprus on the hills and is vey fragrant: that which grows in Hellas yields no perfume, being scentless.

From roots are made the perfumes named from iris spikenard and sweet marjoram, an ingredient in which is *koston*; for it is the root to which this name is applied. The Eretrian unguent is made from the root of *kypeiron*, which is obtained from the Cyclades as well as from Euboea. From wood is made what is called 'palm-perfume': for they put in what is called the 'spathe', having first dried it. From fruits are made the quince-perfume, the myrtle, and the bay. The 'Egyptian' is made from several ingredients, including cinnamon and myrrh.

Again from several parts of the plant is made the perfume called megaleion, which is made from cinnamon and [....] and from the myrrh when it is bruised flows an oil: it is in fact called *stakte* (in drops) because it comes in drops slowly. Some indeed say that this is the only simple uncompounded perfume, and that all the others are compound, though made from a larger or smaller number of ingredients, and that iris-perfume is made from the smallest number of all. Some assert this, but others declare that the manufacture of *stakte* (myrrh-oil) is as follows: having bruised the myrrh and dissolved it in oil of *balanos* over a gentle fire, they pour hot water over it: and the myrrh and oil sink to the bottom like a deposit; and, as soon as this has occurred, they strain off the water and squeeze the sediment in a press.

Megaleion, these authorities say, is compounded of burnt resin and oil of balanos, with which are mixed cassia cinnamon and myrrh. Thet add that this perfume and the Egyptian are the most troublesome to make, since no others involve the mixture of so many and such costly ingredients. To make *megaleion*, they say, the oil is boiled for ten days and nights, and not till then do they put in the resin and the other things, since the oil is more receptive when it has been thoroughly boiled. The superior kind of sweet marjoram-perfume, they say, is made of all the best spices except sweet marjoram: in fact this is the only spice which perfumers do not use for any perfume, and the name is a misnomer.

Some perfumes are made colourless, some are given a colour. They give a colour to sweet marjoram-perfume, rose-perfume, and *megaleion*, while among expensive kinds the Egyptian, quince-perfume and *kypros* are colourless, as well as all the cheaper kinds. The reason why these are made without colour is that it is desired that the Egyptian and *kypros* should look white and that quince-perfume should have the colour of quinces, while it is not worth to add colour to the cheaper sorts. The dye used for colouring red perfumes is alkanet; the sweet marjoram-perfume is dyed with the substance called *khroma* (dye), which is a root imported from Syria.

Of the properties of various spices.

VII. It is thought that not only the smells of perfumes contribute to a pleasant taste, but also the qualities of pungency and heat which are found in some of them: accordingly some of these perfumes are also mixed with certain wines to give, as it where, 'point' to them. Thus myrrh is hot and has a biting quality as well as being astringent, and it also has a bitter quality. Cinnamon again has a fair amount of pungency as well as heat. So too is it with *koston*. Cassia exceeds both of these in heat pungency and astringency. Iris-perfume is hot and astringent, and excessively bitter when it is fresh, in which state it causes sores on the skin of those that work on it. Cardamom has also a biting quality as well as heat. The juice and the fruit of balsam of Mecca are more active in producing both these qualities, while the wood is less so. Nepaul cardamom has also a property similar to this.

Ginger-grass has a more biting quality that sweet-flag, and is hotter; but both are equally astringent. *Kypeiron* is however more astringent than either. The sweet-scented *aspalathos* also has this quality. Spikenard has a biting quality as well as heat. *Maron* and the *khroma* which is mixed with sweet marjoram-perfume are heating. The root of alkanet also contributes to the colour of rose-perfume and iris-perfume.

Now some spices when they are fresh have at first heavy and pungent qualities, but in course of time become sweet till they have reached their prime, and then lose their properties again. This the iris is at its prime for manufacturing the perfume for three years after it was gathered, and lasts for six years at longest. *Maron* lasts two years; myrrh ten, and improves with time. Cinnamon *koston* and cassia keep at their best for about the same periods as these. Ginger-grass and sweet-flag soon get past their prime. Of flowers some, like the rose, possess their virtues from the first while they are still fresh, some only after they are dried, as crocus and *melilotos*, these having a certain amount of moisture while they are fresh.

These examples may suffice for the study of the characters and properties of species.

Of the medicinal properties of certain perfumes.

VIII *Megaleion* is beleived to relieve the inflammation caused by any wound, and rose-perfume to be excellent for the ears. And this is probable enough. For the former is composed, as was said, of burnt resin cassia cinnamon and myrrh, and all these have astringent and drying properties: while the reason why rose-perfume is good for the ears is that salt is used in the manufacture of it: for it is by reason of the salt that it dries and warms (which is why 'sea-foam' is also good for the ears). Its use against strangury however needs explanation: for it is said to be especially helpful against this. The explanation may be that anything which is to remove the difficulty must first dissolve that which is to be removed; and this is the effect of the salt, while the fragrance supplies the necessary stimulus.

Why however, it may be asked, though iris-perfume is fragrant, does it not give the stimulus? Perhaps it is because it is astringent and

closes the passages, so that by shutting them it prevents free course. On the other hand this perfume acts as a laxative on the bowels because of its heating quality and because it astringes the passages leading to the bladder: for, when these are closed, the liquid collects in the bowels. In general iris-perfume, as well as others, has medicinal properties. And the explanation in all cases, to put it generally, lies in the above-mentioned properties of astringency and heating; for it is spices possessing these properties that are medicinal. However these matters lie outside our subject of study.

Of rules for the mixture of spices,
and of the storing of various perfumes.

IX. There is no fixed rule for the combination and mixture of spices in the sense that the same components will always produce a satisfactory and a uniform result: the result varies by reason of the varying quality of the virtues found in the spices. For this there are several reasons. One, which applies also to fruits, is the character of the season; this causes the virtues to be sometimes much more than ordinarily powerful, sometimes less so. Another is to be found in the time of collection, according as it is made before or after the spices are in their prime. A third cause operates after the collection, that is, in the case of those spices which need time to come to their prime, as we said: for here too it is possible to be too soon or too late.

Of these causes that which depends on the seasons is not within our control, except so far as we can discover which spices in a particular season have powerful, and which have weak virtues. But we can control those which depend on collecting them when in their prime, or on keeping them after they are collected, that is, if we know pretty well how to hit the right moment.

So much for the origin and composition of perfumes.

Those which last longest are the Egyptian, the iris, the sweet marjoram and the spikenard-perfumes: but myrrh-oil has the longest life of any; for it will keep any time. A certain perfumer said that he had Egyptian perfume in his shop for eight years, and iris-perfume for twenty, and that is was still in good case, in fact better than fresh perfume. These are instances of perfumes which will keep a long time.

On the other hand all those made from flowers have little vigour. These are usually at their best after two months, but they deteriorate when a year has past and the season has come round again at which the flowers are at their best. Also, as these perfumes lack vigour, so also do they quickly mellow, and, in most cases, quickly evaporate. Those made from roots and the other parts of the plant last longer, their odour being fuller stronger and more substantial.

Perfumes are ruined by a hot season or place of by being put in the sun. This is why perfumers seek upper rooms which do not face the sun but are shaded as much as possible. For the sun or a hot place deprives the perfumes of their odour, and in general makes them lose their character more than cold treatment: while cold and frost, even if they make them

less odorous by congealing them, yet do not alter or deprive them of their virtue. For the most destructive thing that can happen to them, as to wines and other savours, is that they should be deprived of their proper heat. This is why men put them into vessels of lead and try to secure phials of alabaster – a stone which has the required effect: for lead is cold and of close texture, and stone has the same character, that being the best for keeping perfumes which has it in the highest degree. So that vessels made of these materials keep the perfume well for both reasons, their coolness and their closeness of texture: they neither let the odour pass away through them, nor do they take in anything else. For evaporation destroys the perfume, and so also does any foreign substance which finds its way in: for even draughts of air destroy odours and cause them to waste, as was said, especially those odours which do not belong to a thing's essential nature.

Of the properties of certain perfumes.

X. Headache is caused by sweet marjoram spikenard and *megaleion* among costly perfume: most of the cheap ones have also this effect, notably that made from bay. The lightest are rose-perfume and *kypros*, which seem to be the best suited to men, as also is lily-perfume. The best for women are myrrh-oil, *megaleion*, the Egyptian, sweet marjoram, and spikenard: for these owing to their strength and substantial character do not easily evaporate and are not easily made to disperse, and a lasting perfume is what women require.

Inasmuch however as some perfumes are stronger than others, the stronger being those made from roots and the others already mentioned, for this reason those derived from flowers are more fragrant if they are not bruised, while bruising improves those made from roots and the others. For the former kind evaporate and pass off as they are warmed by the bruising, thus losing their character, while the latter owing to their strenght have, as it were, certain passages opened by the bruising, and so their fragrance is made more obvious. This, as was said, also takes place in the case of the roots themselves and of the solid things in general; but the result in the case of flowers is just the opposite, so that both kinds behave according to their origin. That this should apply to the perfumes made from myrrh is quite natural for both reasons; they mingle more than others with the air, and the heat due to the bruising is not prejudicial, since it is gentle, and myrrh is fact requires a certain amount of heating. And in general any strong odour, whether it be pleasing or the reverse, whether it be pungent or sharp, or whatever its character, becomes more pronounced with movement; for then it becomes, as it were, active and mingles more with the air.

The Egyptian perfume, myrrh-oil, and any others that have a strong odour become sweeter if they are mixed with fragrant wine; for then their heavy quality is removed. In fact myrrh itself is made to exhale a more fragrant odour by being steeped in sweet wine, as was said in a former treatise.

If one has regard to the virtues of the perfumes in question, one may well be surprised at what happens in the case of rose-perfume: –

though it is lighter and less powerful than any other, if one has first been scented with it, it destroys the odour of the others. And this is why perfumers, if a purchaser hesitates and is not inclined to buy this perfume, scent him with it so that he is not able to smell the others. The explanation is that, being very delicate and acceptable to the sense of smell, by reason of its lightness it penetrates as no other can and fills up the passages of the sense, so that being entirely taken up and filled with it, it is unable to judge of others. For the power of judging is inhibited in two, or possibly in three ways; one is that which has just been mentioned; another is that the sense of smell is, as it were, intoxicated with its powerful virtues and becomes stupefied: the third is that the sense may be preoccupied with the superior odour; for then it is not easy to introduce after it what is inferior, since the sense of smell refuses this – just as the sense of taste in like case refuses flavours and foods in general.

It is also thought that the rose even weakens the effect of compound perfume; for, when the flower is at its best, they treat compound perfumes with it; and, when these come to be opened, they smell only or chiefly of rose. However this effect is only temporary and transient because of the weakness and delicacy of the rose-scent, (the very quality which also causes it to assert itself over the scent of other ingredients). For, as it is so delicate and is compressed by confinement, it is exhaled before the others and disperses in all directions. It is also for this reason that the rose-scent only asserts itself for a short time and then is overpowered again; for anything that is delicate and subtle must be lacking in vigour.

Certain wines have also a similar effect: if they are first drunk, there is no satisfaction in others. Some again make it even difficult to take others after them: this is the effect for instance of wine of Erythrae, which has a taste of brine and is subtle. The explanation one must endeavour to find by comparing analogous experiences. However there is one peculiarity which as we have already more or less indicated, is possessed by rose-perfume only; while all or most of the others are heady, this, as was said, gives actual relief from heavyness and discomfort, even from that caused by other perfumes.

The reason for this is plain in view of what has been already said, seeing that this perfume overpowers others and penetrates everywhere. For the others that are heady are heavy because they are made of heavy substances, whether roots or juices; while this perfume is both light as to its scent and also by its heat well adapted to bring the passages to a suitable temperature and to open them. For pains in the head are due to an excess of moisture in it, or of air which gets confined in it, so that it is necessary to get rid of the one, and to raise the temperature of the other or to remove it.

And for all such purposes heat is useful, both for removing the moisture or air, and, still more, for releasing the temperature of the passages and opening them: and to these ends it is helpful that the perfume should have been prepared with salt, since the effect of salt is to open the passages and to warm them thoroughly. Again the fragrance also supplies a stimulus to movement. This perfume is also considered to be good against lassitude, because its heat and its lightness make it suitable, and

also because it penetrates to the inner passages. Some however say that *kypros* is quite as efficacious: for this too has a delicate scent which is grateful to the skin. These and similar properties may be considered peculiar to these particular perfumes.

Of other properties and peculiarities of perfumes.

XI. The admixture of rose-perfume, whether in scents or in flavours, if it will be well blended, is beneficial, in the one case by removing the heaviness and strength of the scent, in the other by imparting a fragrant scent or a sweet taste to the flavour, as in the case with wines. Thus the wine which is served in the town-hall of Thasos, which appears to be of wonderfully delightful quality, is thus flavoured. For they put into the jar a lump of dough which has been kneaded up with honey, so that the wine gets its fragrance from itself, but its sweet taste from the honeyed dough.

This result also follows, it is said, from the mixture of different wines, – for example, if a strong fragrant wine be mixed with one that is mild and without fragrance, (for instance, if wine of Heraclea be mixed with wine of Erythrae), since the latter contributes its mildness and the former its fragrance: for the effect is that they simultaneously destroy one another's inferior qualities through the mildness of the one and the fragrance of the other. There are many other such blends mentioned by and known to experts. And it is quite to be expected that such a result should follow from blending odours, as it does from blending colours, if one discovers the suitable combinations. This then is peculiar to rose-perfume.

However there is one question which applies to all perfumes, namely, why it is that they appear to be sweetest when the scent comes from the wrist; so that perfumers apply the scent to this part. The explanation must be sought by observing what happens in the contrary case, inasmuch as heat changes or destroys the character of a scent, and the effect on the sense of smell is immediately perceived when perfumes are brought into close contact with the skin.

The question is also raised why those who do not habitually use perfumes smell of them more strongly, when they do so, than those who use them habitually. The suggestion might be made that this is an illusion due to the fact the use is not habitual, and does not represent what really happens. If however it really does, it would appear that in the one case the perfume becomes, as it were, confused with a number of other scents which weaken its force (the smell of the skin also becoming mixed with it), while in the other case the porous condition of the skin takes in the scent as it were uncontaminated, and so makes it perceptible by the sense of smell, because it lingers for some time. One might also make a suggestion of opposite character, that the skin takes in perfumes less readily because it is not used to them, and so, as the perfumes mingle with it more slowly, they preserve their scent for a longer time. One may add that this is a small point and that all do not agree as to the fact.

Those perfumes whose scent is strongests get the best hold on the skin head and other parts of the body, and last for the longest time: such are megaleion, Egyptian perfume and sweet marjoram-perfume. Those on

the other hand which are weak and have not a powerful scent, since they are volatile and evaporate, also quickly come to an end: for instance rose-perfume and *kypros*.

There are some however whose scent is even better on the second day, when any heavy quality that they possessed has evaporated. Some again are altogether more permanent, as spikenard and iris-perfume, and the stronger a perfume is, the longer it lasts. Again some perfumers for some reason keep their scent in the bath when the body is relaxed, or at least do not help to produce a disagreeable effect; while others become disagreeable and cause an even more unpleasant odour than the sweat, as though some sort of decomposition or decay took place.

Let this surffice for an account of the manufacture and properties of perfumes.

On the making of perfume-powders and compound perfumes.

XII. As to the mixing of solid substances to make powders and compound perfumes, we do not find it here necessary to mix certain specified ingredients: the more numerous and the more various the perfumes that are mixed, the more distinguished and the more grateful will be the scent – just as though one were mixing whatever spices themselves were procurable. As a matter of fact the custom is to use a mixture made of all kinds. Again in perfumes of this class the aim and object is not to make the mixture smell of some one particular thing, but to produce a general scent derived from them all. This is why every few days they open the vessel and remove each time that perfume whose scent is overpowering the others, adding at the same time smaller quantities of the less powerful scents, such as [....], while some perfumes are never added, such as galingale, of which we spoke just now.

When they make compound perfumes, they moisten the spices with fragrant wine: and this certainly seems to be useful for producing fragrance, seeing that perfumes last a long time. They are used to impart a special odour to clothes, while the powders are used for bedding, so that they may come in contact with the skin: for this kind of preparation gets a better hold and is more lasting, so that men use it thus instead of scenting their bodies directly. Some, before putting the powder in the bedding, soak it in fragrant wine, so that it may acquire its scent: and some powders they moisten by mixing them with mead and wine, or again simpliy with mead. For in general both these things help to five them fragrance. Compound perfumes also last well. From which what was said above becomes manifest, inasmuch as solid perfumes, when mixed with one another, acquire a greater fragrance.

It is to be expected that perfumes should have medicinal properties in view of the virtues of spices: for these too have such virtues. The effects of plasters and of what some call 'poultices' prove what virtues they display, since they disperse tumours and abscesses and produce a distinct effect on various other parts of the body, on its surface, but also on the interior parts: for instance, if one lays a plaster on his abdomen and breast, the patient forthwith produces fragrant odours along with his eructations.

Of the characteristic smells of animals, and of certain curious facts as to the smell of animal and vegetable products.

XIII. The smells of animals correspond to their several characters: each has a smell of its own according to its particular composition. These smells are pleasant and pure when the animal is in its prime and in good condition, and even pleasanter when they are young and tender. But the smell is strongest and least pleasant at the breeding season, and generally when the body is wasting or out of condition: wherefore goats stags hares and other animals have most smell at such times.

It is a remarkable fact and peculiar to the goat that goat-skins are sympathetically affected when the breeding season comes round. The reason plainly is that there remains somehow in the hide the sort of virtue or moisture from which arises the breeding impulse when the animal is alive. It is natural therefore thatm, when this is excited and warmed by the air, the skin also should be excited so far as it belongs to it to be so affected. Wherefore the original cause as it were of the phenomenon is the special condition of the animal at such periods: for at these times even those makes which are not breeding have the smell, and the sterile goats and the females in general. Indeed, though at that particular time the fact that animals are actually breeding is a powerful factor in producing the smell, yet their condition is in itself a cause.

Similar sympathetic behaviour is found in a mannen in other things also. Thus wine appears to 'bloom' at the same time as the growing grape, and stored garlic and onions appear to have the most pungent smell at the season when those in the ground are sprouting: however in this case sprouting takes place in the stored vegetables also. And in general any plant whose root is in layers or fleshy becomes active at the season of sprouting, unless it has been completely dried: for it is the force latent in such plants which is stirred into activity. But the most remarkable phenomenon of the kind is what occurs with bears' grease: it makes active growth at the time of the bear's winter sleep and completely fills the vessels in which it is kept.

Of odours as compared with other sense-impressions.

XIV. What can be the reason why Democritus, though he assigns various flavours to the sense of taste, yet does not in like manner assing various smells and colours to the senses to which they belong? According to his system he should have done so. Perhaps the same criticism should apply to all who have dealt with the subject: for they all either give the various qualities and distinguish the experiences of this sense alone or at least comparatively neglect the others: thus with colours they distinguish white and black, and with flavours sweet and bitter, yet they make no corresponding classification of smells, but merely class them as 'pleasant' or 'unpleasant'. So too they fail to distinguish different experiences of the sense of touch, whereas several belong immediately to this sense, as hardness, softness, roughness, smoothness.

In sounds still more are the differences, as that between shrill and deep. Again some sense-experiences are simple, some compound.

Flavours are simple at first in the sense that they cannot be resolved into two components: instances are water oil phlegm blood, and in general anything that floats, like milk, or which causes separation, like vinegar. (Where the mixture can be produced by pressure or crushing, it is quite a different matter). Secondly there are flavours which do not readily combine in another sense, namely for human use, or which even spoil one another if they are mixed, as sea-water, or water with soda in it or which has a bitter taste: these spoil wines or other things that are good to drink, unless they are taken at once.

Now the odours which in this sense do not combine are numerous, and, speaking generally, it is the pleasant odours which do not combine with the unpleasant ones. It would indeed be difficult, if not impossible, to find a case in which mixture is an improvement to the odour: in fact one might say that not every combination of one fragrant thing with another will produce such a quality, but though sometimes the effect of such mixture is an improvement, sometimes it may be the reverse, as is the case or perfumes: for while the effect of some admixtures is to remove the excessive strength or harshness, in other cases the odour is enfeebled and made, as it were, insipid. With solids however all combinations are possible.

In fact powders are the better, the more ingredients they have. Also the admixture of wine makes some perfumes and things used for incense more fragrant, for instance myrrh. It appears also that perfume sweetens wines, wherefore some add it in the manufacture, some put it in at the time of drinking. Nor is it unnatural that between these senses, since they are akin and are affected by the same objects, there should be a sort of reciprocity: for, to speak generally, no taste is unaccompanied by taste, the reason being that a thing which has no taste produces no smell.

It is also the case that smells actually change along with tastes, for instance in wine and certain fruits. And in some cases, as with grapes, the change takes place earlier, during the flowering period: while in perfumes it occurs only when they have reached their best and are about, as it were, to go off. Almost all perfumes undergo alteration at certain seasons of the year, and this applies specially to the weakest kinds: in the case of those made from flowers this period is that at which the plants from which they are made are in bloom.

[Compound perfumes are made from spices: they bruise and mix a variety of these and shut them up together in a box. Then after a few days they open the box and take out the spice which seems to have the strongest smell: this treatment is repeated at intervals, so that the smell of no one ingredient may overpower the others. And clothes put away with such perfumes acquire a marvellous fragrance.

The perfume made from the Egyptian *balanos*, though it has not much scent of its own, when mixed with others, especially iris-perfume, improves them]

Translator's note: "The remaining sentences (§§ 70, 71) seem to be disconnected scraps, which perhaps do not belong to this treatise at all. The text of them being defective, it seems not worth while to attempt translation."

Transcription: Marcello Aspria, November 21, 2006