

The Perfumer's Apprentice
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A method of creation and perfumery
By Jean Carles (Dec.1961)

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The apprentice perfumer at the beginning of his career is like a ship without a rudder. If he is left to his own devices or badly lead, his discoveries will lack organization and will lead him inevitably to wasteful and ineffectual use of his creative energy.

In my early days on this rugged pathway, I found myself in the presence of tutors who seemed to have disregarded the necessity for basic rules and whose enthusiasm in our fate was of the mildest. Watching how they proceeded with their own work was not particularly enticing: they appeared to believe in a happy-go-lucky way of life, desultorily dipped smelling strips into the available samples of odorous materials, and thus their formulations progressed, small addition by small addition, and not according to some preestablished plan. Thus, in the past, most of the great perfume creations, or rather, of the commercially successful perfumes, were produced almost by chance, sometimes to the unfeigned surprise of their authors! Although such happy occurrences are always possible, a firm belief in them should not be the guiding rule.

Since the trial and error method held no appeal for me, I attempted from the very outset of my career - 50 years ago - actually to understand the whys and wherefores of the fascinating world I entered for better or worse. This is why I feel I may now offer to share whatever experience I've acquired since with my younger colleagues, many of whom still work undirected and create in haphazard fashion, in the expectation of a potential miracle.

In perfumery, however, miracles are few and far between. From the very outset, a perfumer should be able to tell whether a creation stands a chance of becoming a sales success. The technique I eventually worked out has made perfume creation surprisingly easy. Thanks to it, I am never a loss for creating new perfumes.

Although some sort of apology should be in order for the seemingly inordinate conceit of what I have just set forth, all my laboratory colleagues and all those who have come to us for tuition can vouch that I've stated nothing but the truth. Also, I firmly believe that the simplicity and the ready applicability of my method will become fully apparent once I disclose my views on organized creative perfumery.

Perfumery at present is at a crossroads. The number of trained perfumers tends to decrease, since the long apprenticeship required appears an insuperable obstacle to most young people, who cannot afford to wait long enough before earning a living. Such a situation should be

remedied at all costs. While it is not to be expected that originality can be taught or that the potential sales appeal of a novel composition will be apparent to the young perfumer before he has gained the experience which only time will bring, it is nevertheless of prime importance that the apprentice perfumer be given help and guidance for coordinating his first attempts in the field of perfume formulation.

There is no mystery in the way I work. Over the past 35 years, more than 100 students, both French and foreign, have taken courses in perfumery in the company's laboratory at Grasse and have been taught according to the simple method which I had originally devised for myself.

I am here trying to record the result of 50 years of sometimes disappointing, but often most rewarding experiences, in the hope that my young colleagues will find therein new possibilities for future creations and will see their enthusiasm increase tenfold when their efforts are crowned with success: since without enthusiasm there can be no perfumer.

PERFUMERY AN ART

Actually, what is perfumery and how should be understood?

Perfumery is an art, not a science, as many seem to believe. A scientific background is not necessary for the perfumer; scientific knowledge may even sometimes prove an obstacle to the freedom required in perfume creation. The creative perfumer should use odorous materials in the same way that a painter uses colors and give them opportunity for maximum development and effect, although it is understood that potential reactions such as discoloration within the ultimate formulation and also the stability of the perfume should be given due consideration. This is about the only use the perfumer will be able to make of his scientific training, if any.

The perfumer's only tool is his nose. I was first called "Mr. Nose" in the USA about 20 years ago. But any one of us is a potential Mr. Nose since, in perfumery, there just is no privileged "nose". Anyone may acquire a highly developed sense of smell, as this is merely a matter of practice. A good nose, that is, an excellent olfactory memory, is not sufficient for producing a good perfumer. By the term "a nose" is meant a perfumer who is able to distinguish a pure product from unadulterated product, who can tell lavender 50% from lavender 40%. I myself, in spite of my long experience, am but a beginner in comparison to the old "noses" I met at Grasse at the beginning of my career, and who were able to detect olfactorily the geographical area where a given oil of neroli or of lavender came from.

Olfactory training is of prime importance and should never be neglected or interrupted. Our own perfumers make it a strict rule to test daily their knowledge of perfume materials and this is why a half-hour is set apart for this exercise, which we all perform in a truly competitive spirit.

Let it be emphasized again that no "nose" can be said to be better than another, and that it is merely a question of olfactory memory for which daily training is not only necessary, but indispensable.

OLFACTORY STUDIES

Thus, the training of a beginner who knows nothing about perfumery should begin with the olfactory study of all odorous materials, both natural and synthetic. In order to facilitate such a study, the beginner will first be given to smell contrasting odors, and later materials belonging to a certain odor "family". Elsewhere are given two tables relating to olfactory studies, according to

such requirements. Learning to smell his smelling strips, to identify and to distinguish from one another all odorous materials, the beginner will soon notice that the odor of the products changes with time, that the rate of evaporation is not the same for all products.

TOP, MIDDLE AND BASE NOTES

Therefore, the next step will be for him to establish *a classification of odorous materials according to their volatility.*

While such a classification could be established scientifically, the apprentice perfumer will soon attain unexpected proficiency by forgetting any technical information he may have, and by establishing "his" classification for himself, as I had to 40 years ago.

On the smelling strips will first be inscribed the date and time at which the drop of the odorous material was deposited thereon, and later the date and time at which the product on the strip will begin to lose its main characteristic, its typical odor. When proceeding thus, no consideration should be taken of the ultimate off-odors, such as terpenic notes or the like. This technique will soon make it apparent for the student that while some products are very volatile and lacking in tenacity, others are of intermediate volatility and tenacity, and others still are of low volatility and high tenacity.

Such data will then readily be set forth in tabular form, all available all odorous materials being listed under three headings, as shown in the table below.

Classification According to Volatility

Very volatile products Lacking tenacity Top Notes	Products of intermediate Volatility and tenacity Modifiers of Base Notes	Products of low volatility And high tenacity Base Notes
Amyl acetate Bois de Rose Linalool Phenylethyl acetate Lemon Lavender Bergamot Orange Coriander Tarragon Laurel nobilis Petitgrain from the lemon tree Etc. etc.	Basil Terpineol Petitgrain (Paraguay) Galbanum Verbena Thyme Geranyl acetate Juniper Tansy Phenylethyl alcohol Geraniol Absolute Lavender Citronella Neroli Rose Bulgarian Ylang Geranium Aldehydes C8 C9 C11 C12 Cloves Etc etc.	Methyl Ionone –Ionones Absolute Orange flower Clary sage Amyl salicylate Absolute Jasmin Benzyl salicylate Cedarwood Aldehyde C16 Aldehyde C18 Sandalwood Artificial Musks Absolute Oakmoss Vetiver and derivatives Patchouli Celery Etc. etc.

The student will then have to be taught how to use this table.

As set forth above, I have termed:
very volatile products lacking tenacity
Top notes

products of intermediate volatility and tenacity
Modifiers

products of low volatility and high tenacity
Base notes

The reasons for this choice of terms are the following:
As indicated by their name, the base notes will serve to determine the chief characteristic of the perfume, the sense of which will last hours on end and will be essentially responsible for the success of the perfume, if any.

Anyone even remotely familiar with perfume materials is aware that all products of low volatility and high tenacity such as Vetiver, oak moss, patchouli, the Methyl Ionones and the like, give off a rather unpleasant smell when freshly deposited on the smelling strips but, on the other hand, the scent given off during the subsequent stages of evaporation is excellent. This is the reason for the use of the modifiers of intermediate volatility and tenacity which will serve to change the unpleasant top note of the base products.

Finally, the very volatile top notes, lacking tenacity, will serve to impart to the perfume composition a very pleasant odor on opening the bottle.

For illustrative purposes, let us take as an example the creation of the chypre note.

CREATING A CHYPRE NOTE

1. The "Accord" between bases.

Absolute oak moss is the basic raw material for the chypre note. It belongs to the series of products of low volatility and high tenacity, or base notes. Others of the more common materials belonging to the series are products such as the Ionones and Methyl Ionones, Vetiver, patchouli, Cistus Labdanum and the like. Therefore, we must choose among them the products which will blend with absolute oak moss and impart an original characteristic to our perfume. We shall begin our study of this "Accord" in the following manner.

We shall select a second product belonging to the series of base notes, whichever was the most appropriate for blending with absolute oak moss. In the present case, we shall use, for example, absolute Cistus colorless or a similar product such as ambergris 162B, and we shall prepare a series of "Accords" containing both constituents in the following ratios:

Absolute Oakmoss	9	8	7	6	5
Ambergris 162B	1	2	3	4	5

We shall not test combinations beyond the five: five ratio, since the following ratios of materials:

Absolute Oakmoss	4	3	2	1
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Ambergris 162B	6	7	8	9
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would no longer produce an accord based on oakmoss, but an accord based on ambergris. We shall then choose between the five "Accords" based on oakmoss and, for example, shall decide on the following:

6 absolute oakmoss
4 ambergris 162B

Since any chypre note should also have a musk like character, we shall at a certain amount of musk ketone or of musk ambrette to the above "Accord". Thus, the base of the desired chypre note will be as follows:

6 Absolute Oakmoss
4 ambergris 162B
1 Musk Ketone

When smelling this blend on the smelling strip, we shall notice that its immediate effect is rather unpleasant, although this will fairly rapidly disappear and be replaced by a pleasant, long-lasting note essentially characteristic of the personality of the ultimate perfume.

II. The Modifiers.

How can we subdue, or, rather, adjust this unpleasant note? We shall immediately find a solution to the problem by studying the table giving the classification of odorous materials according to volatility. Among the products of intermediate volatility and tenacity, we shall find which product, or products, will be best suited for blending with our "Accord" between bases.

We shall choose a floral note, a rose note, for example rose absolute. This rose note will subdue the immediate effect of our "Accord" between bases and make it more pleasant. It will play its part as a modifier of base notes, and this is the reason why we have termed the products of intermediate volatility and tenacity: "modifiers" (of base notes). To the rose note, we shall add a trace of absolute civet, so as to impart a slightly animal shading to the chypre note.

At this stage, the formula is as follows:

modifiers - 3 Absolute Rose
1 Absolute civet, 10% sol.

Bases

6 Absolute Oakmoss
4 Ambergris 162B
1 Musk ketone

III. The Top Note.

Our formula, however, is not yet complete. We must add to it a top note, which will produce the immediate effect when smells on opening the bottle. This note is fairly important, since the potential buyer is easily influenced by it - with or without reason - as in no case can the top note be the characteristic note of the perfume.

This study is far easier than the study of the "Accord" between bases, since the series of very volatile products lacking tenacity contains many odorous products, most of which possess very pleasant notes. The study of the "Accord" between top notes can be carried out as set forth above for base notes, but with much more freedom and fantasy. Combinations, in this case, are countless, and may be left entirely to the perfumer's initiative.

As with base notes, we may study several "Accords" between two or three notes, or even four. Let us, for example, after testing various combinations, decide upon the use of sweet orange and Bergamot in the following amounts:

- 4 Sweet Orange
- 1 Bergamot

Thus, the extremely simple formulation of our chypre note may be written down as follows:

Top Notes (25%)

- 4 Sweet Orange
- 1 Bergamot

Modifiers (20%)

- 3 Absolute Rose
- 1 Absolute Civet, 10% sol.

Bases (55%)

- 6 Absolute Oakmoss
- 4 Ambergris 162B
- 1 Musk Ketone

It is understood that the above is not complete formula, but that it is nearly given for the purpose of illustrating the method set forth in this paper.

IV. Proportions. Percentages of the three groups of products: bases, modifiers and top notes.

This percentage is extremely important: it is, for the major part, responsible for the tenacity of the perfume. A perfume containing 20% of bases, 30% of modifiers and 50% of top notes will lack tenacity, since the percentage of bases would be relatively too low as compared with that of the more volatile modifiers and top notes. Therefore, the proportions are selected so as to obtain a balanced evolution during evaporation.

V. Extension of the above Formulation.

We shall now examine how this chypre note formula could be completed, or modified. Let us first consider the base notes. We have already realized the "Accord":

- absolute oakmoss
- ambergris 162 B
- musk ketone

We might, for example, add to it Vetiver, which will result in the following "Accord":

- absolute oak Moss
- ambergris 162 B
- Vetiver
- musk ketone

And we shall endeavor to find the proper ratios of ingredients, as follows:

.....	A	B	C	D
Absolute Oakmoss	4	6	3	3
Ambergris 162B	4	3	6	3
Vetiver Bourbon	4	3	3	6
Musk Ketone	1	1	1	1

Thus, when studying the above "Accord", the main characteristic will be imparted by oakmoss in experiment B, by ambergris in experiment C and by Vetiver in experiment D.

The student perfumer will also be able to choose between the following "Accords":

(a) absolute oakmoss .
ambergris 162B
patchouli

(b) absolute oak Moss
ambergris 162B
Methyl Ionone

(c) absolute oak Moss
patchouli
Vetiver

(d) absolute oak Moss
Methyl Ionone
Vetiver, etc.

according to his preferences with respect to the main odorous characteristic of the base of the chypre note he wishes to create. Obviously, the use "Accords" could be increased to contain 4, 5 or 6 notes.

It is therefore apparent that this method offers endless possibilities for creating new notes and new perfumes, the perfumer being entirely free to use any odorous material in these "Accords", provided however, that such materials are selected from the series of base notes; such complete freedom in the choice of the starting odorous materials may also be given to the beginner.

Whatever the type of formulation, once we feel the "Accord" between bases is complete and fully satisfactory, we shall have to reconsider our first selection of modifiers. In our first tentative chypre note formula, we might, in place of the rose note, use an Orange note, a Jasmin note, or any other floral note such as Lily of the valley or carnation. Again, top notes should also be similarly adjusted.

For the purpose of illustrating the procedure used for such adjustments, a series of modifications is given below.

Original Chypre note formulation

Sweet Orange
Bergamot

absolute Rose
absolute civet

absolute oak Moss
ambergris 162B
musk ketone

First modification

sweet Orange
Bergamot

orange flower absolute

Absolute oakmoss
ambergris 162B
absolute Jasmin
musk ketone

Second modification

Bergamot
Laurel nobilis

Angelica seeds
juniper berries
Muguet

absolute oak Moss
Vetiver
patchouli
ambergris 162B
aldehyde C 14
absolute Jasmin
musk ketone

Third modification

Bergamot
sweet Orange

absolute Rose

absolute oakmoss
Amber liquid
Methyl Ionone
Vetiver
patchouli
absolute Jasmin
musk ketone

Fourth modification

Bergamot
Lemon
linalyl acetate

Jasmin 1103
geranium African
orange flower 1103
aldehydes C9, C10, C11

Absolute oak Moss
gardenia Invar
Styrallyl Acetate
Vetiver
ambergris 162B
musk ketone

Thus, modifications of the original formulation may be carried out endlessly; although the resultant blend is always within the scope of chypre notes, an entirely different perfume is

obtained each time. However, this result can be achieved only provided the original formula is written down as suggested above, in the following order:

Top Notes
Modifiers
Base Notes

The specific example given above of the successive steps a perfume formulation shows how any particular type of perfume may be endlessly varied. But the method applies just as well when the perfumer wishes to obtain novel perfumes from a basic formula established to contain "Accords" of which he is especially fond.

AIDS to metamorphosis

In this respect, I shall describe an experiment with which our former students are well familiar and which might be called "a brief lesson in perfumery". I first write down, with black pencil, a very simple formula containing, let us say, about eight products and which results in a very acceptable perfume. To this formula, I then add new products, the names of which I write down with a red pencil: thus, a second perfume is produced, *while the proportions and the constituents of the first formulation remain unchanged*. Pursuing this ensuing experiment, I added new series of products to the second formula just obtained, writing down the names with a blue pencil; it is understood that these new products contain top notes, modifiers and base notes. Again, without affecting any change in the products making up the first two formulations, a third perfume is produced, which is also entirely different from the others. ... And the experiment might go on, endlessly, by mere addition of products.

At this point, I feel the subject of accessory products should be mentioned. What are "accessory products."? As far as I'm concerned, products in this series are those which, owing to their typical odor or to their high scenting power, cannot be used in large amounts in an "accord" between bases or between modifiers, but whose presence in a formulation in more or less traces results in a complete change in the character of the latter and imparts to it a unique cachet. Examples of such products are aldehydes C12 (MNA) and C14, styrallyl acetate, isobutyl quinoline, galbanum, cascarilla and the like. However, although I have just recommended to use such products with moderation, *this is not to be taken as a standing rule*. Aldehyde C12 (MNA), for example, proves to be an exception and it should be known that some products such as geranium, give most successful blends with as much as 50% of it. The advantages which may be derived from the use of accessory products are therefore readily apparent, and it would be pointless to discuss them at greater length in the present paper. But such considerations bring me quite naturally to mention an error, which is quite common in young perfumers.

"Well rounded" or characterless?

Our eager would be perfumers seem to feel that they are under the obligation to produce "well rounded" perfumes, in other words, that they should subdue or hide any predominating odorous material. I believe this is actually the worst mistake the perfumer could be guilty of, since this desire for attaining maximum equilibrium in a perfume results in a subdued, characterless finished composition.

One should never believe, before actually experimenting, that a formulation contains an excess of a given product. Such "excess" may quite possibly be due to the lack of some other product. Dominantly effective notes in perfumes should be neither feared nor deliberately avoided. They are a perfumer's own secret, and such "faults" have quite often been responsible for tremendous commercial success. As a matter of fact, when the perfumer feels the amount of a basic product should be increased in a formulation, he should increase this original amount twofold, threefold, and even tenfold. This will afford him the almost unhoped-for opportunity of hitting on an

outstanding "Accord". This amount can always be reduced at a later stage, but the perfumer will know at once what results can be expected from the use of an excess of absolute oakmoss, of Vetiver, of Methyl Ionone and the like in the ultimate formulation, an excess which, sometimes will "pay".

Sharp contrasts and "fashions"

At present, to meet with success perfumes should actually "explode" all over, so to speak. Modern perfumery requires contrasts, sharply characterized olfactory values. The perfumer should be totally unprejudiced, should entirely disregard his own tastes. Woe to him if he hates Vetiver, if he cannot stand aldehydes. He should be aware that *there are no incompatibilities in perfumery*, that apparently clashing materials will blend successfully on addition of another product playing the part of a binding agent and making their odorous compatible. The creative perfumer should, above all else, consider the clientele's tastes. The commercial success of the new perfume, of the novel "Accord", is essentially dependent on his original ideas, on his brain waves.

I have often been asked about the question: "what is the latest fashion in perfumery?" There is no fashion in perfumery. Only actual sales success dictate the fashion. A good perfumer is a perfumer who knows how to create a "bestseller".

The Invaluable Accord

Great perfumers, like great concert pianists, should make it a strict rule to practice scales, in other words, to study possible "Accords" between cases, since only therefrom can they derive the necessary technique conducive to virtuosity. While this as an overwhelmingly all embracing task, an effort should be made however, to reduce it to less gigantic and more readily accessible proportions. It is not necessary, when studying "Accords" based on chypre notes, for example, to consider the combinations of absolute oakmoss with all existing odorous products. The perfumer will first select the odorous raw materials he will see fit to use in his creation of a chypre note, and is only from such materials that he will study the satisfactory "Accords" between bases.

But, although I have stated at the beginning of this paper that, in perfumery, miracles are few and far between, I must say that this, actually, is where the true miracle emerges.

The very selection a perfumer makes of the raw materials to be used as ingredients in a new formulation is the best of all possible standards for appraising the originality, the initiative and the genius of the creative perfumer, on which the success of the new perfume is entirely dependent. And while it is possible to devise a method which will enable the apprentice perfumer to understand and to acquire some sort of the technique, in perfumery as in many other fields many will be called but few chosen, since the essential qualities which lead to success cannot be taught, any more than can be taught enthusiasm, the joy of living and of creating, and the love for one's calling. These are innate qualities without which there is no great perfumer.

There is not much more I can say about the method I devised for my work, and it is up to my readers to take over where we left off. On the basis of the method I set forth in the previous paper, they may study "Accords" with products other than absolute oakmoss, that is Accords with Vetiver, patchouli, Sandalwood, Methyl Ionone, etc. Unless they find the work deadly dull from the start, they will enjoy many months of systematic research from which they will draw many useful lessons. My own experiments with absolute oakmoss have already passed the 1000 mark, and at least as many, if not more, remain to be carried out, since such investigations are endless.

(End of Part 1)