Perfumery Techniques in Evolution—II

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Perfumery has developed with an astonishing speed. The subjective element of this development has always assumed the same character as the evolution of humans. The technical element is research, the discovery of new raw materials and the use to which they are put by the artists whom we call perfumers, those who by their sensitivity, experience, delicacy, talent and effort have combined all of these raw materials to create and elaborate the various perfumes.

Unfortunately we live in a century and at a time of great confusion, which is indifferent to spiritual values and places little value on the interior life that, in my opinion, is what makes for the richness of the true perfumer. This situation has radically changed one of the most beautiful and most poetic professions that has ever existed, transforming it in many cases into a merely computerized response to some so-called marketing needs, which in turn makes very bad use of its ideas. This sad commentary shows how hollow at bottom our modern society really is.

Perfumery evolves, although at times not as positively as we are led to believe. Nevertheless, the elements which the perfumers have at their disposal grows at an unusual rate, and despite the criticism from some circles that reject everything that is new, I believe these new products are excellent, and that they are in no way responsible for the troubles of the creator-perfumer-artist. I do not share the opinion of those who say that everything can and should be done with a hundred certain aromatics and with thirty-odd essential oils. These people run the risk of becoming completely superceded since creativity is only possible in our field if we remain abreast of what is offered to us, and what unquestionably helps us.

The great perfumes are always created side by side with new materials, which is what gives them their personality. The discovery of vanillin, ethyl vanillin and coumarin and all the basic products at the beginning of the century resulted in a whole series of perfumes which were revolutionary at the time. These perfumes created a style which didn't change until the discovery of the aromatics such as hydroxy-citronellal, the aliphatic aldehydes, the quinolines, heliotropin, amyl salicylate, the nitro musks, and the macrocyclics, or undecalactone which created of themselves a whole new series of perfumes.

The relation between the great aromatics and the new creations still continues; it is precisely the understanding of these aromatics which gives us a glimpse of what is going to take place in this decade of the eighties.

I believe the natural products do not evolve at the same rate as the chemical aromatics. However, every day we see more faithful reconstitutions of some very costly natural products such as civet, tuberose, jonquil or jasmine which make it possible to market perfumes with 20 to 25% of a good reconstituted jasmine, something which would be impossible with natural absolute. What can we say about the extraordinary scent of the absolute of orris! Reconstituted products of these substances retain their qualities. If they didn't, or if we didn't have reliable research, they would quickly be forgotten, unless it were just to create a perfume for the elite alone—extremely expensive and of uncertain future.

The basic natural substances of all kinds will

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continue to be used, but it will be rare that a new natural substance will provide the principal characterisatic of a perfume, or that an old, unfamiliar natural substance will be used.

As an example of a great and rare innovation, I would like to mention the case of the essential oil of Cyperius Scarious, which is extracted from the roots of an Asiatic plant. This essential oil gives to the chypre tobacco notes a distinctive and high quality spicy note of dried leaves. It is very suitable for high class perfumery as well as for soaps and other cosmetics products. This essential oil, a bit old and not very well known by most perfumers, in whose repertory it is usually not found, is extracted from a plant which is native to India and China, and which is one of the keys of Macassar, the new perfume by Rochas which has a very original and sophisticated green note with the distinctive quality of the essential oil.

Personally, I like some absolutes very much, such as Mate Abs., which can be blended excellently with myrrh and jasmine, and serves very extensively in perfumery.

I think the essential oils of Zdravetz and Davana will have a good future, only if they are the original, pure qualities that come from India or Bulgaria. I am familiar with a line of products with labels purporting to contain these original oils, but which are so adulterated that they no longer have the scent of the pure, original product. The original oils are not very well known.

The olfactaory families that I am going to mention will be the same ones that I mentioned in the first part of this work,* as well as one or two others.

Agrestical Products

Let's begin with the olfactory family of the agrestical products and the classic products of linalyl and terpenyl acetates in the herbaceous-lavender-camphor-cineolic subgroup. In my earlier work I mentioned the myrcenyl, ocymenyl, and citryl acetates, linalol oxide, trimethylcyclohexyl acetate, lavandulol, hersage, menthanyl acetate and others. I would like to mention the following products, abridging and combining in a drastic way a family that is very extensive.

2,2,6-Trimethyl-6-vinyl-tetrahydropyrano, called *Geranic oxide,* has a wild, pungent, fresh and camphoraceous note which suggests the odor of cineole. Present in the essential oil of Geranium Bourbon, it is a very interesting product in as much as it is a reconstitution of this essential oil and because it is used in perfumes with a lavender note, where it imparts its very special sharp effect. It is very stable in soaps and detergents and combines very well with the rose and wild notes such as in the typical Spanish essential oils of lavender and marjoram.

2,2,6-Trimethyl-2-vinyl-tetrahydropyrane, called *Lime oxide,* in structure and olfaction is an isomer of the preceding compound, but it is somewhat impaired with an odor of myrcene because the commercial quality is usually not pure. It is more citric and less camphor than the preceding compound, but it has approximately the same applications. It has been identified in the essential oil of distilled lime.

2-Methyl-2-vinyl-5-isopropenyl tetrahydrofuran, called *Desoxide,* has a pungent, herbaceous, camphor odor with a strong character of the essential oil of boldo, and with some olfactory aspects of the essential oil of chenopodium. These essential oils smell so strong that after smelling it, the perfumer will lose their odor, or find only a slight herbal character with no personality. Desoxide, identified in the essential oil of Petitgrain Paraguay, is excellent when used in small quantities in Eaux Fraîches, and in larger proportions in masculine perfumes. It blends very well with Mandarine aldehyde, Corps rhubarbe, Vertacetal, Verdoracine, imparting an uncommon personality with citric and green notes generally.

We could cite infinitely more products in this family, but suffice to remember the names of the so-called *Heridón* and *Oxaspirane,* with their strongly menthol, camphor, herbal character, reminiscent of cedar leaves; and *Acetomarane,* with a herbal, conifer character which suggests l-bornyl acetate.

Within the herbaceous and the leguminous-citronellic subgroup, we mentioned in the previous work the classical products of citronellal, trimethylhexanal, citronellic acid and tetrahydrocitral. Others include the following.

Tetramethyl hexanal, called *TMH Aldehyde,* of great strength is similar in some ways to Inonanal, but with a more modern, more floral and less citronellic note.

Alpha-methylene citronellal, called *Bergamal,* with a refreshing odor, citronellic, citric and floral, suggests the essential oil of petitgrain and bergamot.

Let us complete this subgroup with *Geranic acid,* more floral and less soapy than citronellic, and an extraordinary fixing agent in a large number of perfumes where florals and wild notes are combined.

Within the wild notes and the various subgroups, we are going to concentrate on the aromatics with a camomile note.

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*Arcadio Boix Camps, Perfumery: Evolution of its Techniques —Part I, *Perfumer & Flavorist,* 10(3) June/July 1985, p. 4.

Ethyl pentenoate has a warm, penetrating, herbaceous, deeply fruity and lightly caramel odor. It is useful in giving an uncommon novelty to the most volatile note. Its gentle camomile note makes this a very useful product for giving special notes to herbaceous shampoos. It should be indicated that the butylic, isoamylic and n-amylic esters of the pentenoic, tiglic, 2-methylbutyric, 2-methyl pentenoic and angelic acids are better for giving the classic camomile note.

1,3-Dimethyl-3-butenyl isobutyrate, called *Isopentyrate,* has an extremely true note of wild camomile. It is absent from most of the laboratories and has an uncommonly high perfumistic value.

Methylpentenyl isobutyrate is of less value than the preceding.

Butyl pentenoate, together with the one described in second place, is one of the most faithful aromatics with a camomile note. It is also missing from most of the laboratories of perfumery; its note is one of the clearest, most radical and most brilliant of the camomile notes that we know.

Amyl tiglate, with its herbaceous, wine note is a lot like the amyl ester of angelic acid.

Let us also mention allyl tiglate and the so-called *Rholiate,* less brilliant and expansive than some of the others, but more persistent.

Within the diverse herbaceous subgroup with a character of dry leaves and everlasting flowers, we will mention the following products.

1-Ethinyl-cyclohexanyl acetate, called *Herbacet n° 1,* has a strong, deep, herbaceous note, notably similar to the absolute oil of Everlasting Flower. It is heavily used in floral, herbal, lavender and camomile notes (although it doesn't smell precisely like camomile).

The so-called *Tachrysate,* of an extraordinarily complex odor, has aspects that we find in the essential oil of tagètte, and in the absolute oil of Everlasting Flower. The chrysanthemum odor gives an interesting character to masculine perfumes as well as to a line of shampoos and foam baths.

I would also like to mention the so-called *Ethyl Chrysanthemate,* the star of the family, with a very complex note of unparalleled richness. The herbaceous, wine, fruity odor, is similar to Everlasting Flower, tagètte and chrysanthemum. It can change the routine that we see nowadays in the perfumed shampoos and foam baths, where the Triplal and dihydromyrcenol notes predominate, and it can give some truly creative and brilliant top notes to masculine perfumery, so dominated by the notes of *Dimetol* and incense.

Finally in the agrestical family I want to mention the thujone subgroup whose classic note is the one that gives its name to this group. As is well-known, thujone is an aromatic present in a great number of essential oils, such as cedar leaves, artemisia, tansy and others. Many high quality products with the thujone note can replace the very costly thujone. Let's mention the following.

2,2,6-Trimethylcyclohexanone is a widely used aromatic that fluctuates around 8% in the essential oil of *Cistus Labdaniferus,* and which has a penetrating, pungent, thujone odor that combines very well with a number of notes, especially the amber notes and the same ones that thujone blends well with. It is excellent in masculine perfumery and in products for the bath.

2,4,4-Trimethylcyclohexe-2-one, called *Pineone,* is the aromatic closest in smell to thujone, and I believe it will be an important element in the formulations of the coming years. It is a key product in bases such as the so-called *Cederleaf,* Cedeillal and others.

4-Methyl-tricyclo (6,2,1,0) undecan-5-one, called *Plicatone,* is highly important because of all the known aromatics with a thujone note, including thujone itself, it is the only one that is long lasting. It serves very well to fix all the notes mentioned before, without in any way imparting the essential note of the family as happens, for example, with coumarin. If I had to choose from among the great quantity of thujone notes that exist, apart from the high priced thujone itself, without a doubt I would choose the two products previously described and *Plicatone.* Their effects are highly interesting in combination with the ciste-labdanum, isobutylquinoleine, Cashmerán, Triplal, Ambrinol and Cetotabac notes, and with many other aromatics.

Aldehydes

Within the family of the aldehydes, let us mention as classic products the aliphatic aldehydes and the 2-alkenals described in Part I. These products have had an enormous impact. Let us remember trans-2-dedecenal, trans-2-tridecenal and in another sense, trans-2-noneal, and bases such as mandarine aldehyde, Bigaradial, and Iranal, are the most important products among the 2-alkenals.

The innovations in this family, which I place on a par with the citric family, and in which I would like to place many of the alkenals and alkadienals, can be indicated with the following products.

Trimethyldecadienal, called *Trimenal,* has a powdery, aldehyde, floral and citric note of uncommon effects. It combines very well with the other unsaturated aldehydes such as trans-2-dodecenal, 2,6-dodecadienal, 2-tridecenal, alpha-sinensal, beta-sinensal, 2,7,11-trimethyl-2,6,10 dodecatrienal, and 2-methyl-2,6-octadienal. On the other hand, it is interesting to see how it combines with methyl-propyl oxathian, cis-6-nonenal, 8-nonenal and with the animal products as well as with the essential oil of costus, the so-called *Muscacide,* some quinolines, p-cresile isovalerianate, etc. Its effects are at once unsuspected and excellent, modifying the classic "fourrure" notes, such as Miss Dior, Givenchy III and in the Eaux Fraîches where it imparts a special character.

Cis-4-decenal is of such an extraordinary strength that it should be used with the greatest precaution in solutions of 1%. It has an extremely agreeable, citric aldehyde, orange flower odor, and it profoundly changes every kind of floral note in alcoholic perfumes.

Trans-4-decenal is similar to the previous compounds, and cheaper. I would like to stress the importance of these two aromatics. They are missing from most of the laboratories, but they can impart a rare originality, unusual in a single aromatic. Important bases with these aldehydes are Citraldial, Muguettal and Lysorangia.

Let us mention as interesting products *Nonyl nitrile* which has a very aldehyde and orange odor for being a nitrile; and *Maceal,* of uncommon strength and flowery brightness; and the so-called *Coronal,* which is missing from many laboratories and is really outstanding.

Woody Aromatics

The woody family is so extensive and with such important innovations, that it is impossible to mention even 10% of what is known.

In the subgroup of pungent-woody we can include patchouly and cedar notes, recalling that Part I we described the following products: several cyclododecanol ethers (such as the so-called Palisandin) alpha-cedrene epoxide, methylcedryl ketone or Vertofix Coeur, Mahagonate, methylcedryl ether or Cedramber, isolongifolanone and isolongifolanile acetate, Timberol, Patchouly epoxide, Cedroxide, Rhubofix and Iso-E-Super. We are going to lengthen this list with the following aromatics.

Calarene epoxide has a radiant and noble woody note, like patchouly and ambergris. It is one of the most noble and useful of the aromatics to use with essential oil of patchouly, and one of the most effective modifiers if we exclude the so-called *ambrinol epoxide.*

Cariofilenyl formate, called *Caryolan,* is a little

known product that is a harmonious blend of a beautiful woody note and a markedly spicy-pepper note. It is radically different from cariofilenyl acetate of a much more pungent character, clearer and more penetrating. It has a low price and recalls many shades of patchouly.

Formaldehyde-methyl-cyclododecylacetal called *Boisambrene* and formaldehyde-ethyl-cyclododecylacetal called *Boisambrene Forte* combine very well with the products already mentioned and blend very well with the classic notes of Paco Rabanne, Azzaro and Yatagan.

Isocyclemone E, a product heavily used both in perfumery and in soaps, has an odor like Iso E Super, although of inferior quality. It is reasonably priced and can be used on a large scale, like Verofix Coeur. Isocyclemone and Vertofix are not very lively. They are to be used very extensively and should be enhanced by certain chemical aromatics described in the animal-amber family, such as Ambraketal, Trimofix, cariofilene monoethyl alcohol. Its use (Isolongifolanone, Iso E Super) is from amounts of 2-3% in Chloe, up to 20-30% in woody and green-floral-radiant-woody perfumes.

Acetyl thujopsene is an aromatic present in what we call Vertofix Coeur, which is a blend of acetyl cedrene and acetyl thujonpsene, with other complementary notes, and which we have begun to use in a pure form. It is without a doubt the most noble note in Vertofix, and its usé as a pure aromatic is extraordinary. It has a radiant and velvety character, a high quality amber note, an elegance and an unequaled nobility.

Cariofilene monoethyl alcohol, of great strength and uncommon duration, is interesting because of a certain similarity to Ambraketal, as an enhancer of the basic, modern woody notes.

Acetyl-1,5,9-trimethyl-1-5-9 cyclododecatriene, called *Trimofix,* is used like cariofilene monoethyl alcohol, but with a greater intensity, without ever equaling Ambraketal and with less endurance. It has a woody-amber note with shades of vetiver, musk and tobacco.

Let us also mention 1,7,7-trimethyl bicyclo (4,4,0) decyl-3-acetate, called *Polywood.* It has a very elegant note, extraordinary when you want to enhance the macrocyclic musk and radiant products, without imparting a specific character, but giving volume and quality. It is the base of well-known quality products such as Bois d'Ambrette, Jasmambrette, Polywoodia, Jasmobois and others. I wish to emphasize that this aromatic doesn't smell extremely at 100%. Only a perfumer of great experience will be able to develop it adequately and create blends full of beauty like those of the bases mentioned previously.

We could continue the family, but let us merely outline it by mentioning ethyl-fenchol, 8-Camphene carbinol, omega hydroxymethyl longifolene and isolongifolene epoxide, called *Folenox.* But I do want to dwell on cedrylmethyl ether, called *Cedramber,* which has a woody note with a profound amber odor of great potency and diffusion. I believe that both Calarene epoxide and Cedramber will have a great future. Cedramber is an excellent modifier of the floral notes, giving them an unquestionable personality, by drying and strengthening bases that are too sweet, due to alpha-amyl cinnamic aldehyde, alpha-hexyl cinnamic aldehyde, Heliotropine, cinnamic alcohol and others. We have seen in the perfume "Opium" by Yves Saint-Laurent how it can modernize the oriental and semi-oriental notes, where Cedramber combines excellently with the spicy-woody oriental-animal-floral blend, formed by the essential oil of nutmeg, the essence and absolute oil of ciste-labdanum, patchouly, Vertofix Coeur, Musk DTI and Musk Cetone, the absolute oil of castoreum, isobutyl-quinoline, isoeugenol, glycolierral, benzyl salycilate, centifol and vanillin which give form and character to the perfume.

We will finish the family with the so-called *Epitone* and *Felvinone,* which have warm, woody, spicy odors which produce a radication which the English call the "Velvet effect", just like Vertofix, Isocyclemone E and Iso E Super, already described.

Within the same woody family and the santalaceous woody subgroup, whose classic products are the essential oil of Mysore sandalwood, santalol and its esters, and the isomers of hydroxy-trimethyl-tricyclo-tridecane, called Sandela, santelex, Indisan and Sandenol, we are going to mention the following innovations in two parts. The first consists in those products whose odor is immediately smelled upon being dipped in smelling strips with strong traces of Sandalwood; and those whose odor develops with time, being of greater long lasting properties.

Among the first group we find *Sandalore,* which has a very complex chemical name. It has a sweet, warm, strong, woody, santalaceous odor, which is immediately perceived on the mouillette, and has a top note power about 50% greater than the essential oil of sandalwood although it doesn't last as long. It is a great aromatic, used in alcoholic perfumery as well as in soaps and detergents, where it has an effect even if applied only in trace quantities. It is interesting to see it developing in combination with allyl-ionone, isobutylquinoline, gamma-undecalactone,

Miraldile acetate, Fixolide, as well as in combination with vanillin and ethylvanillin.

Within the aromatics of similar characteristics we find *Brahmanol, Sandel C* and *Bacdanol,* where the strength and perhaps the applications will vary one from the other. Nevertheless, Sandalore, Brahmanol and Bacdanol, which is perhaps the best of them all, are products of great nobility. Their use as modifiers of the classic notes of the essential oil of natural sandalwood is interesting.

Bacdanol and *Brahmanol* are olfactively related to the naturally occurring cis-B-santalol although they are more powerful and more musky lacking the outstanding floral character of the natural chemical.

Corps Santal falls in a different style of odor. With reference to the typical santalaceous note, it is product of quality inferior to the ones described earlier, but it possesses an important part of the olfactory spectrum of sandalwood, by imprinting the lactic note of the essential acid once it is applied. In combination with cis-jasmone lactone, delta-decalactone, jasmolactone, gamma-decalactone and gamma nonalactone, some beautiful blends can be composed.

Finally, we could add *Sandel C,* an interesting product, with a persistence even greater than which these aromatics offer. Of all the sandalwood notes, I believe it is most persistent.

Within the same woody family we can enumerate some aromatics with a clear vetyver note, some classics such as the vetiverile acetates and vetiverol. Let us mention briefly the following products.

4-Methyl-4-phenyl-2-pentanol acetate, called *"Corps 53",* has a very strong odor, a subnote of grapefruit, but which we can classify as a vetiver note. It combines very well with the green, fruity aromatics and, in general, with the woody ones.

The so-called *Methyl vetivate,* with a metallic, woody note of apparently little quality has good effects on soap and detergent perfumes.

4-Cyclohexyl-4-methyl-2-pentanone, called *Vetyval* and *Vetyvertone,* has a top note very typical of the essential oil of vetyver, although without the woody note of vetiverol, the vetiverones and khusimone. This odor is not the radiant-woody-floral one sought in the effects of vetyver oil.

6-Isopropyl-2-decalone, called *Decatone,* is a strong aromatic with a fruity, citric vetiver note reminiscent of methyl-phenyl-pentanol acetate and of nootkatone. We couldn't define the aromatic *Decatone* as either absolutely woody, citric or fruity, although it blends well and gives a personality to each one of these notes. *Decatone* fixes the citric notes considerably and in an original way, and it combines very well with the unsaturated aldehydes, as well as with the products of the exotic, fruity green family, so important in present day perfumery: 3-methyl-thiohexanol, thiocineol, methyl-propyl-oxathian, 3-methyl-thiohexanal and thio terpineol. Its blends with Isocyclemone E, Vertofix Coeur, Hedione and Methyl Jasmonate are excellent.

We are going to finish this vetiver subgroup by mentioning the noble cetones: alpha-vetyvone and khusimone. It is well-known that the most noble notes of the essential oil of vetyver are in the cetones, otherwise very little known.

There are bases with noble cetones of vetyver, such as *Oxyver, Vetocet,* and these cetones, called vetyverones commercially, have been used in perfumes of great quality.

Within the woody family with the subnote of roots, there are many products, which for lack of time, will not be described. Suffice to recall p-teramylcyclohexanone, called *Irivone,* with an earthy odor of oris, somewhat reminiscent of trans-2-nonenal, but much less intense; ethyl-ethylcapronate, called *Yrotil,* with a similar note; the so-called *Racinon* and *Vetycon,* with notes

less floral and more woody than the previous ones; and the so-called *Veltonal,* which has a dry odor like tobacco, of great quality, also little known and little used by the perfumers.

Let us now finish the woody family with the important floral-woody subgroup, whose beautiful and classic products are represented by the ionones, methylionones and the irones.

Dihydro-gamma-ionone, little known, little used by the perfumers, but used a lot in some of the great, universal bases and one of the most noble exponents of the family. Present in the tincture of ambergris to which it gives a tobacco character, it is a product of particular beauty and remarkable expansion. It is excellent in combination with powdery, radiant and amber notes, and it can impart a methylionone-ambery note of great quality.

The so-called *Myrtenol,* present in small quantities in the essential oil of myrtle, can lend a creativity to the more floral notes such as paraterbutylcyclohexile, and linalile acetate and products of the olfactory family.

Tricyclodecane methanol acetate, called TCD acetate, with a woody, rainbow-hued odor, is reminiscent of the methylionones, and fruity spicy notes in the direction of the essential oil of carrot seeds.

It combines extraordinarily well with all the powdery notes, and in woody, herbaceous and lavender notes.

I wish to mention now a singular and very little known aromatic, which from my point of view will play an important role in the perfumery of the future. One of the best chemicals that I know, it is an aromatic with a very long chemical name, 2-Methyl-3-(-2-methyl-5-isopropenyl-cyclopentenyl) propyl acetate, which I am going to call MCP acetate. It is very little known, and has extraordinary effects of a floral, woody odor, highly radiant, with effects of those produced by *Cashmeran,* but of much greater quality.

From my point of view, it is one of the most elegant aromatics that has ever existed, and its odor, exploited by good perfumers, will produce good notes in future Eaux Fraîches and high quality feminine perfumes. Its high price will set it apart for the elite and it won't at all be incorporated in perfumes for the marketing-minded people who decide what is good and what is bad for many companies.

The effects of MCP acetate are sophisticated and difficult to catalogue; but it has a broad, radiant, floral, voluminous and elegant note, which made Hedione an indispensable element. More woody than either Hedione or Methyl jasmonate, and with a completely different effect, it combines well with notes that are more woody, and which don't weaken it, such as, Polywood, Cedrenone, and Iso-E-Super, as well as with the voluminous notes of jasmine, Hedione and Methyl jasmonate. It also blends excellently with the so-called Veloutone, and with the floral muguet notes of the kind alpha-pinyl-isobutyraldehyde, Pinoacetaldehyde, Racinal and others. We could mention some impressive bases created with this compound, such as *Jasmambrette.*

Amber

I talked a great deal about the amber family in part I, mentioning such worthy products as Ambrox, Grisalva, Gamma-homocyclogeraniol, Amabrarome Abs. and Dynamome, Ambrogéne, Grisambrene and Grisambria. I would like now to broaden it, but not without first recalling the most important olfactory aspects of this precious material.

A classification of the whole range of odors discovered in this olfactory complex that we call ambergris, according to Ohloff, can be divided into groups of notes as follows:

—Humid, earthy and fecal.
—Marine and algoid.
—Tobacco-like.
—Sandalwood-like and sweet.
—Animal, musky and radiant.

We could say that the earthy and fecal odor results from the so-called alpha-ambrinol and alpha-ambrinol epoxide, which has been found only in very oxidized products. The tobacco odor results from, among others, dihydro-gamma-ionone.

The marine and somewhat metallic odor derives from homocyclogeranile chloride and gamma-homocyclogeraniol. The algal odor comes from the so-called amber aldehyde or ambraldehyde. The typical radiant note comes from the so-called ambrox. This doesn't mean that only the compounds found in the natural product are valid.

Research has developed and discovered highly valuable aromatics not present in amber, but of revolutionary characteristics. Let us mention in detail a few of these products in this family that are influencing perfumery.

2-Hydroxy-2,5,5-trimethyl octanile, called *Alpha-Ambrinol* and 2-hydroxy-2,5,5-trimethyl-8,8-A-epoxy octaline, called *Alpha-Ambrinol epoxide,* are very important products, with an earthy, animal-fecal odor of extraordinary potency. Their note is part of a large number of bases and masculine and feminine perfumes.

They combine very well with cistus oil and with the high boiling fractions of this essence, with the absolute of labdanum, with leather notes like isobutylquinoleine and other quinoleines, especially with tetrahydropamethylquinoleine, and products derived from birch tar oil like the so-called Boul N° 6B.

Their blends with Ambrox, Grisalva, Geosmin and the essential oil of Patchouly are unique, and have been exerting an influence on perfumery for a long time, and will continue to do so in the future. Let us point out Gentleman by Givenchy as the perfume with good doses these compounds; and the bases such as the so-called Oxambrol, Muscambrol, Muscarome, Castorol, Costia, Oxambria, Grisambria, Indian Wood and others where these compounds are part of the composition.

2,6-Dimethylbicyclo 64.4.06) decan-1-ol, called *Geosmin,* which was isolated as a metabolite of various microorganisms of the actinomycete family, as well as a metabolite of certain seaweed, has an extremely potent earthy odor, which is used in solutions of 1%. Its note has always reminded me of the smell of a room that has been closed for a long time and which is suddenly opened. The effects of Geosmin and its isomers are so unsuspected that we are still beginning to feel them. Its ability to modify the essential oil of Patchouly is unique, something like ambrinoles but different in result. Its blends with the Ambrinoles, Ambraketal, and with what I previously called Corps ATC, with Patchouly epoxide, Calarene epoxide, Ambrox and Cetotabac, have created complexes of unequalled originality. Important bases with this kind of aromatic are Terralia and Terrarome, of great value in perfumery. Geosmin and olfactive derivations are extremely difficult to work with and only experienced perfumers will be able to hide the bad side of its odor.

Homocyclogeranile chloride and gamma homocyclogeraniol have humid and seaweed odors of extraordinary originality.

Ambraldehyde, found, as I said earlier, in ambergris, and together with the products previously described, is the agent that causes the shades of marine and alga.

Ambraketal, whose chemical name is 14,15-Bismor Labdan,8-alpha,13,13,20-dioxide and which is of capital perfumistic importance, is not found in ambergris, but is synthesized in pure form in the laboratory. It exists in various quantities in the products of the chemical reaction. It exists in traces in the so-called *Ambron* and in quantities up to 30% in an old product, used a lot in perfumery, but which, despite its age, still has

a code name.

Ambraketal, with a strong odor of ambergris, more potent and woody than Ambrox and Isoambrox, is the aromatic of greatest olfactory power that we know to date, in the field of amber. It is prepared by the decomposition of diterpene Manool, and to date all other ways of preparing it have failed, yielding only enantiomers with weak odors only remotely comparable to the true Ambraketal.

Ambraketal is so strong that a 5% solution is stronger and more persistent than cariofilene monoethyl alcohol, or Trimofix, in the pure state; these two substances have an odor reminiscent of Ambraketal, but lack its radiation and diffusion. The influence that it has had and still has in perfumery is immense, and although it is missing from most laboratories, it is a key product in a great number of high quality perfumes. Suffice to mention the case of Chanel N° 19, where it is absolutely fundamental in giving personality and character to the Vertofix Coeur base. Ambraketal serves to give life to all the woody bases, combining very well the essential oils of Vetyver and Patchouly, as well as with Vertofix Coeur, Isocyclemone, Iso E Super, Eiptone, Felvinone. It blends excellently with natural, absolute oils, such as foin, flouve, fir balsam and the resinoids of myrrh, incense and opoponax, and the absolute of green Maté. If it is used with chemicals like Fixolide, Lilial or Lyral, the extensive radiant effects can produce dangerous compositions, of which the consumer will tire quickly. Ambraketal is in bases such Ketambria, Amritsar, Bois Dorée and dogwood base.

To conclude this brief treatment of some amber chemicals, let us mention by way of recapitulation those we have already mentioned: Dihydro-gamma-ionone, acetyl-thujopsene and ambrox.

Within the animal group, musk subgroup, I mentioned several products in Part I. I wish to add without giving much detail, *Muscogene,* not typically musk in the sense of the musk polycyclics, or the macrocyclics, but rather in the earthy, animal aspect of natural musk. Bases like Muscogenia demonstrate the olfactory value of this substance.

Hexadecanolide or Dihydroambrettolide, a product of beauty, equals that of the macrocyclic musks of high quality.

The so-called *Neomusk* is very little known product of uncommon characteristics, with a price like Fixolide and Galaxolide, but which has extraordinary shades of the quality of true Muscone, more animal than this in character, of great beauty and with a very diaphanous radiant note

of great interest. Bases of Neomusk are the so-called *Muskia, Muskalia, Muskione,* and many others. It is a very important product.

To conclude the musk family, let us mention in passing the so-called *Mosquene, Thibetolide* and *Musk Alpha,* an aromatic that contains Bromine in the molecule, and which gives a metallized note to many compositions.

Caramel Olfactive Products

Although I didn't include in Part I any product of the olfactory family that I am going to call Caramel, it wasn't because I didn't consider these notes to be of interest. The rather elementary nature of the earlier work didn't require the mention of mere trace products, even those with a strong impact. These notes, however, do have a unique harmonizing effect, as was demonstrated by the perfume Aramis, which has a small quantity of maltol blended with cyste-labdanum and isobutylquinoline-costus notes. I am going to mention some in detail.

Methylcyclopentenolone is a typical caramel note with subnotes of nut, tobacco and licorice. It is one of the few aromatics that can adequately modify the classic fougère bases, heavy with coumarin, and in small doses can produce very original effects. It blends well with lavender notes, gamma octalactone, Delphone and other Rhodipol/C and others.

Dimethylhydroxyfuranone, with a sweet, strong note, fruity and heavily caramel, in small doses gives extraordinary blends. It provides the experienced perfumer with some rarely equalled notes, if he is sufficiently capable of shading it well.

Let's close this family with ethylcyclopentenolone, angelic and tiglic acids, maltol, maltyl isobutirate, maltyl propionate and ethyl maltol, somewhat in disuse.

Anise Aromatics

The anise family has few variations, except to mention the use of the products such as *Canthoxal,* and *Anisimal,* with notes of anise, licorice and fennel odor, which combine well with floral perfumes.

The Balsams

In the balsam family we find the vanilla, resinous, coumarin and tobacco subgroups. Vanillin, ethylvanillin, as well as coumarin are the classic products of this family. In Part I we mentioned the various derivatives of coumarin, some lactones, like gamma, hepta, and octalactones, ocymene and methyl-lavender ketone. Without going any further we can mention Guaiacol, Vinyl Guaiacol and Acetyl Guayacol, within the vanilla subgroup.

In the resinous subgroup we will mention the so-called Labdanax, with a labdanum note, which represents the most balsamic, almost caramel-like shade of this olfactory note.

There are many products in the coumarin subgroup, some of which I do not want to overlook. I will mention among others the so-called *Rhodipol/C,* which has a special coumarin note, but is less interesting than 3-oxa-10-ethylidene-tricyclo (6,2,1,0) undecan-4-one, called *Florex.* From my point of view it is the most revolutionary aromatic that we know within the range of the coumarin notes. Ten times stronger than coumarin and more persistent, it is a powerful fixing agent in all the traditional compositions where coumarin plays a part. Its somewhat greener note lends freshness. Rarely do we see great fixative compounds that are diffusive. We are familiar with the so-called Root Body, among the green notes; the so-called Calone among the melon frutals; and we can add without a doubt Florex, within the coumarin family. This still little known compound is going to have an extraordinary influence on soaps, detergents and liquid perfumery. Its blends are excellent in combination with the notes described in the santalaceous woody chapter, as well as with the old coumarin and vanilla notes that are being developed and brought up to date.

To conclude this family we will mention 6-Amyl-alpha-pyrone, with a coumarin, lactone note of great beauty and quality. It is little used in perfumery, but it has excellent effects in combination with the jasmine lactones, the fruity family, the cis-3-hexenol esters like benzoate and salicilate.

The notes of the tobacco subgroup come from the broadest of the coumarin notes, and offer many elements of great perfumistic worth. We will mention 3,3,5-Trimethylcyclohexanone, with a completely different odor from the isomer of the wild-thujone family, described earlier. It has a sweet smell, between honey and tobacco, and curiously smells more like cistus than the isomer described earlier, which is present in the essential oil. Its effects with ionones and with all the woody-florals are also interesting.

Beta-Damascone, completely different from alpha-damascone in odor, which is radiant and fruity, and from Damascenone, which is radiant-floral-fruity, has a very strong and radiant, obscure, tobacco odor. It is indescribable and only understood by a good perfumer with notes and subnotes that could take us into areas of very

subjective and personal description. It is found in the essential oil of Bulgarian Rose, in the absolute of tobacco, in tea and in apple. It blends very well with innumerable notes, especially the warm-rose-powdery ones, and the classic fourrure ones, modifying them very well and bringing them up to date. It is used in good perfumes. The Damascones and the Damascenones will have an impact on modern perfumery.

Without going any further I will finish the family with the aromatic called 2,2,6-Trimethyl cyclo hex-5-en-1,4-dione, which I will call *Cetotabac*. It is an extraordinary product that is strikingly similar to the odor of tobacco leaves, belonging, as it does, to this aromatic composition. Enormously powerful, it is clearly the compound to use for getting new tonalities in masculine perfumery, an area already over-burdened with old schemes. Cetotabac combines very well with woody notes like Palisandin Cedramber, Timberol, Trimofix, Patchouly epoxide, Calarene epoxide, as well as with amber ketal. It is a real shame that this aromatic is not more widely used since it is really surprising to find a chemical compound that has such an extraordinary tobacco leaf-note. It is without a doubt one of my favorite aromatics, one that inspires me most in my creative moments.

To finish the balsam family and the tobacco subgroup, we will mention only the so-called *Amerinal*, dihydro-alfa-ionyl aldehyde, is preswhich can have some very interesting effects, if it is used well to modify the ionones and the methylionones, in conjuntion with beta-damascone, Cetotabac and others. We can also note that the most important chemical of the isomers found in *Amerinal*, dihydro-alfa-Ionyl-aldehyde, is present in an important masculine perfume in combination with Adoxal and Fir Resinoide Absolute, sage oil and anetol.

Citric Aromatics

We will pass quickly to the citric family, which is sometimes confused with the aldehyde family, because many of the products that have a citric odor are aldehyde and smell of aldehyde. In Part I we mentioned trans-2-dodecenal, trans-2-tridecenal, alpha-sinensal and beta-sinensal, 2,6-dodecadienal, Nootkatona, and bases such as Mandarine aldehyde and Bigaradial. I wish to underline the extreme importance without going into further detail, of Sinensal, present in the oil of Green Mandarine in very important amounts, and 2,6-dodecadienal, the most revolutionary and the least used, curiously enough; while of the two 2-dodecenal and 2-tridecenal, I prefer particularly the second without wanting at all to denigrate the first. I would like to add tridecen-2-nitrile, with a very powerful citric somewhat waxy and pleasant odor of mandarine skin when dilute. It is an excellent product for soaps, where the 2-tridecenals and the 2-dodecenals are not very stable. It blends well with methyl-propyl oxathian, methylthiohexanol, Cashmerán, Bigaradial, and undecen-2-nitrile, which has more of a lemon note. This compound has provided important bases, such as Sinocitril and Tangenil, as well as Florexaltric and Citroherbil.

Phenyl methyl penten nitrile, called *Citronitrile*, is a very powerful product which is generally used in a 10% solution, where its strength is similar to a 100% citral solution. It is ten times more powerful than citral, yielding a note like Citralva, but more citric, more acid, sharper and less floral, but above all longer lasting. It is without a doubt the most persistent lemon-citral note that exists to date, the most powerful and one of the most stable. Marketed only very recently, it hasn't been used as much as Citralva; nevertheless, I will put my money on a good future for this exceptional aromatic.

Let us finish this group with the so-called *Thiocineol*, which I would prefer to describe in the green-frutal chapter.

We could list a subgroup of citric-floral notes, in which to put citronellyl ethyl ether, the so-called *Novorosan*, citronellyl nitrile, called *Agrunitril*, and citral glycerylacetal, among many others.

In the coiraceous family I will only mention the various quinolines, without describing them, since everybody is familiar with them.

Spicy Aromatics

The spicy family includes classic products like eugenol, methyl-eugenol, cinnamic and cuminic aldehyde, Livescone or Gravenone, Cinnamalva. I would like to mention the so-called *Ethyl Safranate*, which has a tart, spicy peppery note and a saffron subnote of remarkable strength. It is a product of extraordinary quality and should be more widely used, but it is missing in most laboratories. It is a key aromatic in bases such as Base E, Base EJM, Saffrania and many others. It is interesting to see how it is used in Arpège and L'Air du Temps, to bring these classic notes up to date. When it is used in combination with alpha- and beta damascone, beta damascenone, Hedione, Jasmolactone, the base Exaltia, Damascerose and Damascenia 185, it lends a unique originality.

The so-called *Myrtenal* has a spicy odor reminiscent of cinnamon leaf with a somewhat disagreeable subnote of alpha Pinene. It has

been and still is a key product in many bases.

The so-called *Safranal* has an extremely powerful and clear odor of saffron, its chief constituent. For its typical spicy note it is used in bases such as the so-called Spezia and Fleur d'Epice. The blend between ethyl saffronate, Saffranal, beta-damascenone, Cetotabac and Dulcinil crystal, together with methyl jasmonate, is interesting.

Floral Family

We will subdivide the floral family into the herbaceous florals, whose classic compounds are linalol, dihydromyrcenol, dimetol, tetrahydrolinalol, tetrahydromyrcenol, myrcenol, and mugol. We will add among others tetrahydromyrcenyl actate, similar to dihydromyrcenol, but with a somewhat duller note that is sometimes better in alcoholic perfumery.

Ocimenol has a strong, radiant, lemon and, above all, lime character which serves excellently to fix all the products of the family, without diminishing them, as well as for the products called Lemon and Lime, for gels and shampoos.

The so-called *Pseudo Linalol,* with an odor more sour and peppery than linalol, but of uncommon characteristics, has grand effects, but it is not well known.

Miraldyl acetate carries a fresh, sweet, floral, rose and muguet odor, of great diffusion and with personalizing and harmonizing effects.

Let us finish the subgroup with the hexile salycilate and the cis-3-hexenile salycilate notes.

Neroli-florals are characterized by many products among which we will mention the so-called *Dihydrofloralate,* methyl-tymil-ether, with mandarine-citric overtones, the so-called *Nerone,* an old and little used product, and cis-3-hexenile anthranilate, with a very personal odor. I mentioned four Rose-florals with the classic rose alcohols in Part I which because of their quality deserve to be mentioned again: Rose oxide, nerol oxide, p-menthen-9-al and Rose furane. The four are different, but have equally good effects.

Rose oxide is used a lot, as is Nerol oxide, with rather petitgrain effects. On the other hand, Rose furane and p-Methen-9-al, are completely forgotten, but they will be very important in the future. Blends of Rose furane with damascenone and damascone are completely new. They are aromatics that can't be defined, because they affect the creativity of each person in a different way.

Dimethyl-octandiol has a smooth note that fixes the previous products very well. I am going to mention the base *Rosaltone,* which brings about an extraordinary blend of this aromatic with the four previously mentioned, as well as with others. It is something brand new. Dimethyl octandiol is in an outstanding base used worldwide in an accord with Veloutone, Tripal, methyl-propyl oxathian and isopirene.

Let us finish with this family by mentioning, among others, the so-called *Pivarose,* also called *Centifolyl, Anatolyl,* a few tiglates, methyl geraniate and benzyl cyanide of unsuspected effects in combination with ethyl decadieonate, cis-jasmone lactone and other lactones.

Jasmine florals have been the most revolutionary base in the developing technology of perfumery in the last decade, and so it will continue, since there are many innovations and research continues to offer some true gems to us perfumers.

We had mentioned methyl dihydrojasmonate or Hedione as the precursor of modern perfumery, and I want to make it clear that this product hasn't seen yet the end of its possible uses. Curiously, 98% of its uses are between 3% and 7%. I ask myself, why not apply it in greater doses of 12, 15, 20 or 25% where the characteristics would change radically, thereby making of this aromatic not only a volume-influencing element, but also one of the best fixing agents that we know, and very elegant too.

Within this family we are going to mention pentylcyclopentenone, called *Delphone,* with a strong, diffusive odor, with a deep jasmine note within the group of the jasmones, and like them, it has a spicy, celery note, and a fruity note a little like pear.

It combines well with the lavender notes, strengthening them, giving them a very original top note. Its blends with methyl-heptadienone are good. It makes very original blends with the products already-mentioned, with cis-3-hexenyl angelate, ethyl decadienoate, cis-jasmone lactone, cis-3-hexenyl salycilate, and decalactones.

Decalinol actate, a very old but little exploited product, is capable of radically modifying the jasmine-florals, as we can see in the perfume Zen de Shiseido.

Cis-jasmone, dihydrojasmone, and other derivates have effects like those described with Delphone.

The so-called *Jasmospezia,* of similar effects, but with a floral enhancing and spicy power, has marked effects and is much more voluminous than the other aromatics.

We could call cis-jasmone lactone, of quality, warmth, smoothness and depth, one of the unexplored gems of our trade. Its overtones are infinite, and there is no end to its ability to combine. Its blends with methyl jasmonate, Jasmolactone,

cis-3-hexenile, salycilate, delta-decalactone, cis-jasmone, Delphone, ethyl decadienoate and Ourtivert are so beautiful that they could well mark one of the roads that I see for the near future. I believe that these aromatics would be worthy of interest in the most rigorous extracts and as far as I'm concerned, the road that I see ahead in feminine perfumery goes in this direction in the 1980s. Their originality, quality, and high grade of sophistication, without detracting in any way from the classical beauty, will make these aromatics the rulers of the 1980s together with the so-called rose cetones, Damascones and Beta-damascenone.

The so-called *Jasmolactone*, is an isomer of the true lactone present in the Absolute of Jasmine, which is cis-2-pentenyl pentanolide. Jasmolactone, the trans isomer is similar but does not have as much quality. It is more fruity than cis-jasmone lactone, and less than the true jasmine lactone, present in the natural product, also with effects different from those of dodecadiene-4-olide, lactone, present in the absolute of jasmine and mainly in the absolute of tuberose and called *Tuberolactone*.

The so-called *Methyl jasmonate*, floral, expansive, radiant, of enormous persistence and elegance reproduces the most noble aspect of the Absolute of Jasmine. It has a more greasy note, less indefinite, more characteristic and more marked than methyl dihydrojasmonate or Hedione. If a clear road can be seen in floral, liquid perfumery, it will be paved by this compound, together with the already mentioned jasmine elements. I believe this compound will be the new standard, and the same success that was created with Hedione will once again surely be created with more perfumed and greasy notes, of great quality, where Methyl jasmonate will blend and harmonize the whole composition. I see this line for the coming year.

Let us finish the family with alpha-hexyl-gamma-butirolactone, which has been belittled by many, when it is one of the existing aromatics most like the cis-3-hexenyl-gamma-butirolactone, present in the natural absolute.

Within the floral-metallics we have *Rosalva, Roseate, Ambronate* and the acetates, formate, propionate and isobutyrate of Verdile, creators of bases in detergents as important as the so-called *Patinol* and the carbinols, like centifol, and others with smooth effects of great beauty.

Within the fruity-florals is trimethylpentyl-cyclopentanone, called *Veloutone*, with a profound, smooth, floral note, which combines with a large number of diverse notes. Its blends with Hedione, Vertofix Coeur, Decatone, Cedralone,

and what we call MPC acetate are excellent.

Methylcyclopentenyl acetate, called *Cyclopidene,* makes for important floral notes, and creates great bases. Although it is a repetition, let us mention some aromatics of universal importance, the regal products of the subgroup: alpha-damascone isodamascone, beta-damascenone and trans-delta-damascone. With the marketing of Nahema by Guerlain, among other European and American products, the prediction I made in part I that they would have an impact on perfumery has largely come true.

From my point of view, beta-damascenone, isodamascone and trans-delta-damascone constituted an odor group in which beta-damascenone is clearly the superior because of its unequaled beauty, its evanescent, sophisticated and difficult-to-catalogue note, and for its radiance. Its effects will be more important, but only the good perfumers will know how to use this exciting aromatic as it should be used.

Alpha-damascone, the most fruity and perhaps most metallic of the family, is also the most difficult to use. It enhances and gives a diffusion to floral blends, but its effect is also extraordinarily great with woody, amber, masculine notes, where it modifies extraordinarily the essence of cistus, and blends very well with tagette, angelica and others. We have masterful applications.

The animal-florals, important in traces, acting as good modifiers, are, among others: the so-called *Campal,* p-Cresyl-isobutirate and p-Cresyl-isovalerianate, p-Cresol, *Indonal* and Cresol.

More radiant and diffusive in another fashion, we have: 6, 7-dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone, called *Cashmerán*. The note is difficult to classify, and I put it here without being sure. It might be better with the radiants, whose limits are rather vague. It is a strong, floral, musky product of great diffusion and personality, which, together with some isomers such as Cashmerán "O" are being completely assimilated into perfumery. Its note combines very well with green grass, as well as with the derivatives of cis-3-hexenol and Triplal, and also with such blends like amber, floral, coiraceous, and woody and especially with Allyl-amyl glycolate, which it enhances, producing a radiance. These products have been widely used in perfumery, as in the perfumes Alliage, Aramis Devin, Polo and Pour-Femme by Jean Louis Scherrer, which is a classic evolution of great beauty. It is a perfume with a coiraceous, resinous, woody, floral green note. The green note is given by the Essence of Gálbanum, Triplal, Stiralyl acetate, enhanced by Cashmerán and with a floral note given by traces of jasmine, a lot of rose, with fresh notes of citronelyl and geranyl acetates, enhanced by rose oxide, and a good dose of gamma methylionone, with a strong Patchouly base, with vetyver, sandalwood, ciste and costus, isobutylquinoleine, as well as notes of phenylacetic aldehyde, helional, a lot of Hedione with resinous and and intense notes.

It is interesting to note the effects of Cashmerán with subtle fruity chemicals like ethyl levulinate and allyl caproate with blends of methyl nicotinate, myrrh resinoide, absolute Maté, etc.

Let us finish the floral family with muguet notes, with the classic products like hydroxycitronellal, and with those already mentioned in Part I such as Oncinal, Mayol, Lilial, Cyclamen aldehyde, Bourgenal, Duplical. We will also mention pinoacetaldehyde and alpha-pinyl-isobutyraldehyde, of very fresh and somewhat pungent, muguet floral odors, recommended for modifying the notes of cologne since they are the freshest aromatics of this family.

Racinal, similar to the preceding ones, but more deeply floral, more woody and less harsh, with a floral character, combines extremely well with cassis and notes such menthon-thiol-8.

The whole family of oxyacetaldehydes, as well as the citronellyles, geranyles, octyles and phenylethyles are included.

The so-called *Maceal,* very little exploited, is of very great possibilities. 2,4-Hexadienol, called *Mimoril,* with a sweet, green, floral note, which blends excellently with Hedione, giving great volume to the compositions.

I wish to reaffirm my faith in the so-called *Oncidal* as one of the most extraordinary aromatics that exists. Its blends with jasmine and iris, together with the methylionones and woody notes, are of great quality.

Frutal Aromatics

As before, I will divide the Frutal family into the melon frutal and the various others. The melon frutals with products as extraordinary as the ones mentioned in Part I, such as cis-6-nonenol, Melonal, Floralozone, Helional, and the extraordinary Calone, have grown greatly, and I will also mention cis-6-nonenal and 8-nonenal, products of such an extraordinary strength that in a solution of one part per million they possess a smooth, melon odor. Used in traces, in solutions of 1%, they yield surprising effects which have already been applied in high class perfumery. The so-called *Ziblenia* and *Melol* bases are made with these products, giving an idea of what can be achieved. The capacity of these compounds to

modify is infinite, and they combine with almost all the notes, vivifying both the floral blends and the more fundamental animal notes. Its effects on other unsaturated aldehydes with a citric note are surprising.

Let us mention the methyl-cis-4-octonoate and ethyl-cis-4-octenoate as interesting and refreshing compounds, with notes reminiscent of pineapple.

I wish to insist that Helional and Calone, already described, are products of infinite quality, whose creative possibilities are likewise infinite.

The various frutal compounds have among them the following that I will mention rapidly. 4-Methyl-2-pentanol crotonate, called *Frutinat,* has a fruity note reminiscent of plum, and a little like the fruity part of Alpha-damascone without any of its radiant character. It is interesting as a modifier of perfumes, shampoos, bath gels and softeners.

The so-called *Emanol* is something like methyl cinnamate and the aldehyde C-16, (pseudo).

Finally, we will quickly mention the fruity-pineapple aromatics, very interesting in soaps, as in allyl heptilate, allyl-cyclo-hexilepropionate and allyl phenoxyacetate. Let us underline the role of the so-called *Frambinon* Cryst, and Frambinon methyl ether, within the raspberry-frutal note.

The Radiants

The family of the radiants encompasses the products already described, which I include here only because of their uncommon character of expansion and their very high quality. They are Hedione, methyl jasmonate, isodamascone, alpha-damascone, beta-damascone, beta-damascenone, what we call MCP Acetate, Cashmerán, Cashmerán "O" and the Irones, and of course the macrocyclic musks.

Green Aromatics

The last of the families that I will consider in this presentation is that of the greens, beginning with green grass, with the classic products like all the cis-3-hexenol esters, which I mentioned in Part I. The lactate and the angelate of that alcohol are also interesting. Other classics are Triplal, Verona and Ciclal, of the same composition but of different isomers.

Let us mention cis-4-hepten-2-ol, a little known green, and perhaps of more quality than cis-3-hexanol, with a similar note. The so-called *Verlastil* is another of the most precious notes of the family. Cis-3-hexenilemethylcarbonate is called *Liffaroma,* with a violet green grass note. Finally, from among so many others, let us finish with 2-ethoxy-thiazole and other sophisticated ones of the green family.

In the fresh-muguet-hyacinth-floral-green notes we have some classic products like phenylacetic aldehyde, phenoxycetic aldehyde, called *Cortex.* Without further elaboration we will include the new products, like *Profarnesal,* p-Isopropyl-hydratropaldehyde, p-methyl phenyl acetaldehyde, and also, p-Isopropyl-phenylacetaldehyde, with a green note of very special character, which is not found in many laboratories, but which is commonly used as a key compound in many bases. It is a green floral that I like very much because of its smoothness, and because of its capacity to combine with the lactones and the jasmine aromatics, which have such a bright future.

The so-called *Vernaldehyde* has a note reminiscent of Adoxal and profarnesal; and to finish the outline of the family we have, finally, formyltricyclodecane, a green note with strong, marked and modern effects.

The subgroup of the metallic-greens, with classic products like sec-butyl-methoxy-pyrazine, and the so-called *Ourtivert,* of revolutionary characteristics, also includes important innovations such as all the alkoxypyrazines, especially isopropylmethoxypyrazine, isobutylmethoxy-pyrazine, and isohexylmethoxypyrazine, the most persistent and interesting of the family, of a strength that renders it useful in solutions of only 1%.

Its importance among the greens is enormous, and without a doubt it is the best and the most famous of the pyrazines. Its use in the great perfumes, proves the statements. It has an intense metallic-green note, which is also used in detergent perfumes, with a capacity to modify every kind of formula, as great as that of cis-4-decenal, trans-4-decenal, 8-nonenal, and other more volatile pyrazines.

Another interesting metallic-green product is the so-called *Greenoxane* or *Firmaflore,* the names under which it is marketed. It has a remarkably strong herbal, green metallic odor, which yields a natural citric effect in the combinations where it has been studied, without having to add the essential citric oils. We have proof of this in the Vikä cologne by Lever, where it forms a blend with Dimethol, Triplal, Citronellol, all combined in a coiraceous-tobacco base of the Gamma-methylionone, isobutylquinoline. With polycyclic musk notes, this kind of blend is ideal for colognes of low graduation, where there is no terpene toleration. Clearly the services of Greenoxane are not limited to these. It has other interesting uses in soap and detergent perfumes.

Let us finish the subgroup with a mention of the so-called *Syvertal*, of effects like Greenoxane, like the octylic and decylic nitriles, and the myristic and dodecyclic nitriles.

We also have the ether greens, with products such as acetaldehyde, phenylethyl-alpha-propyl acetal, called *Acetal R, Resedafol, Vert de Capicine* or *Hyacinth Body n° 3*, and acetaldehyde phenyl ethyl-ethyl aceta, called *Acetal E, Effetal* or *Hyacinth Body*, that are very useful in shampoos, foam baths, soaps and detergents.

Let us mention β-phenylethyl ethyl ether, called *Rosacinthin* and beta-phenylethyl methyl ether called *Genistafol* or *Pandanol* present in Kewra absolute and incredibly appreciated by the Indian and Arab perfumery.

The subgroup of the marine-resinous-greens is very interesting, including campholenic aldehyde, and the so-called *Verbenone*, present in the essential oil of incense and juniperberries, with resinous-green notes, reminiscent of incense, and let it be known that there are indeed few aromatics with this kind of odor. They are the originators of bases such as *Incentsia, Vert d'Encens, Cuirencens, and Shiva.*

The so-called *Corps Racine*, a pyridine of green odor, has a strength and persistence so extraordinary as to make it something completely new. It gives the impression of an alkoxypyrazine, when you smell it for the first time, but it isn't as volatile as these, and has a persistence of months, greater, for example, than of alpha-santalol. Just like citronitrile, it serves to prolong the effects of voltatile products, without diminishing them at all. This compound is one that should form part of the basic repertory of the perfumer. It combines very well with undecatriene, allyl-amyl-glycolate, cyclo galbanate, and green-grass.

Let us finish now the subgroup with gamma-undecapyridine, an excellent note with a surprising odor, absolutely faithful to seaweed absolute. In the future, when it is better known, this compound will help the perfumers to impart the note of seaweed oil, since it is ten times less expensive than the natural product. There are several very important bases, created especially with this most excellent pyridine, such as the so-called *Marobase.*

Although the fruity-greens are very extensive, I am going to restrict myself to the so-called *Oxane*, with a chemical formula of 1,3-oxathian-2-methyl-2-propyl. It is an extremely strong compound, which has been identified as the important active element in the aromatic composition of the passionfruit, called Maracuyá in South America. And in other tropical fruits, such as

mango, guanabana, rambutan, mangostino, and others. It is acquiring an immense importance in perfumery. Its odor is strong, green, fruity and forms part of some very important bases, such as the so-called *Tamarine base, Cassis base, Citrofresh,* and others. Its effects are amazing both with grassy-green and with citrics, like Hedione, methyl jasmonate, Vertofix, Trimofix, Amberketal, Acetylthujopsene, Isospirane and others. Its blends with the unsaturated aldehydes, as well as with the bases created for these, are unsurpassable. With an acidity very much to the Mediterranean taste, the Maracuyá compound is absolutely stable in all mediums, something quite novel in this kind of chemical compound.

The closest related product is 3-methylthiohexanol, which certainly combines very well with it, and is perhaps more green, just like 3-methylthiohexenal, with a note closer to Aldehyde C-7. Methylthiohexenol is much more persistent than the Maracuyá compound.

Let us mention among so many others the so-called *Thiocineol,* stronger still, but with a clear grapefruit note. They have made some important bases with it, such the series called *Vert de Pamplemousse,* incorporating as well Thiolimonene, Thiogeraniol and Thio Terpineol.

Let us finish this most important subgroup with 8-mercapto-p-menthenone, called *Corps Casis,* and found in the absolute of Bourgeons de Cassis, as well as in the essential oil of Bucchu. It is ten times stronger than oxane and methylthiohexanol. It can replace the natural products mentioned and make reconstitutions of them, as well as create new notes full of originality.

The last classification that I want to cover in this part of my work is the citric-greens and I am going to mention, dimethyl cyclohexenylpentenone (DCHP), called *Neogall,* which has uncommon strength, used in 1% solutions, imparts a green note like that of undecatriene or allylamylglycolate, but with an equally important subnote that is deeply citric-mandarine-lemon, more natural and less metallic-aldehyde than that of the alkadienals twelve and thirteen. It also has a fruity pineapple shade. It yields new blends with the sinensals and 2-dococenal and 2-tridecenal, as well as with tridecen-2-nitrile, citronitrile, Agrunitrile and Citralva.

DCHP is one of those compounds that is influencing perfumery most. It is a key compound in bases as important as the so-called *Galbex* and *Galbania.* It combines excellently with the unsaturated aldehydes. 3-methylthiohexanol, Oxane, yielding a note that would be impossible to duplicate without it, as we see in *Tropicana base.* Its effects in Eaux Fraiches and in toiletries are exceptional, and I am sure it is going to profoundly influence the perfumery of the 1980s.

To finish with this sub-group, let us mention products such as allylamyl-glycolate, cyclogalbanate, and the so-called *Vertacetal.* These products are full of interest among a hundred or so others.

Creativity and Marketing

Now that we have finished this little exposition, which I hope has been of interest to the perfumers, I would like to make some remarks about the state of our profession. We have listened to a wealth of opinions about the concept creator-artist-perfumer, and most of these opinions have severely assailed the marketing industry for being the cause of the lack of creativity that we have recently witnessed.

I cannot fully share this opinion. I believe that the ideas that inspire marketing are essentially good ones. Marketing in itself is something positive, and if we made better use of it, it would without a doubt result in real progress. What is truly negative and fatal is the inability that we see in many circles to assimilate and apply its essentially good principles.

The kind of society in which we live is marked by an extreme materialism. Because it lacks a spiritual truth, it leads to disenchantment, frustration and insufficiency of ideals and dreams. If, in addition, this materialism is compounded by economic failure, the social consequences can be really serious.

In this context of general apathy, marketing comes upon the scene to promote a product. In general, in order for the product in question to be a success, the marketing people try to place it in an unreal environment. They try to sell illusion and they do it very well. Nevertheless, the product fails, or it doesn't have the desired success. Why? Because of ineptness, I think.

It is only natural for marketing to plan a way of promoting a product, to envelop it in dream and illusion, but first of all they must realize that if the product isn't good, everything they do will be in vain. High class perfumery is not an industrial product. It is something profoundly related to the most intimate anxieties of the consumer. These anxieties can only be calmed by a good dose of art, creativity and beauty.

Marketing in perfumery has debased the most sublime aspect of this profession. There are some sectors that have completely ignored the most important artistic and emotional values that belong to it, instead imposing inferior standards under the pretext that the consumer only wants mediocre products.

Suppliers

Acetal E—Givaudan
Acetal R—Givaudan
Acetomarane—Naarden
Agrunitril—Dragoco
Ambraketal (Captive)
alpha-Ambrinol—Firmenich
alpha-Ambrinol epoxide—Firmenich
Ambrinol epoxide—Firmenich
Ambronate—IFF
Amerinal—H&R
Anatolyl—RBD
Anisimal—IFF
Bacdanol—IFF
Bergamal—IFF
Boisambrene—Henkel
Boisambrene forte—Henkel
Brahmanol—Dragoco
Calarene epoxide—Dragoco
Campal—PPF
Canthoxal—IFF
Caryolan—Firmenich
Cashmeran—IFF
Cassis base—Firmenich
Cedramber—IFF
Centifolyl—RBD
Cetotabac—Rossyl
Citrofresh—Rossyl
Citronitrile—H&R
Coronal—IFF
Corps 53—Mane Fils
Corps Casis—Oril
Corps racine—H&R
Corps santal—Dragoco
Cortex—IFF
Cuirencens—Rossyl
Cyclopidene—Firmenich
Decatone—Givaudan
Delphone—Firmenich
Desoxide—Dragoco
Dimetol—Givaudan
Effetal—Naarden
Emanol—Naarden
Epitone—Naarden
Ethyl chrysanthemate—Stauffer Chemicals
Ethyl saffranate—Naarden
Felvinone—Naarden
Firmaflore—RBD
Florex—Firmenich
Folenox—Givaudan
Frambinon—Dragoco, IFF
Fruitinat—H&R
Galbania—Rossyl
Galbex—Firmenich
Genistafol—H&R
Geranic oxide—Dragoco
Greenoxane—Naarden
Herbacet No. 1—IFF
Heridon—Dragoco
Hyacinath body—IFF
Hyacinth body No. 3—IFF
Incentsia—Rossyl
Indolal—Dragoco
Irivone—Dragoco
Isocyclemone E—IFF
Isopentyrate—Firmenich
Jasambrette—Rossyl
Jasmolactone—Firmenich
Jasmospezia—Rossyl
Liffaroma—IFF
Lime oxide—Givaudan
Maceal—Naarden
Marobase—Rossyl
Melol—Rossyl
Methyl jasmonate—Firmenich
Methyl vetivate—Bedoukian
Mimoril—Oril
Mosquene—Givaudan
Muscacide (Captive)
Muscogene—Dragoco
Musk alpha—Norda
Muskalia—Dragoco
Muskia—Rossyl
Muskione—Rossyl
Myrental—IFF
Myrtenol—Dragoco
Neogall—Firmenich
Neomusk—Rossyl
Nerone—Givaudan
Novorosan—Dragoco
Ourtivert—Rossyl
Oxane—Firmenich
Oxaspirane—IFF
Oxyver—Rossyl
Pandanol—Givaudan
Patinol—PPF
Pineone—Givaudan
Pivarose—Naarden
Plicatone—Firmenich
Polywood—Firmenich
Profarnesal—H&R
Pseudo linalol—IFF
Racinal—Dragoco
Racinon—H&R
Resedafol—H&R
Rhodipol/C—IFF
Rholiate—Dragoco
Rosacinthin—H&R
Rosaltone—Rossyl
Rosalva—IFF
Roseate—IFF
Safranal—RBD
Sandalore—Givaudan
Sandel C (Captive)
Sandel G (Captive)
Shiva—Dragoco
Syvertal—IFF
Tachrysate—Naarden
Tamarine base—Firmenich
Thibetolide—Givaudan
Thiocineol—Dragoco
Trimenal—Firmenich
Trimofix—IFF
Tropicana base—Rossyl
Veloutone—Firmenich
Veltonal—Bedoukian
Verbenone—Dragoco
Verlastil—Oril
Vernaldehyde—Givaudan
Vert d' Encens—Rossyl
Vert de capicine—Firmenich
Vert de pamplemousse—Rossyl
Vertacetal—Dragoco
Vetocet—Rossyl
Vetycon—Dragoco
Vetyval—Dragoco
Vetyvertone—Naarden
Yrotil—Henkel
Ziblenia—Firmenich

If our society is not able to surround itself with those of noble spirits who will elevate art and spirituality, at least in the fields of high class perfumery, we will have in store for us one of the greatest fiascoes ever known. The time has come to strengthen our noblest values. I do not mean by this that a good perfume can lead to absolute happiness; but I do mean that the day society demands art and true spiritual progress, our world will then be in a position to overcome all its problems.

Unfortunately, this is not what is happening. The perfumer is belittled by exclusionary policies, and is forced to use substandard substances, looking ultimately just for something to fill a pretty bottle: something that smells of Royal Ambrée for the top note, of Estivalia for the middle note, of Agua Brava for the bottom note, with a background of Aramis, Paco Rabanne or Yatagán. Of course, it should cost $20 a kilo, be good, have character and possess feeling, neither too vulgar nor too elegant.

I ask myself, if, in spite of so much progress, we have ever lived through an age of greater spiritual insecurity. It is precisely this sense of false progress that is leading us to the greatest of upheavals, because of the lack of something in which to believe.

Spiritual progress is the goal of every artist, and this is the road every good perfumer should take. It is beyond our control to change the road the profession has taken. What is in our power, though, is to keep ourselves free from that one-dimensional mediocrity. This effort to keep ourselves creative should characterize all our professional conduct. Are we going to have enough force to save our profession? It is the challenge of our future.

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