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# The beginner face to face with the perfumer's palette

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**T**he way a beginner approaches his first collection of fragrance materials is most important if he is to assimilate them properly and will have considerable influence on the way he will deal with them throughout his career.

A good method of teaching him to memorise the various fragrances is to group them in "families" or "series." In the case of the young people for whose training I was partly responsible, I restricted the number to 15 different series: Citrus, Rose, Orange Flower, Jasmine, Violet-Iris, Anise-like, Herbal, Green, Spice, Woody, Tobacco, Fruity, Balsamic, Animal, and Leather.

The order in which I have listed them has been chosen deliberately. The list begins with the simplest, most common and most widely used families such as citrus and identifiable florals and then goes on to more specific series, ending with those that are the heaviest and the most exotic.

There is no point in making the list longer, for this would complicate matters needlessly for the beginner and upset the classification of fragrances by families. So I am not in favour of having a series for each individual flower, since Tuberose can be regarded as a sub-category of Jasmine, and Narcissus, Lily of the Valley, Lily and Hyacinth belong in the Green series. Similarly, Carnation is classified under Spice, Mimosa is Anise-like, Jonquil belongs in the Orange Flower series, and Gardenia is Fruity. There might be something to be said for a Bitter series, by analogy with the sapid taste found in flavours, a typical example of which would be crumpled leaves from the bitter orange tree. But this particular odour can already be classified under Citrus, Orange Flower, and Green. So what is the point of creating yet another series?

The system of classification we have adopted also has the advantages of appealing immediately to the imagination and of being easy to memorise. It enables the student to pinpoint odours, to classify them, to group them, and associate them with each other objectively; and this facilitates the exchange of ideas and helps to situate a product under discussion in its ap-

propriate perspective for giving personality to fragrances. By making use of the system of reference categories one can cover the whole gamut of the present-day perfumer's palette, for it is easy to incorporate (as most people would agree) under the different series the majority of most commonly used materials, together with new materials as and when they appear on the market. To justify yet another series there would have to be enough new individual materials which could be assigned to it and which were not to be found in the series listed above.

In each series are entered the relevant natural products, or those associated with it, together with the main chemical constituents of the oils. At the outset one must avoid cramming the series and avoid overloading the beginner with too large a number of blotters to compare, for he will feel lost and will not have sufficient time to study them in depth. I cannot give here the complete list of my standard series, for this would take up more space than Stanley Allured would be prepared to allow me. So I will henceforth limit myself to the Citrus series as an example of the methodology for studying a series. However, it is easy to find, in trade literature, the names of oils relating to the 15 series already mentioned and their main chemical constituents, if one limits oneself to about thirty names per series. The beginner will then have all his life to add to them.

This classification by series or families is of great teaching value; but it is of no interest during the actual process of composition, since one does not compose with series or families but with individual materials that one must do one's utmost to gauge, first in the course of exercises, and later during research work, so as to predict the interactions as a whole within a blend. It is during the above operations that intuition is of particular importance, for the complexity of the combinations is such that there is not time enough to check everything, and hence, to grasp everything. Without intuition intelligent technical study of composition is impossible, and research so uncertain in its findings as to be virtually useless. This

is all the more true of an artistic composition. Intuition can only be cultivated by experiences and experiments. The latter must therefore be carried out continually and examined in depth, not only to increase one's knowledge, but also to memorise them, enabling one to renew them if required.

When training composers I set them exercises for each different series of fragrances. These exercises range from simple to extremely complex. As the fragrances themselves are classified in the same way, the training which the composer receives is in every respect progressive. The exercises begin after the third series, the Neroli note being the least difficult of the first three series.

Exercise no. 1 consists of a very simple blend of six products, all Neroli constituents (distilled oil from orange blossoms). I see to it, however, that they are well integrated so that the exercise is not too easy. The student has to match the compound by identifying (with his nose of course) the components and their proportions. Exercise no. 2 can consist of matching a compound reminiscent of the odour of Orange Flower Concrete, still with only a few ingredients. Exercise no. 3 consists of matching a blend with a Bergamot fragrance.

In the Rose series the exercises consist of matching Rose compounds which become progressively more and more complex, and which may contain elements from the Rose series as well as from the previous series with which the student is already familiar. In the same way in the subsequent series exercises can be devised to include progressively all the products the student has already studied, but taking care to increase the complexity of the exercises step by step and to compose them skillfully.

In this way the student's palette is rapidly broadened while his olfactory memory is called upon more and more frequently and is thus subjected to intensive training without being overloaded. Provided that the exercises are well graded and harmoniously constructed, he will develop the habit of doing likewise in his future work, a habit that will have a far-reaching effect upon his style.

Since each exercise is a blend known to the teacher, there is no possibility of a difference of opinion between him and his pupil, who should aim at perfection in his matching work. This will no longer be the case when the student proceeds to study the major perfumes on the market, although, with modern instrumentation now available allowing formulae to be violated, the noses of students have become lazy if not totally ineffective: for the mind tends to take the line of least resistance instead of aiming still higher to correspond with a newly acquired skill. The school of thought of today is not what it was and this amply explains certain shortcomings in present-day composition.

One important recommendation: avoid prompting the student when he is faced with a difficulty in a matching exercise. Prompting kills the need to make an effort. The student must be skillfully induced to find the missing product or to correct a faulty blend

entirely by himself.

In the study of the Citrus series, the products are to be studied in five groups, at 1 hour intervals, students taking from five to ten minutes of fresh air between each group (see Table I).

Study of the Citrus Series

Group I - Blotters dipped at 8:00 AM	Group IV - Blotters dipped at 11:00 AM
Lemon oil 10%	Guinea orange oil 10%
Bergamot oil 10	Florida orange oil 10
Distilled bergamot oil 10	Bitter orange oil 10
Orange oil 10	C-10 Aldehyde 0.1
Mandarin oil 10	Methyl anthranilate 1
	Limonene 10
Group II - Blotters dipped at 9:00 AM	Group V - Blotters dipped at 12 Noon
Bergamot oil 10%	Tangerine oil 10%
Linalool 10	C-10 Aldehyde 0.1
Linalyl acetate 10	Methyl anthranilate 1
Terpineol 10	Dimethyl anthranilate 1
Terpenyl acetate 10	Limonene 10
Limonene 10	Dipentene 10
Group III - Blotters dipped at 10:00 AM	
Lemon oil 10%	
Lime oil 10	
Verbena or lemongrass oil 10	
Citral 1	
Limonene 10	

The object of Group I is to compare the following four essential oils: Lemon, Bergamot, Orange, Tangerine. The object of Group II is to study Bergamot and its constituents. The object of Group III is to study the Lemon-like odours and their constituents. The object of Group IV is to study the various oranges, orange-like odours and their constituents. The object of Group V is to study the Tangerine, tangerine-like odours and their constituents.

I choose a Monday morning to start each series (family of odours). After a good night's rest, stools, breakfast at 6 A.M., washing and dressing (without using perfume); then jogging for 30 minutes with breathing exercises. On returning a glass of pure water and then to work.

All necessary blotters should have been prepared the previous day with the names of the products and the date and time of dipping. The blotters should be kept in an odourless box overnight. A note sheet should be made available to make notes without losing a second of all the impressions aroused by each successive smelling.

Generally speaking, follow the rules laid down in "Savons-nous sentir?" (*The young perfumer and scents*. Dragoco Report. 4/62, pages 93 to 103.)

A person who is going to smell products unknown to him for the first time must realise that such impressions are irreplaceable (I will revert to this point) and that concentration is indispensable. During these periods spent in studying series one must cut oneself off completely. Put up a "Do not disturb" notice on the door and disconnect the telephone. The sound of a bell ringing at the crucial moment when you, deep in concentration, are on the verge of grasping a nuance or finding the right word to describe the sensation, will ruin everything. You will never recapture the same impression.

Worse still, the irritation caused by an untimely

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interruption may prevent you from recapturing that calm serenity which is so vitally necessary and make it impossible to continue studying profitably, the more so as there is a strict time-limit. Thus one interruption can wreck an entire morning's work. You must grasp this fact and see that those around you grasp it too.

Olfactory operations now begin. Try to specify and jot down quickly: the quality and character of the fragrance (its note, its "form," what it evokes or suggests); the power; the type of expansion (diffusion, "volume"); the stability or instability; the evolution of the note and of the form over a period of several days or several weeks as the case might be, thus determining the lasting power. All these features constitute attributes of the olfactory perception which they endow with a personality. They are inseparable and they must be considered as a whole which is coherent but has a variety of interactions with the attributes of other fragrant products when it is introduced into a blend.

Everything that comes to mind must be noted down, in words that come naturally, even crude words, provided they create an image, and provided they help to define thoughts accurately, to formulate them, to trace the contours of the fragrance without ambiguity. Approximations must be avoided at all costs; the task is to find the exact words to define unmistakably the impression felt, so that twenty years

later, when faced with the same impression, it is the selfsame words that come to mind. This is how the "fragrance file" and even more so an electronic memory can become very valuable by faithfully registering every olfactory memory and making it available to the perfumer, with the corresponding product name. It is always easier to remember a fragrance than to remember its name.

If the first sniffing does not enable one to give a clear definition in words of the impression felt, it is a good idea to repeat the experiment at a different time and if necessary in a different place. But we must not forget that only the first impression is unadulterated. It must therefore be safeguarded and treated with particular attention; hence one's first reactions must be noted down instantly for their spontaneous value, even if, upon reflection, we subsequently have to correct them. Indeed it is highly instructive to ascertain the kind of error of judgment one is liable to make, and to learn to be on one's guard. This is how good critical judgments are formed and Heaven knows how much they are needed in our profession. But it is vital to avoid confusing spontaneity with impulsiveness.

Very occasionally one can experience a second unadulterated impression after the first—if a considerable time has elapsed or if all memory of the first impression has disappeared, or again, if one is lucky enough to be confronted with it unawares.

Every effort must be made to create this kind of surprise effect when studying composition, by spacing tests or trials sufficiently, by periodically interrupting them for months on end, in order to avoid becoming obsessed by them, in order to forget form and formula so that one can then revert to one's deferred test and make a further attempt, approaching the task with a fresh and impartial mind. It is difficult for it requires a strong character, much perseverance and great mental honesty. But what wonderful training! And what an achievement, what a relief it is, to feel your judgment becoming more objective and more reliable. Interrupting a task is not the same thing as giving up one's job completely. One is simply giving oneself a break by switching from one piece of research work to another.

The person who sniffs should keep a close watch on his own behaviour and on his olfactory mucous membrane after the different exertions inflicted upon it. He must not hold blotters closer than 1 cm to his nostrils, otherwise he will contaminate his nose and upset subsequent sniffing sessions.

*Never sniff in a laboratory or in a place that is not free from odours.* How many firms enable their perfumers to respect this elementary rule? Protect yourself continually against the insidious attack of odours, whatever they may be. Any foreign odour interferes and has an adverse effect on the judgment. This should be enough to condemn tobacco. Never sniff too soon after eating or drinking. After each meal, brush your teeth carefully in order to eliminate any trace of food that might be likely to decay and therefore to cause a smell, and rinse your mouth with a pinch of bicarbonate of soda in a glass of lukewarm water so as to neutralise any possible acidity. For brushing, use an unscented toothpaste.

Do not sniff less than an hour after your meal, because you will still be smelling what you ate. Take these restrictions into account when drawing up sniffing timetables, and do not waste time after a meal if you have to sniff afterwards. But the most efficient sniffing sessions are those held in the morning.

The products of each series are to be followed on the blotter as long as a trace of fragrance is still perceptible. Sniff the dried down blotters in the morning, after washing, dressing and taking a breath of fresh air, but before breakfast. This is a task that must necessarily be done at home. Begin, naturally, with the blotters that have dried down the most, starting with the weakest.

During the study of odours by series, breathing sessions between each series are indispensable to ensure both an adequate regeneration of the olfactory mucous membrane and also mental relaxation. Devote part of the time to a short jog and the rest to relaxation with breathing exercises, on your way back to the office. It is also important to know how to regenerate the mucous membrane during the study of series, between two sniffing phases by taking a lungful of fresh air at the window. These details are very important to ensure that the work at hand is carried out efficiently and accurately.

I would like to remind you that, in order to be accurate, sniffing must be brief. Sniff in a succession of 2 to 3 sniffs of 2 to 4 seconds each, since the sensitivity of the olfactory membrane is quickly dulled. A perfumer who cannot limit the duration of each sniffing and the number of sniffings, will be incapable of passing a valid judgment on what he sniffs, with all the consequences that this entails.

In the majority of odour series, there are products ranging from 10% to 0.1%. You must never lose sight of this fact; keep it in mind throughout examinations and make notes on the fragrances accordingly. The 10% concentration is to be considered a standard dilution, used in the great majority of products. It has the advantage of being diluted enough to allow "form" of the fragrance to express itself. There is no risk of causing a shock to or over-saturating the mucous membrane with most products, something that could affect one's judgment; but at the same time 10% is not too far away from the concentration used in perfumes, thus enabling each product to be judged under conditions of evaporation similar to those of a perfume. This is extremely important in order to pass a valid judgment.

The image of each product, an image that will eventually engrave itself upon the composer's memory, will thus be the image of the product at a standard level of concentration; 10%, 1%, 0.1%, etc., depending on whether the products are more or less powerful. And this will greatly enhance the practical value, the regularity and the efficiency of the composer's assessments, of his points of reference, and of his classifications—in short, of all his mental processes.

This rule, if followed, will lead to the best results when it comes to evaluating products in relation to each other. Whenever the composer thinks of Linalol, it will be of Linalol at 10%. Whenever he thinks of Methyl Anthranilate, this will evoke the image of the product at 1%, of its strength at that level of concentration and its form; and he will grow used to estimating the amount of 1% Methyl Anthranilate that can be tolerated per 1000 of 10% Linalol, for example. After that, he can practise estimating what proportion of other substances he can introduce successively into the original blend—but always taking into consideration the original standard concentration for each product.

The risks of misjudging what the best proportions are for combining fragrances will thus be less than if one were to base one's calculations on products at 100%, which could not be compared in such a manner. One can estimate the relative power of Decyl Aldehyde at 0.1%, or even at 1%; but one could not do it just by sniffing this product at 100% level, because its overpowering strength would block the olfactory system, the latter being protected by a blocking mechanism, and this would prevent one from making a valid appreciation of its real strength, its useful aspects and its form.

To draw up a rough table giving only (and unable to give more than) "balanced" proportions of binary mixtures, and even tertiary mixtures would be an over-

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simple and dangerous solution. It would be oversimple because the interactions that occur within a blend consisting of fifty or a hundred constituents, as is the case in a perfume formula, cannot be compared with the interactions between only two, three or even four constituents. It is no use knowing that A and B are balanced, because once you introduce the rest of the alphabet everything is upset.

Such a table is the more pointless because a perfume is not constructed in terms of a balance. In a formula, one is not concerned with "balancing" the different constituents, but with blending them harmoniously, in such a way that, whether balanced or not (this is of little importance since dissonance can also be exploited), these constituents will combine to create an olfactory form having such and such characteristics. Much more important than the balance between the constituents is the way they merge with each other, and the chords that they produce, that is to say the melodic aspect of the composition. A composition that is merely balanced gives a static perfume, a blocked perfume, and resembles a face that is devoid of expression. A well composed perfume is necessarily alive and dynamic.

Such a table would also be dangerous since even though drawing it up would involve hard work, it would inevitably encourage laziness amongst its users. In fact a composer who relied solely on the table, and combined his constituents in the proportions that it indicated, would soon be in for a rude awakening. As soon as you add a second pair to the original binary "balanced" blend, the first balance will be upset since it has been studied on the basis of two products and not four. For precisely the same reason disorder will also occur if one adds new pairs that were previously balanced.

But what is worst of all is that the composer who relies thus upon his table will neglect to take the trouble to study each of his products in relation to all the others. Consequently he will not be able to fix these relationships in his memory so as to create in his mind, gradually for each product in the course of his studies, an image that comprises both the appearance of the product and its possibilities of association, that is to say an image that reflects its whole personality. For it will be the composer's job to juggle with that personality. He must therefore assimilate it, integrate it into his own personality, so that it becomes so familiar to him that he can juggle with it with ease.

Once he has reached this stage of familiarity with each product, when the time comes to introduce it into a new combination, the composer will be able to predict intuitively whether it will succeed or not and to what extent. For intuition is not a miracle but a spark that is kindled only when the composer has accumulated sufficient knowledge, experiences, reflections and meditations; and it is only by strokes of intuition that he will progress and make his way forward, slowly but surely, through a piece of research.

In certain series of odours there are crystalline substances. Even less than in the case of liquid products, the action (olfactory form, strength, performance) of

crystalline products cannot be appreciated at 100% because their vapour performance pressures are generally weaker and the evolution of their scent over a period of time cannot be followed in the crystal state. When studying them, and later when recalling them, one must not forget to associate their image with their crystalline form which plays a part as such in a blend. Crystalline bodies often have a rather high boiling point and evaporate rather slowly, resulting in a braking action on the other constituents of the formula, regardless, of their particular lasting power, which can also have a delaying action.

But the behaviour of crystalline substances should not be systematised, their image must above all take into account their specific action: for there are some unusual cases. Thus Heliotropin melts at 37°C and boils at 263°C. Coumarin melts at 68°C and boils at 291°C, but its lasting power is much greater than that of Heliotropin—more than the difference in boiling points would lead one to believe. The lasting power of Vanillin, which melts at 83°C and boils at 285°C, is even greater; indeed its lasting power is among the greatest found amongst fragrance materials. However in a composition its influence will be markedly evident from the beginning of the evaporation process. It is yet another distinctive example.

Menthol melts at 51°C and boils at 211°C; while Camphor melts at 179°C and boils at 208°C. In spite of their crystalline form these are powerful odours—Camphor exceptionally so in spite of its melting point of 179°C. Other peculiarities about Camphor are that its boiling point is quite close to its melting point and that its liquid state is short lived; note also its ability to sublimate at room temperature. These two substances, Menthol and Camphor, even though they are crystalline, should not be considered as having a particularly delaying effect in a blend: on the contrary they will tend to have a lifting effect.

The three Nitro-Musks: Ambrette (melting at 83°C), Ketone (melting at 137°C), and Xylene (melting at 114°C), are, especially Ketone, extremely long lasting. Their delaying action is undeniable, but since they stick out too prominently on the drydown process, it is their odour that is predominant, and generally speaking they do not seem to slow up the evaporation of the other products of the compound.

In the Violet series one studies Ionones and Methyl Ionones which must be sniffed with certain precautions. These substances have the property of quickly fatiguing the olfactory mucous membrane. It is therefore advisable not to stop for more than a second at each blotter soaked in these products, otherwise one will not be able to smell them properly if at all. Since they belong to one of the most noble series in the chemistry of perfumes, it would be a pity not to evaluate them under the correct conditions in order to use them efficiently.

In the same series, the different Nonadienes should also be treated with great precautions because, olfactorily speaking, they are dynamite. Only a very considerable dilution, such as 0.1% or 0.01%, enables one to appreciate their great value.