Perfumery: Evolution of Its Techniques—Part I

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Throughout my professional life I have placed all my enthusiasm, effort and vocation at the service of perfumery and of art. As I present my ideas, the fruit of study and reflexion, I hope to contribute to the enriching dialogue that has characterized these Perfumers' Conventions for more than five years.

Perfumery has evolved and is evolving. But this evolution doesn't mean in any way a break with the past. I don't think that the perfumery of today is better or worse than it was before. The science continues, and those who work in this field continue to strive.

We are enriched by the experience that the perfumers of the past have handed down to us. The mystery that they have enclosed in their fantastic perfumes is like a part of them that will never die. Who hasn't, when studying their perfumes, been impressed by the character of these great people of the past.

The present state of the science comes about by our effort, by a study of these perfumers and their work. By assimilating the experience of the great classics, and by their mastery of the basic new elements at their disposal, new generations of perfumers create this present state, and provide examples for the future.

We can't be concerned here with why it evolves. All the arts evolve, and perfumery can't be any different.

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Neither can we analyze such things as talent, which is innate, or effort which relates to one's sense of vocation or commitment or will power.

The products of natural origin still serve the perfumer very well, and although the tendency to use them on a large scale is diminishing, high class perfumery can't do without them. In recent years the number of natural products has not increased noticeably, since we continue to use practically the same ones. The chief evolution in this field has been determined by the market supply of essential oils and absolutes, which come mainly from African plantations, as they are not profitable to produce in Europe.

The use of these natural products has decreased due to a series of factors, chiefly the excessive rise in prices and the remarkable reconstitutions we now enjoy, some of which are excellent.

We have achieved good reconstitutions of ambergris, and of the essential oils of ambrette, angelica roots, bergamot, cascarilla, costus, geranium, pepper , rose, and ylang-ylang, and of the absolutes of cassie, fleurs d'oranger, orris, hyacynth, jonquil, jasmine, rose, broom and tuberose among others.

It should be noted that at one time the reconstitutions were made in a completely artificial way, but more and more we achieve more perfect scientific results with the noticeable increase of identified and synthesized definite chemical aromatics. Nevertheless, it is important to indicate that the majority of the components are not usually very important, as far as the typical character of the essential oils is concerned. Research is long and complex in order to achieve a good reconstitution.

Innovations in the sector of natural products are few and far between. Among them, though, are the absolute and essential oils of sea weed, bucchu, boldo, eriocephalea, lanyana, marigold, hops, ouhout, river plant, tagétte, American fir, etc. We should point out that most of the new natural products, if we exclude perhaps the sea weed, marigold and tagétte, and American fir balsam, have been commercial failures.

What have determined and still determine the creativity and the innovation in perfumery are the definite chemical aromatics. This statement is not only true today where there are so many substances of great beauty. It was true in the past. Due to the discovery of products like coumarin, vanillin, ethyl vanillin, heliotropin, anisic aldehyde, benzyl acetate, terpineol, phenylethyl alcohol, indole, linalol, linalyl acetate, amyl salicylate, the ionones, the methyl ionones and the nitro musks, the beginning of this century was indeed revolutionary. These products put their seal on an age of perfumery.

It is in feminine perfumery that we can see samples of the innovations that came to light due to these discoveries: Fougère Royal by Houbigant, Jicky by Guerlain, Trèfle Incarnat by Piver, L'Origan by Coty, Habanita by Molinard, and many others.

Little by little new substances were discovered, such as most of the aliphatic aldehydes, methyl heptincarbonate, hydroxy-citronellal, alpha-amylcinnamic aldehyde, quinolines or undecalactone, a line which made possible the appearance of such perfumes as Chanel No. 5, Mitsouko by Guerlain, Arpége by Lanvin, Je reviens by Worth, and others like Replique by Raphael, Ma griffe by Carven, Miss Dior by Dior, Cabochad by Gres, Femme by Rochas, Caleche by Hermès or Fidji by Laroche.

All these substances revolutionized perfumery and its accepted notions in such a way that it is safe to say that with them at the dawn of this century perfumery as we know it today was born. The present development is and will be determined by other chemical substances of more recent discovery, but the type of formulation hasn't changed.

Since the marketing of Fougére Royal in 1882, the development has been spectacular. It has passed through different stages, for example, the vanillin period, the ethyl-vanillin period, the undecalactone and the quinoline periods. This has brought us to the present period, which in female perfumery and to a large extent masculine perfumery is called the methyl-dihydro-jasmonate period or the Hedione period. The magnificent creation of Mr. Edmond Roudnitzka, which was marketed under the name of Eau Sauvage, was the beginning of the present period.

Nevertheless, although this is perhaps the most notable product of the present day, it is not the only one. Research in recent years has been extraordinarily fruitful and it has provided us with some things of uncommon value.

But it is necessary to know how to select the really interesting things. Nothing would be more fatal for the perfumer than to be without a sense of judgment when it comes to choosing the new elements to develop a work.

I would like in the simplest way possible to classify the products that I consider interesting into family groups. We will talk only about the commercial aromatics; otherwise, it would take us too far afield.

Since I am interested in a practical division, one that will be easily understood, I will list the following families or groups without aiming for anything like academic perfection.

—Agrestical: Characterized by minty, camphor, herbaceous-lavender, earthy and leguminous-citronellic notes.

—Aldehydes: Although all aldehydes have a special scent, and some there are that don't even smell of "aldehyde", I have to mention some products in this category, since it is very well defined among perfumers.

—Woody: of pungent characteristics (patchouli, cedar, vetiver) santalaceous (sandalwood) and lichenous (oak moss).

—Animals: with musk, amber, coiraceous-castoreum and fecal notes.

—Balsams: with vanillic, resinous and coumarinic notes.

—Citrics: Characterized by lemon, orange, tangerine, lime and the citric part of bergamot which is not linalyl acetate.

—Spicy: These form a definite family if we look at them from the perfumer's point of view.

—Florals: Which will include the notes of the herbaceous flowers, rose, jasmine, carnation, lily of the valley (muguet), and the flowery wood (violet).

—Fruity: with a scent like melon, etc.

—Radiants.

—Greens: which include the properties of grass, flowering greens, metal greens, fruit greens, resinous and violet greens.

—Roots: These properties are difficult to classify. In some cases they can have wild notes; in others, woody; and in others, empyreumatic notes.

I could list other families, but I won't, since they don't fall under the products I wish to describe.

Agresticals

Within the families of the agrestical, I will speak only about the herbaceous-lavenders and the leguminous citronellic notes.

Agrestical Herbaceous-Lavenders: We had some classic products like the linalyl and the terpenyl acetates, but there are some important innovations that we can cite. *Myrcenile, ocymenile and citrile acetates,* with fresh scents, somewhat grassy, almost like the citric part of bergamot are of great interest. *Thuione* has a warm scent, herbaceous, which falls under the subgroup of the camphors.

Linalol oxide, with its somewhat over-sweet scent and earthy, has a scent like spice lavender oil and other wild plants.

Trimethyl cyclohexyl acetate has a clear scent of lavendin—sweet and mentholated. The so-called *methyl lavender ketone,* with a very intense smell, something like mushroom, is of great use in the fixing process of the fougère and lavender, floral-woody notes.

Finally we could mention *lavandoulol* and *lavandulyl acetate, octen-1-ol-3* and *octen-1-ol-3-acetate, methyl dioxaspiro undecane,* marketed under the name of Hersage, dihydroterpenyl or menthanyl, and nopyl acetates. These are interesting among the countless substances that one finds in this group.

Within the family of the agrestical, subgroup of leguminous-citronnellic notes whose classic product is citronnellal we can mention several. *Trimethylhexanal,* with a potent dry, grassy smell could be classified in the "aldehydic" family. It would fall somewhere between citronnel-

lal and aldehyde C.8.

Citronnellic acid has a very long lasting grass smell. It is used in fixing floral, woody and geranic notes.

Tetrahydrocitral, with a very powerful lemon character, is very useful in stressing citric top notes. *Geranic acid* is related to citronnellic acid but finer with very nice shades of the back notes of geranium and rose oils.

Pellargonic acid incredibly has a note similar to citronnellic acid but a little bit more dirty and is extremely useful because of its low price.

Some nitriles such as *geranyl nitrile* have surprising results in soaps and detergents, in imparting the character of lemon freshness. Geranyl nitrile is becoming a chemical widely used in all fields of our profession.

Aldehydes

Within the family of aldehydes where we already had the aliphatic aldehydes C.7,C.8,C.9,C.10,C.11,C.12 L., and C.12 MNA, we are going to mention those that are more and more important in perfumery.

We have the forgotten *aldehyde C.13 or n-tridecanal* which is present in important bases and is perhaps one of the chemicals more untested. It blends excellently with the floral parts of sandalwood oil and vetiveryl acetate creating accords full of beauty. I've worked a lot with this chemical but to describe it could fill an entire volume.

Cis-4-Heptenal, with an extremely potent scent, when greatly diluted yields a fresh, creamy character. It should be emphasized that this product, together with rose oxide, ocimene epoxide, beta-damascenone and other important aromatics is what gives the peculiar character to one of the specialities that at present is being marketed everywhere.

Trans-2-heptenal, with a fresh, pungent, vegetable-like odor has interesting characteristics when combined with the essential oil of galbanum, geranium and gives special green notes accorded with some pyrazines, specially isohexyl methoxy pyrazine.

Trans-2-nonenal is of a greasy, orris-like, extremely powerful character. It forms the base of some internationally famous products. *9-Decenal* is something like undecylenic aldehyde. *Trans-2-decenal* has an orange, citric scent, very diffusive. *Trans-2-undecenal* is of a lemon-like characteristic. *Trans-2-dodecenal* has a very strong tangerine scent. It forms the base of very important specialties like mandarin aldehyde and bigaradial.

Trans-2-tridecenal has similar although more interesting qualities. The so-called *citrodial* is of an unusual potency and when extremely diluted, yields the novel quality of musk citrus and fruit, all combined.

And other products like the so-called *Myrac Aldehyde,* with its greasy, citric, flowery scent, something like lauric aldehyde or the *citronnellyl* and *geranyl oxyacetaldehydes,* have interesting metallic flowery notes.

We should indicate that if aliphatic aldehydes are interesting, the 2-alkenals already described are at least the same or even more. Personally I believe a time will come when these unsaturated aldehydes will be indispensable. As a matter of fact some specialities such as mandarin aldehyde, bigaradial, citrophore, citrodial and iranal are proving what I say.

Woody Products

Among the woody family, the classic products were cedryl and vetiveryl acetates, vetiverol, cedrol and others. In this field the research has been and still is, so extensive that it is almost impossible in such a short span of time to summarize the innovations that have taken place over the last few years.

It is difficult for the woody chemical aromatics to have a sharply defined characteristic smell if we consider the separate woody essential oils. It is for this reason that under the name of pungent woody substances, I include the products that exhibit shades of cedarwood, patchouli and vetiver oils in their scent.

Pungent Woody. Cyclododecyl methyl ether, called palisandin, has an odor of cedarwood and musk with undertones of ambrette seed oil. *Cyclododecyl ethyl ether* is closer to vetiver oil and more interesting than the aforementioned. *Cyclododecyl methyl allyl ether* of the three is the closest to vetiver.

Methyl cyclododecyl methyl ether, called Madrox, in my opinion is less interesting than the preceding ones. It has shades of musk and amber.

Alpha-cedrene epoxide approximates to a part of the precious dry characteristics of patchouli oil.

Methyl cedryl ketone commercially is referred to as Vertofix. Although one can see many products on the market that have a warm aroma of precious wood suggestive of musk, this is a product of great value, a classic aromatic, both in industrial and in high class perfumery. Its only defect is a lack of vitality which the experienced perfumer knows how to correct. It blends well

with the other woody products that we mentioned, with the irones, the methylionones and the ionones, especially with allyl ionone or isopropylionone being the key of important bases. The combination of Vertofix, methylionone, allyl ionone and cedrenes has produced one of the most well known bases that exists in this woody family.

What is called *Mahagonate* comes close to some shades present in patchouli oil and possesses some subcharacteristics of the spices and some of the flowers. It's a shame that the product doesn't have a little more strength.

Cedryl methyl ether, called Cedramber is extraordinary and has a bright quality between amber and patchouli. This is one of my favourite aromatics, and it can be used in luxury perfumery as well as to give vitality to the qualities of Vertofix, as in functional perfumery, where it confers an uncommon character and fixes marvellously well the floral-aldehydic notes of undecylenic and cyclamen aldehydes, lilial, lyral and others.

Isolongifolanone and *isolongifolanyl acetate* are strong fresh and radiant products of an immense olfactory value. These two fragrances are absolutely necessary in the perfumer's choice of materials, since they give an exceptional vitality to combinations. Besides playing a role in the basic note of the perfume they also give character to the top note.

What is called *Timberol* is another one of the gems that we possess, which cannot be defined unless we heighten our artistic sensibilities. A radiant, dusty product of the woody family, it harmonizes well with everything it brings and gives character, elegance and class to the composition, along with some well-known musk chemicals.

The scent of *tetra methyl tricyclo undecane epoxide*, commercialized under the name of Romanal, reminds one of some back note of some agrestical oils such as rosemary and lavender. I mean the woody back smell of these odors as being dry and slightly camphoraceous.

The so-called *patchouli epoxide* is not widely marketed. Present in the patchouli oil it has completely revolutionary woody characteristics. It is absent in 99% of all laboratories.

Trimethylcyclodecatriene epoxide, called Cedroxide, has a powdery note, intensely woody, very delicate strong and long lasting.

What is called *Rhubofix* has a very particular fresh, woody and spicy note which is found in important parts of the odor of vetiver oil and influences the character of a perfume.

Octahydrotetramethylnaphtalene, marketed under the name of Iso E Super, is present in many of the masculine and feminine perfumes known worldwide. It gives a woody character with some important "velvet" shades. It is brilliant and harmonizes with all kinds of notes, especially the coiraceous-quinolines, amber and castoreum.

Let me mention finally what is called *Maderol* or *Boisomiel* whose aroma imparts a strong character of wood and honey in small dosages of about 1 to 2% in a perfume.

I have mentioned only some of these products, all of them very important although there are many others.

In the woody family subgroup of *sandalwood* odors we will mention the well known *hydroxy tridecyl tricyclo tridecane* so called Sandela, Santalex TNK, Sandeol, or Sandenol, commercial products which are mixtures of stereoisomers. They impart an odor of sandalwood which is related to alpha-santalol and develops slowly upon evaporation.

What commercially is called Santalol are enriched high boiling fractions of sandalwood oil and mainly mixtures of alpha-santalol, bergamottol, cis-beta-santalol etc. whose extreme delicacy confers an elegance only possible in products of high class perfumery.

Sandalwood notes are confused among many perfumers. In my opinion only two are the valuable notes of the exotic oil. The first one is a very strong milky oriental note which is imparted mainly by bergamottol, and the second is a floral-radiant one which is extremely valuable imparted mainly by cis-beta-santalol. These are the most important chemicals in the natural oils. Alpha-santalol has a more weak, less floral and more resinous odor related to sandela and in my opinion its value is more as a fixative than olfactory.

The woody family, subgroup of *lichenous* notes have few developments, the most important of all is the so-called *Evernyl, Mousse Metra or Veramoss*. It is a product of universal use in high class perfumery as well as in functional perfumery. Essentially we can recall the cases of Calandre or Polo. The odor is noticeable in very small quantities.

Animal Products

The family of the animal products is perhaps the one that has been the cause of the greatest beauty for the chemical aromatics. I will speak only of the amber and musk chemicals.

Amber must be mentioned as one of the most important aromatics, which is absolutely necessary to be familiar with, although, if we wanted a

complete list it would require a special lecture for it.

We have *methyl dodecahydro trimethyl naphto furan* so-called Ambrox or Ambroxan. Of all the surprising products that exist, this one perhaps incorporates the most beauty. It has been identified as one of the most noble ingredients of natural ambergris and it imparts an outstanding, extremely powerful, radiant note typical of amber. It is universally used either directly or in a form of bases which include it as the well-known Fixateur 404.

Ethyl dodecahydro trimethyl naphto furan, whose stereoisomers are marketed under the name of Grisalva, has characteristics similar to the aforementioned, although is weaker and in my opinion it has a somewhat synthetic undertone.

Homo cyclo geraniol imparts the so often sought after marine metalic note of natural ambergris tincture.

The so-called *Ambrarome absolute* is a special blend of cistus-labdanum absolute with strong and fecal animal notes. It is widely used and forms part of incredibly beautiful bases of great elegance such as the so-called Fixomusc and Ambrophore.

What is called *Dynamone* employs some bases made with this product such as Ambrogène, Grisambrène or Grisambria. This is a product which is formed by the high boiling fractions of cistus-labdanum oils and is extremely long lasting.

Musk Chemicals

The musk chemicals will be divided into three degrees of quality. In the first I will include Muscone, Exaltone Exaltolide, Civettone and Ambrettolide.

Methylcyclopentadecanone, so-called Muscone, is the chemical aromatic present in natural musk, and it has a smooth, brilliant aroma, not overly animal-like and very beautiful. It is perceptable in very small amounts and its fixation is so extreme that it seems incredible. Although it doesn't substitute completely for the natural product, it is equal to it on the lasting properties. We can consider it outstanding and it imparts a great elegance. It is the main ingredient of the well known base Musk Tonkin reconstituted, a product of a great beauty, more animalic than muscone.

Cyclopentadecanone, so-called Exaltone, has a warm aroma that equals or in the opinion of some, surpasses Muscone. Personally I would say that it is as good as muscone, but it is different. The powerful musk odor is more animal-like than muscone but the fixation capacity is the same. It is one of the most beautiful chemicals we have.

Cyclopentadecanolide, so-called Exaltolide, is also well known by other names. It is a product with a musk, animal-like odor with an extremely uniform fixation. It should be emphasized that according to statistical data obtained on a certain occasion, there exist people who don't smell any of these substances.

Although Exaltolide is widely used and is an excellent chemical, I prefer the above described chemical as the most beautiful in the musky family. Exaltolide is not as deep a musky note as the other.

Cycloheptadecen-9-one, so-called Civettone, is a more musky product than many others although it is present in civet absolute, and it imparts an elegance difficult to describe, which sets high class perfumery apart from all the others.

Cyclohexadecen-7-olide, commercially called Ambrettolide or Moschus Lacton, is another of the best chemicals we have. It is present in excellent perfumes such as Fidji or Oscar de la Renta pour femme.

All of these chemicals amplify the odor of the perfume and if the cost makes it possible I prefer mixtures of both in all high class perfumes because by using them all together, the radiation is even more beautiful and perceptible for more people. They could all be listed in the family of the radiants but because the deserved respect of the time-honored musk deer tincture and the thorough animal-like note of some of them, I have included them here. I will form the second group of musky chemicals with the following ones. *10-Oxadecanolide,* so-called oxalide, has a smooth note completely musky, whose odor has a great quality, although it doesn't match the ones of the previous group. *11-Oxahexadecanolide,* so-called Musk R-1, has an excellent musk odor with shades of ambrette seed absolute. *12-Oxahexadecanolide,* so-called Hibiscolide, has a clean, musky odor.

These chemicals have a quality much better than those of the third group which consists of *Galaxolide, Traseolide, Tonalide, Ethylen Brassilate and Musk D.T.I.* All these chemical aromatics have musky odors, perhaps less smooth than the preceding ones, but they impart an excellent odor to masculine as well as feminine perfumes and they give cleanliness and substantivity to functional perfumery.

We should emphasize the importance of the last chemicals whose relatively cheap price make their uses possible at a level of 10 and 12% in compounds. In general the musky products of these

three groups enhance, homogenize, enrich and fix the perfumes. They exert an influence over the other components which is just as important as their own odor.

Balsams

In the balsamic family where the classic components are vanillin, ethyl vanillin and coumarin, there are few innovations. Let me mention the derivatives of coumarin like *hexa hydrocoumarin, octahydrocoumarin* and other lactones like *gamma-hepta and octalactones.*

Among the resinous ones let me mention *oximene,* but I will have something more to say in the very important chapter on the resinous greens.

Citrics

The citric family is full of new things. We have already mentioned some of these in the aldehyde group. Let's emphasize *trans-2-dodecenal* and *trans-2-tridecenal,* which I have already described.

Alpha-sinensal, present in orange, and mandarin, has a capital interest for the perfumer who seeks creativity in any formulations. It is one of the best citric chemicals that we have.

2,6 Dodecadienal has a deep citric odor, the clearest of all the ones mentioned. The citric odor of mandarin-orange produces effects more natural perhaps than that of 2-Dodecenal, which is more metalic.

The so-called *Nootkatone,* a compound present in the essential oils of lemon, orange, grapefruit and mandarin then is important in the formulation of citric back notes. This one and the other products mentioned, although they can be considered as fixatives, influence and modify the compound as it emerges.

To conclude, let's mention some bases, such as *mandarin aldehyde,* and *bigaradial,* which are interesting products.

Spicy Products

The spicy family, whose classic products are eugenol, methyleugenol, cinnamic aldehyde, cuminic aldehyde and others, has a few innovations that we can mention. The so-called *livescone* and *dihydrolivescone,* with a strong odor, reminds one of the note of the essential oils of celery and levistico. This product is important in the amber, woody, chypre, and oriental perfumes, where it imparts a special, new character.

Dihydrocuminic aldehyde or *perilla,* with a fresh, spicy note, is not exploited by the perfumers and in my judgment is interesting. *Cinnamil nitrile* has a clear odor of cinnamon, much more stable than cinnamic aldehyde.

To finish, let us mention the so-called *Sigaride* and *Sylvestone*—one develops a spicy, tobacco note, and the other brings to mind the spicy cuminic note. They are products whose study could prove very interesting.

Florals

The floral family contains some very important innovations. Let us divide it into the herbaceous florals, rose, jasmine, carnation, muguet, and violet. It should be noted that the flowers such as hyacinth, reseda and gardenia are to be classified as floral-green.

The *herbaceous florals,* whose chief compounds is linalol, have been developed.

Let us mention *dimethylheptanol,* called Dimetol, which has a sweet, fresh, herbaceous, floral odor, that smooths the top note of perfumes that are too harsh. It has an important use in high class perfumes but also in soaps and detergents, where it reinforces the top note. The blend of Dimetol, adoxal, lilial, maderol, and ambrox is very interesting.

Tetrahydrolinalol, tetrahydromyrcenol, and *myrcenol* are very interesting products in detergents and fabric softeners since they reinforce the floral notes and modify them in a very modern way.

Alo-ocymenol, called Muguol, is perhaps more floral and less herbaceous-citric than the previous ones, but it too has very good effects. Its stability is poor in some media.

Let us mention especially *dihydromyrcenol,* which strongly imparts a fresh-lime-citric-herbaceous-floral note, very interesting in florals of all types. It blends extraordinarily well with Triplal, Isocyclocitral and Adoxal.

The rose florals have been augmented with various products destined to influence greatly the perfumery of the future. Rose oxide, nerol oxide, the so-called rose furan and p-menten-9-al all have been identified in the essential oil of Bulgarian rose. The first two impart a geranium-rose character, while the last two have a lemon-rose odor.

Rose oxide is another one of the aromatic compounds of great beauty. Its use in high quality perfumes is evident, and it imparts a diffusive, metalic rose note of great aromatic value. It vitalizes intensely all the floral and aldehyde notes. Its odor is inspiring every kind of perfume, and within its rose note it holds a kind of mystery that it is impossible for me to describe.

Nerol oxide is something like rose oxide, but less rosy and more pyrazinic. The odor it gives off is more like hyacinth-honeysuckle. It is less dif-

fusive and has more body than the preceding.

Rose furan and p-menthen-9-al have a very potent odor of lemon-rose, characteristic of certain shades of the Bulgarian rose oil, to which these shades are imparted. They are new products, which, indeed, are going to be important in the creativity of the future. I believe that these four products should form part of the repertoire of many perfumers.

Within the jasmine florals group I would like to describe six products of great interest: dihydrojasmone, cis-jasmone, cis-jasmone lactone, jasmo lactone, methyl-dihydrojasmonate, and the so-called Jessate.

Dihydrojasmone has a warm, frutal odor, somewhat waxy, which imparts a naturalness to every kind of floral perfume. *Cis-jasmone* has a warm, spicy, frutal odor that harmonizes to an extreme with products such as Helional, imparting an excellent freshness and naturalness. *Cis-jasmone lactone* has a greasy, floral note of such a quality that perhaps we could include it within the ten aromatics of greatest beauty.

Jasmo-lactone has a greasy, floral, frutal odor, with notes typical of the jasmine petals. It is also important as an aromatic compound, as it modifies in a substantial way the fruity, floral bases.

Methyl dihydrojasmonate, called Hedione, is the compound which without a doubt has most influenced modern perfumery, and has allowed the great artists to develop their ideas with inspiration. It was used for the first time in Eau Sauvage and in Diorissimo and it has become famous because it gives to compositions a delicate, fresh, smooth radiant, warm, elegant character that blends well with all kinds of perfumes from the floral-citrics to the woody, chypre and oriental.

I want to repeat that this chemical has put its seal with such force on the present, that perfumery has finally come into its era; perhaps in all of history there have only been a few chemicals that have exerted such an influence in so many ways; and if we exclude vanillin, ethyl vanillin, and coumarin, which are the key of the opoponax bases, it is safe to say that this chemical has created its period of influence.

Hedione has by no means been exploited, and I am sure that it will continue to be used for a long time as an absolutely necessary element in our elaborations.

The so-called *Jessate* is the last chemical in this group that I wish to mention and it is interesting because it imparts a thoroughly smooth jasmine note which is very economical.

Among the carnation florals I am going to mention some chemicals which although spicy

have a strong floral character.

Dimethyloctadienilacetal or acetaldehyde, called commercially Elintaal, is something exciting and its odor of countless shades gives absolutely original blends when it is mixed with floral notes.

Let us mention also the so-called *Dianthox,* which is perhaps the clearest spicy-floral product of the present, with an odor that very faithfully reproduces several important aspects of the carnation flower, as well as the chemical called *Carnotheme.*

Within the features of lily of the valley and muguet we will include *trimethylundecadienal,* called Oncidal, which is another extraordinary aromatic, as much for the smoothness that it gives to compositions as for its superb olfactory quality.

Cis-dihydro shiseol, commercialized under the name of Mayol, is a somewhat grassy, smooth, floral odor which suggests the sensation of freshness that you feel when you smell flowers like muget and nard. It is a much more interestinga product than hydroxicitronellal, which also blends well with the floral and citric notes. The effects that are achieved when it is combined with hedione are very important. They give place to certain blends, full of beauty and naturalness.

Let us mention also some other more classical products, which have given rise to some spectacular results in the last few years, such as *lilial, lyral, cyclamen aldehyde, bourgenal,* and perhaps *dupical,* which of them all is the one that smells most profoundly of muguet.

Lilial and lyral are used in countless perfumes. Let us mention for example Eau Cendrée, Azzaro pour homme, Rabanne of Paco Rabanne, and Cialenga. The effect of products such as lilial, lyral, bourgeonal and dupical is very important in the field of detergents and toilet soaps, together with the so-called esters of verdol. All of these products are in their heyday.

The violet florals, which are determined by the ionones and the methylionones haven't changed very much, except for the extension of these same aromatics with products such as dimethylionone and others.

It is worthwhile to single out the extraordinary product in this group: *2,6-nonadienol.* Its odor is indescribable and its influence can be impressive in all kinds of notes.

Fruity Products

We will divide the fruity family, taking into account the products I want to mention among the melon-fruity and various other fruity notes. The melon-fruity are playing a decisive role in the current evolution of perfumery. Let us men-

tion *cis-6-nonenol,* with an absolutely natural and intense melon character, which could lead to important innovations in the future.

Moreover, *dimethyl heptenal,* called Melonal, has a very interesting fresh, tart odor of melon. It should be treated with care, since its effects are very intense. *Ethyl-alpha-dimethyl hydrocynamic aldehyde,* called Floralozone, has a character like lilial but much more fruity and less floral. It imparts an unusual body in perfumes for fabric softeners, where it enhances the whole perfume in a very surprising way. It is interesting in rose-muguet blends with a top note of rose oxide.

Dihydrobenzoxepinone commercially is called watermelon ketone. This product is of fundamental interest, especially in Eaux de Toilette Fraiches where it imparts a uniform freshness that accompanies the composition from beginning to end. On the other hand there are few chemical aromatics that are diffusive and long lasting at the same time. This product is perhaps the most radical of all the ones that possess these characteristics.

We will finish this group with the so-called *Helional.* A product with a fresh melon fruity odor, it is endowed with a great fixing power. It is a product that has a decisive influence in perfumes such as Diorella and Dior Dior where together with Hedione and other compounds the perfumer happily obtains an exceptional naturalness. Its blends with cis-jasmone, dihydrojasmone, the alcohol C-9, C-10 and C-11 are very important. It is another product that is strongly influencing the evolution of perfumery in the present day.

Other important notes are the esthers of cyclopentenilacetic acid, especially cyclopentenil acetate of cyclohexenile, which has a very interesting natural note of pineapple. P-hydroxyphenyl-butanone, or Frambinon crystalized, and p-methyoxy-phenylbutanone, or Frambinon methylether, are also important. These last mentioned have a character very close to raspberry.

Radiants

The family of the radiants is composed of products that strengthen, blend with, enhance, amplify, and have an influence over the other elements in a composition. Let us mention here the products we have already discussed: muscone, exaltone, exaltolide, civetone, ambretolide, timberol and hedione. We are going to dwell on the following products, which, in my opinion, are brand new and thoroughly interesting, isodamasconel, alpha-damascone, beta-damascone, beta-

damascenone and the irones.

Most of these products have intense fruity rose odors but *beta-damascenone,* with its chemical formula 2,6,6 trimethyl-trans-crotonylcyclohexadiene 1,3, is perhaps the most revolutionary of this family of products. Present in the essential oil of Bulgarian rose as a minor component, its effects are of the greatest importance in determining the final odor of the natural product. Even in minimal doses, its effects are indescribable. It imparts a freshness, naturalness, radiance, intensity, broadness, uniformity, and a character to any perfume. We could almost say that it imparts the very subjective feeling of a perfume, wherever it is used. I am completely convinced that beta-damascenone will be one of the greatest aromatic compounds of the 80s and its incorporation into the great perfumes is assured.

The irones are well known by everybody. Their power to radiate and to embellish are enormous. We should indicate that by themselves they don't necessarily have the odor of the absolute oil of orris. The natural absolute oil is a mixture of various isomers, the most important of which are the alpha, beta, and gamma irones. Mixed just in the same proportions as is contained in the absolute oil of iris, they smell intensely of it. Rarely do you find an isomer in the pure state on the market, for commercial products are already mixtures of these three very important isomers.

Let us mention as interesting, although totally different, the so-called *alpha-irone* and *Irone V.* Their odor is different because their isomeric composition varies enormously. In general, alpha-irone has an odor very close to alpha-ionone, although its richness is a thousand times superior. Beta-irone is more spectacular. In any case the irones are classic products of unequal beauty, and when they have been well used, they give an uncommon elegance. Their effect on woody notes and on the herbal-floral notes is indescribable.

Greens

Finally I will mention the important family of the greens, divided into grass, floral green, metal green, fruity green, resinous green and violet green.

Within the notes of grassy green we will include *cis-3-hexenol* and its esters, especially the acetate, *formate, propionate and isobutyrate.* They are very powerful products, which, well used, impart a great naturalness to the compositions, or to be more exact, a very interesting natural freshness.

Also important are *butyrate, 2-methylbutyrate* and *tiglate* which are more fruity, and *benzoate* and *salycilate* which are more floral and which are often used for their fixing properties of the other more volatile notes of the family.

Trans-2-hexenol and the esters generally impart a more sophisticated and strawberry-fruity character to the compositions and the acetals called *leaf acetal* and *leaf alcohol acetal* are more stable in some media although they are not used as enthusiastically.

Finally I would like to mention as very important *dimethyl-cyclohexenilcarboxaldehyde,* called Triplal, and *trimethylcyclohexenilcarboxaldehyde,* called Isocyclocitral. These two products have been transformed recently into classic aromatics because of their amazing effects which combine natural grassy notes with marinex notes. The use of these aromatics is massive both in high class perfumery, as well as in industrial perfumery, where they have contributed to the modernization of the classic pine notes, which for a whole generation formed the typical perfumes of the bath gels. The use of Triplal has modified these notes as well as others in such a way that we can say they are strongly influencing the evolution of present day perfumery.

There are a great number of bases created with these chemicals, such as the so-called *Agrumen, Zestaroma, Agrumal,* and others. A very interesting one is *Zestodial,* where they combine the notes of Triplal, ocimene-epoxide and docecadienal, and which is striking because of its radical newness.

Among the floral greens there are a number of innovations. Let us recall the classical products of this group: *phenylacetic aldehyde* and its dimethylacetal, *hydratropic aldehyde* and its dimethylacetal, and others. It is enough to mention that phenylacetic aldehyde continues to be one of the most up to date products, since it is used intensely. It is the agent responsible for the grassy note in such important perfumes as Calandre and Amazone, although in this last mentioned, only partially. It is used together with its dimethylacetal and other green notes.

The products that I want to mention in this group are trimethylundecilenic aldehyde, called Adoxal or Farenal, and which some people don't object to consider simply as floral. Personally, I find that this product communicates a freshness without equal and an especial liveliness. Although it has been around for some time, they recently began to use it intensely, and that's why I mention it as a relative innovation. Its effects are noteworthy in combination with products such as dihydromyrcenol, triplal, dimetol, the ionones, the irones, ambros, and lilial.

Phenoxyacetic aldehyde, called Cortex, has an intense sweet, grassy, floral odor, and which strengthens and refreshes the back notes very effectively. *Phenylaketone* has been used in different hyacinth bases, like the so-called Hyacinthia.

Finally, there are many others, but I only want to mention some bases, such as, the so-called Cortexal, Folial, Florizia, Deltia, and the already mentioned Hyacinthia, which fill this chapter with an exceptional beauty.

The green metalic notes have given rise to some very interesting compounds, as for example, the diverse *alkoxy-pyrazines, sec-butylmetoxypyrazine,* present in the essential oil of galbanum and responsible for the metalic note, and *isobutylmetoxipirazine,* present in the essential oil of petitgrain. This substance is really important in the odor of this essential oil, and gives it all of its fresh, green, metalic note, together with other pyrazines.

Let us mention the so-called *Ourtivert,* the ethyl ester of a not very common acid, which, though found widely in nature, is a product of extraordinary effects, which should be tested in each case. It gives off a very interesting note of metalic freshness, something like nettles.

Isobutylphenylethylcarbinyl acetate, marketed under the name, Corps Rhubarbe, is a product with a strong and expansive odor with overtones at once metalic and resinous. It embellishes extraordinarily well the wild plant compositions where clary sage is present. Important blends are elaborated using such bases as the so-called Marjoliane, Marjalia, Mediterranis and Provençalis. We will finish with this series by mentioning the so-called Stemore, which smells essentially between galbanum and fig leaves absolute.

Let us also remember the classic product of the series, stiralil acetate, which is heavily used.

Within the green, resinous notes, let us mention as innovations undecatriene, ocimene epoxide, and the so-called Chrysantal.

Undecatriene, 1,3,5 is a green, greasy, resinous, intense, expansive product of an uncommon strength. It is directly responsible for the green odor of the essential oil of galbanum. This product is not only important in reconstituting the natural essence, but it also has extraordinary effects in perfumery, used just as it is in a strong solution, or in very small quantities. It is very unstable, and it's worth mentioning the base Galbia, where it is found in interesting amounts.

Ocimene epoxide is another of the most interesting compounds used. Its fresh, strong,

green, resinous odor, with marine overtones, makes this one of the best aromatics that we have today. We should study its effects on the rose notes, such as rose oxide and rose furan, together with products such as adoxal and cis-4-heptenal, or with the typical radiant notes isodamascenone, beta-damascenone, beta-lonone, and the irones, where we achieve impressive effects.

The so-called *Chrysantal* is a difficult product to define, with earthy and menthol aspects. Nevertheless, its odor is profoundly resinous, and its application is very interesting.

The green-frutal notes, such as dibutyl sulfide, are the so-called Corps Maracuya, and phenylpropionic aldehyde. To finish with the family of the greens, let us mention the green-violet notes, where we will mention *2,6-nonadienal,* with a very strong odor of the absolute of violet leaves, and which, together with the corresponding alcohol, *2,6-nonadienol* (which is more floral) and its dimethylacetal, forms universally famous bases, such as the so-called parmantheme and Vert Violettal. I believe we could take a great deal more advantage of these aromatics and their bases if we exploited them a little more. Let us mention finally *dimethylacetal* of *trans-2-noninal, methyl nonilenate,* and perhaps *cis-3-hexenyle heptincarbonate* which is important. The classic notes of this series are *methyl heptincarbonate* and *methyl octincarbonate.*

In conclusion, what remains to be done, is to single out the sociological dimension of our profession, its motivation, and the way it interacts with society.

The perfumer is an artist, and the artist should create beauty. Beauty, however, can exist and be intepreted in many different ways. Throughout history, in painting, sculpture, music, literature, as well as in perfumery, there have been great artists, who have influenced society by the movements they have created.

Among perfumers there exists an impulse to be creative. In our profession creativity can only be achieved by the person who possesses a certain talent, sensibility and culture; by the person who understands how the techniques of combining substances work, and by the person who has at hand some good sources of basic, new products. There are some who have all of these qualities, and who will, for that reason, be able to assimilate the message of our predecessors, and give it new forms.

Like Edmond Roudnitzka, one of the greatest perfumers of all times, I don't believe that the perfumer is just a "nose." The true perfumer is a human being, a mind and a philosopher who tries to express a sensibility, and who gives it to us to

know and to appreciate.

The artist always aspires to a world beyond the sensible which reason can never really delineate, a world that finds expression in certain spiritual ideals. This idealistic yearning of the artist often comes in conflict with a world that never rises to the level of this aspiration.

How can we reconcile the purest values of the creative artist, namely the spiritual, the esthetical, the metaphysical or the ethical, with the realism necessary to understand society? How can we harmonize the conclusions drawn from an analysis of society, with the subjective and idealistic vision, which is a projection of the artist's spirit on reality? The solution is twofold: a balance on the one hand, and a sensitiveness on the other.

The artist should be able to make it understood that true progress will come when society assimilates art. The great challenge we face at the end of this century is the attainment of a world which will be based on the ability to perceive the emotive and poetic value of things; that true civilization will be realized by a refinement of sensibility. And just as has been stated on many occasions, the human ideal is nothing but a question of sensibility.

The perfumer should create beauty, a beauty that is accepted by society. The very substance of humanity, its most beautiful expression, is in art.

True creation will be that which awakens all to a greater sensibility and a higher spirituality, not that which renders them insensitive by reason of its arrogance, or without understanding by reason of its complexity.

The meaning of our profession is to heighten awareness by means of created beauty; and for this we need the backing of the marketing industry, whose purpose, along with seeing that a product is sold, should be to see that it is sold by means of constructive advertising that improves the culture. The marketing industry should also be an instrument of creativity.

In this way we can complement one another within the framework of society, and sharing common concerns we can contribute insofar as we can to the advancement of humanity, not only in its technical and material aspects, but also in the spiritual; so that art will permeate unquestionably all of society.

To struggle in the service of art is to struggle for humanity and it, above all, should urge us on, and should motivate us in our profession.

Acknowledgement

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Suppliers

Adoxal—Givaudan
Agrumal—Rossyl
Agrumen aldehyde—H&R
Ambrarome—Synarome
Ambrogene—RBD
Ambrophore—Firmenich
Ambrox—Firmenich
Ambroxan—Henkel
Bergamottol (Captive)
Bigaradial—Rossyl
Boisomiel (Captive)
Bourgenal—Naarden
Carnotheme—Dragoco
Cedramber—IFF
Cedroxyde—Firmenich
Chrysantal—Naarden
Citrodial—Rossyl
Citrophore—Firmenich
Civettone—Firmenich
Corps Maracuya (Captive)
Corps rhubarbe—Firmenich
Cortex aldehyde—IFF
Cortexal—Firmenich
Deltia—Rossyl
Dianthox—H&R
Dihydrolivescone—RBD
Dimetol—Givaudan
Dupical—Naarden
Dynamone—RBD
Elintal—Naarden
Evernyl—RBD
Exaltolide—Firmenich
Exaltone—Firmenich
Farenal—H&R
Fixateur 404—Firmenich
Fixomusc—Firmenich
Floralozone—IFF
Florizia—Firmenich
Folial—Firmenich
Frambinon—Dragoco, IFF
Galaxolide—IFF
Galbia—Rossyl
Grisalva—IFF
Grisambrene—Firmenich
Grisambria—Rossyl
Hedione—Firmenich
Helional—IFF
Hersage—PPF
Hibiscolide—RBD
Hyacinthia—Rossyl
Iranal—Rossyl
Irone V—RBD
Iso E Super—IFF
Isocyclocitral—IFF
Jessate—Naarden
Lilial—Givaudan
Livescone—RBD
Lyral—IFF
Maderol (Captive)
Madrox—Givaudan
Mahagonate—Dragoco
Mandarin aldehyde—Firmenich
Marinex—Rossyl
Marjalia—Rossyl
Marjoliane—de Laire
Mediterranis—Rossyl
Melonal—Dragoco
Moschus lacton—IFF
Mousse Metra—Florasynth
Muguol—IFF
Muscone—Firmenich
Musk DTI—Firmenich
Musk R-1—Naarden
Myrac aldehyde—IFF
Oncidal—Dragoco
Ourtivert—Rossyl
Oxalide—Takasago
Palisandin—H&R
Parmantheme—Firmenich
Patchouly epoxyde (Captive)
Perilla aldehyde—Caro Trading
Phenylaketone (Captive)
Provencalis—Firmenich
Rhubofix—Firmenich
Romanal—Dragoco
Sandela—Givaudan
Sandenol—China National
Sandeol—Soda Aromatic
Santalex TNK—Takasago
Sigaride—RBD
Stemore—Givaudan
Sylvestone—RBD
Timberol—Dragoco
Tonalide—PFW
Traseolide—Naarden
Triplal—IFF
Veramoss—IFF
Verdol—IFF
Vert Violettal—Rossyl
Vertofix—IFF
Zestaroma—Rossyl
Zestodial—Rossyl

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Perfumery Techniques in Evolution—II

By Arcadio Boix Camps, Rossyl SA, Barcelona, Spain

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.

*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 pampiemousse—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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International Perfumery Congress

Perfumery Techniques in Evolution—III

By Arcadio Boix Camps, Rossyl SA, Barcelona, Spain

I am well aware that our profession becomes more complicated every day and it is increasingly more difficult to keep it within certain purely artistic limits. Classifying and giving greater emphasis to our analytic powers results in a weakening of our creativity. Culture, taken almost solely as technique or study, as the Kingdom of Omnipotent Reason was sure to lead our profession and in fact the whole society to a wasteland close to desolation—a desolation of the soul, of the spirit, of mystery, of intuition and of myth. And have we not said that the characteristics of the creative perfumer were precisely these?

Voltaire, one of the fathers of Rationalism, thought that Reason was certainly a weak light, but it was the only thing that counted. But no work of art, no great perfume has been made with this as a premise. Aware of the reality of the time in which we live today, the perfumer as an artist is in a critical situation.

Scientifically and astronomically speaking, the sun is of extraordinary interest. However its warm, radiant and golden brilliance shining over a valley and over a sea fascinates the inhabitants of a humid and industrial Europe and brings them to the Mediterranean.

This is the root of the perfumer's problem. The problem of the good perfumer is not just a "nose" as often said. On the one hand, there is the world of the soul, spirit, mystery, intuition and myth; on the other hand, there is the world of business and a society based more and more on an unbridled materialistic Rationalism which is supremely useful scientifically and economically, but which has resulted in stunting our collective personality.

We are all of this world, but what strange and unhealthy idea ever made us believe that in order to grow we had to cripple ourselves?

Moving on now to the main section of this paper I want to emphasize that my published works are part of a whole. Don't think that when I speak of woody notes and I don't mention Vertofix Coeur or Iso-E-Super or that when I speak of ambery notes and I don't mention Ambrox it is because I have forgotten, but because these products belong to parts one or two, already presented and published.*

Here I will cite a few chemicals of each of the different olfactory families.

Agresticals

The agresticals I am going to subdivide into herbaceous agrestical, lavender-camphoraceous, citronnellic, camomile-tea, herbal dry leaves and thuyonic.

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*Perfumery: Evolution of Its Techniques—Part I, *Perfumer & Flavorist,* June/July 1985, **10**(3), p. 1 and Perfumery Techniques in Evolution—II, *Perfumer & Flavorist,* August/September 1985, **10**(4), p. 15.

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The herbaceous-lavender-camphoraceous includes a great number of new developments. I will describe only two.

2,5-Dimethyl hepten-5-ol-2 shouldn't be confused with *Dimetol*. It has an excellent fresh, floral, herbal, lavender fragrance with a very intense note of rosewood oil. Its effects in lavender mixtures are really good, as well as its blends with cistus, Cetotabac and kephalis.

cis-Verbenol has unequalled camphoraceous beauty and strength. It is found in certain essential oils and it is even finer than *Verbenone*. A crystallized substance with shades of incense that yields blends of great beauty in combination with Bacdanol, Brahmanol, Sandalore, Indianol and Krisnanol.

The subdivision of camomile-tea odors has as an extract *n-Butyl-2-Methylvalerate*, called *Methyl cammomille* with a very fine camomile fragrance, very volatile. It produces interesting effects with crude eucalyptus oil, the so-called *Ourtivert*, Evernyl, herbaceous essential oils like hyssop, mint and camomile.

Theaspirane. In this case we find ourselves before one of those singular chemicals which seldom emerge from research. We could consider it among the ten best chemicals on the market. It is present in natural tea and its fragrance is extraordinarily complex: herbaceous, green tea, wet and recently cut tobacco leaves, with metallic, woody, floral and spicy subnotes. It combines in some singular blends with vanilla notes, with 3-Megastigmatrienone, Oxo-Damascone, Beta-Damascenone and cetotabac. Its radiant beauty of unequalled character places this chemical among such products as Hedione, Exaltolide, Irones and Pentambrette, without implying, of course, that I pretend to group all these aromatics in the same family.

Aldehydes

On occasion some aldehyde family products have been confused with citric products and have been thoroughly mentioned in my earlier works. Of these products we can mention the aliphatic aldehydes, the 2-alkenals and others like trimethyldecadienal, 2,6-dodecadienal, 8-nonenal, cis-4-decenal and Maceal. Let us consider some others.

β-Coronal is a product of the utmost importance, and despite this, is forgotten by most of the laboratories. It has a very strong aldehyde note with coiraceous and metallic overtones. It has important uses in combinations with γ-Valerolactone, Methyl Nicotinate, Ethyl levulinate and Mate absolute.

5,9-Dimethyl-4,9-Decadienal, called Dominal, has a very strong odor which should be listed in the citric aldehyde group, but in strong solutions it can have a floral, magnolia-lily of the valley note. It is reminiscent of Trimenal although perhaps it has a less green and a more floral note.

The family of tobacco scented products, which I had earlier mentioned includes such products as 3,3,5-trimethyl cyclohexanone (Isophorone), β-Damascone, and 2,2,6-trimethyl cyclohex-5-en-1,4,-dione (Cetotabac), has many important new developments. Now I am going to mention others.

3-Megastigmatrienone, a product of supreme importance both in the future of perfumery and flavoring and in the chemical composition of the tobacco leaf, has the strong and brilliant, indescribable, fruity odor of tobacco. Its use can bring us into a new era in perfumery. I wouldn't hesitate to place this aromatic among the elite of chemical products such as Hedione, the Irones, the Damascones, Theaspirane or macrocyclic musks.

It gives some truly sensational blends when combined with woody-scented notes like limbanol and with fruity-radiant notes like β-Damascenone and α and β-Damascone and with chemicals like Theaspirane, Ambrox, Rose Oxide and Rose Furan.

It is so sensational that it is well worth the effort to develop the imagination and to accept fully its enormous possibilities. It is incredible that dealing as we are with synthetic products, they should smell exactly like chemicals of natural origin. Excellent bases have been made with 3-Megastigmatrienone like tobacco leaf, Darjeeling or Cetotabac series.

Sensational blends are obtained by mixing this product with Oxo-Damascone or Oxo-Edulan.

Oxo Theaspirane has an odor similar to that of Isophoryl Acetate, but less dry, more of a moist-woody odor of camphor and cineol smelling a lot like tobacco.

Woody Chemicals

To consider the family of the woody chemicals, its subdivisions and some welcome developments that it brings to us, I would like to emphasize that the developments of this olfactory family like Cedramber, Cedroxyde, Madrox, Vertofix Coeur, Iso-E-Super, Timberol or Trimofix have profoundly affected modern perfumery, that is to say, perfumery that has been marketed since 1970.

The following:

Oxyoctaline Formate, is one of the jewels that research in this field has recently given to us. Its

fragrance is extraordinary and in its evaporation, it has unequalled shades of beauty. The richness of this chemical will be sure to place it on a very high level in the future, and I am sure that it will be used more and more each day.

Amboryl Acetate, a very economical product, is chemically speaking isolongifolanyl acetate. It may or may not be "Bouqueted." It possesses a clear note of amber-ketal but somewhat weak and diluted. It doesn't have as much class as such aromatic chemicals as Vertofix Coeur, Iso-E-Super, Cedramber or Timberol but its low price makes it interesting for functional uses.

Limbanol, an extremely powerful woody chemical, is synthesized and used as such and also is found as an impurity in Timberol. Although a new and relatively unknown chemical, it will influence perfumery in the next decade. Very few times, with rare exceptions, have I smelled something as enigmatic, profound and potent.

Physeol, a very pungent chemical, is not very longlasting and somewhat in the direction of Cedramber but more deeply woody, Cedarwood-like and less "velvet" and ambery. I like Physeol very much. It is one of my preferred woody chemicals.

Sandalwood chemicals. The classical exponents, Sandela, Brahmanol, Bacdanol and Sandalore which prevail upon modern perfumery have these two innovations, Indianol and Krishnanol.

Indianol is an extraordinary chemical which completes the series of sandalwood products. It has a much more floral fragrance than Bacdanol or Brahmanol and it is less weighty and less typically sandalwood; for this reason it adequately tempers the overly-technical quality of these two products, which are per se of a less floral character than the sandalwood chemical par excellence: natural cis-β-santalol. Mixtures of Brahmanol, Bacdanol and Indianol give us an odour so extraordinarily radiant and beautiful that it can hardly be distinguished from cis-β-santalol. Indianol has as much of a floral fragrance as Vetiverol, and in some respects resembles it when it is compared with substances of a more sandalwood character such as Brahmanol or Bacdanol.

Krishnanol is an extraordinary chemical with milky powdery, sandalwood, fruity and velvet characters of unequalled beauty, it is again one of the jewels. Its blends with decenyl cyclo pentenone, cis-jasmone lactone, Hedione, Bacdanol, Brahmanol and Dihydroambrinol are really interesting.

The woody-moist-rooty-earthy chemicals include 9-ethylidene-3-oxatricyclo (6,2,1,0^{22}) Undecan called *Rhubaflor.* Extremely powerful, of a floral, fruity, rhubarb, mossy, woody, rooty character, which combines extraordinarily well in small quantities with the quinolines and 4-ethyl-4-butyl-5-valerolactone, it imparts a very lively character. Absent from a great number of laboratories, it is a chemical which hasn't been exploited but, nevertheless, is of capital interest. Accords of Rhubaflor with Tridecen-2-nitrile are excellent and found in prestigious bases.

The woody oak moss chemicals. Besides Veramoss, which I have already mentioned, this group has many new and important developments, but I am only going to mention here *Orcinyl No. 3,* a very strong chemical, typical of the odor of Yugoslavian Oak Moss Absolute. It is not as long lasting as Evernyl but it possesses a very beautiful, extremely natural top note.

Animals

On other occasions I had mentioned the olfactory aspects of natural ambergris as well as some chemicals which were responsible for this odor. The products were Ambrox, Grisalva, dihydro-γ-ionone, α-Ambrinol, α-Ambrinol epoxide, Dynamone and the prestigious Amber Ketal. I would like to add two important products.

Dihydroactinidolide, with its fragrance as extraordinary as it is little known, is missing from most of the perfumery laboratories. It is by far one of the four most important aromatic chemicals in the natural product, the other three being dihydro-γ-ionone, α-Ambrinol, and Ambrox. If one of these four aromatics is missing it is absolutely impossible to achieve the really natural, rich, diffusive, metallic and seductive scent of the mythic natural product.

Dihydroambrinol has an extraordinary odor of ambergris much weaker than given off by α-Ambrinol but with tremendously natural nuances and with a slow, lovely, metallic evaporation similar to amber.

In the subgroup of *animal-musk* products mentioned in parts one and two which have influenced perfumery strongly for a long time are: Muscone, Exaltone, Exaltolide, Civettone, Ambrettolide, Hexadecanolide, Oxalide, Musk R-1, Hibiscolide, Galaxolide, Tonalide, Celestolide and Ethylene Brassilate.

These musks have influenced modern perfumery so much that we can say that their massive use together with Methyl Dihydrojasmonate is the base of what we understand to be the present world of perfumery. The launching of perfumes like Fidji or Calandre have marked the guidelines for an evolution foreseen and that has been made possible thanks to an enormous rich-

ness in chemical development.

In the family of *animal-fecal-costus* I would like to mention several.

Nolinac has an extreme strength reminiscent of costus and of an animal cage or of straw stepped on by animals. Whenever the correct doses are skillfully used, it makes excellent blends especially in products which contain large amounts of cistus absolute or of floral-green notes of the sophistication of Alliage or Aramis Devin, which don't contain Nolinac directly, but instead some note of natural origin reminiscent of Nolinac. Nolinac can enhance this note which one should know how to make the most of.

4-Ethyl-4-Methyl-δ-Valerolactone, called *Costaulon,* has a very strong, costus, animal, slightly Tonka-cumin odor which combines excellently with Rhubafuran and Rhubaflor, in many blends.

Citric Chemicals

In the family of the citric chemicals, I have already mentioned trans-2-dodecenal, trans-2-tridecenal, α-sinensal, 2,6-dodecadienal, nootkatone and tridecen-2-nitrile. The family continues growing and I will describe three more.

Thioterpineol, the best products of the family and the one with the most citric notes, it is the finest and the most elegant of all the chemicals that I know that have sulfur in the molecule. It is found in traces in the essential oil of grapefruit and it can be said that it is a key compound. It is much more important than nootkatone. Thioterpineol is another one of those elite products that enhances the citric character wherever it is used. It is another of my favorite chemicals and I am not going to list the blends it can make, except to say that its ability to enliven citric notes is infinite. The acid effects it creates are made even more beautiful in citric eau fraiches where a good amount of Indonesian patchouly oil, Hedione and Helional are also used.

The family of herbaceous citric brings us in the way of new developments a true jewel which I am going to try to describe to you. *2,6,9,10-Tetramethyl-1-Oxaspiro (4,5)-3,6 Decadiene,* called *Isospirene* is tremendously powerful with a citric-herbaceous scent that smells a lot like green tea with subnotes of tangerine and grapefruit. It has important fruity nuances, a shade of mango and passion fruit. It is a product of extraordinary power and of a fragrant quality that makes it selective and again one of the best chemicals in existence. Since it forms part of universal bases, it is being used on large scale in perfumery and along with the Damascone, dimethyl cyclohexenyl pentenone, methyl propyl

oxathian and other compounds, it is imparting a great character to perfumes.

Spicy Scents

Among the family of spicy scents I had earlier mentioned eugenol, cinnamic aldehyde, cuminic aldehyde, livescone, cinnamyl nitrile, ethyl safranate, safranal and myrtenal and I would like to add another.

4-Isopropyl-2-cyclohexenone, called *Crypton,* is a very interesting but little known product. Widely found in nature in the essential oils of lavender, lavandin, pepper, cumin, eucalyptus and wild pine, it is spicy with a strong smell of cumin and caraway.

Florals

The family of floral scents, and the subgroup of herbaceous florals, have classical chemicals which were mentioned in my earlier work like Linalol, Dihydromircenol, Dimetol, Tetrahidrolinalol, Ocymenol, all, as you know, extremely important.

The rose florals I have already mentioned are the rose oxides, nerol oxides, rose furan, and the classical citronellol, geraniol, nerol. I am going to add two more.

3-Methyl-5-phenyl-1-pentanol called *Phenoxanol* has a very radiant geranium-leaf odor of high quality and very natural. It has that "velvet" note of rose petals and has also a fresh aspect with shades of hyacinth.

Anatolil has a smooth intimate, delicate fruity note. It is interesting to substitute Centifolil which is present in Opium of Y.S.L. with Anatolil and see the sweetening effect it has and how it changes the final product.

Of the *jasmine florals* I have already mentioned dihydrojasmone, cis-jasmone, cis-jasmone lactone, Hedione, jasmolactone, methyl jasmonate, γ-decalactone and others. I want to include here *α-Hexyl-γ-butyrolactone* with a floral, sweet grassy, fruity note of great radiance and beauty. It is related as far as the smell is concerned with the chemical found in jasmine absolute, cis-3-hexenyl-γ-butyrolactone which is an even more impressive odor. It forms extraordinary blends with cis-3-hexenyl salicilate, Printanyl/C, Helional, Hedione and Methyl Jasmonate. It is an important chemical to modify types like Calandre or Diorella.

While earlier I mentioned *floral fruity* products such as Veloutone, Floralozone and the prestigious Helional, they are going to be enriched by the following scents.

O-methoxy benzyl ethyl ether, called *Rosetyl,* with a really interesting floral, fruity, penetrating note blends extraordinarily well with tea rose notes, such as geranyl ethyl ether and isodamascone. It forms part of the formulation of many important bases especially tea rose. It is very interesting to work with and to study Rosetyl in depth; combinations with Myroxyde, β-Damascone, Mimosa absolute are rich and infinite.

Decenyl cyclo pentanone is another one of the most impressive products within this group that is forgotten about and which continues to be missing from most of the laboratories. With a very smooth top note of floral fruity-peach scent and of unequalled elegance, its delicate note is perhaps the most velvety of these fruity products.

Let me mention, in order to finish this subgroup, a product of extraordinary power. I am speaking of *Oxo Damascone.* It is going to play a very important role in perfumery.

In the group of *floral-animals* I have already mentioned the prestigious Cashmeran and I add *Penyl cyclo propanoic acid,* called *Patchoulac,* found in patchouly oil but not representative of its scent. Its potency is so extreme that it should be worked with in 0.1% solution. In this concentration it has a floral, milky-tiglic, urinous odor that is difficult to classify.

Within the floral-muguet scents, where I have already mentioned Hydroxycitronellal, Mayol, Lilial, Lyral, cyclamen aldehyde, Oncidal, α-pinyl Isobutyraldehyde, Bourgeonal and Pinoacetaldehyde among others, I want to add three others.

Glycerylacetal of Phenylacetaldehyde, a very old product with a nice floral sweetness, is part of some very important bases such as Printanyl/C. Its inclusion in Calandre is very important. (Calandre has always been one of the perfumes that has impressed me the most. It was lucky enough to come into the market at a time when the marketing people let perfumers be perfumers.)

The so called *muguet alcohol,* a profoundly floral note crystallized in its pure state is less fresh than Lyral but with a precious heavy-wood-floral note.

4,4,6-Trimethyl-2-benzyl (1,3) dioxane, called *Reseda Body,* is another important and unknown chemical of extraordinary odor between muguet, narcissus, hyacinth and magnolia. It is a minor ingredient of the perfume Alliage, another one of those giants in the world of perfumery which brings together some superb green notes with odors of incense, costus and amber as well as some spicy notes with a light woody-Helional, musky background.

Fruity Scents

The family of fruity scents is subdivided in fruity notes recalling melon where I had earlier mentioned, cis-6-Nonenal, 8-Nonenal, watermelon ketone and Floralozone and Helional with important floral notes. I won't add anything else here but I will outline a second subdivision: fruity notes smelling of cassis, for example, *Buccoxime,* an extraordinarily clean fruity note of cassis bud absolute, is reminiscent of p-mercapto menthanone but weaker than this although still very powerful. It creates some fantastic blends in combination with thioterpineol, Oxane, Isospirene and Veloutone. It is present in some interesting bases such as the ones called Buccovert or Thiovert.

Greens

The family of *grassy-greens* include cis-3-hexenol and Triplal, Isocyclocitral. I will add *cis-3-Hexenyl allyl ether,* with a very strong, grassy note. It is a chemical imparting a very original green note.

Among the fresh-floral-herbaceous-greens I would like to mention two. *Ethylene glycol acetal,* called Glycolierral, is a fresh, green, floral product that makes good blends and is present in great fragrances of high class and functional perfumery. *Phenyral* is one of the jewels of this family with an extraordinarily green, floral note, uncommonly natural with an odor of cyclamen and possessing a great clarity of nuances.

Within the *green-metallic* subgroup I had earlier mentioned several alkoxy pyrazines, emphasizing the immense possibilities of isohexyl methoxy pyrazine; Ourtivert, one of my favourite aromatics, which has had the greatest effect on my creativity; Stemore, Styrallyl Acetate and Syvertal. I am going to add several more.

Kerfoline, of an exceptional strength, should be applied with extreme caution. It has a green-metallic, pyrazinic note with an odor of green pepper and green bean.

Vertamide has a note similar to a certain degree to Buccoxime but with a greener more metallic, less fruity character since it doesn't possess the typical "Bourgeons de Cassis" note at all.

I want to mention now the *ethereal-greens* wherein I have already in the past cited Hyacinth body, Vert de Capucine and the resinous-green-seaweed subgroup in which we find Undecatriene, 1,3,5; ocymene epoxyde and Formyl Tricyclo decane. Three more are of interest. *Fantesal* has a powerful note with an incredible relation to seaweed absolute. *Tangerinol* is to some degree like Fantesal in its odor of seaweed but it is much more citric with a waxy, green, very strong note of tangerine. With an odor of Syringa strongly reminiscent of p-methylphenylacetaldehyde and p-isopropylphenylacetaldehyde, *p-ethyl phenoxyacetaldehyde* creates an extraordinary floral shade which enlivens most of the green and floral blends.

The last classification that I want to cover, the *critric-greens,* includes *Dimethyl-cyclohexenyl-pentenone,* called Neogal, which has an uncommon strength and, used in 1% solutions, imparts a green-fruity note like that of Undecatriene 1,3,5 and allyl-amyl-glycolate together, but with an equally important subnote that is deeply citric—mandarin or lemon—more natural and less metallic aldehyde than that of the alkadienal twelve and thirteen. It has also, as allyl-amyl-glycolate, a fruity pineapple shade. It yields new blends with Sinensals and 2-dodecenal, 2-tridecenal as well as with tridecen-2-nitrile, citronitrile, Agrunitrile and citralva.

Let me remind you of other chemicals of this subgroup mentioned before like allyl-amyl-glycolate, cyclogalbanate, and the so-called Vertacetal.

New Chemicals: Innovations and Creativity

Now I would like to discuss our profession. I want to insist once again that new chemicals and

essential oils have always opened up the flood gates of innovation and creativity; nowadays more than ever the perfumer can no longer continue to say that everything can be done just with talent, spontaneity, sensibility and creativity. Our profession has become complicated and effort is something that is absolutely essential: effort and a complete dedication and a "love" for the new developments that continue to arise from those ingenious structures that our most faithful collaborators, the chemists, are searching for. Today a perfume is, in part, their work and here I want to render them the homage of being the "wise men behind the scenes."

On the other hand, as I have already said, a true perfumer should always be an artist and unfortunately we live in a century and at a time of great confusion which is indifferent to spiritual values and to interior life that, in my opinion, is what makes for the richness of the true perfumer.

Like many good perfumers such as Mr. Roudnitzka or Mr. Wolkowisky, I believe that a good perfume is an odor, of course, a mixture of ingredients from natural and artificial origins . . . but I prefer to say that it is an aromatic image, a poetic image, an emotional image, a symbol, which, if it is really *good,* should be apprehended by the senses and reach the unconscious world of spirit. A great perfume should create emotions, enliven the imagination and intuition . . . should be in opposition to the ideals of restraint and cold reason.

But how do we emphasize today, the subjective, spiritual or fantastic? Nowadays the kind of society in which we live is marked by an extreme materialism, leading people to frustration and an insufficiency of ideals and dreams.

I have said and I would dare to say again that high class perfumery and also the perfume used in functional products are not only industrial. This is something deeply related to the most intimate anxieties of the consumer. Our industry has debased the most sublime aspect of this profession. There are some sectors that have completely ignored the most important emotional values that belong to it.

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 it will be in a position to overcome its problems.

Unfortunately this is not what is happening and I wonder, if, in spite of so much progress, we have ever lived through an age of greater spiritual insecurity.

Spiritual progress is the goal of every artist and this is the road good perfumers 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 and creative enough to understand intimately one of the most beautiful and most poetic professions that has ever existed.

Inside every good perfumer there is the same challenge to attain beauty and to achieve a real advance in humanity, not only in the material aspects but also in the spiritual. In collaboration with our modest possibilities, we hope to see unquestioned penetration of art in our society. I believe in art because art is the expression of the most sublime of human values, and material development for which we oftentimes strive without reason should be only a support to arrive at a better understanding of art.

I have always placed men and women at the center of the Universe and, for me, perfumery like all the arts is an emotional reflection cultivated by the depth of an individual conscience. While I agree with Marcel Proust, that life, in its permanent flow, is no more than lost time that can only be recovered for eternity by the artist's work, I cannot accept his belief that there is no relation between interior life and social life. I believe that mankind and society will have really progressed the day that we have found the way to face the differences between exterior social existence and the interior life, or the "memoires" described by Proust.

Because Proust was perhaps the most detailed and descriptive writer ever, he projected his interior life in his words without meaning to, because he was doubtful that people would understand him. This doubt, or skepticism, is what keeps all of our interior lives hidden. The problem is that people who love art and the spiritual things in life are skeptical because they are not understood by a materialistic society.

This understanding is just a question of sensitivity. Sensitivity to art and a sense of being cultured should be norms that guide society; instead society is guided by materialism and dogmatism. Only the day that this sensitive understanding of art and culture succeeds in guiding will our society see its wishes fulfilled. Only then will the interior private life be merged with the exterior social life. This concern is the duty of every citizen, of every artist and, therefore, of every perfumer.

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Perfumery: Techniques In Evolution IV

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In November 1978, 21 years ago, I introduced the first article of the series, "Perfumery: Techniques in Evolution,"[1] at the Fifth Convention of Perfumers in Spain. I was then a member of the Spanish Society of Cosmetic Chemists and The Professional Group of Perfumers, organizations that I quit some years later. I started talking about the word "evolution" as a key hallmark to understand our profession. At this time I described products like α-damascone, β-damascone, damascenone, calone (watermelon ketone), all virtually unknown in 1978 by almost all the perfumers in the world. I stated that these chemicals were going to be the elements making the forthcoming evolution of perfumery possible, an evolution that was a real revolution already looming over the horizon. Well, I was right. In 1978 there was not a perfume with calone in it. Now, it is one of the most successful ingredients; one with which perfumers won't be able to work without. Damascones and damascenone where known only through the patents, through scientific papers describing minor ingredients in bulgarian rose oil, rose oxyde, neroloxyde, rose furan and p-menthen-9-al; at the time, these were used in bases such as cetylia, dorinia or damascenia. Most perfumers, exept those working with the company that patented them, used these bases without knowing which chemicals were responsible for imparting the sought-after effects of radiant, fruity and rosy nuances.

However, I said something wrong. I said that this evolution did not mean any break with perfumery's past. Unfortunately, and at that time I did not see it, there has been a major break. Perfumery of the past, the technique used by the most excellent perfumers, Jean Carles, Edmond Roudnitzka, Ernest Beaux, Maurice Maurin, Paul Vacher, Guy Robert etc.; men and women that spent their lives expressing themselves through combinations of essential oils and chemicals were going to be hampered by several organizations that began telling us what ingredients we could and could not use; if it was allowable to use 0.1% of costus or not, even in limited amounts, for example. Italian bergamote oil, styrax, Peru balsam, cinnamon or chenopodium oils were treated as hramful. According to the logic of these organizations, the crusaders of human health, we found out that almost all essential oils were not advisable to be used except in light touches. Clary sage, black pepper, juniper berry, frankincense and laurel-leaf oils were allowed; blessed generosity by those concerned with the health of the world. Many chemicals that were discovered by enthusiastic young chemists cooperating closely with me were often stalled for years and years by these organizations, and could not be used at all.

Another branch of what I call crusaders of human ethics, those defending the rights of animals, started fighting civet, castoreum and all the rest of animal products, for the sake of saving animals from cruelty.

This appears to be a noble target, yet, like most of us, these people eat meat every day with out qualms.

We perfumers have been left almost without essential oils, without animal products and with the marketing and evaluation boards of every company acting as "divine judges" whose final say was pure dogma to be follow without so much as a whisper.

I remember one day, after having worked a combination of honeysuckle, musks and sweet balsamic notes for a long time, a combination that I judged as beautiful, full of harmony, warmth and creativity, I was met by one of the heads of the marketing department who after smelling my work for about one or two minutes told me that it was "not bad", but I was missing 0.1% of aldehyde C.12 MNA to finalize my creation. Knowing my weakness in front of him, I agreed, showing him after half an hour the "modification" that was found to be perfect. I had not placed the aldehyde as suggested. I showed him the exact same product and it became a big hit in the market.

Preserving the Art

Van Gogh, Matisse, Marc Chagall, Picasso, Renoir, and Gaugin were revolutionaries in the art of painting when compared to the classics. I won't say they are better or

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worse than Rembrandt, Rubens, Leonardo Da Vinci, Giotto, El Greco, Zurbarán or Velazquez, but many people prefer their work to the classics, finding their art closer to our present realities, joys and worries. Can anyone imagine a review board telling Van Gogh not to use yellow, or red, since after testing they had found that touching those colors would cause harm to one's hands? Or what if the intensity of a painting is too bright, using too much red as in "The Harmony in Red" by Matisse, and will harm the eyes of the viewer? It is an exaggeration, but not far from the reality of our profession.

Polysantol, ebanol, firsantol, sandal Mysore core, brahmanol, sandalore, sandela, candalum and bacdanol are extremely interesting sandalwood chemicals, but sandalwood oil, the rich, milky, long-lasting oil from Mysore, is something. It is an extremely good element to combine with those chemicals. Now, there is no sandalwood oil. It is not possible to re-plant trees, it is not possible to re-exploit the ground to keep having the oil. We are told the oil must be forgotten. An excellent decision to save the planet, but could we imagine great creations like Madame Rochas which have been re-orchestrated because of the natural product, or Herrera for Men, without the oil? Could we make them with only the chemicals? Have we the right, while trying to create new olfactive accords with epimerized hedione, isospirene, florhydral, iso E super, tonalide, cedramber, nor limbanol, muscenone δ, helvetolide, habanolide, muskolon or okoumal, to outlaw the beauty found in original Madame Rochas? Have we the right to ban this lovely olfactive accord? My intimate thinking tells me simply, no. The creative work of the past, accords that were lovingly blended with months or years of effort to achieve perfection and beauty, have been replaced by mixtures of chemicals that consumers say all smell the same.

What I mean is that imposing on the artist when it comes to the expression of feelings is simply nonsense. I am a strong supporter of research. I am eager to smell any new chemical resulting from the research, to test it, to blend it, to try to use it since it is a new treasure, a new element that could enrich our sensations and our capacity to express beauty felt through the sense of smell, but it is sad the way modern perfumery is handling this.

This approach to our profession is already a reality and it will affect our way of working forever. In my personal laboratory in Cabrils, Spain, where I can see the beauty of the Mediterranean coastline, I spend many days and nights expressing myself and creating nice accords without worrying about guidelines that kill the spontaneity of our work. I smell many new creations, and have never gotten sick. This is my way of saying to the world, "I am a free man." Is it just a dream to keep being free today as a professional perfumer? Maybe, but Michaelangelo used to say a beautiful phrase, "The future belongs to those believing in their own dreams."

Recent Progress in Perfumery Elements

When trying to analyze the evolution of research and the procurements of new chemicals to be used in modern perfumes, I classify them in various olfactive families, as I did in the past. Although I know the sense of smell is individual and that everybody smells different, I have no other option to describe chemicals than using my own sensations, logic and classifications.

Through my long trips exploring the countries of Asia, I found many essential oils and interesting "attars". However, there is no time in this work to talk about these lovely natural ingredients. I primarily use products like motia, moulshri, gul hina, kewra, champa, shamama, saffron, agarwood oils from India, Cambodia, Laos, Malaysia, Indonesia, Vietnam and Kapoor Kachri. Ciperious scarious, balchar, brahmi, mantri and many more extraordiary products will be described in part V of this work along with other chemicals too numerous to mention here. One of my greatest professional satisfactions has been the ability to combine this Asian knowledge of traditional Indian perfumery, introduced in Arabic countries by Indian perfumers long ago, with our Western methods of perfume formulation. The creations are fantastic and the addition of these rare materials increases the quality of most of our accords, giving them more body, more warmth and more intimacy. A sense of feeling that can only be achieved by the charm of natural ingredients. Most of these attars are codistillations of exotic flowers and rare roots and woods over sandalwood oil, but today we find many of them codistilled over diiosoctyl phtalate, a new beautiful replacement, I suppose, for the natural oil from the jungles south of Mysore, the lovely capital of the old maharajahs of this Indian state.

I wil start with the agrestical olfactive family and I will include the list of chemicals described in parts I,[1] II[2] and III[3] of my work on the top, before the new description of new aromatic products. It is understood that when talking, for instance, about the floral-rose chemicals, I know β-phenylethyl alcohol, citronnelloll, nerol and geraniol but I do not mention these products because they are well known by everybody and it will be a waste of time. These chemicals made the evolution of perfumery possible at the beginnig of this century and though we are in 1999, we use them more and more. When I describe accords I never mention those classical popular and old chemicals that, of course, I use, but the heart of accords made with rare ingredients in order to achieve novelty; the novelty making possible perfumery today and in the future.

Agresticals

This family of agrestical-scented chemicals will include the following sub-groups:

Herbaceous-lavender-clary sage
Linalyl and terpenyl acetates, myrcenyl,ocimenyl and citryl acetates
Linalool oxide
Trimethylcyclohexyl acetate (sautane)
Lavandulol and Lavandulyl acetate
Octen-1-ol-3 ,octen-1-ol-3 acetate, methyl dioxaspiro undecane (hersage)

Dihydroterpenyl, menthanyl and nopyl acetates
(I), 2,6,6-Trimethyl-6-vinyl-tetrahydropyran (geranium oxide),
2,2,6-trimethyl-2-vinnyl-tetrahydropyran (lime oxide),
2-methyl-2-vinyl-5-isopropenyl tetrahydrofuran (desoxide),
Heridon, oxaspirane, acetomarane (II),
2,5-dimethyl hepten-5-ol, cis verbenol, (III)

This subgroup was widely mentioned in my past works and you can find above the list of products described before. I would like to add six more chemicals, those being:

Tetrahydro-4-methyl- 2-pyran-4-ol is a small "jewel", having a lot of nuances like rosy and herbal, with a beautiful clary-sage note than combines extremely well with all kind of citrus accords but also with jasmine making a revolutionary twist when mixing it with octenyl cyclopentenone and other lactones. The accords of clarycet, oxaspirane, gingergrass oil with quinolines, mint oils, and musks are extrordinary. I am working more and more with it. Its combinations both in fine toiletries and functional fragrances are full of a velvet sensation that warms the spirit of those smelling it. It is beautiful when mixed with the hersage, anoxirane, magnolan, prenjasmon and ambersage.

Cyclohexyl crotonate smells of lavender and cistus, and I love its accords with myrrh oil and resinoid, juniper berry, frankincense, and ethyl phenoxyacetate as found in base Samaram. Its future possibilities are unique. Samaram is able to twist every fragrance imparting a strong animal-cistus note; very new, strange and beautiful.

Sclarene (4,5-Decamethylene oxazole) is green, balsamic, agrestical, clary sage-like but more metallic than the oil. The accord of sclarene with clarycet and citrus oils, cedarwood, mints, isopropylquinoline, rosemary (natural), clary sage, and tobacarol is great and is part of the base called Ischia**,** a beautiful one.

Basilex,(8-Acetoxy-3-methyl-9-methylene-tricyclo-{5,2,1,0,2,6}-dec-3-ene) is a precious unknown chemical recalling part of the warm herbal note of sage, basil, peppermint and even lavender. It enhances most fragrances and is particularly active with herbal and floral notes, especially rose accords. Accords of basilex with peomosa, novorosan, doremox and octalinol are good. When mixed with clarycet and oxaspirane, the mixtures are great.

Balsapia is based on a captive chemical slightly blended with touches of ethyl maltol, giving a fir-balsam effect. It is extremely important for boosting ambery, kephalis and cistus top notes. It is widely used in functional and fine toiletry fragrances such as Rocabar.

Let's finalize this sub group with sagetone V (Bornane-3,1-cyclopentanone-2), an ingredient that again combines very well with those described above sclarene and clarycet. It is more woody than the other chemicals of this family. One of my favorite students, a woman full of creativity named Eugenia Navarro, made a great work with it called Introspective, using a lot of sandalwood oil, myrrh, iso E super and balancing then with an accord of huminol, ethylene brassilate and sclarene. I really enjoy reworking this accord, however I could not do it better than she did in 1993, when unfortunately she quit the profession.

Herbanate, the ethyl ester of the acid corresponding to the old and well-known chrysanthal, an extraordinary and not widely known chemical. It is absent from most creative laboratories. Herbanate smells herbal, fruity, spicy, earthy, slightly woody, warm and sophisticated. It gives fantastic results when combined with spicy notes.This chemical is the key ingredient of bases like dulcetima, pineapple or hervasate**,** a terrific application of the same.

***Earthy*:** I did not mention any chemical of this subgroup in the past other than geosmine, but geosmine (geonol), like huminol M, is more humid than earthy, although vey often these two concepts go together. Just walk or ride a horse in a Mediterranean forest after the rain and you'll see what I mean.

Huminol M (8-Methyl-1,5-dimethylbicyclo-(3,2,1)-octan-8-ol) has an extremely powerful, humid, earthy odor related to real geosmin, geonol or geovertol that also recalls the real norpatchulenol, one of the key chemicals in patchouly oil. It combines extremely well with other agrestical products. Bases that try to evoke the heart of Mediterranean forests after a winter rain like rosswood or maresme are expressions of beauty partially achieved with this chemical using interesting wood chemicals to hold and hide it since the natural scent, although agrestical and humid, is deeply woody.

Terrasol (Ethyl fenchol), also in the line of huminol but less humid and more rooty, earthy and mossy. Combinations of woody chemicals with the so-called labienoxime and hederyl create a real new line full of liveliness.

Rootanol (o-Terbutyl-4-methyl-cyclohexanol) is chemically similar to verdol with an additional methyl group. It is very rooty as its name states, and is beautiful when combined with those described in this family since the natural humid smell of wet earth is quite complex and interesting.There are no perfumes with a clear humid note, but when walking with my friends or riding our horses on the Mediterranean mountains close to the sea, everybody loves this natural smell that when properly dosed can therefore create new accords widely sought. It is also very interesting to use rootanol in fabric-softener fragrances since, if properly dosed, can bring accords with an extremely new clean note.

Chinchilol (1-Allyl-2,2,7,7-tetramethylcycloheptanol) is a nice chemical that combines greatly with both rootanol and terrasol, adding an important amber nuance to these described chemicals. It is very interesting to modify men's fragrances like Ungaro for Men and Gentlemen by Givenchy, combining patchouly, ambrinol, civet and terrasol, rootanol and chinchilol along with cistus absolute, and bases such the described Samaram. Also, bases such as patmos, imagined during a September trip when smelling the air of the Greek island, or Kirenia, imagined on an October afternoon when walking down the hills after having seen the monastery of Bellabbais in Northern Cyprus, near Kirenia, are excellent to blend with these olfactive profiles.

Vethymine (2,4-Diethoxy-5-methylpyrimidine) is earthy, dusty, woody and rooty with strong nuances of vetyver,

patchouly and agarwood. It is not known to many perfumers, but it is very useful when trying to modify accords where the woody note of these essential oils is imparted and is useful in royal accords where agarwood oils from India and Cambodia are mixed to Indian rose oil, shamama, amber and saffron. If forms part of the base, mahatma, the heart of many Asian creations.

Histidal (2-Methyl-3-cyclohexecarboxaldehyde glycerol acetal) is herbal and earthy. It combines very well with isocyclogeraniol, phenafleur, ambersage, maderan and dulcinyl.

All these chemicals blend extremely well with agarwood accords. Agarwood, the fabled essential oil from Cambodia, Vietnam, Laos ,Thailand, Burma, Malaysia and India, is one of the real treasures and a pleasure to the spirit. Although the natural product is scarce, it is used in good quantities in the Middle Eastern perfumery. I worked a lot on the olfactive reconstitution of agarwood oils. I say oils since there are three different products, including oils from Burma, India and Vietnam; Laos; and Cambodia, Thailand and Indonesia, each group being totally different. There are also great differences between Vietnamese, Burmese and Indian agarwood oils but the differences are less if we compare these oils with one of Cambodian origin. Although we call them all agarwood oils, the botanical name of the trees from India or Cambodia are different.

I worked a lot on the olfactive reconstitution of agarwood oils and achieved good success with what we call bio-agarwood oils**,** products made with high technology. My work continues, and if really successful, if we could get the real thing through perfumery work, it will be a major breakthrough in our professional world since we could eventually use them in Western perfumery. Agarwood oils are the most sensational of all the woody, rooty, leathery and animal essential oils. The natural ones are produced by us. In the West, we consider sandalwood and vetyver oils as royal jewels. In the Middle East, the real royal jewels are the different agarwood oils that today, in 1998, are priced when pure between US$8,000 to US$30,000 per kilo, depending on the various origins.

***Minty*:** I will mention four items I find very interesting, isomint, freskomenthe, givmenthe and frescolat. Isomint is missing from most laboratories, but the combinations of the same with mints, menthones and other mint products are very beautiful, increasing the power, radiance and naturalness of mint oils and imparting new, creative accords.

Freskomenthe (2-Secbutyl cyclohexanone) and givmenthe (2-Cyclohexyl cyclohexanone) have dusty, herbal, menthone-like notes, but when combined with arbensis dementholized mint oil, they increase the sweetness of the same making it more peppermint-like.They are extremely useful when formulating fragrances for bleach and other chlorine products.

Frescolat (l-Methyl lactate), combines well with all the described chemicals and when adding some caramel-like ingredients such as ethyl maltol, mentholactone or furaneol, the harmony of mint accords is supreme. I did not touch on this sub group in my past works.

***Camphor*:** Patchomint (3,3-Dimethyl-2-norbornane-2-ethanol) is camphoraceous, minty, coniferous, having nice patchouly nuances and is very useful when formulating foam-bath and other functional products.The accords of patchomint with aliphatic aldehydes such as C-9 or C-10 along with alkenals and alkadienals (Floral super, dominal, geraldehyde, 4-decenal, dodecadienal) and nitriles like dodecen nitrile or tridecadien nitrile are really good. I also like accords of the same with floralozone and calone to impart along with classical chemicals beautiful and "tonifying" accords. The product can be also widely used in fine toiletries.

The so-called dihydrociclol (norbornanol) it is strong and very camphoraceous and stable in fuctional products such as bleach, giving originality to too many formulations using only isobornyl acetate and related products.

The third item I want to mention, cis-2-pinanol, is camphoraceous and has an extremely clean note, very useful for soaps and functional products when wanting to introduce clean and more elegant notes than those imparted by the widely used ingredients in these formulations.

***Citronellic*:** Citronnellal, trimethylhexanal,citronnellic acid, tetrahydrocitral, geranic acid, pellargonic acid (I), TMH aldehyde, gergamal (II), belong to this subgroup and will be enriched with landenal (3,7,7-Trimethylbicyclo-(4,1,0)-heptane-2-carboxaldehyde) an old chemical forgotten by most perfumers and extremely strong, posessing fresh, herbal, citronellic, citrusy shades within its odor. It should bring a creative twist to citronnellal. The effects are remarkably good when mixed with limonen aldehyde and trifernal.The base, citroneland, is extremely good for functional products.

Greenal's (2,5,6-Trimethyl-4-heptenal) odor is related to aldehyde TMH and trimethylhexanal, though more delicate, less metalic and more floral-green as compared to these chemicals. The accords of greenal with metonyl, mandaril and frutonile are extraordinary and one of the key bases of functional perfumery used only internally. Also, the base, citroneland, is extremelly good for functional products.

Isononyl nitrile possesses a metallic note with important herbal and fresh effects when mixed with the related key bases along with florhydral, isonometal, floralozone and cyclamen aldehyde and creates an unsurpassable functional beauty whose spectrum can be modified by increasing the quantities of metonyl and mandaril.

***Chamomile*:** Ethyl pentenoate, butylic, isoamylic, n-amylic esters of pentenoic, tiglic, 2-methyl pentenoic and angelic acids, 1,3-dimethyl-3-butenyl isobutyrate (isopentyrate), methylpentenyl isobutyrate, butyl pentenoate, amyl tiglate, allyl tiglate, rholiate (II), methyl Cammomille (III) belong to the chamomile group.

I will add to the early descriptions of this group, carbavert (methyl 2-hexenoate), which is extremely powerful, giving

nice unexpected effects when combined with herbavert and floramat, an incredible forgotten chemical belonging to the floral-fruity subgroup. It is a great chemical to boost herbal and green topnotes especially when big quantities of iso E super, vertofix and methylionones are used.

Methyl pentyrate is a great chemical much superior to the more known isopentyrate. It is a pity it is not as available as desired.

Camonile is a base made with an important captive that I can't mention. It works very well in both functional and fine toiletries while imparting a precious herbal-chamomile scent quite natural and beautiful. Combinations of camonile with laurel-leaf oil and isobutyl isobutyrate are extroardinary.

***TEA (TheaspiraneIII)*:** This important sub-group has been frogotten by creative perfumers whose most imprtant chemical is theaspirane, described in part III[3] of my work, is enriched by 6-hydroxydihydrotheaspirane, more fruity (damascenone-like) than normal theaspirane. Its accords with mate absolute, β-ionone, dihydro-β-ionone, epimerized hediones, osmanthus and boronia absolutes (natural or reconstituted) are new. It is not often used, but dihydro-β-ionone was not used often, either, and is now a key chemical in modern perfumery. These tea accords are a source of a new trend that is very successful in the international markets that started with Cologne au The Vert, de Bulgari, a real creation . This creation contains neither theaspirane nor 6-hydroxydihydrotheaspirane but the modifications we can achieve by adding these chemicals are just great. Additionally, the modification we can achieve by using it in profiles such as Escape for men, mixing it with fruitberry**,** (berryflor) and precarone are excellent. The base, green tea auram, is an impressive application of those chemicals. It is used to impart an herbal, more natural modification to all Bulgari Cologne au the vert profiles.

***Dry leaves*:** 1-Ethinyl-1-cyclohexanyl Acetate (Herbacet Nr.1), Tachrysate, Ethyl Chrysanthemate (II) are included in this group.The sub-group of agrestical with a dry-leaves note will include chrysantheme, which is a very interesting chemical. Although when smelt pure it is not so impressive, its effect when enhancing and improving green notes is remarcable. It works very well with triplal and all the cis-3-hexenol family of chemicals and the accords of it with precarone, ether MT, phenexal and dihexal are quite good.

Neoproxen, an interesting chemical that is very stable in acidic media, could be combined with the minty chemicals described before and also with all kinds of eucalyptus and lavender notes.

***Thujone*:** 2,2,6-Trimethylcyclohexanone, 2,4,4-trimethyl-cyclohexe-2-one (pineone), and thujone, 4-methyl-tricyclo (6,2,1,0) undecan-5-one (plicatone) (II) belong to the sub-group of thujonic chemicals and will include artemone (1-acetyl-3,3-dimethyl-1-cyclohexene) which is an impressive chemical smelling of real thujone. It is very herbal, strong, vibrant and its uses are infinite. It can be used in fine toiletries fragrances as well as in functional fragrances, especially in those used for foam bath and shampoo.

Tamigone is a chemical missing in most laboratories. It is thujonic and, as in the case of artemone, vibrant and strong. It combines extremelly well with plicatone and etaspirene, giving this remarcable cassis product a good fixation. It is also very good when mixed with the so-called octalinol and most of the woody olfactive profile products.The combination of tamigone, plicatone and etaspirene along with other inportant chemicals is the heart of an internationally successful base, having an incredible strength and effects when used.

Tetramethylethylcyclohexenone, is very herbal and has important honey subnotes.The accords of tetramethylethyl-cyclohexanone, one of the best products I know, are limitless and it is used extensively. Its combinations with woody and honey-like chemicals are important and again it is excellent to mix it with tamigone, isophorone, phenylacetates, nor limbanol, base XVIII E and okoumal to get unexpected results. It also blends incredibly well with resins such as benzoin and frankincense as seen in important bases such as resinodor and fixambral and it is a major ingredient, along with chemically related chemicals such as diethyldimethyl-cyclohexenone or trimethylethylcyclohexenone in products like aromel givco, nectarol or miel blanche.

Herbac (1-Acetyl-3,3-dimethylcyclohexane) includes important shades of both thujone and camphor. Artemone is a good product to enhance thujonic accords and therefore its combinations cannot be mentioned in a work like the one I am writing here. It has been successfully used in bases such as thujetone and chamomile ITA that create delicious shades to herbal fragrances.

Let's finalize this sub-group by mentioning artemisia ketone (2,5,5-Trimethyl-2,6,-heptadien-4-one), again a great, nearly forgotten product that blends extremely well with the rest of this family and whose uses cannot be fully described in a work of this length.

***Juniper berry*:** To finalize the olfactive family of agrestical products, I will describe two remarkable chemicals, almost forgotten, belonging to the sub-group of juniper-berry notes.

Juniparome (Dimethyl tricyclo (5.2.1.0)-2,6-decenyl methyl ether), an old chemical possesing an interesting novelty, hasn't been used much. It has shades of juniper berry with fruity notes of tropical fruits and sweet honeysuckle magnolia-like parts. Its use could create quite a new trend in fragrances for shampoo, foam bath. It also combines well with ozone-like smells such as melozone, vertral and the jewel of floralozone mixed with the described thujonic smells and also coniferous scents.

Also interesting is junipal (4-Formyl-7,7,9-trimethyl bicyclononene), very strong and stable in many media, able to achieve good twists to accords like those imparted by combinations of juniper berry and clary sage oils.It works well when mixed with ambrox, musks, β-damascone and ambrinol.

Aldehydic

This group includes aldehydes C-7, C-8, C-9, C-10, C-11 lenic, C-11 lic, C-12L, C-12MNA, C-13, cis-4-heptenal,

trans-2-heptenal, trans-2-nonenal, 9-decenal, trans-2-decenal, trans-2-undecenal, trans-2-dodecenal, trans-2-tridecenal, myrac aldehyde, citronellyl and geranyl oxyacetaldehydes, mandarin aldehyde, bigaradial, citrophore, citrodial, iranal (I), trimethyldecadienal (trimenal), cis-4-decenal, trans-4-decenal, citraldial, muguettal, lysorangia (II), and 5,9-dimethyl-4,9-decadienal (dominal)(III).

Floral super (4,8-dimethyl-4,9-decadienal) and geraldehyde (5,9-dimethyl-4,8-decadienal) are isomers of the chemical described in part III[3] of my work, dominal. Both are extremely strong aldehydes and, as usual in chemicals with this structure, have strong citrusy floral notes that combine very well with other aldehydes, especially the alliphatic, but also with products such as 4-decenal. I personally love these products and use them in small traces in all kinds of fragrances since they increase the power, radiance and elegance of them.They are really indescribable with words, as complex as they are. When used in dilutions, they are far better than alliphatic aldehydes, always giving more synthetic effects, though more widely used than related products.The alliphatic aldehydes improve when mixed with products like floral super, geraldehyde or dominal. However, I feel it will take some time before the alkenals and alkadienals are fully rediscovered in perfumery. Creativity will demand increasing use of these chemicals

Ozonic

This is one of the most important groups, one that has really influenced modern perfumery. The first product I'll mention is precyclemone B (1-methyl-4-(4-methyl-3-pentenyl)-3-cyclohexenecarbaldehyde), with its pure ozonic, marine, radiant, clean and strongly diffusive smell. It is used and used extensively in many fragrances that have succeeded in the market partially due to the auratic effects of the prominent chemical that makes fragrances far more noticeable. It has been applied in fragrances such as Dolce Vita, Eternity for Men, XS for Men, Cool Water for Men and many more.

Cyclemone A, used far less than precyclemone B, proves very interesting in functional accords for boosting the difussion and increasing strength.

Cyclomugual nitrile, which is the nitrile of cyclemone A, is more stable than the aldehyde though less floral and more metalic.Great effects can be obtained from those two related chemicals when formulating detergent fragrances. Interesting top notes are found when mixing them with herbavert and with diprosal**,** a totally forgotten aldehyde.The symbiosis of both products is unique but requires the skills of good perfumers to find and balance the beauty that can be achieved by blending them.

Woody

This segment includes many sub-groups and is one of the most important in perfumery

Pungent woody (patchouly, cedarwood, vetyver) : Cedryl and vetyveryl acetates,vetyverol, cedrol, cyclododecyl methyl ether (palisandin), cyclododecyl ethyl ether, cyclodecyl methylallyl ether, methyl cyclododecyl methyl ether (madrox), α-cedrene epoxyde, methyl cedryl ketone (vertofix), mahagonate, cedryl methyl ether (cedramber), isolongifolanone and isolongifolanyl acetate, timberol, tetramethyl tricyclo undecane epoxyde (romanal), patchouly epoxide, trimethylcyclodecatriene epoxyde (cedroxyde), rhubofix, octahydrotetramethylnaphtalene (iso E super)(I), calarene epoxyde, caryiophylenyl formate (caryolan), 4-methyl-4-phenyl-2-pentanol (corps 53), methyl vetyvate, 4-cyclohexyl-2-methyl-2-pentanone (vetyval,vetyvertone), khusimone, vetyverones, 6-isopropyl-2-decalone (decatone), veltonal, trimofix (II), oxyoctalin formate, amboryl acetate, limbanol and physeol (III) are included in this group.

Nor limbanol (2,2,6-Trimethyl-α-propyl-cyclohexane propanol): In part III of this series, I described limbanol, a nearly unknown chemical that is excellent yet different from nor limbanol. Nor limbanol is simply fantastic, powerfully woody in the direction of patchouly, but not humid and with important ambery effects. It was found as an impurity in a much older product, timberol, imparting to it many of its valuable effects. Nor limbanol is found in many fragrances such as Ted Lapidus for Men and Marbert Men, among others, and in important bases such as limbwood.The accords of nor limbanol with cedroxyde, base XVIII E, coranol, precyclemone, caryolan and polywood are extraordinary. It is one of the best available woody products and it will be used more and more in the years to come, becoming a must-have item in the perfumery of the 21st century. The effects of nor limbanol with musks, especially muscone, muscenone delta, exaltone, exaltolide and habanolide, and woody chemicals such as spirambrene and ambraketal (used in large amounts), have given life to one of the most successful masculine fragrances of the Middle East.

Dextro nor limbanol, extremely new and resulting from research, is more powerful than nor limbanol and is just starting to be used. Again, it will be an important chemical in the years to come and will possibly affect perfumery beyond the year 2000. It is velvety, creating beautiful accords with quinolines such as iso E super, amber ketal, karanal, vertofix, trimofix, boisanol, cedroxyde, spirambrene, woolfwood, oxadrane and many other chemicals.

Okoumal, being used quite widely, is a heavy, woody-musky chemical that is extremely fixative. One of the important uses of okoumal has been in Escape for Men where the accord made of birch leaf givco, florhydral, ebanol, helional (about 5%) kephalis, veloutone, sandalore, koavone, floralozone and precyclemone B was extraordinary. Okoumal is also used in functional perfumery and forms part of important detergent and fabric-softener fragrances although it will be increasingly used in the next coming years. I also foresee a good future for okoumal missing from almost all perfumer's shelves.

Amraketal (phantolid ketal + a methyl group) is vey close to okoumal and still more heavy and musky. It should be classsified between the musky and woody families, but I place it here because it is related to okoumal. Applications are similar to the above. Do not confuse this chemical with ambraketal (14,15-Bisnorlabdan-8-α-13,13,20-dioxide), also called Z-11, which is one of the most important chemicals used in our profession, described in the second part of my work.

Boisanol(Trimethyl cyclododecadienol and trimethyl-cyclododecatrienol) is the corresponding alcohol to cedroxyde. Boisanol is supreme and one of my favorite woody chemicals working in small amounts similar to the way trimofix and ambraketal work. Combinations of both are extremely good and accords using them with vetyverol and vetyveryl acetate are even better than these products alone. They work well providing lift and life to iso E super, kohinol and vertofix coeur. It is a real "Burmese ruby" of the woody family.

Tobacarol (5,6-epoxy-2,6,10,10-Tetramethyl bicyclo (7,2,0)-undecane), another real jewel, is warm, woody and spicy with notes of clove, macis and nutmeg, ambery, tobacco, and others. Because of its many shades and nuances, it is impossible to fully describe. It combines extremely well with citrus notes and the accords achieved when mixing lime oils or lime chemicals such as the lime dienes DA, with tabacarol and octalinol, are part of perfumery's future. Additionally, the accords of tabacarol with oriental-woody fragrances are remarkable since tobacarol provides them substantivity, fixation and body. Accords of tobacarol with woolfwood, spirambrene, oxadrane, octalinol, and the limbanols are impressive. It is a chemical of the future since it will be used increasingly in the coming decade. Tobacarol, a chemical that has been used as a captive for a long time, is one of the key woody notes of Herrera for Men, incorporated in this fragrance either directly or through a base. The accord, kohinool, iso E super, tobacarol, dimethylcyclormol, nutmeg oil and paraanisyl phenylacetate is the key of one of the most outstanding international woody bases in the world. Many people have been using tobacarol by using this base where it occurs at a dosage of 10%, without knowing which was the woody note used in their fragrances.

Hydroxyambran (2-[cyclododecyl]-propan-1-ol) works extremely well with the limbanols, okoumal and tobacarol. It provides body and fixation while mixtures of both chemicals with unsaturated macro-cyclic musks are part of the future. Hydroxyambran is one of the most long-lasting and powerful chemicals I know. I feel that an accord of hydroxyambran, nor limbanol, ambraketal (Z-11), okoumal, tabacarol, havanolide, exaltonene, coranol, octalinol and muscenone δ with touches of isospirene and etaspirene has a supreme harmony and an extraordinary auratic breathing quality; an important part of the success of a fragrance. However, this accord is not the last word in accords, since what can be done with these chemicals (in recombinations) is simply unique and limitless. Many perfumers search for the supreme accord in perfumery, but it does not exist. Arts are evolving and accords full of beauty will always be as plentiful, plural and diverse as the tastes of people. Art has always been the mixture of the past and the future. Fidias did not know Michaelangelo and Zurbarán did not know Marc Chagall. All of them are part of the history of the fine arts as will those artists to come.

Spirambrene is a nice, strong chemical with a closeness to boisambrene forte, nor limbanol, cedroxyde and cedramber. It is somewhat more seaweed-like than the above and imparts important velvety nuances to woody notes. Again, I believe it is a chemical that has a bright future in our industry. It is being widely used in fragrances such as Kenzo for Men, Eden, Gio and Agua Fresca by Adolfo Dominguez, among many others.

Dione (Trimethylcyclohexyl acetyl-2-cyclopentanone) is unknown and forgotten chemical by many perfumers. It posseses notes of cistus, precious woods and amber-animal nuances. It is a valuable fixative, good for imparting woody-animalic shades in chypre and fougère fragrances. It is quite stable in both acid and alkali media.

Karanal (2,{2,4-Dimethylcyclohex-3-ene-1-yl}-5-methyl-5-{1-methylpropyl}) is a new and special chemical. I call it special because the way its smell is interpreted varies significantly. I find it weak, possesing the organoleptic properties of products like iso E super or kohinool. However, other perfumers find it extremely strong with properties resembling trimofix, boisanol or ambra ketal, while still other people find it equal to amber core, cedramber or amboryl acetate. It is said that small amounts impart very important nuances in fragrances that I am unable to smell at all. It is like the macrocyclic musks that need to be mixed in order to be smelled since people highly sensitive to muscone can normally not smell civettone and vis a versa. The same thing applies to karanal. I smell it weakly, while other people smell it to a medium degree and still others smell it to an extremely strong degree. It is very difficult to please everybody. I have used karanal in an extremely beautiful base called woodauram**.**

Woolfwood**,** a relatively new chemical unknown to many, is woody with what I call norbornanyl effects. What I mean by norbornanyl effects is a mixture of nuances found in products like palmaire or herbacet No. 1 or No. 2, although those are not woody. It is a pity that sensations and feelings are so complex that we do not have words to express them. You will find in my writings too often, the same adjectives used repeatedly. Woolfwood is very elegant and combinations of it with leathery chemicals, oakmoss and labdanum and ladbacuir, are very beautiful. Additionally, accords of woolfwood with cedroxyde, nor limbanol, firsantol, phenexal, aldehyde NU, methyl decanile and musks like habanolide or muscenone δ are extremely interesting.

Vetylbois (1,4-Dimethoxy-2-terbutyl benzene) is a very clean, woody chemical with nuances of vetyver and patchouly that is dry and elegant. Its accords with spirambrene, oxadrane and dione are quite remarkable and its ability to

dry patchouly dominated accords is quite interesting. It has been frequently used in perfumery mainly in small quantities as part of important bases where it imparts its properties. Examples of fragrances containing vetylbois are Heritage, Eau Fraîche de Leonard and Insensé de Givenchy.

Cyclamber (13,Oxabicyclo {10,3,0} pentadecane) is a relatively old chemical missing from many laboratories. It is a sharp, velvety, ambery, woody, elegant and very diffusive note that blends very well with nor limbanol and cedramber. It is very substantive and therefore extremely useful in detergent and fabric-softener fragrances. Personally, I have always liked cyclamber very much, and I believe this chemical deserves a better future, to be used more often as a very noble ingredient in many accords. The bases brentwood, begur, sacred musk and agarwood Pra**.**, contain this product. It is widely used in combination with extremely rich materials.

Oxadrane, a product developed in the late 80's and unknown to many, is quite interesting and combines very well with dione, vetylbois, labienone, novolide, tetrascone and physeol, imparting unusual effects to spicy and woody accords. It is interesting as well when mixed with koohinol, koavone, polysantol, iso E super, ambra ketal and p-anisyl ahenylacetate.

Amber core (o-Terbutylcyclohexyloxybutanol-2) is beautiful, velvety, and delicate, smelling similar to cedramber, but with a different ambery nuance that is less costly. It is very effective in functional products since it is quite substantive. It is also very useful for boosting the fragrance of detergents. It forms part of the base called begur**.**

Sandalwood: Hydroxytridecyltricyclo tridecane (Sandela), santalol, bergamotol,cis-β-santalol (I), sandalore, brahmanol, corps santal, acetate TCD, bacdanol, sandal Mysore core (II), krishnanol, indianol and krishnanone (III) are included in this sub-group.

Ebanol (3-Methyl-5-{2,2,3-trimethyl-3-cyclopenten-1-yl}-4penten-2-ol) and its isomers are very rich and powerful sandalwood chemicals with musky nuances. It is very strong, but must be fresh because if it is old or not properly stored, it develops many synthetic sandalwood chemicals, urinous and animal shades. Ebanol was first introduced as part of the base super sandalore. Either pure or through bases such as super sandalore, it has been used in many fragrances, both in functional and fine toiletries fragrances. I believe it is a good chemical though sandalwood oil is so complex that no chemical imparts its class and all nuances. It is best to blend them and to use them together.

Polysantol (3,3-Dimethyl-5-[2,2,3-trimethylcyclopent-3-en-1-yl]-pent-4-enol and 1,2,2-Trimethyl-4-[2,2,3-trimethylcyclopent-3-en-1-yl]-but-3-enol) is a mixture of both isomers. It is one of the best available sandalwood chemicals. It is strong, with an impressive character posessing important segments of the natural oil, imparting a fruity nuance which is missing in the same. Polysantol is an important development that is important to the evolution of our profession. Blends of polysantol with ebanol, bacdanol, brahmanol, blue chamomile oil and sandela are unique. However, my belief is that sandela must always be used as a fixative for all sandalwood chemicals. The accords of polysantol and firsantol are also excellent since the latter product lacks the fruity note of polysantol and hides it, making the mixture more of a sharp, dry sandalwood. Polysantol has been used in many fragrances such as Xs for Men, Safari for Men, Samsara and many others. Products like Safari for Men, Samsara and Marbert Men contain impressive amounts of polysantol. It has also been used in the green and white Palmolive toilet soap fragrances. It is also used in bases such as sandalwood 77125 B, brentwood, mysorene and new frutambria, with great success.

Firsantol, a higher isomer of polysantol, is really a jewel. It is more sandalwood-like than polysantol and more dry, less fruity and has a note resembling pure cis-B-santalol which, it seems, is going to be synthesized soon in industrial scale. Firsantol is one of the greatest sandalwood chemicals ever developed, and has a bright future as a key ingredient in our profession. It has been used in many fragrances and bases yet remains virtually unknown to many. It is more long-lasting than polysantol.

Candalum is another chemical I would like to mention**.** What we know as sandela is a mixture of isomers named 3-isocamphyl cyclohexanol. Many of these stereoisomers are almost odorless while others are extremely strong. Candalum is an extrordinary product in which the best-smelling isomers are conentrated. It is by far stronger than sandela and similar products. It is difficult to understand the possibilities of candalum without being a skilled perfumer, but I believe it has a very good future, influencing the perfumery of next decade. What is good, sooner or later succeeds.

This family of sandalwood-related products is one of the most revolutionary and one where the research had been more successful, by far, more than patchouly, vetyver or agarwood notes. However, if it is true that cis-B-santalol can be synthezised, we will have a real jewel that is still missing. All these products like brahmanol, bacdanol, sandal Mysore core, polysantol, firsantol, and ebanol, are not as long-lasting as cis-B-santalol, one of the keys to the scent of the natural oil. Sandalwood oil that lasts about three months in a smelling strip is mainly composed of α-santalol (weak), cis-β-santalol (extremelly important), epi-β-santalol, trans-β-santalol, spirosantalol, (important), cis-lanceol, cis-nuciferol (important) and trans-a-bergamotol (important and partially reponsible for the milky top note). The research on synthetic chemicals with sandalwood notes has been very important, providing chemicals that are, by far, less long-lasting than the natural ones. I believe it is necessary to find good, rationally available chemicals that last longer than those available today. One of them, already produced, is candalum and also those described in part III of my work Indianol, krishnanone and krishnanol were chemicals produced when trying to find long-lasting sandalwood-related products. However, the purification and stabilization were not very good, and undesirable, strong

animal-hormone nuances appeared when synthezising, producing and storing them.

Lichenous

Evernyl(I) Orcinyl Nr.3(III) is included in this sub-group.

Seamoss (Methyl 3-methyl resorcylate): This substance is crystalline like evernyl and orcinyl No. 3, which is as strong as those described before but less used and known. Seamoss is a very good product smelling clearly of oak and tree moss absolutes that deserves a better use in our future creative works.

Ethyl 2-hydroxy-4-methoxy-6-methylbenzoate: This is an almost unknown chemical with important shades of oak and tree-moss absolutes. It is not much used because it is olfactively considered less important than evernyl, orcinyl No. 3 and seamoss. However, evernyl is not 100% oak-moss absolute. When mixed with orcinyl No. 3, for instance, the mixture is much better than evernyl alone, being more natural. My point is that mixtures of evernyl, orcinyl No. 3 and ethyl 2-hydroxy-4-methoxy-6-methylbenzoate are more beautiful than evernyl alone because they are closer to the natural product from Yugoslavia. The related chemical is extremely long-lasting, good for use in mossy bases and accords. The product imparts good substantivity on fabrics, especially cotton.

Woody-Floral

Methylionones(I), dihydro-γ-ionone, myrtenol, 2-methyl-3-(-2- methyl-5-isopropenyl cyclopentenyl) and propyl acetate (Pentambrette)(II) are included in this group.

Koavone (Acetyl diisoamylene isomers): This product is not very new and is widely used in perfumery since it is very elegant. It is related to the smell of methylionone γ, but less heavy and more sharp while providing lift to the top notes of all the products in which methylionones and iso E super are used. It has been used frequently in fragrances for fine toiletries such as Globe by Rochas, Tsar by Van Cleef & Arpels and Jazz among others, and in functional fragrances such as Lenor. It has also been used in fabric softeners and Pink Palmolive toilet soap. Koavone is a unique product as well, with its future assured being used more and more in next decade's fragrances.

Dihydro-β-ionone has an odor somewhat mild, woody, floral and slightly fruity, possesing great radiance and beauty. It is a relatively old product that has only recently found found a wider audience when introduced in the creative accord of Issey Miyaki for ladies. Afterwards, it was used in many fragrances, amongst them Dolce Vita and Bulgari for ladies. However, it is found in many traces in many fragrances because it is an important part of the reconstitution of osmanthus absolute, along with dihydro-β-ionol, γ-decalactone and theaspirane. I believe it will be used increasingly in perfumery, with many accords being created with its complex and ambiguous, floral, woody and fruity notes.

Ironyl (Butyl-3,4-dimethyl-3-OH-5-[2,6,6-Trimethyl-2-cyclohexenyl]-4-pentenoate): This element is almost unknown to many perfumers and it is a very interesting chemical since it is fabulous for fixing methylionones, imparting velvety and extremely nice nuances full of charm. It can be mixed with iso E super and vertofix providing these chemicals, already complex, an additional orris note of great value. I believe, it is a chemical that should be rediscovered. It is a pity that the product I described in second part of my work, pentambrette**,** has almost been discontinued. Accords of pentambrette with ironyl, musks, hedione and irones have much beauty and radiance, especially now that we have extremelly strong musky chemicals such as exaltonene and muscenone δ. Pentambrette should be re-introduced in our industry and boosted again along with ironyl and many other forgotten chemicals. The beauty of ironyl, pentambrette, habanolide and epimerized hediones, calone, and helional could give accords an unsurpassed elegance.

Iritone (4-[2,4,6-Trimethyl-3-cyclohexenyl]-3-buten-2-one): This element and its isomers work more or less like ironyl, but in a different stage of the evaporation of the fragrance. Iritone and methyl iritone enliven methylionones and ionones, and work very well with koavone. It is being used in many fragrances, especially in functionals, because of its stability in soap.

Kohinool (3,4,5,6,6-Pentamethylheptanol-2 and isomers): Kohinool has a woody, floral, amber note with an unsurpassable beauty that combines extremely well with iso E super, making what I believe to be a dream accord. In the past, I used to say that nothing was comparable to vetyveryl acetate or vetyverol, but upon seeing mixtures of iso E super, kohinool, cedroxyde, nor limbanol, boisanol, trimofix and amber ketal, my mind changed. They are as great as the previously mentioned old and classical products.The best well-known use of kohinool is Herrera for Men (around 5%).

I will finalize this sub-group with ambrate and dihydroambrate, old chemicals that are not properly understood and not widely used. They are full of many shades and have complex odor descriptions.They are woody and floral with important nuances of ambrette that work very well with iso E super and methylionones making the achieved accords more sophisticated and interesting. It is quite different from mettambrate, which is much more fruity and licorous chemical that will be described later in this part of my work.

Animal

The first sub-group of this segment is one including chemicals with a musky note. It is interesting to notice that some musky products are undoubtedly animal, while others are more radiant, clean-diffussive and flowery. However, having respect for the deer musk that led us to start the research on these chemicals, I will classify them all here in this sub-group.

Musk

Muscone, exaltone, exaltolide, civettone, ambrettolide, 10-oxadecanolide (Oxalide), 11-oxadecanolide (Musk R-1), 12-ocadecanolide (Hibiscolide), galaxolide, traseolide, tonalide, ethylen brassilate, versalide, musk D.T.I.(I), muscogene, musk moskene, hexadecanolide (Dihydro-ambrettolide), neomusk, muskia, muskalia, muskione, musk moskene and thibetolide (II) are included in this group.

Habanolide (Cyclopentadecenolide): This chemical was found as an impurity in products such as exolide super during an attempt to get better reactions to synthezise exaltolide (Cyclopentadecanolide). It possesses a radiance, elegance and beauty that I find indescribable. The accords including it are limitless. The olfactive strenght of the unsaturated macro cyclic musk chemicals is much higher than the saturated ones that have been used for decades, such as muscone, exaltone and exaltolide. Habanolide has been used in many fragrances whose most remarkable example is Bulgari for Men, where its extroardinary, powerful and long-lasting musky effect is imparted along with muscenone δ, another unsaturated macro cyclic musk chemical. Habanolide is, perhaps, one of the most elegant products I know of. Again, I regret that pentambrette has been almost discontinued since the accords of both products together could be extremely elegant.

Muscenone δ: (Methylcyclopentadecenone): If habanolide is radiant, floral and musky with metalic notes, muscenone δ is animal, strongly musk tonkin, and plays a role in the natural product's odor, perhaps, more important than muscone. The same thing happens when smelling a rose-flower fragrance, where the smell of damascenone and β-damascone is almost as strong as the scent of β-phenylethyl alcohol or citronnellol, though they are present in minute traces. Muscenone δ smells of the most animal-like part of deer musk powder or musk absolute, if made. All of these unsaturated macro cyclic musks are incredibly strong and accords we made in the past mixed cresols with exaltolide or muscone and are now much finer and more elegant when using muscenone δ or chemically related products. It is being widely used in fragrances such as Bulgari for Men.

Exaltonene (Cyclopentadecenone): If muscenone δ is the unsaturated chemical related to muscone, exaltonene is the unsaturated chemical related to exaltone. It is incredibly strong, animal and smells of deer musk powder. It can be applied in the same elements mentioned with muscenone δ. Its animal note is more remarkable and beautiful than that of muscenone δ. Mixtures of muscenone δ, exaltonene, exaltone, habanolide, exaltolide and muscone are the holy *sancta sanctorum* of the musky sub-group. I believe the research in this area has approached perfection and we can now say that we know what the meaning of musk, today, is not at all like galaxolide.

New products coming from research are the so-called helvetolide and vulcanolide, that have applications similar to muscenone δ and exaltonene. Small traces of them increase the power of products like habanolide, exaltolide or exolide super to a high degree. Accords made in the past with p-cresol, p-cresyl phenylacetate, maritima, galaxolide and musk cetone seem to me today very outdated. The future is coming in a new direction and this direction will be extremely important in the perfumery of the next decade.

Novolide: This element is a crystalline substance almost unknown in this industry with features resembling tonalide, but more fruity. It is useful as a fixative for fruity notes, so fashionable today. Novolide has been used in bases such as osmanthinia givco and it works well with dihydro-β-ionone, 6-hydroxydihydrotheaspirane, damascenone and damascones, tuberolactone, tuberolide or methyl tuberate, jasmin lactone, the almost forgotten lactone of cis-jasmone, and myrasline, a very good product nearly discontinued. Also extremely interesting are the accords of novolide with the beautiful and old nectaryl (2-{p-Menth-1-enyl-9} cyclopentanone), fortunately being promoted again. Accords of nectaryl, precarone, corps popinal, radjanol, fixal, givescone, berryflor and florhydral with novolide are extremely good. Unfortunately, some of these products are being restricted because of those not responsible with the task of creativity in our profession.

Muscalone: This element is another interesting substance that is very powerful and unknown to most. It has not been used extensively, but I would like it to be rediscovered since its many nuances provide an extreme beauty to many accords. This is especially true in combination with ambretone (5-cyclohexadecenone), an unsaturated musk structure much older than those described herein and inexplicably unused for many years. Its olfactive beauty, musk, and animal nuances and diffusion made it a success of recent research. Ambretone is long-lasting, substantive, extremely stable and smells quite natural of musk with ambrette nuances that are very charming. Again, accords of pentambrette, the forgotten jewel, with ambretone and hedione are unique.

Amber Gris

Methyl dodecahydro trimethyl naphtofuran (Ambrox), ethyl dodecahydro trimethyl naphtofuran (Grisalva), homo cyclo geraniol, ambrarôme absolute, dynamone, grisambria (I), 2-hydroxy-2,5,5-trimethyl ocatnile (α-ambrinol), 2-hydroxy-2,5,5-trimethyl-8,8-A-epoxyoctaline (Ambrinoloxyde), oxambrol, muscambrol, muscarome, castorol, costia, oxambria, indian wood, 2,6-dimethylbicyclo-decanol (Geosmin), homocyclogeranyl chloride, γ-homocyclogeraniol, ambraldehyde, ambraketal, (II), dihydroactinidolide, and dihydroambrinol (III) are included in this grouping.

Having previously mentioned products like ambrox, ambraketal (woody-ambery), grisalva, homo cyclo geraniol, ambrarôme absolue, dynamone, grisambria, α-ambrinol, ambrinoloxide, oxambrol, muscambrol, castorol, costia, oxambria, dihydroactinidolide, ambraldehyde and dihydroambrinol in my past works, few chemicals are to be newly introduced. Labdacore can help us to widen ambery

shades we may be looking for. One thing is important that must be said in our epoch of rationalism and pragmatism; ambrox, though unique and fantastic, is not amber gris and never will be. When in Zanzibar, the Maldive Islands, Aden, Al Mukhalla, the island of Socotra, the wild Yemeni region of Mahra, on the shores off the Sultanate and many other places where giant turtles are in sight, amber gris is available. When I smell the natural product, I feel shame and pity for our epoch. Amber gris is a wonder while ambrox, so widely used as the alternative, does not have the charm of the real thing, though many people want us to believe the contrary. Amber gris, which was supremely understood and rationalized by Ohloff, was described as humid, earthy, fecal, marine, algoid, tobacco-like, sandalwood-like, sweet, animal, musky and radiant, is thousands of times nicer than ambrox and far more mysterious.

It is a pity that we could not think over every chemical and provide such a charming and complete description as available for amber gris. Though we've lost the natural product, we have a beautiful memory of it.

That we have forgotten about this natural jewel and badly replaced it by ambrox shows how our modern society disregards the charm and depth of the subjective world concerning the fine arts. I will talk about it, hopelessly,at the end of this segment, trying to quote about arts, design and social reality. Now we cannot even think of applying amber gris, our top and already overly expensive limit is ambrox.

Coiraceous Castoreum

I have never mentioned this before because castoreum is, for me, one of the most important ingredients I have ever smelled. I did not want to chemically analyze it too much since I was afraid of losing the feeling that the scent brought to me when I recalled it.

p-Ethylphenol: This element has an extremeley complex scent, when diluted, of oak moss and castoreum. This chemical is used in important bases and accords with dihydroambratte (Castoreum givco), dihydro-β-ionone, dihydro-β-ionol, theaspirane (it is an important part of natural osmathus absolute), which are full of beauty. Diluted p-ethylphenol is extremely interesting when mixed with β-ionone, a rediscovered product which is being extensively applied in fragrances for fine toiletries. It was previously only used in rose, orris or violet accords. I have always thought about the beauty of β-ionone. I remember reciting the above in 1969, when a student in Grasse and very young. I was told I was "crazy" by very experienced perfumers. p-Ethylphenol could be an important ingredient as well, but skill is necessary to dose it properly.

Nolinac (4-Ethyloctanoic acid): This chemical is also called costus acid N. Nolinac is another jewel smelling of costus and castoreum when extremely diluted. It is the key of most synthetic costus bases. We cannot use the natural products because we could die from smelling such a poison. We can smell nolinac in infinitely small dilutions. Accords of nolinac, costaulon, patchoulac, p-ethylphenol and p-isopropylphenol, along with many other things, give us a new rooty, animal character that I have used to create bases like castoral, castorax, animusk, coirilys and Bangladesh.

P-terbutylquinoline: This is an almost forgotten chemical which should not be confused with isobutylquinoline, normally a mixture of isomers where P-terbutylquinoline often occurs along with sec-butylquinoline and other related products. P-terbutylquinoline alone is more erogenic, more castoreum-like and more animal.The chemical, as in the case of p-ethylphenol, nolinac and many other important products, belonging to this sub-group should be carefully dosed. Only then will we feel all its strength and beauty full of possibilities. It is important to mention that all these products blend very well with the chemicals I will mention in my next sub-group that I label animal-floral.

Animal-Floral

P-cresyl isobutyrate, P-cresyl isovalerate, P-cresol, and indolal (II) are included in this group.

This is a unique sub-group and one of the most important in our profession. Mentioned by me before in my past works I will continue it by adding:

Narcisse ketone (p-Cresyl ethylcarbonate): This chemical is a jewel, unknown and forgotten by most perfumers. Narcisse ketone is less medicinal and less animal than other p-cresol derivatives, and by far more floral. It is a product that can really take us to the world of narcisse absolute. The accords of narcisse ketone are limitless, having the ability to be mixed in all kinds of narcisee-like florals and animal bases such as animalis, based in p-cresol derivatives and a special treatment of cedarwood oil. Narcisse ketone warms up, harmonizes and provides radiance and auratic breathing to most of the formulas where skilfully used. Again, it is a product to be rediscovered and re-used since the effects provided, I believe, are much better than those imparted by p-cresyl acetate and other p-cresols, which I find are more synthetic and metallic.

Sumatril (Tricyclodecane carbonitrile): Although this chemical is rated as spicy and herbal, it is deeply animal-floral. Sumatril is quite stable in functional perfumery and it gives interesting accords with another forgotten product, ethyl phenoxyacetate, inexplicably missing from most laboratories. Sumatril gives impressive lifting to resinous accords and it combines very well with tetramethylethylcyclohexenone, etaspirene, tamigone and laitone, creating new blendings.

p-Cresyl crotonate: Again, this chemical is a unique, forgotten and unknown product, key in many international bases. It has a clear narcisse note, more natural than most p-cresol derivatives. It is also fruity, tobacco and extremely floral when smelt at the proper dilution. Accords of both nracisse ketone and p-cresyl crotonate are simply excellent.

Citrindol: This is a totally unknown schiff base that has been widely used in classical perfumes such as Joy, but also in newer fragrances such as Polo, more or less modified. The accords of citrindol with tufurol acetate, n-propyl

benzyl carbinol, n-butyl methylanthranylate, acetyl isoeugenol, phenoxyethyl propionate and p-methylphenoxyethanol are part of the history of our profession. However, many perfumers used those elements without exactly knowing what they were using.

Caramel

Maltol, methylcyclopentenolone, dimethylhydroxyfuranone (Furaneol), tiglic and angelic acids, ethylcyclopentenolone, ethyl maltol, maltyl isobutyrate, and propionate (II) are part of this sub-group.

I mentioned before that the influence of these profiles is large and increasingly important. Products like aramis have an important caramellic note given by maltol. The oriental beauty found in amazone is extrordinary and has sandalwood, exotic resin and caramelic nuances full of charm. However, today, one the most frequently used absolutes, either natural or reconstituted, is fir balsam. It affects perfumery more than most ingredients. Its effects are unique, but I don't have time to mention them since there are nearly no men's perfumes without fir balsam.

Cyclopentacide (Cyclopentilideneacetic acid): This element is not familiar to most perfumers. Cyclopentacide blends extarordinarily well with fir balsam accords, imparting a new twist to the natural or reconstituted product. Cyclopentacide also blends well with mossy products as well as with fruity elements and with the nearly forgotten (and difficult to use) glycomel. It also blends well with methyl pentenyl salycilate, firsantol, myroxide and isoacetate. Cyclopentacide accords with tiglates and angelates are simply a dream. However, my experience sometimes is very limited. I still do not know how to properly use cyclopentacide or glycomel. Perfumery is reflection and hard work and requires much time and study.

Balsamic

Vanilla: Vanillin, ethyl vanillin (I), guaiacol, vinyl guaiacol and acetyl guaiacol (II) are included in this sub-group.

Ethyl and propyl dianthilis: These chemicals are long-lasting and impart very different effects that are, by far, less vanilla and more spicy-balsamic and carnation-like. They blend extremely well with many florals such as jasmine, tuberose, carnation, gardenia and magnolia. They are not extensively used. One of the formulas we can admire their effects in is Jasmin Etoile Civco. I like them very much and I have worked accords of them with nectaryl, tuberolide, osmathus, methyloctalactone, prassinate, magnolan and diantheme. These are, according to my sense of beauty, supreme.

Isobutavan (Vanillyl isobutyrate): This chemical posseses sweet, vanillic with buttery, chocolate and cocoa shades. It is used when one is looking to diversify and sophisticate the effects found with vanillin and ethyl vanillin. I like accords of isobutavan with cyclopentacide, laitone, ethyl laitone and mettambrate. It is a virtually unknown chemical and will blend very well with accords such as those found in Angel or Hanae Mori for Ladies.

Ultravanil (2-Ethoxy-4-methylphenol): This chemical is extremely strong and quite forgotten. It works well with creosol when trying to impart real vanilla-absolute effects. These effects are unique when working narcisse and carnation accords or reworking elements such as the accord of amazone or old Van Cleef & Arpels for Men, both extremely complex fragrances so different to those being formulated today. However, as I said when discussing the chapter related to amber gris, vanilla absolute is something we need to forget about. What is vanilla if we can smell vanillin, ethyl vanillin and vanitrope? It is by far enough, or, if necessary, accords of vanillin with isoamyl acetate are also available. What else do we need? As I said before, pragmatism, rationalism and a great capacity for resignation are virtues highly appreciated by our society. Vanilla or amber gris are too complex to be understood by a world providing us with Planet Hollywoods and Hard Rock Cafes, where the noise is such that nobody can talk.

Honey

I never mentioned these before, but classical products such as phenylacetic acid and many phenylacetates are extremelly important. Bases such as nectarol, miel blanche, miel oliffac or aromel givco are top ingredients and keys of many accords.

p-Anisyl Phenylacetate: This chemical is an old, forgotten and recently re-used element in a top woody base where it is mixed with koohinool, iso E super, dimethylcyclormol, nutmeg oil, tobacarol and other captive ingredients. The accord of the base, modified, is around 10% of Herrera for Men. p-Anisyl phenylacetate imparts an extremely good fixation with elegant honey undernotes, yet it is clean, diffusive and blends very well with vetyveryl acetate and sandalwood oil. I feel we are being told to forget these precious ingredients.

Propyl phenylacetate: This chemical is used less than ethyl phenylacetate. However, it is by far more natural honey-like. Its accords with azarbre and tetramethylethylcyclohexenone are unique as found in the base melauram, where they are combined with rare ingredients. It is an available chemical that needs to be rediscovered. I like to work with it quite a lot having achieved remarkable results.

Cypronat (Cyclohexene isopropylacetate): This chemical has a strong, unexplored honey note. It is very interesting to mix it with tetrahydro-p-methylquinoline, phenylacetic acid and oxyvet, to achieve a very unusual animal-honey effect that I find very substantive to be used in detergents and fabric softener fragrances and fine toiletries.

Resinous

Labdanax (II) is included in this sub-group.

I always loved the term "precious resins." We cannot forget that Christ was offered gold, silver frankincense and myrhh by

the Three Wise Men when they came to worship him. This is because in those times, the three ingredients had the same value. When the Romans used to travel to Samaram, a fabled harbor close to Takah and Mirbat in present Oman, they exchanged these precious resins with gold. Silver frankincense was used in their temples and the Christians took it for use in churches. Myrrh was used in parties and orgies and therefore was almost banned until rediscovered by perfumers at the end of last century and the beginning of this one. However, there are no synthetic chemicals clearly smelling of those resins. The chemistry of frankincense is easier than the one of myrrh. I have never seen synthesis of curzerenone or dihydrocurzerenone nor the many furans and furan ketones such as furadien-6-one, that occur in myrrh.

Aromavert (Schiff base of camphollenic aldehyde and methyl anthranylate): This is quite an interesting chemical since it olfactively combines the notes of resins with parts of orange-flower absolute and green parts of neroli. I like to use it in many fresh accords and bases incorporating cassis, mango and citrus notes. Aromavert and these bases, octalinol, epi hedione, habanolide and iso E super are very good when combined. Its accords with Eau Sauvage profiles are remarkable.

Lavonax (4-Pentenophenone): This chemical is described as an opoponax, myrrh and labdanum chemical that works very well with kephalis, samaram, labdanax, myroxide, and cyclohexyl crotonate. It can be used either in combination with the natural resinoids or with many chemicals to impart an oriental, non-discoloring effect in many functional accords.

Morellone (Benzyl dipropylketone): This chemical smells of Peru and tolu without many parts of the natural products such as those provided by nerolidol or cinnamates. It is a very stable chemical and it is very substantive. It should be re-used increasingly along with musks in order to modify the olfactive substantivity provided by them.

Forenat (Styrallyl crotonate): This chemical is nearly forgotten and very interesting. It is missing from most laboratories with important aspects of labdanum, Peru and tolu. I have used it often and mixed it with interesting oriental accords. It is good to combine with rose and ginger lily head-space accords. One fragrance to be reworked, where ginger lily head-space accord was used is cabotine. The addition of forenat and other key ingredients such as precarone, phenoxanol, myroxide, berryflor and florhydral to this accord gives a new twist that I find quite interesting as seen in many of my bases (lilypure family).

Farnesene: This perfumery element is an increasingly used sesquiterpene found in almost all natural products, especially in gardenia. It gives very interesting notes with florals and also combined well with opoponax, myrhh, benzoin and some of the products described in the honey and herbal honey sub-groups.

Tobacco

3,3,5-Trimethylcyclohexanone, 3,3,5-trimethyl-2-cyclohexen-1one(Isophorone), 2,2,6-trimethyl cyclohex-5-en-1,4-dione (Oxophorone)(I), 3-megastigmatrienone (Tabanone), tobacco leaf, cetotabac, darjeeling, oxo-damascone and oxo-edulan(III) are included in this sub-group.

I want to recall that the chemicals described in past parts of this series are extremely important. Accords like those found in cetotabac, tobacco leaf or darjeeling are unique when providing balsamic shades to many fragrances and tobacco flavors. Cetotabac is a base that successfully soothes the irritative effects of tobacco smoke.

3-Theaspirone, (Oxotheaspirane) is sweet, balsamic, deeply fruity and shows the typical fruityness of tobacco leaf with plum and chocolate aspects. It resembles oxo-edulan in that it blends very well with most fruity chemicals as well as tabanone, dihydrotabanone and tetrahydroedulan. All these important chemicals will help to further develop the tobacco-flavor industry.

B-Oxoionyl isobutyrate, an excellent forgotten chemical that is heavy and deeply floral, smells of tobacco, plum and osmanthus. Osmanthus absolute is quite a complex odor, though it is primarily deeply fruity. Everybody knows that its odor and taste work extremely well when combined with tea and tobacco. Osmanthus absolute has an herbal character imparted mainly by theaspirane and linalool oxides (both furanoid and pyranoid). It has an important oily character imparted by linoleic, oleic, palmitic and linolenic acids, as well as a mild, woody-fruity smell mainly provided by dihydro-β-ionone, and dihydro-β-ionol with traces of dihydro-α-ionone. Osmanthus absolute has orris, violet and boronia notes mainly imparted by β-ionone. It posseses a fruity-milky note imparted by γ-decalactone, tuberolactone and many other lactones. However, most of the reconstitutions are made only with G-decalactone and it has a very particular characteristic fruityness, absent in most of the reconstitutions which is provided by megastigmatrienone epoxyde, megastigmadienone epoxyde and many oxo ionols, oxo ionones and oxoionyl derivatives. This particular fruityness is the most individual and distinctive found in the natural product. It is the most decisive and beautiful yet, as I said before, it is absent from most reconstitutions and is very close to the fruityness found in tobacco leaf. B-Oxoionyl isobutyrate imparts this special characteristic fruityness found in both products. It is an unknown and infrequently used chemical that could be, if promoted, an important part of the sophistication of many fragrances. The base, osmanthus absolute 8688/D, has many of these sought and important parts of the natural product.

Coumarinic/Tonka

Coumarin, hexahydrocoumarin, octahydrocoumarin, γ-heptalactone and γ-hexalactone(I), rhodipol C, florex, and 6-amyl-α-pyrone(II) belong to this sub-group.

Laitone (7-Isopropyl-1-oxaspiro [4,5] nonan-2-one): This chemical is a forgotten and totally unknown jewel. It posseses an extremely strong milky, coumarin-tonka note, which is more milky and less tonka than octohydrocoumarin (by the way a very good chemical), and also more fruity with D-decalactone notes.

Methyl laitone (4-Methyl-cyclohexyl spiro-4-γ butirolactone): I find that this is much less oily and milky than laitone, and more coumarin-tonka like with reminiscences of fennel and quite herbal. It is the most tonka-like chemical of the laitone family as well as less milky when compared with the other two. However, it is less long-lasting than ethyl laitone or laitone.

Ethyl laitone DA: (4-Ethyl-cyclohexyl spiro-4-γ butirolactone): This chemical falls in between laitone which is more milky and lactonic and methyl laitone which is more coumarin-tonka and herbal. It is an extremely strong chemical used in dilution (DA) to impart extraordinary effects such as in Romeo & Gili for Men.

Dehydrotonkalide (4-Ethylbuten-4-olide): This is another unknown chemical with a coumarine-tonka smell. It is quite interesting and blends very well with the laitones and florex creating a wonderful base.

Tonkalactone: This is an extremely strong and very interesting chemical combining tonka-coumarin with root-dry-woody and anisic notes. It also has a strong iron-like smell. It is the most powerful coumarin-like chemical in its top note, but less long-lasting when compared with octahydrocoumarin, laitone or ethyl laitone.

Coumolide: This chemical posseses a coumarin-like note more sharp and tonka than octahydrocoumarin which is more lactonic and less herbal-like than methyl laitone. It is very good in combinations with the laitones and florex.

Tricyclone DPG: This is a coumarin-like note presented in a way (DPG) that makes it weaker than florex, coumolide, the laitones or octahydrocoumarin.

Cantryl (Campholen nitrile): This is quite different from the chemicals related in this family. As a nitrile, it has the typical coumarin note imparted by nitriles which is more metalic and less tonka-like. Cantryl is a very good chemical, very stable in soap and detergents, whose accords with vertral, sweet tuberose, ylang, undeca and deca γ lactones, trimofix, frambinon, heliotropine, lilial, lyral, rosalva, β-damascone, tagette oil, sandalwood chemicals, aldehydes, and timberolare, are unique and used in a top fragrance for toilet soap.

Trivertanyl (Triplal nitrile): This is one of the most useful tonka top notes in functional perfumery which harmonizes with coumarin. Triplal nitrile is an extremely good note to impart its freshness in fougère-like accords twisting these old mixtures with a young note that makes them very interesting. It is used in top important functional products. The accords of trivertanyl with aubepine nitrile, a long-lasting chemical with tonkalactone, mettambrate and laitone are simply exceptional.

Citrics

Lemon: Geranyl nitrile(I) and undecen-2-nitrile(II) are included in this group.

Ethyl citral: This is a forgotten and almost discontinued chemical. I really don't know the reason why, but this was possibly dictated by somebody that does not understand our industry at all. It is more floral than citral and also more metallic. It also has an ability to fix it, which is remarkable. I used this in many lemon colognes, some of them selling well. It also blends well with petitgrain, neroli and with biodegradable musks such as habanolide. The accords are limitless.

Lemonile (Ethyl citral nitrile): Lemonile is much stronger than citralva as well as more citrus-like and less floral. Its ability to boost lemons where citral or ethyl citral are used is also unique. Lemonile should be used as much as citralva, yet is not, precisely because of its strength. It must be diluted to be understood.

Citronile (α-Methylgeranyl nitrile): This chemical is missing from too many laboratories. It is citrusy though more floral and less sharp than the chemicals described above. However, combinations of citronile, citronitrile, lemonile, mandaril, metonyl and citronellyl nitrile are very interesting and also important to impart some novelty to the old accords made with geranyl nitrile (Citralva).

Mandarin/Tangerine

Trans-2-dodecenal, trans-2-tridecenal, 2,6-dodecadienal, mandarin aldehyde, bigaradial (I), tridecen-2-nitrile, florexaltric, citroherbil, and citronitrile (II) are included in this sub-group.

Mandaril (3,12-Tridecadien nitrile): Again, this is a chemical missing from most laboratories. It is extremely strong, diffusive, less metalic and more natural than tridecen-2-nitrile. It is extremely stable and great to impart a new citrus twist to the well-known chemicals used for years and years. Accords of metonyl, frutonile, frescile, citronile, citronitrile, ocimenquintoxide and lime dienes DA are extrordinary, providing a freshness, especially when incorporating lime dienes DA. It is very fruity, juicy and natural. I also like accords of it with sinensals, dihydronootkatone, thioterpineol, cassis chemicals and oxane. I want to mention the base lemozone as a very good accord of these related chemicals with many rare non-described.

Lime

Lime oxide, already described in my past works as herbal-citrus, is very different when smelt pure or when seeing its effects. Lime oxide, which is a reaction product mixed with terpenes, and whose soul is what is called ocimenquintoxide, is an extremely interesting chemical unknown by most perfumers. It boosts all accords where citralva and other nitriles are used. It is extremely important in toilet soap and detergent fragrances and also in fine toiletries. It combines very well with lime oils, dimethyl-octenone and with cineoles (mainly 1,4-cineol). It imparts a natural freshness that is highly sought and adds an uncommon strength to those compounds.

Lime dienes DA: This chemical was introduced in early 90's and it is as interesting as it is unknown. Lime dienes DA is juicy and blends extremely well with chemicals such as isospirene, etaspirene and octalinol. The accords of lime

dienes DA are limitless. Lime dienes DA forms interesting accords when mixed with bases like citroasis or in fragrances like Armani for Men or Eau de Tsar, a very fresh, pleasant and wearable fragrance.

Grapefruit

Nootkatone (I), methyl pamplemousse, thiocineol, thiolimonene, vert de pamplemousse (II) and thioterpineol(III) are included in this sub-group.

Dihydronootkatone: This chemical is a citrus, grapefruit-peel chemical without the woody nuance of nootkatone. It combines very well with the sinensals, thioterpineol and octalinol, amongst others.

Floralate (2,4-Dimethyl-3-cyclohexene-1-methanyl acetate): This is a well-known chemical not widely used though very important. It smells citrus, grapefruit-like, with dry leaf shades and possesses somewhat rooty and metallic. Accords of floralate with octalinol, neocaspirone, dispirone, pamplenol C, pamplefleur, methyl pamplemousse, corps 53 and etaspire are also great. Floralate blends extremely well with ocimenquintoxide, mandarin aldehyde, veticol acetate, vetikone, citrathal, decatone, verdoracine, pamplovert, oxane, as well, creating one of the best grapefruit bases, grapequorum, ever made. It is very stable both in soaps and in alcoholic perfumery.

Pamplenol C (3-Oxa-4,4,8,9-tetramethylbicyclo [4,4,0]-dece-7-ene and isomers): This is an old but very interesting chemical. Pamplenol C is less rooty and metallic than floralate, but more fruity. Pamplenol has just been applied in one of the biggest detergents and one of the biggest shampoos in the world, because its performance when blended either with green (Triplal, cis-3-hexenol), with fruity (Manzanate) or green herbal (Herbavert), it imparts body, difussion and sweetness to those products. It is a product to be re-used and rediscovered since its posibilities are many.

Floral

Novorosan, citronellyl nitrile (Agrunitril), and citral glycerylacetal (II) are included in this sub-group.

Dimethyloctenone (2,5-Dimethyl-2-octen-6-one): Again, this is not a very new chemical. It has a clean citrus-floral smell of great strength. It harmonizes, enhances, exalts, and rounds-off many accords, working very well with herbal, citrus and floral-fruity chemicals. I like accords of the same with labienoxime DA, since one product harmonizes the other creating a vibrant form that works by itself. It is also important to mix it with other cassis notes and tropical fruit products.

Spicy

There are several sub-groups belonging to this group that I would like to discuss below.

General

Eugenol, methyl eugenol, cinnamic aldehyde, cuminic aldehyde, livescone, dihydrolivescone, dihydrocuminic aldehyde (Perilla), cinnamyl nitrile, sigaride, sylvestone (I), cinnamalva, ethyl safranate, base EJM, saffrania, exaltia, myrtenal, safranal, spezia, fleur d'epice (II) and 4-isopropyl-2-cyclohexenone(Crypton) (III) are included in this sub group.

I won't add any additional chemicals, but I would like to emphasize the importance of those described and classified in previous installments.

Anisic

Canthoxal and anisimal (II) are included in shis sub-group.

Tarragol (Octahydroeugenol): This chemical is very new, smelling of tarragon and basil oils. It is very elegant and stable and I believe it will be used increasingly in the future. Combinations of it with coranol, basilex, prassinate and tamigone give you bases of unusual freshness that work very well with woody and citrus notes. I love an accord made of tarragol, basilex, octalinol and citrotone B, being extremely useful in boosting citrus/anisic notes in soaps, shampoos and detergent fragrances. It exalts products like verdyl acetate, propionate and isobutyrate while enlivening combinations of both with pelargene, farenal and profarnesal (Oncidal).

Floral

This group is comprised of many sub-groups.

Fresh floral: Linalool, dimethyl heptanol (Dimetol), tetrahydro-linalool, tetrahydromyrcenol, allo-ocimenol (Muguol), dihydromircenol (I), tetrahydromircenyl acetate, ocimenol, pseudo linalool (II) and phenoxanol (III) are included in this sub-group.

Ethyl linalool: This chemical is more floral and less fresh than linalool with shades of neroli, petitgrain, bergamot and magnolia. It combines extremely well with almost everything including dihydromircenol and coranol. It is not possible to note here the good accords achieved with ethyl linalool since today it is one of the most widely used chemicals. It is not new but it was rediscovered some years ago and now it is not possible to build any top note without it. It is perhaps its ability to harmonize and naturalize white-flower fragrances that is the secret of its success. However, for me it is somewhat synthetic and smells a little bit of functional fragrances, especially fabric softeners, a field where ethyl linalool is also being widely worked.

Ethyl linalool continues to be used in many modern fragrances such as Eternity for Women, Wings for Women and many others

Coranol (4-Cyclohexyl-2-methyl-2-butenol): This may be one of the most important chemicals used today. Coranol has an extremely fresh, floral and somewhat vibrant rosy-metallic note that is really almost impossible to replace. It combines exceptionally well with dihydromircenol and other beautiful products not used as frequently used as cyclohexyl propanol. It is not as widely used as cyclohexyl propanol, ocimenyl acetate and ocimenol, imparting to every fragrance its freshness, strength and difussion. It blends exceptionally well with citrus, floral, woody, spicy

and musky notes and harmonizes green-metallic products such as stemone, gardamide, labienoxime DA or buccoxime. Coranol is being used everywhere and it is a real key element for the top note of the olfactive forms achieved with it. An example among many where coranol has been used is Bulgari for Men (Musky habanolide, Muscenone δ) and many other fragrances. Coranol is going to be a key developmental element in future since today, it is still captive and not known by many perfumers.

Mixtures of coranol with nor limbanol, octalinol, salicylate de methylpentenyle, salycilate de cis-3-hexenyle, polysantol, habanolide, muscenone δ, calone, helional, firsantol, basilex, prassinate and epi hediones, ambraketal (Z-11) and trimofix are the most recent successes present of our world of perfumery. However, I would like to see it mixed with epi hediones, habanolide and old pentambrette to achieve something really new and elegant.

Jasmine

Dihydrojasmone, cis-jasmone,cis-jasmone lactone, jasmolactone, hedione, jasmonyl, jessate (I), pentilcyclopentenone (Delphone), decalinol acetate, cis-jasmone, dihydrojasmone, jasmospezia, jasmine lactone (II), methyl jasmonate, α-hexyl-γ-butyrolactone and cis-3-hexenyl γ-butyrolactone (III) are included in shis sub-group.

Epi hediones (Hedione HC, paradisol, kharismal, cepionate, super cepionate): When in 1966, my good friend Edmond Roudnitzka created Eau Sauvage, hedione was emerging as the greatest revolutionary element in perfumery since the discovery of vanillin, ethyl vanillin, the aliphatic aldehydes, coumarin, heliotropine and the other chemicals that made possible the historical landmarks of our art in this century. Hedione was used by Roudnitzka at around 2%, not more, and it worked in creating a diffusion and an auratic breathing aspect not seen before in any floral chemical. Rounitzka was an extremely experienced man who spent hundreds of thousands of hours smelling. I remember that one day, we met and discussed hedione. He told me that the greatest problem he faced with it, was a sense of saturation when dosing greater amounts in fragrances. It was like a border the product could not go beyond. The results were the same when using 7% or 25%; the diffussion was blocked. He told me he wanted to go beyond that, especially in Diorela and the old forgotten and withdrawn treasure Dior Dior. This was the reality until epi hediones were born. The first product was cepionate, but cepionate is only about 30% epimerized and although it was more difussive than hedione, the difference was not that great when comparing the price of both chemicals. Later on we started seeing higher epimerizations like 60 and 70% (Hedione HC, super cepionate, kharismal) and 90% to 95% (paradisol). Here we broke another limit to difussion. We started seeing fragrances with an inmense auratic breathing, with a diffusion through the wind (the word auram is latin, meaning "diffusion through the wind" and "perfumed breeze"). We realized this was going to affect perfumery as much as hedione, when Roudnitzka made Eau Sauvage more than 30 years ago. Products like CK One, amongst others, were appearing, forging a new period in perfumery as radical as the one that resulted from Eau Sauvage hitting the market 30 years ago. We will see a great development in the future. It will be interesting to see how these new products will affect the present and future of perfumery. Diffusion was once achieved with hedione. Today, unsurpassable auratic breathing in perfumery is achieved by epi hediones.

I could continue talking about new and old products like jasmine lactone, cis-3-hexenyl butirolactone, isojasmone CNC (not to be confused with with normal isojasmone), but these products have already been mentioned briefly in my works and, although important, they are not so important when compared with the way epi hediones are influencing perfumery in our age and presumably the future as well.

Rose

Products destined to greatly influence the perfumery of future include rose oxide, nerol oxide, rose furan, p-menthen-9-al (I), dimethyloctandiol (glycol de rose), centifolil, anatolil, methyl geraniate (II), phenoxanol (III).

Nothing has really revolutioned the concept of this subgroup phenoxanol. Phenoxanol, like epi hediones, is synonomous for diffusion, class and revolution of "aura." Phenoxanol, as I predicted in 1979 when nobody knew it, is strong and makes our accords glorious. It is well-applied (around 8%) in Aire de Loewe, a fragrance that changed the Spanish perfumery. It has been used extensively in many countries.

Also very interesting, but not often used, is peomosa (2-Methylphenylethyl alcohol). This product could and should be as important as β-phenylethyl alcohol since it smells very naturally of a fresh rose petal. I believe it will be used, sooner or later, in fragrances in large quantities. It can, when combined with rose noble chemicals like roseoxyde, neroloxyde, damascenone, damascones, dihydrofloriffone, TD and dihydroroseoxyde, impart new aspects of the flower. We can increase its freshness in a way we cannot with just phenylethyl alcohol. A jewel of harmony can be achieved when blending peomosa with acetaldehyde diphenylethylacetal, hyacinth body Nr. 3, florhydral and precarone.

Florol: This chemical could be described between the rose, magnolia and lily of the valley chemicals, however, its important rosy aspects are paramount. Florol will possibly be re-discovered as was magnolan, an extremely old chemical recently rediscovered. The accord of florol, ambrettolide, black pepper oil, muscone, ambrox, ethyl acetoacetate, helional and cyclogalbanate is one of the biggest successes in the white-flower profiles. Combinations of florol with full sampac and florhydral along with other interesting and relatively unknown products, have created the base dremia almost unknown.

I want to mention that other products, such as rosaphen, rose nitrile, floramat and damascate, are quite interesting.

Carnation

Elintaal, dianthox (Diantheme) and carnothene (I) are included in this sub-group.

Here, I will include both propyl and ethyl dianthilis, described in the vanilla sub-group of the balsamics because they possess aspects of both sub-groups. It should be noted that dianthox (Diantheme) and carnothene are very important as well.

Magnolia

Magnolan (2,4-Dimethyl-5,6-indanyldioxane): This is very old product that was introduced in the sixties as a very good functional chemical to be used in detergents and later in fabric softeners. It has finally found successs in fine toiletries. I have always liked magnolan. However, I am more interested in the flower of magnolia whose chemical reconstruction can be seen in the base magnoliana. I was born with magnolias, I have beautiful magnolias in my garden and too many times I have wondered why this flower or gardenia and even jonquil, are so forgotten and why we insist on using jasmine

Cyclomethylene citronellol (3-{4-Methylcyclohexen-3-yl}-butanol): This is a product that sooner or later will succeed since the its accords with mayol, florol, nectaryl, lyrisal, bulgarat and floramat are extraordinary.

Boronia

β-Coronal (2-Methyl-4[2,6,6-trimethyl-1-cyclohexenyl]-2-butenal: This is a very old product used in one of the bases that formed Alliage. It is nearly forgotten. It is strong with important parts of boronia absolute, the jewel of Tasmania, orris and violet. β-Coronal blends very well with ambrox, ambrinol, ambrinoloxide, dihydro-β-ionone, reseda body, candalum and other sandalwood chemicals, as well as with sandalwood oil, mate absolute, myroxide, myrrh and resins of orient.

Lily of the Valley

Oncidal, cis-dihydro shiseol (Mayol), lilial, lyral, cyclamen aldehyde, bourgeonal, dupical (I), pinoacetaldehyde, α-pinyl isobutiraldehyde, myraldyl acetate, racinal, oxyacetaldehydes, maceal, 2-4 hexadienol (Mimoril) (II), phenylacetaldehyde glycerylacetal, muguet alcohol, muguet alcohol acetate, and reseda body (III) are included in this sub-group.

Florhydral (p-Isopropylphenyl-2-butanal): This chemical was introduced to our industry in 1990 and has only recently been applied. It was once called super lilial because it is much stronger than lilial. However, its smell is not only lilial and lily of the valley in nature; there is an important cyclamen and ozonic side. It also has many nuances found in meta-lilial, a totally unknown product and isomer of lilial that is extremely potent. Florhydral has supreme accords with precarone and berryflor. It boosts lilial nuances, and is quite substantive. It is bright and enhances accords. It will be another chemical of perfumery's future. It is already one of the relatively unknown chemicals that I am working with. It's application possibilities are limitless.

Majantol: This chemical is one of the best smelling lily of the valley elements. It is floral, slightly herbal and combinessupremely well with all florals and musks. Recent successful applications are seen in *Contradiction and Good Life* by Davidoff.

Corps popinal (4,4-Methyl-3-cyclohexenyl pentenal): This chemical is strong, lily of the valley-like and combines extremely well with allyl-ionone, precyclemone B, allyl amyl glycolate and cyclogalbanat. I believe, if promoted, it could be a with potential for successful blending. I remember a great accord of corps popinal with mimosaldehyde, but unfortunately somebody extremely clever withdrew mimosaldehyde from our shelves. Sadly this may also happen to corps popinal.

Mefranal (3-Methyl-5-phenylpentanal): This is the corresponding aldehyde to phenoxanol. It is bright, vibrant, floral, lily of the valley-like and blends very well with florhydral and precarone, berryflor, labienone, lyral, habanolide and mettambratte. Its shades, as in the case of the alcohol, are extremely rich and full of possibilities. A great base made with mefranal is animaflor, a product that will be used widely.

Salycilate de methylpentenyle: This is another important and unknown product that should be classified between the floral, lily of the valley and floral-green subgroups. It works well with cis-3-hexenyl salicylate, helping to naturalize it when overdosed. It blends very well with florhydral, coranol, octalinol, tetrameran, chrysantheme, bulgarat, phenoxanol, hydroxyisodamascone and phenexal, as well as with many green-fresh-floral chemicals, imparting a very elegant and natural twist.

Mugetanol (1-4-{isopropylcyclohexyl}-ethanol): This is a relatively old chemical, but only recently introduced in an application that goes in the direction of an older development, muguet alcohol. It combines very well with other floral, kewra, sandalwood and green products. Mugetanol imparts an interesting reaction to sandal rose accords that help in diffusing.

Lyrisal (2,5,7,7-Tetramethyloctanal): This is an interesting, largely unknown chemical that has important shades of lily of the valley. It combines nicely with cyclomethylene citronellol, mayol, florol, and many lily of the valley/magnolia chemicals. There is a bright future for blendings of these products.

Aldehyde XI (p-Methylphenoxyacetaldehyde): This is a chemical that falls between lily of the valley and hyacinth. It is also ozonic and its accords with calone, helional, lyral and cyclamen aldehyde formed the heart of New West for ladies, a product that launched both aldehyde XI and calone in the international markets. It has created a trend that today is in full strength. It is important to note that p-ethylphenoxyacetaldehyde, a totally unknown chemical briefly mentioned in part II of my work, is even better than aldehyde XI. It is more bright, deep-floral and clean.

Floral Metallic

Rosalva, roseate, ambronate and bromarose (II) are included in this sub-group.

Rosyrane (2-Phenyl-4-methyl-dihydropyrane): This is a chemical with a lively smell that falls between fresh aspects of rose, hyacinth and lily of the valley. This little-known chemical is wonderful for replacing the vulgarity of diphenyloxide and other products of the family. Rosyrane blends very well with triplal, isobutylquinoline, roseoxide and sandalwood chemicals. I find that this chemical is very stable.

Doremox (Tetrahydro-4-methyl-2-phenyl-2H-pyran): This chemical is very powerful, rosy, lily of the valley, metallic, somewhat herbal, full of life, beautiful and vibrant. It can be used in combination with rosyrane and with all products described with the same. It combines extremely well with bases containing etaspirene, neocaspirene, nitriles, glycolierral, cyclamen aldehyde, florhydral, myroxide, floralozone, basilex, florantone T, cyclorosan, ether MT, cashmeran and octalinol. It is a beautifully vibrant chemical that is not used widely, which may change in the future.

Floral Woody Orris and Violet

2,6-Nonadienol (I) is included in this sub-group.

Irival: This is an almost forgotten chemical. I would like to say that this is one of the best chemicals imparting an orris-absolute note at a fraction of the price. Irival, a nitrile, works extremely well with ionones and floral-woody chemicals.

Irotyl (Ethyl 2-ethylhexanoate): This chemical is strong, sharp, and imparts a very clean orris-like note that combines with methionones, ionones and irival extremely well. It is an untouched and unworked jewel. I made a variation of persil, a good but very heavy fragrance that does not contain the chemical. The variation has more lift, more top note The accord, irotyl, methylionone nectaryl, is delicious.

Violetnitrile (2,6-Nonadien nitrile): If irival and irotyl are important to impart functional orris accords, violet nitrile is important to impart functional violet accords. It is found as a key chemical in the base viotryl, and it has been used in many important products.

Green Floral

Hexyl salicylate and cis-3-hexenyl salicylate (II) are included in this sub-group.

Ethyl phenoxyacetate: This is an extremely interesting green, floral chemical and is not simply just another ester, as many will rate it. Its accords are vibrantly floral and extremely important in functional perfumery. Reintroduced in 1985, it forms part of very important functional products and is simply extraordinary in new fabric softener fragrances. It is almost unknown or disregarded by most perfumers. Its importance is, and will be, capital.

Precarone*:* This chemical is green, floral, intense and natural. The accords of precarone with berryflor and frohydral are very new when having in mind white flowers, and form part of a very important international base. It blends beautifully well with the damascones, nectaryl, phenoxanol, peomosa, mefranal, salycilate de methylpentenyle, anthranilol, pentenyl acetate and so many other.

Palmarosa

Isocyclogeraniol (Trimethylcyclohexenemethanol): This is a very interesting chemical, not widely used but more fresh and herbal than some classical rose chemicals. It combines well with floral-woody products such as tetrameran, nerolidyl acetate, nerolidol, bisabolol or farnesol, and with oxaspirane and the forgotten gingergrass oil.

Fruity

This sub-group includes frutinat (II), rosetyl, decenyl cyclopentanone and oxo-damascone (III).

Berryflor (Ethyl 6-acetoxyhexanoate): This is a beautiful chemical smelling of jasmine-raspberry and mimosa. Berryflor is floral, sweet, fruity, tender, delicate and combines with many accords. It is found in bases like dossinia givco, white cyclamen and the new chrysantheme. Berryflor blends well with herbal functional notes such as the one found in Pantene Pro V shampoo, whose accord would improve if added. It also works well with functional fabric softener green-floral notes. It is based on ethyl phenoxyacetate or lily of the valley natural scents in combination with florhydral and precarone. In blendings, with labienone, benzylisoeugenol, bulgarat, and benzyl cinnamate, it works well. It is a product that should be enhanced, promoted and used lavishly.

Labienone (2,4,4,7-Tetramethylnonan-6,8-dien-3-one): This chemical is floral, fruity, and a little bit raspberryplum-like. It blends very well with many chemicals of this family. Labienone forms great accords with mettambratte that makes it more licorous. It also blends very well with ethyl phenoxyacetate, laitone and related products.

Givescone (Ethyl ethyl,α-cyclogeraniate): This is a well-known chemical that is difficult to describe. It has many nuances of the damascones and damascenone, but is less sharp-metallic and has more of a sweet apple note. It combines very well with undecavertol, myrascone, tetrascone, and it forms part of important international bases, important functional fragrances (Ariel Future) and alcoholic fragrances (Jean Marc Sinan for ladies).

Datilat (1-Cyclohexyl ethyl crotonate): This chemical is relatively and smells of plum and dates with a delicate fruityness. Its accords with frutinat, cyclomethylene citronellol, mayol, labienone, berryflor, damascate, hydroxyisodamascone and floramat and some mild cinnamates makes it simply delicious and useful in fragrances.

Methyl cyclogeraniate: This, again, is an interesting floral-fruity note. It is similar to other products of this subgroup. Methylcyclogeraniate combines well with chamomile chemicals, such as isopentyrate and tropical-fruit chemicals, such as oxane. It also forms good accords with

berryflor, mayol and florol. Naturally, its uses are not limited to the described accords. Blends of methyl cyclogeraniate, givescone and ethyl cyclogeraniate form accords even better than the methyl alone.

Pyroprunat (2-Cyclopentyl-cyclopentyl crotonate): This fresh-fruity scent can be used in many sophisticated accords. It combines extremely well with tropical fruits, apple, plum as well as florals, such as linden, freesia or champa (frangipani). It gives extremely nice new twists to osmanthus absolute or moulshri.

Floral/Animal

Campal, cashmeran, cashmeran O (II) and patchoulac (III) are included in this sub-group.

Octalinol (2,2,6,8-Tetramethyl-2-octalinol) or (Homo ambrinol): This is one of the most important chemicals used today. Its smell is floral, musky, metalic, radiant, vibrant, ambery, animal and difussive. It combines extremely well with citrus new chemicals, especially from the grapefruit sub-group such as methyl pamplemousse, pamplovert and zestal, imparting a special lift to many of them. It improves the top note of many alcoholic fragrances, and also with products such as irones, β-ionone, dihydro-β-ionone, β-coronal, the quinolines, mate absolute, cashmeran, nor limbanol, ambraketal (Z-11), trimofix, habanolide, coranol and forms many indescribable accords.

Fruity

This group includes many important chemicals.

Melon: Cis-6-nonenol, dimethyl heptenal (Melonal), floralozone, dihydroxybenzoxepinone (Calone), helional (I),cis-6-nonenal, novenal (II) ziblenia and melol (II) are included in this sub-group.

Methoxymelonal (6-Methoxy-2,6-dimethylheptanal): This is a forgotten chemical, part of an extremely important international base. It is fruity melon and by far less sharp than melonal. It combines well with calone, helional, epi hediones, florol, p-ethylphenoxyacetaldehyde, p-isopropylphenylacetaldehyde and floralozone. It works well when seeking melon, magnolia and syringa accords. It works well with citrus in many eaux fraîches.

Watermelon

Cis-3-cis-6-nonadienol (do not confuse with Trans-2-cis-6-nonadienol[Violet leaf alcohol]), an entirely different product): 3,6-Nonadienol is very fresh and as watery as watermelon. It is an important ingredient of the flavor of this natural product. I believe the accords of 3,6-nonadienol with calone are really unique, imparting an even more natural aspect to the fantastic watermelon ketone (Calone). Extremely sweet bases such as melenia or sea breeze are important accords for the future development of the use of calone and 3,6-nonadienol.

Pineapple

Cis-4-octenoate, ethyl cis-4-octenoate, emanol, allyl heptilate, allyl cyclohexyl propionate and allyl phenoxyacetate (II) are included in this group.

Raspberry

p-Hydroxyphenyl butanone (Frambinone) and p-methoxyphenyl butanone (Frambinon methyl ether)(I) are included in this group.

Floral

Veloutone and cyclopidene (II) are included in this group.

Lactonic

Nectaryl (2-[p-Mehthenyl-9]-cyclopentanone): This is a unique chemical that clearly shows that creativity must be improved in our profession. γ-Undecalactone is overused and is less elegant than nectaryl. Nectaryl blends extremely well with all the flowers, imparting fixation and radiance. Accords of nectaryl with myrasline, precarone, cyclomethylene citronellol, tuberolide, florol, mayol, full sampac auram (a unique partially scientific, partially perfumistic, reconstitution of the Indian flower called locally motia), floramat, frambinon methyl ether, florhydral, floralozone, lilial and lyral are extraordinary. Nectaryl also blends well with γ-undecalactone, softening its slightly vulgar note and making it more distinctively new. It also improves mixtures of nectaryl with tuberolide, tuberolactone, octenyl and decenyl cyclopentanones that I find to be very elegant. It has been used in functional products such as persil and in many fragrances for fine toiletries, but not as much as I would like.

Methyl tuberate or tuberolide (2-Methyl-1,4-nonalactone): This is another extremely interesting chemical, nearly forgotten. It is strong, lactonic, and smells of tuberose, peach, shades of osmanthus, jasmine and coconut. Many people have consistently used tuberolide with tuberose accords. It is a mistake since it does not improve tuberose accords much. However, the effect with other florals (Jasmine, jonquil, gardenia, magnolia) is extraordinary. Accords of tuberolide with osmanthus are also interesting, enhancing and beautifying most foral fragrances when properly used.

Tuberolactone (6-[2,Pentenyl]-5,6-dihydro-2-pyrone): This chemical is strong, fruity, lactonic, creamy, peach and coconut-like, and full of nuances and shades difficult to describe. Tuberolactone is a real jewel that blends extraordinarily well with epi hediones, habanolide, nectaryl, calone, florol, phenexal, ambrettolide, muscone, cyclogalbanate, octenyl and decenyl dyclopentanones. It is very expensive, but small traces impart a distinctive, extremely elegant dry down notes in fragrances. Found in osmanthus absolute and tuberose absolute, it is a chemical of great importance that is able to improve most of the accords where it is added.

Cassis

Sulfox (II), buccoxime, buccovert and thiovert (III) are included in this sub-group.

Neocaspirene (10-Isopropyl-2,7-dimethyl-1-oxaspiro-[4,5]-deca-3,6-diene): This chemical is powerful, extremely sharp, metallic, herbal and smells of cassis. It is extensively used in important international bases. The accords of neocaspirene with ethyl safranate and nectaryl are very elegant, as those including ethyl maltol, vanilline

and musks. Neocaspirene is one of the key missing elements in most laboratories globally.

Labienoxime DA (2,4,4,7-Tetramethyl-6,8-nonadien-3-one oxime): This chemical is very strong and smells of cassis and bucchu. It is less minty than sulfox and less bucchu than buccoxime. I find it more papaya-like than those products. The way it is introduced is not pure (DA), and therefore I have only smelt the product diluted as most perfumers that know it. Its strength in the dilution (DA), is about the same as sulfox at 0.1% and buccoxime at 5%. It is a key ingredient of papaya givco.

Isospirene (2,6,9,10-Tetramethyl-1-oxaspiro-{4,5}-deca-3,6-diene): As you see, this product is chemically related to neocaspirene. Isospirene, although already desbribed by me as a citrus-herbal chemical in part III of my work, is so complex that I want to classify it again here. It is extremely powerful, metallic, cassis-like and very difussive. It forms part of many important bases such as cassis base and berberis. Its accords with ethyl maltol are simply unique giving an unexpected synergetic effect and an enhanced warmth to all the fragrances where it is used. It blends well with oxane and galbanolene super. Isospirene is a chemical missing from most laboratories, though it is used in the form of bases. It gives interesting twists to fragrances where osmanthus, cassis bud absolute and sulfox are used.

Etaspirene: This chemical is extremely powerful and more herbal than isospirene and neocaspirene. It blends well with thujonic chemicals such as tamigone, plicatone, octalinol and doremox.

Licorous

Mettambrate (3-Secbutyl cyclohexylacetate): This is an extremely interesting fruity and licorous chemical, smelling of rum and other alcoholic drinks. It has nuances of red wine and brandy. It is good to impart its excellent note. Accords of mettambrate with laitone and tetramethylethylcyclohexenone. It is a key of important international bases like brentwood. The potential uses of mettambrate are limitless.

Rhumacetal (Cyclohexanone diethylacetal): This chemical is ethereal and interesting, because it smells of rum (very natural). Diethylacetals are an important part of a rum flavor that is widely used by the tobacco industry.

Peach

I would like to stress the differences between the lactonic part of peach and its green, fruity, metallic part

Isopropyl methyl thiazole: This is an incredibly powerful chemical that should be used in high dilutions. It is green, licorous, fruity, metallic and a chemical that was used in reconstitutions of peach and apricot flavors. However, trace amounts of this chemical in heavy musk-oil accords and blends with large amounts of methylionones, provide an unexpected lift. It is important to blend it with etaspirene, nectaryl, γ-undecalactone, helional, crude ipsidienone, grisalva, β-damascone, blue chamomile oil and hexyl acetate. It forms part of a very successful feminine fragrance.

Radiants

Muscone, exaltone, exaltolide, civettone, ambrettolide, hedione, isodamascone, α-damascone, β-damascone, damascenone, pentambrette, cashmeran, cashmeran O and irones (I), trans-δ-damascone (Dihydrofloriffone TD), epi hedione and epi methyl jasmonate (IV) are included in this sub-group.

I mention this family here because all the products described exalt, enhance and lift the diffusion and the aura of every fragrance. These chemicals have already been described in other families (musky, floral-jasmine, etc.), but it is good to name them again here. Products like habanolide, epi-hediones, epi methyl jasmonate and octalinol fit in this part of the classification.

Greens

Grass: Cis-3-hexenol & esters, trans-2-hexenol, leaf acetal and leaf alcohol acetal, dimethylcyclohexenyl carboxaldehyde (Triplal), trimethylcyclohexenyl carboxaldehyde (Isociclo citral), zestarome, agrumal, zestodial (I), cis-4-hepten-2-ol, verlastil, liffaroma, 2-ethoxythiazol (II), and cis-3-hexenyl allyl ether (III) are included in this sub-group.

Green flowery: Phenylacetic aldehyde, hydratropic aldehyde and DMA, adoxal, phenoxyacetic aldehyde (Cortex), phenylacetketone, hyacinthia, cortexal, folial, florizia, deltia (I), p-isopropylhydratropaldehyde, p-isopropylphenylacetaldehyde, vernaldehyde, formyltricyclodecane (Vertral) (II), glycolierral, phenyral, P-ethylphenoxyacetaldehyde (III) and Hexenyl Oxanate (IV) are included in this sub-group.

Hexenyl oxanate (Cis-3-hexenyl acetoacetate): This chemical is less green and much more floral than the grassy chemicals. I find it slightly fruity and good in accords with salycilate de methylpentenyle, salycilate de cis-3-hexenyl, salycilate de benzyle, helional, phenexal, thracylene, florhydral, lilial, lyral, the schiff bases of the latter, musks and benzyl salycilate.

Melozone (Octahydro-4, 7-methano-1H-indenecarboxaldehyde): This chemical is very powerful, green, floral, smelling of ivy and other green-wet-herbs. Combinations of this product with triplal, isocyclocitral and small traces of huminol, geonol and terrasol, form interesting accords, if properly balanced. Additionally, accords of the same with helional, hederyl, 3,6-nonadienol and calone are very new and lovely as well as natural. It has been successfully used in the base ivyone.

Green/citrusy-fruity: Dynascone, neogal, galbex, galbania, allyl amyl glycolate, cyclogalbanate (II) and tangerinol(III) are included in this sub-group.

Green metallic: Secbutyl methoxy pirazine, isobutyl methoxy pirazine, ourtivert, isobutyl phenylethyl carbinyl acetate (Corps rhubarbe), stemone, styrallyl acetate (I), ourtivert, isopropyl methoxy pyrazine, isohexyl methoxy pyrazine, greenoxane (II), vertamide and kerfoline (III) are included in this sub-group.

Gardamide (N-Methyl-N-phenyl-2-methyl butyramide): This is a very powerful chemical; green, metallic, with woody nuances, similar to some of the chemicals described on the citrus grapefruit sub-group such as floralate, vetikol acetate and corps 53. It has, therefore, a grapefruit note, though it is less intense than those related chemicals. It has, as with most of these described products, a rhubarb note. It is quite stable and useful in mixtures with kerfoline, isobutylquinoline, vertacetal, terravert and terranil, as well as in hyacinth and gardenia. The former are accords where its personality stands out with force.

Gardenia, one of the most beautiful flowers in the world, is comparable to rose and jasmine. It has been virtually forgotten by perfumers. I have worked very hard in order to find out the real reconstitution of this flower and succesfully formulate the gardenia florauram. The absolute, which is not available, nearly identical (99% accuracy).

Hederyl (2,[2-Methyl-3-pentenyl]-5-ethylpyridine): This product is very powerful, green, metallic and animal-like. This nearly unknown chemical blends well with kerfoline, labienoxime, terrasol and vertral. Hederyl contributes to wet, green, metallic and ivy notes. It is important with Mediterranean bases such as begur, patmos, marjalia, provençalis, grazalema, almazora, hervasil and the outstanding kirenia.

Fruity Green

Manzanate (Ethyl 2-methypentenoate): This is a very difussive, strong and elegant-fruity note widely used in both functional and alcoholic perfumeries. It smells of apple and has many grassy and velvery nuances. I believe it will be increasingly used in future. It has been used in Ariel Future, and traces of it are found in Pert Plus. Combinations of manzanate with neroli, musks and lily of the valley chemicals are outstanding. I have worked with many scientific reconstitutions of the essential oil of neroli bigarade in the world. It smells 99% identical to the natural oil.

Green/Fruity/Tropical

Oxane and 3-Methylthiohexanol are included in this sub-group.

Green Resinous

Undecatriene, ocymene epoxyde, chrysantal (I) and fantesal (III) are included in this sub-group.

Green Violet

2,6-Nonadienal, DMA- Trans-2-Nonynal, Methyl Nonylenate, Cis-3-Hexenyl Heptincarbonate, Methyl Octin-carbonate (I) and Nonadyl (III) are included in this sub-group.

Undecavertol (4-Methyl-3-decen-5-ol): This is a green chemical smelling of important aspects of violet and mimosa. Undecavertol is fresh, young, and combines very well with tetrahydrolinalool, dimetol, and givescone. It forms a well-known international base that smells of linden flower while its accord with myrascone, givescone and tetrascone form an impressive reconstitution of the mimosa flower. It has been used in important fragrances such as XS pour elle and in functionals such as Ariel Future. It also blends extraordinarily well with 2,6-Nonadienol, a part of parmantheme.

Nonadyl (6,8-Dimethyl-2-nonanol): This is an interesting product I want to fit in this sub-group though its smell is difficult to classify. It has many possibilities.

Green Herbal

Herboxane, herbane, cyclonemal and herbavert (IV) are included in this sub-group.

Herboxane (Pentanal hexyleneglycol acetal): Although very old, this element remains very important since it is not easy to find chemicals with such a natural smell. Herboxane is green, herbal and it combines extremely well with coniferous and citrus notes. It also can be applied with the Mediterranean bases mentioned before. Good examples of what can be done with herboxane are the bases floravert, citrofresh and citroherbil.

Herbane (Butanal hexyleneglycol acetal): A lower homologue to herboxane, this chemical is more sharp and less natural. However, it works better in low traces.

Cyclonemal (Hexanal hexyleneglycolacetal): This is a higher homologue to herboxane which is powerfully green and citrusy and smells, when concentrated, like tomato leaves. It is very useful when increasing the strength of lemons and top notes for liquid detergents and fabric softeners. It works superbly with ethyl phenoxyacetate and shampoos.

Herbavert (3,3,5-Trimethylcyclohexyl ethyl ether): This is a very good chemical that should not be forgotten. It is quite volatile and has very good substantivity. I like to use it in many products that are both functional and alcoholic. It blends very well with fruitate, pamplenol, lilial, manzanate, doremox, allyl cyclohexyl propionate, cyclohexyl salicylate, undecavertol, givescone and floramat, amongst others.

Roots

Rhubaflor, costaulon, root body (III) are included in this sub-group.

An extremely important base called shamaria, which is really outstanding, blends extremely well with rosy and woody notes.

Leathery

Aldehyde NU and alcohol NU: These are old and virtually unknown chemicals used extensively with boul Nr. 6 B in some important leather bases such as the corinal family, which are used in very important international fragrances. These products blend very well with allylionone, musks and create accords whose beauty and elegance is supreme.

Arts, Design and Social Reality

I have finished the description I wished to write in this article. Now, as I have done in the three previous parts of the series, I would like to continue to express the ideas that, in my view, make sense to our profession beyond the

material interest. I feel that these ideas are not understood by many of those forming part of the business establishment where our profession is rooted. I don't understand why this is true. We could do the same amount of business while at the same time dignifying the profession and its deeply philosophical, sensitive and intellectual origins, and launching, from time to time, great creations that would last and remain stable in the international markets.

False progress in perfumery: Looking at the period from 1965 to the present, I see that many good creations have been launched and will continue to be sold for a long time to come. These include L'Eau par Kenzo, Angel, Amarige, Cabotine, Issey Miyaki for ladies, So Pretty, Bulgari for Men, Egoïste Platinum, Tresor, Herrera for Men, Yvresse, Samsara, Cologne au The Vert de Bulgari, Cool Water, Safari for ladies, Heritage, and Roma. Perfumes such as Anais-Anais, Fidji, O de Lancome, Montana for ladies, Amazone, Paris, Aramis, Eau Sauvage, Diorella, Cristalle, Chanel Nr. 19, Private Collection, Vetyver by Gerlain, Jean Louis Scherrer for ladies, First, Santos, Van Cleef & Arpels for men were and are being sold every day. I publicly apologize because I certainly cannot name all the "good" existing fragrances. However, most of these fragrances were launched with trusted advice from perfumers and were not formulated in a short 15-day rush to fill a beautiful bottle. If perfumers had more say in the process, the results would be even better. However, after the success of CK one, an incredible number of fragrances have been launched. These fragrances could have been made by a computer. There is an increasing conviction that everything smells the same.

When I wrote part one[1] of this series in 1978, I was a very young man and I thought, as I do today, it was useful to talk about art and society in relation to our industry. I was an idealistic perfumer that wrote phrases like, "I don't believe a true perfumer is a 'nose,' I believe he or she is a human being, a mind and a philosopher who tries to express a sensibility, and who also offers it to us for us to get to know it and to appreciate it." I also wrote, "The artist should be able to make it understood that true progress will come when society assimilates arts and culture. He must, as all citizens [must], work to attain a world which will be based on the ability to perceive the emotive and poetic value of things. True civilization is nothing but a question of wisdom, culture and sensitivity." And I wrote: "The purpose of our profession is to heighten awareness by means of created beauty; and for this we need the support of the marketing industry whose purpose, along with seeing that a product is sold, should be to see that it is sold by means of constructive advertisement that improves culture."

I first presented part II[2] of this series on November 6th, 1979, when I still was an idealistic perfumer with a headful of ideas from years of discussions and correspondence with my good friend Mr. Edmond Roudnitzka. I wrote then, "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..." I also wrote, "Marketing in perfumery has debased the most sublime aspects of this profession. There are some sectors that have completely ignored the most important artistic and emotional values that belong to it." I suggested that "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 be then in a position to overcome all its problems." I complained that "the perfumer is belittled by exclusionary policies, and is forced to make [something] to fill a pretty bottle." Finally, I wondered "if, in spite of so much progress, we have ever lived in 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."

When I introduced Part III[3] on February 11-14, 1986 at the International Perfumery Congress in Portimao (Portugal), I started mentioning words like *desolation*. I said, "Culture, taken almost solely as technique or study, as the Kingdom of Omnipotent Reason, was sure to lead our profession (and in fact the whole society) to a wasteland close to desolation—a desolation of the soul, of the spirit, of mystery, of intuition and of myth. And have we not said that these were precisely the characteristics of the creative perfumer?" I observed that "Voltaire, one of the fathers of Rationalism, thought that Reason was certainly a weak light, but it was the only thing that counted," and I followed up with my own observation that "No work of art, no great perfume, has been made with this as a premise." But I was still quite idealistic when I wrote the following:

> I believe in art because art is the expression of the most sublime human values... It is an emotional reflection cultivated by the depth of an individual conscience. While I agree with Marcel Proust, that life, in its permanent flow, is no more than lost time that can only be recovered for eternity by the artist's work, I cannot accept his belief that there is no relation between interior life and social life. I believe that mankind and society will have really progressed the day we have found the way to face the differences between exterior social existence and the interior life, or the "memoiries" described by Proust.

Because Proust was perhaps the most detailed and descriptive writer ever, he projected his interior life in his words without meaning to, because he was doubtful that people would understand him.

I concluded Part III on the following idealistic note:

Sensitivity to art and a sense of being cultured should be norms that guide society. Only the day this sensitive understanding of art and culture succeeds in guiding will our society see its wishes fulfilled. This sensitivity and a strong sense of social justice are the duties of every citizen, of every artist and, therefore, of every perfumer.

New vs. eternal: Almost 13 years have elapsed since Portimao. I am still young, but not as young as then. During those years we've seen a certain progress based on a materialistic Rationalism which is supremely useful scientifically, but we have also seen more and more our collective personality stunted. Do we progress? Is the art of perfumery progressing when so many new and beautiful ingredients are discovered in order to boost our creativity? The answer should be Yes, because now we have more materials than ever; look at the description of so many new chemicals ready to be used, to be discovered, to be worked. But my answer today is No! It is unfortunate. It makes me sad. I wish I was mistaken. But my answer is No!

We don't see eternal values at the horizon. We see more and more that real communication and dialogue—a key for progress and success, especially amongst young people—is avoided by setting up new concepts in places like "Hard Rock Cafe" where the noise is so loud that it is simply impossible to talk while dining.

Again I say, we don't see eternal values at the horizon. Perfumery is lately being made with Iso E Super, Tonalid, Vertofix, epi hediones, Helional[a] and ethyl linalool with formulas that could eventually be made by a computer, that sell when launched but fail soon, necessitating the launch of new fragrances that will, most probably, also fail. In 1994 alone, we saw as many launchings as had previous occurred throughout the whole history of the industry! When there is no "heart," when there is no "art," the demanding word is "new, new, new," because heart and beauty are always sought, at least subjectively, by the society.

Lately I have frequently visited important perfumery shops, where I watch and listen to the customers. Their questions mainly are, "What has been recently launched? Can I smell it?" This search for new, new and new undoubtedly means failure, failure and failure for what has been done, because when we really love something, we are not so desperate for rapid change. We are pleased. We want to keep on enjoying our life and happiness based on our feelings, on our reflections, on our serenity.

Behind the sad reality of this search for the "new," one finds a whole aggressive world of marketing departments, evaluation boards and a strong sense of collective frustration. Are we promoting what is really good? In other words, what are we trying to market: master pieces of art or something false that the consumer will smell once deeply and reject as a bluff? Is the problem of failure in perfumery a marketing problem or a problem that comes from a wrong evaluation? If the evaluation and the fragrances are good, it there an environmental problem? Here I'm talking about the way the perfumery shops look with all the products packed like medicines, one beside the other. Are the good fragrances promoted with enough mystery and charm? Or is the problem based on the fact that the market has lost the sensitivity to appreciate beauty, and therefore everything will fail? We must find a sociological and philosophical answer since, perhaps, the response to these questions is complex and something that is rooted in the state of our society.

Social reality and the Classical Greeks: For many, many years, the "real life" for the ancient Greeks was the fulfillment of a social function. Mankind then, at the peak of its wisdom, served the community as a limb serves the body. This was the great ethic, dreamed and preached by all the philosophers that created the civilization known as Western Classicism and that later, after the death of Alexander the Great in 323 BC, was called Hellenism. This has been called the greatest civilization created by mankind. We can say that happiness and culture of a majority of the society were the real objectives of that beloved civilization. I still remember the thoughts of Protagoras, one of the greatest philosophers of that period and the real father of "moral relativism." He defined Western Classicism with these superb phrases:

Culture in our minds, Serenity in our hearts, Law in our conscience, Freedom at the level of moral freedom, Tenderness when feeling the Fine Arts and in the soul of sensitive people, a Motherland as a place where tolerance and plurality and wisdom reign...

And it was like this until the last years of Plato. Plato believed in mankind, dreamed of mankind and devoted all his efforts to save mankind from alienation, decline and destruction. He examined eternal questions as a drama and not as a demonstration while fleeing from dogmatic answers. Already tired in his last years, he wrote "The Laws" and "Timeus." They are known as his "Dialogues of Old Age." What had happened to that man who was once so full of illusions, who wanted to get men, women and gods (at this time understood as dialogue towards truth) close together, who wanted the whole society close to all the gods? What had happened to the same person that had written the "Socratic dialogues" as Io, Lyssos or Apology, and the "Doctrinal dialogues" as Fedo or The Republic, and the "Critical dialogues" as Parmenides or Sophistos? Where had all the flowers gone? Where had all the energies gone? Where had gone the dream to make out of the Man simply a Man, a reflective and wise person, a serene human being?

Those late "Dialogues of Old Age" represented the philosophical collapse of the old ideal, never fulfilled, that should have brought women and men close to perfection. This ideal is the very deep root and real longing of Western Classicism, our cradle, our cultural origins. We westerners all come from those philosophical and forgotten origins.

In those "Dialogues of Old Age," Plato has already lost hope. He distrusts the honesty and intelligence of those called to rule the society, those he named "custodians." "Who is going to custody the custodians?" he wrote. "Who will care for them not to corrupt themselves?" And after this unanswered and unresolved question, he just dreamed of a very little town, very, very small, isolated, very isolated and very, very far away, conducted under a very strict conservative thinking and totally free from external influ-

Iso E Super, Vertofix and Helional are trade names of International Flavors and Fragrances, New York, NY, USA. Tonalid is a registered trade name of PFW Aroma Chemicals, Barneveld, The Netherlands. Epi Hediones is a registered trade name of Firmenich, Geneva, Switzerland.

ences. It would be shared just by a few chosen close friends. For the first time in his life, with great sadness and resignation Plato abandoned society and mankind to get close to relatively few privileged friends.

One can predict here the weakening resolve of Athens in the Peloponnesian War, the decline of Greece, the failure of the real meaning of the Greek word *demos* in democracy, so artificially used today by those governing the world. And it is precisely in this Plato—disappointed, aged and sad—where the so-called Neoplatonic schools found their support. These Neoplatonic schools lasted during the long decline of the Roman Empire until the dignity of Hellenism was finally destroyed by Christian dogma. Neoplatonism was the philosophy of Hadrian, Antoninus Pius, Marcus Aurelius, Celsius, Maximus, Jullian the Apostate (the great young Roman Emperor, who was unfortunately assassinated when he was 33, and whose life has been so extraordinarily described by the American writer Gore Vidal). These and many other wise people did not trust freedom as it was trusted before. They did not trust vitality of mankind as it was trusted before. They did not feel the strong faith in mankind as before. Because its thinking was weak, Neoplatonism could not stop the forthcoming dogma that was already looming over the horizon.

Philosophy—born from astonishment and admiration of the beauty of the universe, according to Plato—split then into three main branches: Stoicism, Epicureanism and superstition. The one finally imposed at the end of the sad fourth century AD was, unfortunately, superstition.

There followed a long period of darkness and decline, a period quite close to ours for different reasons. Why should one think? What was the meaning of being cultured there? It was enough to obey, to follow the dogmatic answers brought by the new religion. It was a period of searching "divine lights" and "celestial answers," but it was not a time for examining what they really mean for a wise mankind. There was no search for the simple truth achieved through wisdom, sensitivity, beauty, freedom, justice and culture.

No growth of culture in today's progress: We always talk about progress without really knowing the meaning of real progress. Progress is not a quantitative increase of things or ideas. Instead, it is, according to the great Spanish philosopher Don José Ortega y Gasset, just the intensity with which we feel some principal and eternal mysteries of life, such as wisdom, culture, arts, beauty, sensitivity, freedom, justice, tenderness and love. Progress is a search for truthfulness, an elusive concept that demands hard work and lasts the whole lifetime. It is a search for glory without fearing the abyss. If we do not look for something higher and purer—if we just go anywhere as Edip the Blind, always, always around the sphinx—we'd have to say we have been defeated in this game called life and perhaps we've even forgotten the rules of the game.

Today, the star of our epoch is a technified and icy-frozen society that preaches peace while promoting aggressiveness; that talks about love and culture while provoking alienation and desolation; that de-humanizes women and men and objectifies them to such an extent that they are no longer persons and have become mere consumption objects.

Today, the forming of culture has been replaced by its opposite, indoctrination. Therefore, as I said in 1986, we live in a world close to desolation: desolation of the soul, of the spirit, of mystery, of human values. It is a world where even the goal to achieve happiness through reflection and serenity is viewed as "strange," where we are increasingly less free and less sensitive. Has it not been wisely said that only through full realization, freedom and human greatness we will reach real creativity and, therefore, understanding of the Fine Arts?

Today, living this empty and sad reality, who really cares for and who really recalls the act of creating?

Feelings and olfactive beauty: Recently, while travelling through the dusty south of the Arabic peninsula, I paused for a moment to think about the far away worlds of New York and Paris with their marketing departments, evaluation boards, and "briefings" handed over to exclusively ISO 9000 companies with a request "to bring an exclusive and radical new creation, to be made within 15 days, to be sensed and loved by everybody, that will spark the sex feeling of females and therefore a touch of androstenone is needed, priced between $80 and $100, evoking the delicacy of the best flowers ever imagined in the world..."

Meanwhile, far from that world, on the shores of the Sultanate of Oman I could smell the real and natural amber gris and feel its warmth, and deeply feel it. I know I still can go where opoponax, myrrh and silver frankincense grow. Traveling east, close to the Gardens of Shalimar, I still can smell the purity of real tuberose that so lavishly grows in so many places of India and Pakistan. I can go to the eastern Indian state of Orissa and feel the exoticism of the flowers of kewra. I can see the sandalwood trees mixed with forests of ooti to the south of Mysore. There also is the yellowish champa; I love to mix it with the natural attar of saffron while experiencing the beguiling scent of the real jasmine sampac used as a perfume by many Indian girls that place the flowers on their long hair every evening when an orange sunset can be seen.

Going west, I smell the white gardenia, so abundant on the slopes descending towards the Lebanese Mediterranean coast close to the old Phoenician town of Byblos.

I still can smell the best melatti in Hue (Vietnam) on the shores of the River of Perfumes. I can smell the best roses of India in Aligarh and those of Iran in Kashan. There, after a good lunch, the moisture of its magical distilled product, natural rosewater, can be enjoyed.

And after deep reflection, I wonder why millions of Indian girls are using every day, for generations and generations, motia, champa and gul hina flowers on their hair, flowers that have such a great diffusion. Is it because they are inexpensive? There are many inexpensive perfumes in India and none succeeds, while the intense flowers are widely used. Is it impossible to do what the flowers do? Why, in places like Lahore, Pakistan, do they use flowers of

tuberose as an air freshener and not any functional product launched with a multimillion dollar advertising campaign? Why, in Beirut, do many children from both Christian and Muslim sectors sell gardenias in the streets every early evening and people have bought them for years and years?

Why do we see this faithfulness to the smell of natural flowers and this rejection of so many fragrances launched with lavish advertisements? This is a question that I would like to see answered by those who launch fragrances so frequently. Is it because the users of natural flowers are poor and have not been "brain washed" by Western marketing? If this is the answer, we should start questioning the results of our "cultured civilization," because it would mean that it brings what I said it brings: aggressiveness and desolation. However, I think the answer is a different one: olfactive beauty that is captured by the spirit of people. Nothing else.

Here is another important question. Is it wise to continue diluting fragrances with something as unstable as ethyl alcohol when the resulting fragrances need so many preservatives to keep them fresh simply for a period of a few months? Wouldn't it be better to market simple, pure fragrances, as was traditional in the Orient, and teach the consumer that the perfume is what matters, and offer good, natural-smelling fragrances that would possibly be sensed differently?

Here is yet another area of questions. Don't our perfumeries look more and more like pharmacies? All the charm is gone. Shouldn't we promote good fragrances and offer them simply for what they are: an expression of art that comes from subjective internal feelings? Shouldn't we surround them with mystery, charm and exoticism, and offer them in places that encourage consumers to forget the sad reality I described and, instead, relax with a dream and a cup of delicious fruity tea while listening to quiet music and smelling and playing with many fragrances?

Driven by an internal necessity to smell the flowers, resins or woods of the world, and trying to perceive their magic, perhaps one day I will create in my laboratory—from where I see the brightness of the Mediterranean Catalonian seashore and from where I can feel how this sea changes its colors from silver to blue and from grey to pink—the perfume of my life. But even if I do, it will just be a very good perfume. It will not be the end of the world, as advertisements pretend when launching a new fragrance.

With all these impressions on my mind, I still can work during the nights full of stars or even when the sun is pleasantly warm, trying with my thousands of accords to combine this jewel coming from the research that I describe with passion. It's not on my mind to wonder whether I need to use bergamot oil without bergaptene or a maximum 0.01% of costus, only a trace of cinnamon, no sandalwood at all, no natural castoreum, but a blend of dihydro ambrate and p-ethylphenol, no rose oil, no cinnamic alcohol, no... And I still dream of expressing something felt without wondering too much if it will sell or not, although I know my creations sell in so many countries of the world.

No, we need sadly to realize that there definitely is not much "art" in our profession any more. Art is the expression of our most sublime feelings, through odors, colors, words or notes, without expecting anything in return for this expression. We can say that, perhaps, there is "design" in our world, by which I mean something that looks shallow and artificially beautiful, quickly made, for the sake to being quickly sold. Design creates fashions. Fashions, unlike arts, are volatile, ethereal, and go with the first blow of wind. The line between art and design is the border between truth and bluff. Our Western society is based mostly in artificial, false values that go with the first wind. If we do not return to solid values that will support our society and economies, we all, sooner or later, will feel the consequences of such a sad reality.

Reality can eventually change. However, if civilization keeps going in the direction it is going now, some of us will have to follow the way of Plato, or the way of Proust when he was describing his interior life without meaning to. We will still find haven in a small town, very, very small, isolated, very isolated and very, very far away, conducted under very strict conservative thinking and totally free from external influences, shared just by a few chosen close friends, where arts, emotions, wisdom, freedom and sensitivity will be simply the only demand.

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Artistry and Craft

Perfumery: Techniques In Evolution. Part V*

A meditation on the art, craft and latest science of fragrance creation

by Arcadi Boix Champs, Auram International Group, Co., Ltd.

No Creativity Without Philosophy or Poetry

Situated in the fertile plain of Thria about 14 miles west of Athens, opposite the island of Salamis, lies the ancient Greek city of Eleusis, which was famous as the site of the Eleusinian mysteries. During the city's excavation at the beginning of the 20th century, the Greek Archaeological Society laid bare the whole of the sacred precinct, which included the Great Propylaea, a 2nd-century-AD copy of the central building of the Propylaea on the Acropolis of Athens. During the cleaning works, a very old rolled parchment was unearthed. When the excavators unfurled it, they found a text in Old Greek. For a moment the chief of the excavators, along with some young and energetic archaeologists, were elated. Maybe it was the key to the Eleusinian mysteries, the most famous of ancient Greece's secret religious rites.

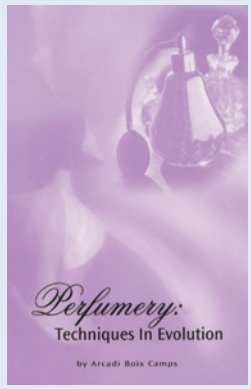
According to the myth told in the Homeric Hymn to Demeter, the earth goddess Demeter went to Eleusis in search of her daughter Persephone, who had been abducted by Hades, god of the underworld. Befriended by the royal family of Eleusis, she agreed

*Parts I-IV in Arcadi Boix Camps occasional series appeared in *Perfumer & Flavorist* in 1977, 1978, 1985 and 1999.

Next Month: the Conclusion of Part V

Installment V in Arcadi Boix Camps' "Perfumery: Techniques in Evolution" will conclude in the July/August issue of *Perfumer &* Flavorist. Among other topics, the author will address: fruity-metallic, ambergris and musk notes, in addition to the battle between the rational and the emotional in perfumery. A must read!

Further Reading



This latest installment of Arcadi Boix Champs' perfumery series follows the publication of his collected articles (1978-1999) — *Perfumery: Techniques in Evolution*, presented by Allured Publishing. Never before has a perfumer of this calibre provided such a constructive and open analysis of new perfumery materials. *Perfumery: Techniques in Evolution* reveals a profound knowledge in the use of perfumery materials in both new and traditional formulas. Though not a book of perfume formulas, *Perfumery: Techniques in Evolution* is an excellent guide for perfumers, as well as those involved in research and development in adopting new perfumery materials in their daily creative work.

Arcadi Boix Camps provides a remarkable review of new perfumery chemicals that have been introduced to the industry in the past 20 years. A definite staple in any creative perfumer's reference library.

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Marie-Hélène Rogeon… brought François Robert to her garden, let him smell a very special rose…and let him work to create the perfume called "Un Zeste de Rose."

to rear the queen's son. However, the queen's fear that Demeter would make the boy immortal and eternally young prevented this. After this occasion, Demeter revealed her identity to the royal family and commanded that a temple be built for her into which she retired. According to the Hymn to Demeter, the mysteries at Eleusis originated in the two-fold story of Demeter's life — her separation from and reunion with her daughter and her failure to make the queen's son immortal.

The mysteries began with the march of the mystai (initiates) in solemn procession from Athens to Eleusis. The rites that they then performed in the Telesterion, or Hall of Initiation, were and remain a closely held secret. We know that something was recited, something was revealed, and acts were performed, but there exists no sure evidence of what the rites actually were, though some garbled information was given by later Christian writers who tried to condemn the mysteries as pagan abominations. It is clear, however, that neophytes were initiated in stages and that the annual process began with purification rites at what were called the lesser mysteries. These were held at Agrae on the stream of Ilissos, outside of Athens, in the month of Anthesterion (February-March). The greater mysteries at Eleusis were celebrated annually in the month of Boedromion (September-October). It included a ritual bath in the sea, three days of fasting, and completion of the still-mysterious central rite. These acts completed the initiation, and the initiate was then promised benefits of some kind in the afterlife.

Those that analyzed the parchment unearthed at Eleusis were soon disappointed since instead of containing the missing key to the Eleusinian mysteries, the text turned out to be a poem. Analysis determined the parchement to hail from the age of the Roman Empire, and thus appeared to have been written around 2,000 years earlier — likely in the 1st century AD.

The parchment was taken to the Greek poet Constantine Cavafy (1863-1933). Cavafy lived most of his life in Alexandria, Egypt, and was, in the early 20th century, beginning his best years of poetical work, which granted him a deserved place amongst the great poets of the time.

Cavafy's work is suffused with an ironic nostalgia for Greece's past glories. The poet probably understood the ancient parchment better than the archaeologists who were merely interested in whether the find was related to the Eleusinian mysteries. Cavafy translated the poem into French. Nobody knows who the real author of the verses was'— perhaps Petronius? "Ex hortatio ad Ulyssem, linguae tuos sedas...Major in externas Ithacus descendat arenas." Nobody knows the identity of the author for sure since there was no signature. Similarly, it is unclear why Cavafy chose to translate the piece into French, because although Greek, English was his language. Some have said Cavafy spoke Greek with an English accent despite that he was a great Greek poet who developed his own consciously individual style, becoming one of the most important figures not only in Greek poetry but also in Western poetry, and well loved throughout French and English literature.

I imagine this man — who called himself a "poet of old age," who was skeptical regarding the realities of the society in which he lived, and ridiculed traditional values of Christianity (since he was ill at ease with his own nonconformity) with a style and tone both intimate and realistic — dreaming when reading this written treasury of the Ancient Greco-roman civilization. I imagine him discovering the greatness of the idealistic soul. It is said that he kept this "old treasure" very close to his heart until his death, and that it influenced most of his convictions and culture.

[Fragrance's] seemingly ubiquitous use..tremendously increased the need for regulations.

Cavafy published around 200 poems in his lifetime and became extremely influential after his death and his work. One of these many acolytes was Lawrence Durrell, who himself wrote several books of poetry before he published his masterpiece "The Alexandria Quartet." This bestseller won high critical esteem. Inside, Durrell explored the relativity of truth. In addition, he implied that the practice of art, sexual experience and love all lead to greater understanding, and finally allowed one to pass beyond, successive phases of development toward ultimate truth and reality. That is what I call the real progress.

I mentioned Protagoras in my past writings — the

father of moral relativism whose experiences, writings and knowledge were surely important to Cavafy and Durrell, just as they have been important to me.

Durrell, who spent most of his life outside England, and who harbored little sympathy for the English character, was educated in India. In 1935 he moved to the island of Corfu, and later to Egypt. Both Durrell and Cavafy probably never met, but they had similar lives and likely fought for the same ideas and ideals and, no doubt, admired the wisdom of those that founded the cradle of Western Civilization. Both men were convinced Hellenists — men of wisdom and progress.

I do not know if Durrell read the mysterious poem written upon the old Eleusisian parchment, but if not, he came to a similar conclusion of values through meditation, or when reading Cavafy's poems, which were inspired by the wisdom expressed by the anonymous writer who lost his or her treasure 2000 years ago. I will insert herewith the poem in French, translated by Cavafy. Perhaps my American colleagues at *Perfumer & Flavorist* will dare to translate it into English (I don't). [Ed.: in the interests of accuracy, we, too, have chosen not to translate the poem.]

Ithaque

Lorsque tu feras voile pour Ithaque
Souhaite que la route soit longue
Pleine d'aventures, pleine d'expériences.
Les Lestrygons et les Cyclopes*
Le furieux Poséidon, ne les crains pas,
Tu ne trouveras pas des choses pareilles sur ta route
Si ta pensée reste élevée, si une délicate émotion
Aime ton esprit et ton corps.
Les Lestrygons et les Cyclopes*
Le farouche Poséidon, tu ne les verras pas
Si tu ne les portes dans ton âme
Si ton âme ne les dresse pas devant toi.

Souhaite que la route soit longue.
Que soient nombreux les matins d'été
Ou — avec quel plaisir, quelle joie —
Tu entreras dans des ports vus pour la première fois;
Arrête-toi dans les bazars phéniciens
Et achète les bonnes marchandises,
Nacres et coraux, ambres, ébènes,
Et parfums voluptueux de toutes sortes,
Le plus possible des parfums voluptueux.
Va dans plusieurs villes égyptiennes
Apprends et apprends encore auprès des sages.

Ithaque doit toujours être présente à ton esprit.
Y arriver est ton destin,
Mais ne presse nullement le voyage.
Mieux vaut qu'il dure plusieurs années
Et que, vieillard enfin, tu abordes dans l'île,
Riche de ce que tu auras gagné au chemin
N'espérant pas qu'Ithaque te donne des richesses.

Ithaque t'a donné le beau voyage,
Sans elle tu n'aurais pas pris la route.
Elle n'a rien d'autre à te donner.

Si tu la trouves pauvre, Ithaque ne t'a pas trompé.
Sage comme tu l'es devenu, avec tant d'acquis
Tu dois avoir déjà compris ce que sont les "Ithaques."

I believe this poem tremendously astonished and influenced Cavafy and probably Durrell, just as it has influenced my culture and me (I named my house in Cabrils, Barcelona, Spain, "Villa Ithaca"). The poem's wisdom is just; its subjects eternal, and still move the spirit of creative people'— writers, painters, sculptors, musicians and perfumers. We cannot forget the importance of the latter, because, as the old anonymous writer mentioned, when making the journey through life we must have — "parfums voluptueux de toutes sortes,"le plus possible des parfums voluptueux"" — voluptuous perfumes of all kinds, as much voluptuous perfume as possible! The way in which this unknown writer emphasized perfume 2,000 years ago was wonderful — indeed, fragrance was compared to nacres, corals, ambers and ebonies. And the author considered perfume an eternal need for mankind. It is simply wonderful: wisdom, serenity, eternity, perfume — concepts that have been mixed together for ages.

I now conclude my philosophical and poetical introduction, which was necessary because there is no creativity without philosophy or poetry.

Beauty and Creativity Remain Key

Our society, as I've mentioned in previous installments of this series, chafes against an overwhelming rationalist influence. When reading "Ithaque," and seeing the unbelievable success of our industry, which produces true olfactory beauty, I understand that people desperately need to develop their in-

*Laystrigones and Cyclops: the anonymous author is referring to the passage in the Odyssey in which Odysseus, in his wandering between Troy and Ithaca, encounters and blinds Polyphemus the Cyclops (a son of Poseidon) and escapes from the beast's cave by clinging to the belly of a ram; Odysseus loses 11 of his 12 ships to the cannibalistic Laistrygones and reaches the island of the enchantress Circe. (Note of the author.)

ternal lives in an often-frustrating and incomprehensible world. Despite this, it is beautiful to see that the concept of perfume is persistently identified with ideals such as high feelings, delicate emotions, soul, wisdom, destiny, spiritual plenty, and the target of life. To me "target of life" means how to find the truth, our individual truth, through our noblest feelings, emotions, thoughts and sensitivity to acquire serenity and wisdom. It is a task that — as the trip to Ithaca in the poem — lasts the whole life. And it is beautiful to be able to work as a perfumer knowing that the Gospel cites myrrh and silver frankincense as treasures offered to the son of God by the three wise men, or "Kings of Orient," who most likely visited Christ in Bethlehem while coming from Ur, a city whose ruins lay in today's Iraq.

It has been said that in the last 50 years mankind has discovered 90 percent of its collective knowledge. New technologies are great; recent scientific breakthroughs in medicine, chemistry, and physics are without doubt remarkable. Still, the sad truth is that, although we have learned much in the last half century, we have simultaneously forgotten nearly all of what was discovered by our ancestors in the previous 2,500 years.

Getting into the technical aspects of this article, I will continue my explorations and descriptions as a continuation of my last work, which appeared in 1999. Since that time, many new jewels have appeared, which have affected the evolution of perfumery, or, to be more precise, have molded present perfumery.

Progress Despite Overregulation

I was negative in 1999, and I still feel negative today, especially when reading the famous list of prohibited allergens, or reviewing the many rules formulated by several governmental and non- organizations. These groups, as I wrote before, want to keep us healthy by keeping us free of supposedly deadly skin irritations. But this is an old story, and I believe we need to begin to look past those negative aspects that affect our profession. When I myself create, I absolutely ignore all these "wise" regulations. I first ensure that I have expressed what I wanted to express, and see that harmony is achieved, that the fragrance's beauty allows us to dream and to believe that dreams will come true. Only once these objectives are achieved do I, at the request of the customer, adapt the fragrance to the conventions of our "wise men." In any case, my freedom is not greatly affected by such a negativism. The best way to deal with the simple ignorance of this sad reality is to give it little thought or worry, to take it for granted as a matter of fact.

To some extent, I compare these mistakenly negative regulating bodies with the teachings of Giuseppe Tomasi Di Lampedusa, the great intellectual Duke of Palma, and Prince of Lampedusa, internationally renowned for his only novel, "Il gattopardo" (1958; The Leopard). The novel is a psychological study of Don Fabrizio, prince of Salina (called the Leopard, after his family crest), who witnesses with detachment the transfer of power in Sicily from the old Bourbon aristocracy to the new Kingdom

of Italy. The events take place after the unification of Italy was completed under Garibaldi, and the grasping, unscrupulous liberal bourgeoisie of the 1860s. Don Fabrizio's nephew, by contrast, participates opportunistically in the revolution and marries into the new class.

I bring this up because in the book, when the annexation of Sicily was completed and the island integrated into Italy, a member of the "democratic parliament" (established in Turin) traveled to Donnafugata to convince Prince Fabrizio di Salina to join this new parliament as a top senator to "work for the cause of progress and Democracy in Italy." To the parliamentary member's astonishment, Prince di Salina refused the offer, making it clear that he did not trust at all the words of progress expressed by his enthusiastic counterpart. Nor did he trust either, the praised Italian "Rissorgimento." di Salina made many wise observations, including, "You need to change everything to make sure that nothing changes…" And: "We have been the Leopards [referring to the old aristocracy whose ancestors were Phenicians, Greeks, Romans, Arabs, Normands and Borbonic Kings], and after us, will come the Hyenas and Jackals." Also: "Nothing will change in a period of time for around 100 years, and afterwards, the world will change and it will become worse."

Does my analogy make sense? It is up to the reader to decide.

Perhaps, though, this pessimism is not entirely wattanted. In the last several years, when discussing the progress of perfumery — particularly in describing all the jewels presented in this series' latest installment — I have come to realize that yes, in the end, we do progress in perfumery, something I doubted in 1977, 1978, 1985 and 1999.

I would again, in this part, like to pay humble homage to the chemists that assist we perfumers. It is these technicians that produce the great substances, with the cooperation we creative types, for us to use. I have always been very happy being surrounded by chemists — wise people, typically very honest and full of energy. I continue to feel a deep respect for these sages behind the scene, and am proud to be friends with some of the best and most respected chemists in the flavor and fragrance world.

Exciting Materials

However, chemicals aren't the only materials being used today — we are now seeing some natural oils that were not previously used so regularly. It is important to mention new products like ginger oil from China, which is used more and more, or pink pepper, which is the partial key to so many great perfumes including

"Miracle" for ladies, "Chance," "Ultraviolet" for ladies, "Polo Export Extreme," "Maniarmani" for men, "Oxygene" for men. Perhaps the most unknown of the natural jewels is galangal from south India, a key product in perfumes like "Opium" for men or "BLV by Bulgari" for men. Galangal is really great and difficult to describe: a strong, fruity, sweet amber-cistus-like material that combines extremely well with accords of vetyver, agarwood, vanillin, Frambinone, Woolfwood, amber ketal, Deltanate, Ambrocenide, and Vulcanolide, producing an extraordinary radiance. I have created a fragrance that is one of the topselling in the Middle East. In this formulation, galangal is mixed with jatamansi, brahmi, kappor kachri, mantri, nutmeg, macis, rose oil from India, champaca and frangipani absolutes, various agarwood oils mainly from Laos (Pakse), Thailand (Prachinbury) and Indonesia (Mereke, Pokambaru, Kalimantan), Yuzu from Japan, several varieties of curcuma, tree moss (IFRA! — I do not want to cause anyone a heart attack since everybody has the right to live…), the loveliest natural saffron attar that we produce 100 percent pure in India, real kewra (which beguiles our senses with its charm), ebanol, geranium and sandalwood oil from Mysore, khus, Cyperious scarious, cistus, geosmin, ambrarôme absolute, nigelle absolute, and a combination of styrax and animal notes with a good touch of p-cresyl phenylacetate, which combines great with Kewra. I am planning to update the fragrance this year with some of the greatest chemicals ever invented, including Javanol, Mysoral and Firsantol. I feel absolutely excited when sensorially experiencing these three chemicals and realizing how we can increase the diffusion of fragrances when using them. How can our profession possibly decline with such strong and absolutely fantastic new products?. How beautiful is our profession?!

Another great accord of galangal combines the oil with Firsantol, Helvetolide (Firmenich), Habanolide (Firmenich), Muscenone (Firmenich), Cyclogalbanate, Pharaone, Spirogalbanone, Florhydral (Givaudan), Romascone (Firmenich), Deltanate, cedrat coeur oil, Laevo cetalox, Bourgeonal, Cedramber (IFF), Kephalis (Givaudan), Cashmeran (IFF), lemon and yuzu oils, cardamom, amber ketal, ambrocenide, Ysamber K (Symrise) and woolfwood.

A great natural oil is Ciperus scarious, used long ago for the first time in Western perfumery in "Macassar" by Rochas. Since that time, the material has found use more and more. Ciperus scarious makes fantastic accords with Cashmeran, Cedramber, polysantol, its dextro isomer nirvanol, agarwood oils, dartanol, myrrhone and Firsantol (Firmenich).

I also need to mention kappor kachri, mantri, tagette, davana, excellent fractions of essential oils such as patchouly used in great fragrances including "Coco Mademoiselle" or "Chance," and naturally some new and beautiful extractions such as the so-called olessences of jasmine sampac, orange flower, champaca, lemon, or the DNA extractions, among which the best is frankincense. This latter material possesses only about 17 percent α-pinene and has lost the turpentine side of the traditional frankincense oil, imparting the real and unbelievably pleasant smell of the burnt smoke of the resin. Other important materials include: lotus absolute, rooiboss absolute, mate absolute and extracts, and fir absolute (which imparts so many indescribable dream-like accords with its fruity-coniferous beguiling scent). I must mention, too, the co-distillations, a new technique that enables the use of many new materials whose pure oils are too scarce or whose note is sought in this form of co-distillations. These include materials such as bois d'opoponax; bois de mousse de chêne; bois d'encens (all of them co-distilled over cedarwood oil); and agarwood oils from Indonesia, Cambodia, Thailand, Vietnam, Laos, India, Malaysia and Burma. These agarwood oils are not well known in Western perfumery — they are mainly used in the Middle East because they form part of a rich Arabic tradition, just as they were part of the traditions of Japan, China and Vietnam. The so-called Vietnamese aloes wood from Aquillaria sinensis, was used for centuries by the ruling mandarins and even during the French colonization of Indochina for burning. Today, the wood is still burned in the Middle East, in the richest houses of the Far East whose floors are made of polished teak wood. It is also burned in the most sacred ceremonies, such as the "sacrifice to heaven" performed by the Vietnamese Emperor once every three years when processing from the Imperial palace of Hue to the "altar of ancestors" just in the other side of the "river of perfumes" that spans the Old Imperial capital of Vietnam.

These agarwood oils, in the form of co-distillations, are already starting to be used in the Western perfumery. Agarwood oils are extremely elegant, with a leathery, animal top note that evolves gradually towards the most elegant woody note known in the natural world. Agarwood oils are, in my opinion, superior to vetyver or sandalwood. They are extremely long lasting, resinous, sweet, slightly fruity and elegantly woody. They combine well with rose oils, nutmeg, macis, jatamansi, kappor kachri, moorpanki (a rare cedarwood oil that, in the sesquiterpene fraction, contains nearly no α- and β-cedrenes, but primarily thuyopsene, and whose olfactory profile lies somewhere between cedarwood and sandalwood), tree moss extracts, saffron, champa (a co-distillation of wild frangipani flowers with sandalwood oil), mitti (a co-distillation of humid earth and sandalwood oil), and lotus absolute, making it naturally one of the top chemicals we available. A material I described in 1978, the extraordinary amber

ketal called Z-11, which I predicted to be significant, has become one of the most important ingredients ever discovered in perfumery. The 1960s and 1970s became the age of hedione following the launch of "Eau Sauvage" by Dior, the great creation of my old teacher and friend, Edmond Roudnitska. The 1990s and beyond have marked the era of amber ketal, Hedione HC (Firmenich), Helvetolide, Firsantol, Polysantol (Firmenich), Dextro Nor Limbanol (Firmenich), Limbanol (Firmenich), Ysamber K, Javanol (Givaudan), Habanolide, Muscenone, Exaltenone (Firmencih), Ambrettolide (Givaudan), ethylen brassilate, Nirvanolide (Givaudan), Moxalone (Givaudan), super muguet and paradisone. Other great accords include agarwood oil with amber ketal, ambrocenide and aelambre — these wonderful latter chemicals, along with limbanol, form the best accords with Z-11. The materials are not as longlasting as Z-11, but are extremely diffusive in their top notes. Perhaps my last writings were a bit negative, too much affected by so many rules that hindered our creativity. But when pondering the essence of progress, we must put in the scale all the factors. Now, with so many fantastic ingredients, the scale is strongly balancing towards progress, creativity and beauty — perhaps not in society in general, but indeed in our profession.

Auram International's agarwood oils — Cambodian, Indonesian, Indian and Neo Agarwood — can be decisive elements in any number of fragrances to come, as will its Rosessence, a co-distillation of a reconstituted rose oil whose impact chemicals have been increased (rose oxide, neroloxyde, rosefuran, β-damascone, β-damascenone, p-menthen-9-al and several essential rose sulfides) with Iranian rose flowers. This process that creates an interesting oil, with compelling effects. The company has developed several other natural co-distillation products crossing various flowers with sandalwood oil, and co-distillations of spices with flowers (also over sandalwood oil or sandalwood chemicals) — Shamama; Amber; Saffron or Kewra; Sandalwood; and Kewra.

Chemicals: Class of 2004

In listing and describing the chemicals in this latest installment of my ongoing work, I will probably repeat some previously mentioned materials. However, any overlaps will result from the fact that the chemicals deeply influence today's perfumery (i.e. they were too new before), or because when describing their odor, the scents are revealed as being so complex they can fit into two or three olfactory families. As usual I'll start with the agrestical family. In the past I mentioned linalyl, terpenyl, mircenyl, ocimenyl, trimethylcyclohexyl, lavandulyl, dihydroterpenyl, nopyl and citryl acetates, 2,2,6-trimethyl-6-vinyl-tetrahydropyran (geranium oxide) (now used in the fragrance of one of the top fabric softeners in the world), methyldioxaspiro undecane, 2,2,6-trimethyl-2-vinyl-tetrahydropyran (citroxide), 2-methyl-2-vinyl-5-isopropenyl tetrahydrofuran (herboxide), Oxaspirane (IFF), acetomarane, and 2,5-dimethylhepten-5-ol, or cis-verbenol. To these I will add the following.

Agrestical — Herbaceous, Lavender, Clary Sage, Isoacetate

These materials smell extremely fresh, linalyl acetate-like, quite stable and useful to b lend with lavender notes to impart freshness. They work well also with petitgrain accords, making a new twist between the classical and superb accord composed of coriander, lavender and neroli.

2,6-Dimethyl-4-heptanone: This material is extremely powerful; at 1 percent, the solution imparts the typical fruitiness found in lavender oil. It has a butyric undertone and a mixed character of pineapple and banana eclipsed by the previously mentioned lavender. The chemical is extremely useful in boosting the diffusion of functional lavenders, much more so than most common chemicals such as methyl hexyl cetone or ethyl amyl cetone, although 2,6-dimethyl-4-heptanone combines extremely well with those, too. It is not longlasting, working instead to boost the top notes and diffusion of fragrances in general.

Verbenyl acetate: This is a very nice and practically unknown chemical. It is quite diverse olfactorily, not smelling of any particulat essential oil, but instead having shades of myrtle, laurel, Spanish marjoram, tea tree, spanish sage, lavender spike, so-called cantueso, and savin. Verbenyl acetate has a very soft, velvety effect when mixed with the oils mentioned, or with isoacetate, Sclareolate, caraway, dextro carvone, ginsene, and 2-acethoxy-1,8-cineol, and naturally with Iso E Super (IFF), Cassiffix (IFF), karanal and other smooth chemicals. It enhances myrtle oil, and its accord with 2-acethoxy-1,8-cineol, myrtle, cardamom, ginger, Iso E Super and calone is great. Although not very longlasting it is amongst my preferred chemicals because of its capacity to smell pleasant without specifically smelling of anything.

Sclareolate — propyl-2-(1,1-dimethylpropoxy)-propionate: This is one of the best chemicals ever discovered, and is quite new, unknown and absent from most laboratories. Sclareolate smells of clary sage, mentha citrata, and linalool ex Mentha citrata, but fresher and imparting a much softer impression than the oils. Combinations of Sclareolate with

coranol, ethyl linalool, Helvetolide and musks are extraordinary. Sclareolate softens and creates new olfactory shades never before imagined, as does coranol. Both together are unsurpassable; their accords are extremely new and unique. They blend very well with woolfwood, too, a combination that is extremely warm and soft, and which imparts the radiance found in some aspects of vetiver oils after evaporation of its top notes. Sclareolate combines well with prismylate and methyl pentenyl salicylate in a combination that is spicier than hexyl and cis-3-hexenyl salicylates. The chemical is agrestical and less floral than coranol or dihydromircenol; Sclareolate will play an important role in coming years in the evolution of perfumery. The accords with myroxide are also extraordinary since myroxide gives power to the much softer Sclareolate that is more radiant and inconcrete. I have always been a great admirer of myroxide, and finally it must succeed; now we will see both combined, especially in men perfumes. The combination of Sclareaolate, coranol and myroxide is also great with the patchouli fraction — very rich in norpatchulenol and patchoulol that is marketed under the name of patchouly coeur; a sensational product. I am at a loss for words to describe the possibilities of Sclareolate, even if I write a great deal about the chemical, it will be less than this product deserves. I herein describe Sclareolate with my capacity to create, but my capacity to create is very little compared to the capacity of so many perfumers combined. They will absolutely understand at once the greatness of this new chemical.

Opalal — 7-dipropyl-8,8-dimethyl-6,10-dioxaspiro-[4.5]-decane: Again, a totally unknown chemical that is missing from most laboratories, but which is being used extensively. Opalal is used in the so-called camonile base at a level of about 5 percent, but there it is not quite noticeable since this remarkable base contains another captive chemical in big amounts that imparts a chamomile-like character. Opalal is agrestical, herbal, and slightly fruity, with shades of cubeb, nutmeg and elemi that work extremely well with Iso E Super. It is also slightly anise and forms great accords with dextro cetalox (the one in the market is the racemic), Habanolide, pink pepper oil, amber core, safranal, cyclohexyl salycilate, gaiac wood oil, cedramber, Sclareolate, Boisambrene Forte (Kao), Cashmeran, Helional (IFF), clary sage oil, Limbanol, dextro nor limbanol and dartanol. Some of these ingredients mixed with Iso E Super and other musks created one of the fragrances that was voted winner for 2003 masculine fragrance in the Enzo Palace in Bologna in March 2003. Mixtures of Opalal with dehydronerolidol (an unknown and beautiful chemical present in Auram's Nerolidinia), elemi, kunzea and cubeb oils, Cassiffix and Auram's Vert de Roses are simply a dream.

Azarbre — diethyl dimethyl-2-cyclohexen-1-one: This material is better known than Opalal, but again is missing from most laboratories. Azarbre (Novachem Aromatici S.R.I.) is less agrestical than Opalal and more woody-honey-rooty, with notes of dry flowers. Azarbre mixes well with rooty essential oils such as corydalis or—Cyperus scarious and all kinds of agarwood oils as well. The material forms great accords with isophorone, phenylacetic acid, oxophorone, tobacco absolute, ionones, damascones, phenylacetates, nectarol, the ususually great myrrhone, dihydro-β-ionol, and osmanthus, and with top creative bases such as Auram's Fixambral in which a combination of "sacred" resins are mixed with a wise honey accord. Auram's Fixambral is a trace component in most of my fragrances, and is composed of several captive chemicals. It possesses an extraordinary oriental-resin effect that is very deep and touching. When used between 0.5 and 2 percent, it imparts the smell of myrrh, frankincense, amber gris and opoponax to most fragrances, creating a very deep and pleasant smell that combines well with DNA frankincense and Auram's Coeur d'Encens, a mix that imparts the sensational burnt note of the best green haujeri frankincense — the best of the best qualities of the sacred resin that comes from the Sultanate of Oman and Yemen.

Claritone — 2,4,4,7-tetramethyl-oct-6-3n-3-one: This is quite a new chemical, more herbaceous and less citrus/grapefruit-like compared to the better-known dimethyloctenone. Claritone (Symrise) is very useful in giving a lift to herbal and citrus fragrances in which it contributes to a very good harmony in the top note. The material blends very well with new nitriles like Floridile (methyl decanyle), a forgotten product that is absent in most laboratories. Claritone's accords with β-ionone, dimethylionone, α-ionol and dihydro-β-ionone are remarkable, especially when combining these subtle violet notes with "soft" rose esters such as feranyl crotonate, Geranyl Tiglate (Organica Aromatics) or other rosy chemicals such as geranic or citronellic acids, methyl or ethyl geranate, among others. Combinations of Claritone, Methyl Pamplemousse (Givaudan) and dimethyloctenone are even better since dimethyloctenone is more delicately citrus/grapefruit-like and more velvety. Claritone is also very good with "citronellic" products such as citronnellal, isopulegol, landenal, limonen aldehyde, aldehyde TMH. The chemical also makes excellent accords with Melonal (Givaudan), cis-7-decenal, Methoxymelonal (Aroma & Fine Chemicals Ltd.) and calone.

Sclarex — 5,5-dimethyl-1,4,4a,5,6,7,8,8a-octahydro-1,4-methano-naphtolen-6-yl acetate: This is an old and, to me, quite

interesting chemical possessing a very natural herbal note with strong nuances of clary sage oil. I have always liked Sclarex, but when comparing its cost to cheaper Sclareolate, it has been found that the latter is more interesting for extensive use in perfumery. In any case, the softness and harmonious blends achieved with Sclarex are remarkable.

Agrestical Minty

I previously mentioned products such as Isomint, Givmenthe, Frescomenthe and Frescolat, and I would like to add these totally unknown but interesting products to the category.

2-Acetoxy-1,8-cineol: This well known and remarkable chemical, mainly used in flavors, is as difficult to work with as it is interesting. It is very strong and minty, with shades of myrcene and L-carvyl acetate. The chemical has a note that is found in many agrestical oils such as myrtle or sage after evaporation of their most characteristic scents. I like to use 2-acetoxy-1,8-cineol in minor amounts just to increase the value of many "cineol-type" essential oils, and its base Minterizzia — where it is mixed with coranol, woolfwood, nor limbanol and very strange essential oils — is something really new. The chemical requires all the skills of a perfumer to bring its undisputable value forth.

Agrestical

This category includes notes of dry herbs, chamomile and herbal fruity. I mentioned before chemicals such as Herbacet Nr.1, Tachrysate and ethyl chrysanthemate, the latter an old forgotten and extremely good chemical again unknown by most perfumers and missing from many laboratories.

Myrascone — ethyl, 2,6,6-trimethyl-2-cyclohexenyl carboxylate or ethyl-α-cyclogeraniate: This chemical has a very rich, diffusive and natural scent smelling of dry herbs and natural sensations that are perceived in a Mediterranean forest in winter after the rain. It belongs to a family of unique chemicals, all isomers that comprise ethyl-β-cyclogeranate, methyl cyclogeranate (methyl-β), Romascone (Firmenich) (methyl-γ-cyclogeranate), ethyl safranate ("damascenone")-cyclogeranate, and Deltanate. Myrascone is more herbal and less fruity than other members of this family, and is also more longlasting. I like combinations of Myrascone with Ginsene, elemol, methyl anisate, Undecavertol (Givaudan), tetrascone, Deltanate, Salicynalva (IFF), Vernaldehyde (Givaudan), Farnesene (Givaudan), Bisabolene (Givaudan), and methyl linoleate, among others. Myrascone blends very well with other members of the family, including Romascone and the damascones.

Ethyl-β-cyclogeranate: This chemical is similar to Myrascone, but less herbal and oilier, with undertones of "rose absolute." It combines well with unusual rose chemicals such as phenylacetaldehyde dicitronellyl acetal or phenylacetaldehyde digeranyl acetal. It mixes well with neryl crotonate, a very subtle soft rosy chemical, and Cistulate and Phenylethyl Anthranylate, both superb rose materials absolutely ignored without any logical reason.

Methyl cyclogeraniate (methyl-β-cyclogeraniate): This material is the best known chemical of this family, along with ethyl safranate. However, in my opinion, it is the worst. The chemical is quite terpenic-turpentine-myrcene-like and possesses the "bad" shades of frankincense oil. I do not mean that methyl cyclogeraniate is a bad chemical — it is the oldest known from this family — but it pales when compared with other newer members such as Romascone or Deltanate. This material has been used in many fragrances, among them the innovative "Courrèges 2020," in which it is wisely mixed with Etaspirene.

Romascone — methyl-γ-cyclogeranate: When γ-damascone was released in 2002, Romascone was also released. I cannot describe the latter better than the company that commercializes it. It is aromatic and damascone-like with aromatic and thujonic aspects, and a damascony-fruity undertone especially evident in composition. It enhances all the herbal-fruity aspects of many compounds and creates unique accords with both ethyl safranate, and the top jewel of the family, Deltanate. Naturally, it also blends well with ethyl-β-cyclogeranate and myrascone, but is by far much more fruity and natural than those described before and less spicy than ethyl or isopropyl safranates. Romascone blends extremely well with Helvetolide, Romandolide, Paradisone (Firmenich), Habanolide, Muscenone, Exaltenone, isoproyl 2-methylbutyrate, and cis-3-hexenyl tiglate; coriander, mandarin and lemon oils; damascones and Damascenone (Organica Aromatics); Florol (Firmenich), acetal CD; and mandarin leaf oil, tagette, davana and calone. This mixture has given light to one of the most respected and successful ladies fragrances sold today. Romascone has unlimited applications, and although is is not longlasting, it combines well with Myrascone or ethyl-β-cyclogeranate, and its accords are even better than when Romascone is used alone. I like to use them all together in a base that is well harmonized and takes most of the individual characteristics of all of them. The base it is called Musk Fruitée, commercialized by Auram.

Ethyl safranate: It would be "Damascenone Cyclogeranate." This is an old product, and along with methylcyclogeranate, the best known of this family. Ethyl Safranate (Quest) is more spicy-saffron-like

than the rest of the related chemicals. It is also more herbal and longer lasting; it has thusly found intensive use. I like its combinations with lactones and with Neocaspirene (or its constitutional isomers such as Isospirene or Etaspirene), Oxane, Verdox (IFF), Hexyl Acetate (IFF), Labienoxime (Givaudan), Rosoxime and Buccoxime (Symrise), despite that the oximes are absolutely different. Again I must say that ethyl safranate is a jewel; it is worthless to describe where it has been used and how can be used because I am sure it affects the sense of creativity of every perfumer. Every perfumer treats this material with respect and care.

Isopropyl safranate: This chemical is less known that ethyl safrante. It is spicier than its more famous cousin, and blends well with Saffracide, creating unusual accords. I like isopropyl safrante when mixed with dimethyl benzyl carbinol crotonate (a totally forgotten jewel) and bases such Prunella, which also combine very well with lactones. Isopropyl safranate also blends well with acetaldehyde diphenylethylacetal and acetal CD, in addition to chamomile chemicals such as Isopentyrate (Firmenich), Methylcammomille, the elegant Prenyl Angelate and the so-called Peranat (Henkel).

Deltanate: This material is by far the best of the family and so new that I cannot disclose yet its chemical name. Deltanate is also the fruitiest member of this family of chemicals. It is more fruity and elegant than Romascone. This material will simply revolutionize the accords in future. I feel such a pleasure when smelling Deltanate that I cannot describe it. It is herbal, fruity, plum-like, damascone α-like, but less heavy and more herbal. Its accord, paired simply with Helvetolide and Paradisone, is like a poem, imparting its delicate fruitiness to these two great molecules — quite unknown to most perfumers. While Helvetolide and Paradisone are the present state of perfumery — the two molecules shaping fragrances in this decade — Deltanate is the future.

Dimethyl benzylcarbinyl crotonate: This chemical is an old and totally forgotten chemical. It is more herbal than the butyrate, which is more fruity and lactonic. Dimethyl benzylcarbinyl crotonate possesses interesting tobacco undertones that blend extremely well with Deltanate, Myrascone, Romascone, ethyl safranate, Civescone, Ginsene, Tachrysate, Isotagettone 50, tagette, and the forgotten marigold oils: Davana, Gingergrass, oxaspirane and methyl pentyrat. I could go on and on here, since creativity is an eternal concept that is difficult to harness.

Prenyl angelate: This extremely nice and elegant chemical smells of the noblest parts of chamomile, linden and even some fragrant teas. It blends extremely well with the described Sclareolate and Opalal, and also with Romascone and Deltanate. Accords with the genuine gingergrass oil (a very special herbal essential oil from India) are also very warm. It blends well with fruity chemicals, especially ethyl decadienoate and the totally unknown but fantastic anapear. Prenyl angelate enhances all these products, giving class and elegance to most of the herbal-fresh-fruity-spicy accords achieved with the described chemicals. Another magical use of prenyl angelate is when it is mixed with Myrrhone and the various irones. It also works well with the greener Peranat, and other chamomile chemicals such as methyl pentenyl isobutyrate, isopentyrate or methyl pentyrate. The unknown methyl pentyrate is quite funny. It is used in a base that has been used for a long time to adulterate Roman chamomile oil that does not contain this chemical. Thus, many people in the United States and Europe are using a certain "chamomile oil," sold by a broker there, which contains methyl pentyrate; this faux material is considered by many as the "real" Roman chamomile oil.

Agrestical-Balsamic

Tea, styrax, clove and eucalyptus: I have mentioned many chemicals in the past, and we are now seeing that my prediction that Theaspirane was going to be widely used came true in many fragrances like "Kenzo le monde est beau." Theaspirane is a jewel that will be used more and more in future. Now I would like to mention several other materials.

6-Acetoxydihydrotheaspirane: This chemical cannot be described as a pure "tea" material, but is interestingly herbaceous, delicately and especifically woody and spicy, and slightly fruity. It blends extremely well with Georgywood, (a chemical that will probably be massively popular in the years to come), β-Damascenone and γ-Damascone. It has a very natural shade of dry leaves and blends well with laurel leaf, the forgotten "crude" eucalyptus oil and clary sage, but also with subtle woody chemicals such as Caryolan, Base XVIII E, Caryophyllenol, and dextro nor limbanol, and balsamic products such as copaiba balsam, and tobacco chemicals such as trimethylnaphtalenone, 4-oxo-isophorone and 4-hydroxy-iso-phorone (all mistakenly considered as flavour chemicals). 6-Acetoxydihydrotheaspirane's accords with irone and myrrhone are extremely beautiful.

Salycinalva — 2-phenylhexanitrile: This is a very interesting herbal chemical with important shades of clove and styrax. It is very stable, and I love its combination in functional perfumery with cyclohexyl salycilate, methyl pentenyl salycilate, and patchouly oil, and also with reconstituted agarwood oils. Salycinalva is also good with leathery notes and with Ben-

zoin, Castoreum, Pierre d'Afrique absolute and styrax derivatives.

Tamisone: I would like to emphasize again the importance of Tamisone — a thujonic chemical described in part IV. On occassion a chemical has been described two or more times in my book because perfumery is a completely empiric science in which we discover and re-discover (and will discover again) so many shades of a material that perhaps were not noticed in the past. Sometimes I have described very new chemicals, and after some years elapsed the greatness of the chemicals deserves a new notice.

This largely forgotten chemical possesses herbal accords with tropical fruit notes. It combines very well with Etaspirene, Plicatone (Firmenich), Dalmatian sage oil, Sclareolate and Centifol Ether. Tamisone is used only in traces because of its extreme potency. Again, accords of Tamisone with Gingergrass, Galangal and Davana are quite unusual and interesting as parts of a top note. Blending these accords with Iso E Super, Cassiffix, and Wolfwood; and the new musks Helvetolide, frankincense oil, Fixambral, Coeur d'encens, Etaspirene and Coranol; promise a golden room of possibilities for new fragrances.

Aldehydes

Under this olfactory group I have described in the past all the aliphatic aldehydes and the unsaturated alkenals and alkadienals. I have taken care not to mix products such as Lilial (Givaudan), Helional (IFF), Hydroxycitronnellal or other—"aldehydes" that smell of flowers or fruits or woods or musks, and I will continue under the same guiding principal.

cis- and trans-9-Undecenal: These products are not to be confused with 10-undecenal (aldehyde C11-undecilenique) or Intreleven aldehydes. Intreleven Aldehyde (IFF) is stronger as compared to 10-undecenal, but much weaker than 9-undecenal. Intreleven aldehyde consists mainly of 10-Undecenal and a mixture of 8- and 9-undecenalsn, while 9-undecenal is pure — in terms of commercial quality, the latter only contains some traces of 10-undecenal. 9-Undecenal is al least five times stronger than Intreleven aldehyde and at least 10 times stronger than normal undecylenic aldehyde or 10-undecenal. Its accords are simply great. The chemicals powerfully enhance many accords with simply trace amounts — they are especially important in fougère and chypre accords, as well as herbal-woody accords. Its combination with agarwood oils and oriental spices are unsurpassable because such mixtures include the so-called "sacred" resins: myrrh, frankincense and opoponax. I have blended such combinations successfully with oils such as mantri, lanyana, kapoor kachri, brahmi, nutmeg, mace, patchouly, valerian, and jatamansi, and with accords achieved with safranal, β-cyclo citral, oak moss, cedar moss, tree moss absolutes or extracts, cardamom and myrtle. It also blends very well with phenylacetic acid, mitti, geosmin, methylionononones, alfa ionol, nor limbanol, Limbanol (trans-methyl nor limbanol) and Timberol (cis-nor limbanol) (Dragoco), novenal, acohol nu, allyl ionone, and osmathus absolute, among others. Its accords with myrrhone, one of the most elegant chemicals ever discovered, and irones are also fantastic. I would dare to say that 9-Undecenal is simply the best "aldehyde" if you understand what I mean with this name. I have never seen an accord that was not improved by 9-undecenal; its blending with leather chemicals, in particular, is unbelievable. The accord 9-undecenal, alcohol NU (5-ethyl-2-nonanol) and aldehyde NU (5-ethyl-2-nonanal) is one of the most elegant combinations I have seen, mixed with dephenolised birch tar oils, allyl ionone, p-cresyl isovalerate and orris chemicals. Also quite interesting are the 9-undecenal accords with costacide, an extremely strong animal acid imparting a very strange note of castoreum, costus and leather. 9-Undecenal is simply another jewel that has not been used by many, and I simply do not know the reason why. Accords of 9-undecenal with novenal (8-nonenal) are also quite interesting because they are the accords of the later aldehydes with α- and β-ionones, methylionones, dimethylionone, α-ionol, allyl and isobutyl ionones, dihydroionone β and so on.

It is interesting to note something that is being forgotten now in our quest for inexpensive products: the capacity to choose the quality of the ingredients. The sensitivity to feel the varying shades of materials is paramount to our profession, and it is being lost. This is particularly true in the field of ionones and methylionones. Products with lots of impurities are being selected with deference to price, and yet most are, in reality, worth nothing. The real Isoraldeine 70 is by far finer than many "pure" γ-methylionones, while products like Iralia Total, Raldeine A, Ionantheme 100 percent or Cetone α have velvet-delicate notes totally absent in "commercial grades" of methylionones and ionones. Unfortunately we are not taking enough time to "feel" the ingredients in perfumery; we are quite obsessed with getting new chemicals, which is a great job, but one should not forget that to select the top qualities of classical chemicals is as important as getting new materials. To substitute Ionantheme 100 percent, Iralia Total, Cetone α or Raldeine A with cheaper impure products is a big mistake. Perfumery is feeling. It is subjective. Because of this, I truly find an indescribable internal pleasure while smelling and sensing the shades of beauty of old chemicals, shades

of warmth and elegance that are totally absent in products that, according to analytical methods, can be as pure as those more expensive related materials. However, the results achieved (and very often disregarded) are totally different. As I said, perfumery is an empirical profession and we should always keep our senses ready to detect where its charm is found or missing.

9-Decenal: This material is almost as powerful as 9-undecenal, but less refined, a bit more powdery and more "orris-like." 9-Undecenal's smell is more elegant and more neutral. 9-Decenal is extremely effective in functional products as a lift, especially for powder detergent fragrances. Sometimes I like to blend both 9-undecenal and 9-decenal together with trans-4-decenal, which is more citrus, but equally strong.

cis-7-Decenal: This is also a very beautiful chemical; it is quite strong, but more fruity-melon than 9-undecenal and 9-decenal. It possesses the same properties as 9-undecenal, but is softer, imparting a good melon character that, though not as clear as cis-6-nonenal or cis-6-nonenol, is quite interesting. cis-7-Decenal blends very well with cis-3-,cis-6-nonadienol, ethyl cis-5-octenoate, calone, methoxymelonal and ethyl 3,4-pentadienoate. cis-7-Decenal produces unusual and promissing fruity-aldehydic notes in applications. I very much like a base that consists of those above-mentioned related chemicals and Coranol — plus an old, excellent and forgotten chemical, linalyl phenylacetate (unfortunately absent from many laboratories). It is both time to discover new chemicals and to rediscover old forgotten products such as the related linalyl ester and other great linalyl esters, in addition to propionate, which clearly smells of clary sage and isobutyrate.

Ozonic Chemicals

Ozone does not have a smell, but we perfumers, having a shortage of vocabulary with which to describe our subjective and spiritually rooted profession, must invent terms to characterize our tools and creations.

Ozofleur — cis-4-tertiary pentylcyclohexyl ethyl ether: This is an old, but newly commercialized chemical. It is fresh and blends well with marine and some extremely freshly floral notes such as Super Muguet (still unknown to most of perfumers). Ozofleur blends well with the so-called Conolline, too, in addition to Fleuranil (IFF) and the older Pinoacetaldehyde. I believe Ozofleur was not understood in the past, judged as too uncharacteristic, but it makes very good accords with some products like Troenan (which is more fruity-watermelon like), Fleuramone (IFF), Methylpentenyl Salycilate (an interesting and infrequently used green-spicy salycilate), Majantol (Symrise) (very flowery-magnolia-champaca-frangipani), Spirogalbanone (Givaudan) (more galbanum-like), neobutenone (much fruitier and stronger), the so called triplol (the corresponding alcohol of triplal — a forgotten jewel that is more green and fresh) and the also forgotten and very interesting Resedacetal. In addition, this chemical blends well with more common materials such as cis-3-hexenyl and hexyl salycilates. Another remarkable accord of Ozofleur has been achieved with Auram's Vert de Roses base. Incidentally, the base's Ozofleur-free variation, Vert de Roses, is the key in one of the most successful fabric softeners fragrances in the world.

Fleuranil — 3-(4-ethylphenyl)-2,2-dimethylpropanenitrile: This is a very unusual nitrile with impressive marine notes. Its accords with Rose Oxyde, Calone, Maritima, Methyl Decanile, Floradile and Leguminal (Symrise) are fantastic. This chemical's fresh marine note also combines very well with green violet nitriles, such as Parmanyl, in addition to new anise chemicals such Toscanol. Fleuranil is also good with Nirvanolide, Calone, Frambinone Crist, Isomuscone and Moxalone. I love its functional accords with verdyl acetate, propionate and isobutyrate, in addition to Dihydroverdyl acetate. Accords of Fleuranil, Buccovert Forte and Vert de roses are unsurpassable.

Woody Chemicals

This is one of the most important chemical families in our profession. Herein I have divided it into several sections.

Woody, pungent, patchouli, cedarwood, vetyver: I previously mentioned fabulous chemicals such as nor Limbanol, dextro nor limbanol, Spirambrene (Givaudan), Boisanol, Tobacarol (IFF) and Hydroxyambran (Fragrance Resources). This latter material id one of the best chemicals ever discovered. Unfortunately, it has been "withdrawn" by a regulatory body that, for sure, must have a lot of knowledge and sensitivity to beauty. How sad is to see decisions like the one taken to stop producing Hydroxyambran; this longlasting woody chemical can perform wonders with other "royal" ingredients such as Ambrocenide, Belambre, Amber ketal, Boisanol, Sclareolide, Spirambrene, Tobacarol, Cedroxyde (Firmenich), Trimofix "O" (IFF), Timberol (cis-Nor Limbanol) and Ysamber K. It was a sad decision indeed. I must publicly state that Hydroxyambran should be restored to our creative palette, but I doubt those who banned the material would understand at all the meaning of my writings and the meaning of our profession.

Limbanol (trans-methyl nor limbanol) 1-(2,2,3,6-tetramethyl-1-cyclohexyl)-3-hexanol): This material was slightly and erroneously mentioned in the third part of my book because it was too new

then. At the time I confused real Limbanol with another chemical. Limbanol is one of the most powerful woody chemicals I know. Normally used in dilution at 10 percent, it is an absolute treasure unknown to most perfumers. Limbanol blends extremely well with the weaker Nor Limbanol and Dextro Nor Limbanol, Timberol (cis-Nor Limbanol; more fruity and weaker as compared to its trans isomer Nor Limbanol), Spirambrene, Boisanol, the sadly mentioned Hydroxyambran (which is more longlasting), Ambrocenide, Belambre, Vetiverol and Vetiveryl acetate, Nirvanol, Brahmanol (Symrise), Dartanol, Mysoral, Javanol, Georgywood and (naturally) amber ketal. Limbanol is great. Limbanol is creativity. Limbanol is the future. Limbanol is hope. Limbanol is a proof that we perfumers would be lost without our most faithful friends — the chemists! The accords of Dextro Nor Limbanol, Woolfwood, Limbanol, Vetiverol, Caryophyllenol, Amber ketal, Cedroxyde, Boisanol, and ambrinol, along with rare and quite secret essential oils, have created one of the most amazing reconstitutions of Agarwood Oils. The same base, Neo Agarwood, without Limbanol, is commercialized. However, the base containing the described chemical must remain captive. It is well known that amber ketal is one of the most important "key" chemicals in our profession"— I described as far back as 1978! At the time it was barely used, compared to today — just a bit in "Chanel 19" and "Anais-Anais." I said in 1978 that the chemical known as Z-11 was going to be one of the most important ingredients for the development and evolution of our profession. Still, today, nobody else talks about it, yet it is being used extensively. Today there is no perfume without amber ketal. I realized this would happen when, in the summer of 1970 in my Swiss laboratory, I smelled for the first time a solution of Z-11 in APV. In any case, amber ketal is, along with Hydroxyambran, one of the longer lasting chemicals in the world. However, when first smelled, it needs some "help." I told this to my precious friends, the chemists, these unpretentious people that I have always considered our "sages behind the scene." Mixing amber ketal with Limbanol, Belambre, Ysamber K, Nor Limbanol and Ambrocenide, five extremely strong woody-ambery chemicals that will revolutionize our profession, creates its best accords. This has already been started with Ambrocenide, but Limbanol deserves the same attention and care. It is so powerful that I rate it at only half of the strength of Ambrocenide. To describe the uses of Limbanol is not possible in this work since that subject alone could fill an entire book. I love the accords of Limbanol with its "brothers," Nor Limbanol and Dextro Nor Limbanol, which contain one methyl group less. However, if we add Boisanol, Belambre, Georgywood, Ambrocenide, Hydroxyambran, Ysamber K, Tobacarol, Amber Core, Base XVIII E, and, why not, 6-acetoxydihydrotheaspirane, we can easily realize that we are achieving perfection in this group of chemicals. Chemicals such as Limbanol make sense in this work, and we see in them the real meaning of the title of my series of writings: "Perfumery: Techniques in Evolution."

Nor Limbanol and Dextro (+)-(3S, 1'R,6'S) Nor Limbanol. 2,2,6-Trimethyl-α-propyl cyclohexane propanol: Although described in the last part of my book, I want to mention this again. This, after all, is not a "cold" work, describing a chemical just once and forgetting it thereafter. These great chemicals, the best jewels discovered through deep research, have soul. They are living substances to be (re)discovered every day. Nor Limbanol is maybe the most elegant woody chemical ever discovered. There are many, of course, but to my mind, I would put upon the altar of perfection — along with amber ketal, Nor Limbanol and Dextro Nor Limbanol, Hydroxyambran, Ambrocenide, Georgywood, Limbanol, Boisanol and Ysamber K — as one of the top and greatest woody-ambery chemicals in the world. Nor Limbanol pleases the spirit. It is a perfume by itself; I like it in a 1 percent solution. It is the longest lasting material, excluding Hydroxyambran and amber ketal. I cannot really make a woody note without its contribution. Accords with Woolfwood are soft and nice and flow like "angels in the heavens." There is no need to mention where Nor Limbanol and Dextro Nor Limbanol are used since there are hundreds of perfumes. Still, I must publicly express to the chemists of Firmenich my warmest thanks and congratulations for having offered those jewels to the realm of perfumery. Nothing is as smooth as Dextro Nor Limbanol. It is slightly better than straight Nor Limbanol. It is not that much stronger than its straight counterpart, though it is indeed stronger. Accords of Nor Limbanol with sandalwood chemicals are unsurpassed. Mixtures of the accords with Firsantol, Nirvanol, Javanol, Brahmanol, myrrhone (another jewel that will cause a positive earthquake in our potential future possibilities) and Mysoral are pure and eclectic beauty. They have contributed to the evolution of perfumery and are key elements that pioneered the actual trend in our great and present creations. They will last for a very, very long time. Subjective beauty is part of art and art cannot be defined, but there is no doubt that much of what we can achieve today was impossible just 10 years ago. We have seen a great evolution in perfumery, which day after day progresses towards perfection. This is not to imply that we, the perfumers of today, are better than past generations. I merely point out that we

can enrich our sensitivities and need to express our feelings while using precious new materials, which will always improve the state of perfumery. In my past works I was quite negative about the progress in perfumery. Well, in spite of losing great materials such as sandalwood oil from Mysore, and in spite of the bureaucratic problems that I have publicly denounced, the beauty of these described new materials is so great that it will make our profession to evolve positively. I stated before that progress was just a question of sensitivity, a matter of how we cope with concepts like beauty, tenderness, freedom, truthfulness, wisdom, tolerance and justice. These great ingredients, although it might seem to many an exaggeration, bring my spirit closer to the peace of mind. They also provide the serenity needed to understand the cardinal mysteries that have impressed mankind since the beginning of civilization. The Nor Limbanols are weaker than Limbanol, but in spite of it, the unsurpassed beauty of all three chemicals is simply paramount. I would just add that if I could chose only one woody chemical I would choose Dextro Nor Limbanol, which I consider absolutely the finest of all.

Prismantol — 4-methyl-8-methylene-tricyclo-[3.3.3]-decan-2-ol: This is an important material, a recently and partially released captive combining woody, spicy, rooty and camphoraceous notes. It is not very powerful, but is very interesting because its typical nuances of ginger compliments it very well. This chemical is one of the key segments of the international base Ginger Root Oliffac. Ginger is a very important essential oil today, and its use in great fragrances has significantly influenced the perfumery of the last years. It is frequently used. Naturally it is not possible to mention all the formulas in which it is used because this is not a monographic work. I will just recall "Aquaman" by Rochas, "Crabtree & Evelyn" for men, "BLV" by Bulgari for men and women, "Zanzibar" by Van Cleef & Arpels, and "Oxygène for Men" by Lanvin. This last creation is one of the greatest and most complicated fragrances I have smelled. It is incredibly difficult to reproduce — perhaps only possible by one of my "colleagues," somebody that understands nothing of perfumery, who (according to his/her rhetoric) reproduced Sandalwood Givco (Givaudan) without Javanol. This colleague will most likely be able to replace several captives such as Coranol, Helvetolide, Octalinol, Woolfwood, Vulcanolide, Mysoral and will be able to blend its accords of frankincense, Pink Pepper, Cashmeran, Methyl Pamplemousse, β-Ionone, Elemi Oil, Plicatone, Canthoxal (IFF), Calone, Melonal (Givaudan) and naturally the great amber ketal. In any case, to make a good duplication of this remarkable fragrance, one of the best ever launched, is extremely complicated. The list of fragrances using ginger it is impressive, and it is good to see that a product previously applied in mere traces ("Eau Sauvage," for example) is now being used so widely — with great creativity and success.

Ysamber K — 1,1,5,5-tetramethyl hexahydro spiro {1,3-dioxolane-2,8-(5H)-[2H-2,4a]-methano naphthalene: If Limbanol is strength and vitality, Ysamber K is class and elegance. (Class and elegance are also found in Dextro Nor Limbanol [more ambery than Ysamber K], tobacarol, Georgywood [more resinous] and Spirambrene [also more ambery and slightly weedy].) Ysamber K is very substantive and is used in both fine toiletries and functional fragrances. Ysamber K blends very well with Ambrocenide, Cashmeran, Kephalis (Givaudan), Nor Limbanol, Ambrox, Sclareolide (a totally unknown jewel), Iso E Super, Timberol and most of the woody chemicals. The material harmonizes (just as Nor Limbanols do) with mixtures of pungent woody chemicals and sandalwood-like ones. Ysamber K creates beauty along with Woolfwood, Prismylate, Prismantol, Nirvanol, Dartanol, Mysoral, Polysantol (Firmenich), Javanol, Polywood, Sandalore (Givaudan), Ebanol (Givaudan); its mixtures are simply fantastic. I have created a fragrance in which a great amount of Ambrox DL was mixed with Amber Core, Helvetolide, Cashmeran and Indian agarwood oil, along with Nor Limbanol. Blendings of Ysamber K with Javanol and Firsantol are unbelievable because Ysamber K harmonizes with Helvetolide (a chemical that will become a second Hedione) and Firsantol (the most diffusive sandalwood chemical, along with Javanol, that is also the most powerful ever discovered). Ysamber K is another of the keys to understanding where our profession is going. Ysamber K is making perfumery evolve. Ysamber K is beauty and, when enhanced with Belambre, Limbanol, Hydroxyambran, amber ketal and Ambrocenid, it is a sensation very close to plentitude — total haromony. Peace of mind.

Bornafix — 3-(2-Bornyloxy)-2-methyl,exo-1 propanol: This is a relatively old chemical, recently commercialized. Bornafix (IFF), though not as elegant as the Limbanol family and Ysamber K, is quite interesting because its woodiness is mixed with agrestical undertones. You can smell a main woody note in Bornafix, which is not as beautiful, elegant or clear as that of Nor Limbanol, Dextro Nor Limbanol or Limbanol. Still, it possesses quite interesting moss, thyme, origanum, sage, rosemay, and lavender spike aspects. Of special interest is a clear rosemary absolute shade that recalls to me the woodiness of Mediterranean forests, despite that a humid earth shade is missing to reconstruct the overall scent, say, of the maritime forests in

Catalonia in the northeast of Spain. I like accords of Bornafix paired with a woody-rooty-herbal and humid chemical, as is found with 6-Hydroxydihydrotheaspirane. A novel unknown product very different to the one described before, 6-Acetoxydihydrotheaspirane is not humid at all — more fruity and woody.

Although I like Bornafix, I do not consider it as elegant as Nor Limbanol, Dextro Nor Limbanol, Limbanol, Ysamber K, Timberol, Georgywood, Spirambrene or Boisanol. I could be wrong, but I do not see this chemical being widely used in the future. It is more complex and, as I mentioned, less woody than those previously mentioned agrestical/mossy jewels. Still, Bornafix works well in functional compounds. Its accords with Tonalide or Tonalide's constitutional isomer, the extraordinary and almost unknown Vulcanolide, are absolutely great. Its combinations wonderfully enrich normal functional compounds.

Georgywood — 1,2,8,8-tetramethyl octahydronaphtalen-2-yl ethanone: When, in 1972, IFF's chemists discovered Isocyclemone E and, after its enriched quality, Iso E Super, a revolution in perfumers' compounds was born. The previous formulas were made of Vetyver and Patchouly accords, Vetyveryl Acetate, Cedryl Acetate, Cedrol, and Cedarwood oils and derivatives. Iso E Super was subtle, extremely soft and velvety, and relatively inexpensive. These factors made the chemical what it is today: an indispensable ingredient present in 98 percent of our formulas. The revolutionary 1970s started with Vertofix Coeur (IFF), Iso E Super, Lyral (IFF), Dihydromircenol, Helional and Hedione. It took just these few chemicals to change perfumery. We suddenly got a "new perfumery" based on new chemicals. Iso E Super was not very powerful but provided a rich woody and extremely soft-velvety aspect that we soon realized we couldn't do without. Later on, the isomers were carefully studied. A great chemist, Georg Frater, discovered one of the isomers that, according to him, was the"olfactory key" for the smell of Iso E Super. He called it Iso E Super Plus. Frater's company patented the same in 1990. To industrially produce Iso E super Plus was almost impossible, so research started on several close molecules finding, finally, that the so called Georgywood was the best of all. Georgywood was described as having a strength measured as 0.015 ng/l, a bit less than Iso E Super Plus (0.005 ng/l). Still, it was incredibly high compared to the measured strength of Iso E Super (only about 500 ng/l). Although I have always said that the best friends of perfumers are chemists, we talk a different language. They measure in ng/l and we measure by concepts such as "beautiful, emotive, subjective, tender, soft, velvety, delicate, touching, and so on). I have deeply smelled both Iso E Super Plus and Georgywood (named after its discoverer Georg Frater), and according to my nose they are not as powerful as the chemists find them. Knowing the fact that our sense of smell is absolutely individual, I have compared my impressions with my closest colleagues. We all reached the same conclusion. In any case, I do not value a chemical for its strength alone, but also for its soul, because perfume chemicals have a soul. Thus it is not surprising that my colleagues and I agreed that Iso E Super, though not very powerful, is a jewel embodying the whole compound, just as Hedione or Helvetolide do. Iso E Super is so good that it changed our formulas. It was a trendsetter, so why should I care if it is 20, 200 or 500 times stronger or weaker as measured by a strange machine (I apologize for being so primitive)? Whatever its strength, I consider Georgywood a wonderful material, unknown to most of the perfumers in the world. It has a woody, resinous smell — by resinous I mean something that moved and touched the soul of people since the dawn of our civilization. Considering that Romans used to cross the Arabic deserts to Samaram (today located in the southwest of the Sultanate of Oman) simply to exchange gold for silver frankincense to be burned back home, one can understand the reason the anonymous writer composed the poem I quoted at the beginning of this installment. When the Three Wise Men of the Kings of the Orient offered silver frankincense, gold and myrrh to Christ in Bethlehem, as described in the Gospel, it is easy to understand the eternal meaning of perfumery. When Arabs burn agarwood wood — priced sometimes at US $20,000 per kilo — just to feel its magical smoking effects (in Saudi Arabia alone, people spend around US $1 billion annually), we can easily understand the eternal meaning of perfumery.

This deeper level of meaning has a lot to do with the wisdom that our ancestors discovered over the last 3,000 years of Western civilization — starting in Mesopotamia, Egypt and Greece — through reflection, meditation, study, efforts and thoughts. I have written a lot about the—"real" greatness of perfumery, its eternal values and arguments with many people over these very points. I have noted in my writings my modest philosophical convictions so that everybody understands that this profession is more than a means of acquiring a nice $500 suit, a good pair of $200 polished shoes, and a $100 silk tie in which to visit potential customers. It is so much more that selling "something" (very often stolen formulas, slightly changed) to raise some quick money. In short, the root of perfumery — its essence and meaning—— will never be founded upon insensitive, dishonest and uncultured people that confused the art's terms, who debase the sacred artistic

and philosophical origins of our profession, and who either block the efforts of those devoted with its progression through bureaucracy or sell an artificial image that is far from the truth that exists within the eternal world of perfume.

Over a long period I exchanged many letters with one of my best friends, the great Edmond Roudnitska. We largely shared the same points of view on issues; we used to fight for the same ideas and ideals, not only within the framework of our profession, but throughout the concepts of our values. We both understood perfumery quite similarly. We agreed that the eternal part, the "real" essence of perfumery, is what will survive. And, as a burst of purifying wind, time (which is also eternal) will keep alive what Edmond and I called — during so many pleasant meetings both at his home in Cabris, France, and my home in Cabrils, Spain — the — "Purity of the Essence."

I say all this is because Georgywood is magically and wonderfully resinous and when smelling it in my hand I feel a deep pleasure as I feel when smelling Silver Frankincense or Agarwood — both resinous materials. Not everybody will understand Georgywood, but sooner or later it will succeed! This awakening is assured because those with an appreciation for the material are among the greatest and the most creative among us, those who know the meaning of perfumery.

Georgywood was discovered, depending on outlook, either by mistake or luck. In either case, it was found by Georg Frater for us to enjoy it. When smelling the material, it moves me, touches me. It is indescribable, just as the smells of the fabled sacred resins of Orient (brought by the Three Wise Men to Christ more than 2,000 years ago) are indescribable.

The only thing I regret is that my beloved close friend Edmond Roudnitska did not have an opportunity to smell it. (Nor was he ever able to smell what he was looking for throughout his long life of sensitivity and extreme creativity — the so-called Paradisone, a chemical surely named by one who was on our side.)

Base XVIII E: This is an almost unknown chemical that I will describe as floral-woody, but which is radiant and brilliant, too. Base XVIII E blends very well with stronger chemicals, including limbanols, Boisanol, Tobacarol, amber ketal, Spiranbrene, Boisambrene Forte, Cedrene epoxyde and Isolongifolanone. It also blends well with subtler ingredients, inclucing Caryolan (a special top quality of Caryophillenyl Formate) and Vetyvenal (a special top quality of Caryophillenyl Acetate). Its accords with Copaiba balsam are amongst the most beautiful I have seen in my life. Base XVIII E is used in a great universal base in which it enlightens and enhances an accord made with the said Copaiba Balsam, the "seemingly" odorless Nopyl Acetate, Polysantol, Cedroxyde, Polywood, Caryolan, Nor Limbanol, Caryophyllenol, and traces of Ambrox and Ambrinol. I like Base XVII E very much, and I trust that sooner or later it will become a very important chemical. Again I am talking of softness, subtleness, magnetism and positive radiation — all concepts close to truthfulness.

The question, ultimately, is: what is the best woody chemical? It is difficult to reply, but to me if we include the ambery-woody described later, the best materials are Ambrocenide, amber ketal, Dextro Nor Limbanol, Limbanol, Hydroxyambran, Ysamber K and Georgywood. However, I admit it is always difficult to dogmatize and express such definitive impressions that exclude products that I use with pleasure. And if I could have only one woody chemical? Here I cannot answer. I can't do without Ambrocenide, amber ketal, Ysamber K and Dextro Nor Limbanol. In this section I can't name just one.

Vetiver

Chemicals smelling of Vetiver are few. Reseach in this area has not advanced much, and I have never seen pure key ingredients via synthesis. This segment includes products like Vetyverols, α- and β-Vetyvones, Khusimone, Khusimic Acid (very abundant in the Khus oils) and northen India Vetiver (quite different from the better known Vetiver Oils that come from the Bourbon islands, Haiti, South India [Cochin], Java and China). I believe in terms of quality the best vetiver is Bourbon, but it is not available in large quantities. Second best in quality, for sure, is the Indian Oil.

Woolfwood [15-(1α,2β,3β,5α)]-2,6,6-trimethylspiro[bicyclo-[3.1.1]heptane-3,1'-[2]-cyclohexen]-4-one: This material was badly described in 1999. It is very delicate and features a highly floral side of vetiver oil. Woolfwood blends extremely well with products like Helvetolide, Muscenone δ, Habanolide, Paradisone, Vetyver oil itself, Ethylene Brassilate, Muscone, the badly known and extremely important Isobutylcyclamide which has by itself a metallic note of Vetyver and Nootkatone-Grapefruit and Rhuboflor (which enhances its Vetyver character making it less floral and more rooty). Woolfwood is one of my favorite chemicals because of its versatility. It is easy to use when when one knows how to do it. The material forms about 10 percent of my striking base, Neo Agarwood, which contains also 10 percent Nor Limbanol. Woolfwood has been used in very important perfumes, including "Oxygène" for men (Lanvin), "BLV for men" together with "Vulcanolide," "BLV for women" and "Cologne" by Thierry Mugler (a sensational accord). However, these are only a handful of examples of an

Creativity is needed more than ever before…

extremely useful chemical that combines floral, softly woody and slightly delicate rooty aspects. I suppose Woolfwood is the best Vetyver chemical ever made through synthesis (as opposed to through partial fractions of the natural oil, like Vetyverol, Vetivone and Vetyveryl Acetate). Again, if I could only chose one Vetyver chemical, I would chose Woolfwood as the best. Prismylate is also good, but it is not longlasting, while Woofwood is unbelievably longlasting.

Prismylate: This is a chemical discovered in 1988 and used as a captive until 2004. It has now been partially commercialized. Prismylate is indeed a very good chemical that blends precisely well with Woolfwood. Prismylate is rootier, more lactonic, with shades of coconut. It is less floraly radiant than Woolfwood. It is also less longlasting. I like accords of Prismylate with Tobacarol, Woolfwood, Boisanol, Cedroxyde and amber ketal, and also mixed with Muscenone δ, Vulcanolide. The material also mixes well with sandalwood chemicals such as Brahmanol, Javanol and Firsantol. Amber ketal fixes all these chemicals. Accords between Prismylate, Woolfwood and Timberol are also very elegant since the floral side of Timberol combines very well with the floral side of Woolfwood. They are quite synergetic. Prismylate is quite a good chemical, very natural, imparting a real Vetiver note to compounds and accords. Both Woolfwood and Prismylate blend extremely well with natural Elemol from Citronella (which is not pure but a fraction of the oil containing around 65 percent pure Elemol with many impurities that blend well with all the vetiver materials and rose materials [to fix them]).

Methyl vetyvate: This is a very old chemical that smells of various shades of Vetyver but with a Linalyl Acetate, Isoacetate and Sclareolate side. It is interesting and blends very well with Woolfwood, Sclarex, Tovanate (a totally unknown chemical to many) and Sclareolate. Methyl Vetyvate blends well with lavender and lavendin and other agrestical natural essential oils. It may be used in many men fougère, imparting to them its interesting Vetyver, fresh, floral and woody note. It gets more life when adding and mixing it with Rhuboflor, Dihydronootkatone, Floralate (IFF), Sec butylquinoline and Isobutylcyclamide. However, good quantities of Woolfwood are necessary to harmonize these ingredients mixed together.

I would like to remind the reader of other products described in the past as Rhuboflor, an excellent and irreplaceable ingredient. Rhubofuran, is not as good as Rhuboflor, but useful, especially in increasing the perception level in lemons for dishwashing liquids (obviously, this is not the latter material's only use). Vetykone possesses about the same properties as Methyl Vetyvate and Rhubofix, but unfortunately none of them are as long lasting as Woolfwood. Nor are they as natural. Most of these products are also described also as "root" chemicals

The Vetyver materials are not as developed as other woody categories like cedarwood, patchouli; or sandalwood chemicals, and I believe it is time to research this extremely interesting essential oil, which possesses many shades in common with agarwood (especially on the dry down).

Sandalwood

This is a rather well developed olfactory family with old jewels like Sandalore (Givaudan), Ebanol, Bacdanol (IFF), Brahmanol, Sandel Mysore Core, Polysantol (Firmenich) and Indianol (described in the third part of my book almost 20 years ago where it was synthesized along with Krishnanol and Krishnanone, both key ingredients of the famous base Mysoran). Today Indianol has been re-used in a very important base with an interesting accord that includes one of the kings of recent research — the impressive and prestigious Ambrocenide. The international base it is called San Dra C.

I will start my description of new Sandalwood chemicals with:

Nirvanol — dextro 3,3-dimethyl-5-(2,2,3-trimethylcyclopent-3-enyl-1)-pent-4-enol-1 (or dextro polysantol): Well-known Polysantol is the Laevo isomer of Nirvanol. Nirvanol, unknown by most of perfumers in the world, is much richer than Polysantol. It has more body. It is more intense and possesses an elegant sandalwood smell. The material is also more diffusive and radiant than normal Polysantol. Although it produces a similar mass spectrum, its smell it is different from Polysantol, just as Racemic Citronnellol is different from laevo Citronnelol. In the case of Citronelol, the laevo isomer is by far better, but in the case of Polysantol, its dextro estereoisomer Nirvanol gives more elegance to accords.

One of the big problems in our empirical profession is lack of time. Perfumery requires time — knowledge of its technique, hours of reflection and olfaction. Many producers make Methylionone—γ, but only one makes Cetone α, its most beautiful synthesis. Many producers make Methylionone α, but only one makes raldeine AGV, just as many make Methylionone β but only one makes Xandralia. When compared to other qualities, it is like night and day. Chemically, the variations could all be correct, but

the softness, velvety nuances, elegance, class and natural violet flower smell of Raldeine AGV makes a great difference. The same is true with Xandralia. Many producers make mixtures of γ-, δ-, o-, α- and β-ionones, but there is only one Iralia, or Iralia total (a cheaper chemically almost identical product) to replace it in formulas. It is exactly the same as using natural or synthetic lavender, or natural or synthetic lemon in a fragrance. What about the ionones? Have you ever seen the delicate nuances of Ionantheme 100 percent? The same thing could be said on Linalool, Lilial, Cyclamen Aldehyde, Xandralia, Dihydro-β-ionone, Iso E Super, Vertofix Coeur, and Timberol, among others. Lots of cheap products are being adopted, and beauty often suffers. Sometimes it is a simple shade that makes all the difference — a nuance can bring happiness. Again, here, we see in our profession a lack of sensitivity to subtlety. I proudly say that many of my formulas, in the hands of other people, sometimes do not smell good. This is because some perfumers do not understand anything about the real essence of our profession, its philosophical and sensible aspects. To be able to choose the right ingredients is as important as the ability to mix them. However, I doubt that those ignoring what I am writing about have any capacity to create anything of beauty because how can there be creativity without sensitivity? My answer is simply: none.

Firsantol — 2-methyl-4-(2,2,3-trimethylcyclopent-3-enyl)-pent-4-en-1-ol: As I said when describing Limbanol, Nor Limbanol, Dextro Nor-Limbanol, Georgywood and amber ketal, this is a master product. Unknown by many, and used like many fellow materials as a captive, Firsantol is simply the best. As usual in perfumery it will take time for the wider industry discover it. I myself discovered the material a bit by luck. In one of the living rooms of my house, one that measures 70 m², I left a smelling strip on a table. To my astonishment, I found that over 15 days the whole room smelled exactly like the woody Indian statuettes carved in Sandalwood. It was unbelievable that a single chemical could cause this almost magical effect. Sandalwood oil from Mysore (not Australian, New Caledonian or Indonesian) is one of the best woody essential oils in the world — to me almost the best because its smell touches me deep inside. However, sandalwood oil is heavy. Firsantol, on the other hand, is diffusion, youth, plentyness and dreaminess. One of my dreams is to make attars with it slightly mixed with Sandela and may be a touch of Mysoral. I want to codistill it with the best saffron from Kashmir, with the fowers of jasmine Sampac, with champaca, with Frangipani, with Kewra, with combinations of Spikenard, Brahmi, Kapoor Kachri, mantri, terpeneless mace (a jewel ignored by most that only use normal oils of Macis and Nutmeg whose terpene fraction make them much less attractive as compared to the terpeneless qualities), Gul Hina, rose and so many other flowers. If I can, I will make the best attars in the world with these materials. These attars will enable perfumers to create accords with a radiance and natural beauty that will be achieved by the fantastic olfactive beauty of Firsantol. (What would a perfume be without olfactive beauty? Would it be called perfume? Of course not.) Firsantol has been used in far too many fragrances to mention them all. One of the best is "212 for men" by Carolina Herrera, in which the material is used in healthy amounts. Yet even at a mere 0.5 percent — as in "Essenza" by Zegna, or even less as occurs in "BLV for men" — the ingredient creates effects that are not otherwise attainable. Combinations of Nor Limbanol, Firsantol, Amyris, Zingerone (Givaudan), Guaiac Wood Oil, Cedramber, Gurjum, Polysantol, myrrh, Virginian cedarwood and Mysore sandalwood oils created the accord of one of the best sprays ever lauched in the Middle East (Mumtaz for men), while the same accord adding around 7 percent Helvetolide + 8 percent Habanolide + 2 percent Muscenone δ are the key of its successful feminine version, Mumtaz for ladies.

Mysoral — 2-methyl-4-(2,2,3-trimethylcyclopent-3-enyl)-pent-4-en-1-al or firsantal: This material is the corresponding aldehyde to the famous Firsantol. It is a fantastic chemical in its own right. More powerful in its top note than the alcohol, Mysoral is strongly sandalwood with important spicy nuances slightly recalling Cuminic, α-Campholenic and p-Tolyl aldehydes. The material is resinous with important shades recalling frankincense. As happens in the case of naturally occurring cis-β-Santalol and cis-β-Santalal, α-Santalol and α-Santalal, or trans-α-Bergamotol and trans-α-Bergamotal, Firsantal has the smell of the typical aldehydes occurring in natural sandalwood oil. It is well known that aldehydes significantly contribute to the smell of the natural oil, although the natural oil is so complex that it seems that some ketones are key elements in its whole smell, too. I once smelled trans-α-bergamotenone and felt quite impressed by the magical odor recalling many essential parts of the natural oil. Mysoral to me it is profoundly sandalwood but also profoundly resinous, and I like to pair it with silver frankincense oil from Oman. Frankincense from Oman and Yemen is by far better than the more commonly used Somalian variety. The so-called Haujeri frankincense, which is of top quality, possesses a touching fragrance whose nuances are also found in Mysoral. Mysoral is fantastic with "powdery" accords. It is found at around 1 percent in "Ultraviolet for ladies", a master accord comprised

of helvetolide, Coranol, Cashmeran, Pink Pepper, Cetalox, Tuberose Absolute, Osmanthus, Ebanol, α-Damascone, γ-Decalactone, Ethylene Brassilate, Frambinone, Helional, Galaxolide, Polysantol, Ethyl Linalool, Muscone and the key trace of ethyl vanilline. Another great perfume, "Oxygène for men," a complicated and beautiful creation, also contains Mysoral. The scent's key accord contains Mysoral, Octalinol, Helvetolide, Woofwood, frankincense oil (unfortunately from Somalia and not Yemen/Oman), Calone, Pink Pepper, ethyl linalool, Vulcanolide, Melonal, Elemi Oil and naturally lots of amber ketal. I really love "Oxygène for men," which I consider, along with "212 for men" (around 3 percent Firsantol), "DKNY for men" (containing lots of Exaltenone) and "Essenza di Zegna," the best of recently launched creations. Accords of Mysoral and Javanol are quite unique in that both products are quite synergetic.

As I mentioned before, a great accord can be made with Mysoral and Frankincense from Oman/Yemen. The combined products create sacred scents that make the senses dream. Mysoral, mistakenly only used for its sandalwood scent, enhances and improves natural frankincense products. Mixtures of 80 percent Omani frankincense oil + 20 percent Mysoral produces the best effects I have seen. I have travelled many times to Mahrah in the lost ends of South Yemen, close to the Omani mountainous border. It is a place to enjoy nature and to feel the peace of mind that all the smiling and cordial people bring to me. I have returned many times, because there the hectic west is forgotten and, while drinking saffron Mocca coffee, thoughts of smelling myrrh, frankincense and ambergris make my pulse to race. It fills me with emotions and dreams that make me feel another and better world is possible. As a sandalwood chemical, the best combination is Mysoral and Javanol. Mysoral blends with Javanol better than with any other sandalwood chemical.

Javanol — methyl -2-(1,2,2-trimethylbicyclohexyl)-methyl cyclopropyl methanol: This material is yet another masterpiece brought about by research. Javanol is four times stronger than Nirvanol and around 20 times stronger than Sandel Mysore Core. And it is the only sandalwood chemical that smells of sandalwood alcohols + sandalwood aldehydes. It is therefore extremely natural since both contribute to the great and mythical smell of the south Indian oil. If I follow my personal conviction that the best "woody" chemicals are the Limbanols, Georgywood, Boisanol, Cedroxyde, Spirambrene, Ysamber K and possibly Timberol, and that the best "woody-ambergris" chemicals are amber ketal (Z-11), Hydroxyambran, Ambrocenide and Belambre, I can also say that the best sandalwood chemicals (sandalwood is indeed a wood but I classify it separate from general woody chemicals) are Sandela, Nirvanol (dextro polysantol), Dartanol-levosandol (Laevo Bacdanol), Sandalore, Sandel Mysore Core, Ebanol, Mysoral, Polysantol, Brahmanol, Firsantol and Javanol. (The latter material is perhaps the best of all.) As I described before, I love Firsantol. Its diffusion is absolutely great, but Firsantol lacks a bit of a natural top note. I know it is easy to compound a better top note with Firsantol. One of the items I prefer to mix with is Mysoral. It is true that the auratic breathing of Firsantol is almost unbeatable, but Javanol has a diffusion that is almost as good, and its top note it is stronger and of higher quality. Javanol is the strongest sandalwood chemical ever discovered. It is more metallic than Firsantol, and smells of a combination of sandalwood alcohols and sandalwood aldehydes, though it is chemically an alcohol. It is known that both alcohols and aldehydes are the most important chemicals in the overall picture of sandalwood oil, and now we are beginning to discover, as I mentioned before, extremely important ketones such as *trans*-α-bergamotenone. This, however, does not astonish me, because during research in the early 1980s, when synthesizing sandalwood molecules, I selected Krishnanone and described it in the third part of my work. Afterwards, a "wise" panel on an evaluation board disregarded Krishnanone — the material was practically withdrawn and I regretted it a lot. Well, now it will return, because Javanol will be extremely important in the years to come, affecting the evolution of perfumery with its very powerful mixture of Firsantol, Mysoral and Krishnanone. The effects of Javanol are really unique. The material is more difficult to use than Firsantol because, being stronger, it is more conspicuous. Javanol has been used in the great international base Sandalwood Givco (Givaudan), mixed with big amounts and Ebanol and Sandalore, Dihydro-β-Ionone, Georgywood, several soft natural essential oils and other "key" captives I do not want to disclose. However, the most important spectrum of Sandalwood Givco is its combination of Javanol, georgywood and key nuances provided by other important and unknown chemicals. Sandalwood Givco is extremely powerful. It is very funny to me that a certain unnamed arrogant person full of pedantry that believes he is the best perfumer in the world, but who in reality knows absolutely nothing, called me once claiming that he had made a perfect duplication of Sandalwood Givco. Naturally I replied to him, "Congratulations!" Well, he did not have any idea about the existence of Javanol and Georgywood (he will learn of these chemicals when reading this work), but he had indeed made a

perfect copy of the base. It is well known that mixing Sandalore and Ebanol produces a substance smelling of Sandalwood. However, those two ingredients alone can never give you the key profile of Sandalwood Givco.

Javanol is a key chemical, the most powerful and beautiful, and the king of our sandalwood research. The material is absolutely a product of master chemists — the most humble and wise people around we perfumers. Javanol is impossible to replace. If one wishes to work for months and months without hope of success, one should try to make a copy of "Truth for Men" by Calvin Klein. Then the truth of what I am saying will be clear. Javanol is great in enhancing sandalwood in all oriental creations and mixes well with almost everything. I have worked with Javanol a lot and just now have improved many formulas with an accent on sandalwood. Javanol also mixes well with extraordinary chemicals such as Moxalone, Muscenone δ, Nirvanolide, Berryflor, Frambinon crystals, and also with attars like saffron or motia, and oriental essential oils such as *Cyperious scarious*, mantri and jatamansi. The material blends very well with patchouly, vetiver, woolfwood and Firsantol (it makes it a bit less heavy and even more diffusive), too. It may also work very well with my beloved Krishnanone. Javanol is twice as strong as Nirvanol, and about five times as powerful as Sandel Mysore Core.

The mentioned great perfume using Javanol, "Truth for Men" by Calvin Klein, has a fantastic combination of Triplal (1 percent), Mettambratte, Velvione, Dynascone, Cedramber, Adoxal, Cyclogalbanate, Ambrettolide, Plicatone, Melonal, Allyl Ionone, Canthoxal, Calone, Cardamom and Galbanum oils, *cis*-3-hexenyl, *cis*-3-Hexenoate and Galaxolide — a well-blended, masterly mix. I see a trend on this accord by adding Pharaone, Spirogalbanone, *trans*-2-tetradecenal and Dihydrofarnesal.

Another recent use of Javanol has been in "Chic for Men" by Carolina Herrera, with a fantastic accord that blends Javanol with Undecavertol, amber ketal, Vernaldehyde, α-Damascone, β-Damascenone, Polysantol, Tonalide, Helional, Ambrettolide, Cyclogalbanate, Kephalis, Cashmeran, β-Ionone, Irones, Vanillin, Muscone, Muscenone δ, Sandalwood Oil from Mysore and Vetyver Bourbon.

We can be truly happy (it is indeed great news), and perfumery may celebrate, knowing we have both Firsantol and Javanol.

Levosandol, Sanjinol or Dartanol — laevo 2-ethyl-4-(2,2,3-trimethylcyclopent-3-enyl-1)-2-butenol, or Laevo Bacdanol: If normal Polysantol is laevo and Nirvanol is its dextro isomer, Bacdanol is dextro and Levosandol; Sanjinol and Dartanol are its laevo isomers. If Nirvanol is better than Polysantol, levosandol is better than Bacdanol. It is similar but more beautiful, more radiant, possessing a more natural sandalwood character. It is also more diffusive. I believe levosandol will slowly replace Bacdanol because, although similar, it is both comparably priced and livelier. The material's uses are similar to those of Bacdanol.

cis*-β-*Santalol: This material's synthesis is completed. I hope we will soon be able to use this absolutely wonderful chemical in our formulas. It is still too early to tell, but it will hopefully be a reality.

I would like to emphasize that Brahmanol, one of the oldest Sandalwood chemicals, has been used much less than Sandel Mysore Core and Bacdanol, and I do not know why. On my first exposures I preferred Bacdanol, but the more I smell it, the more I value the great naturalness of Brahmanol. I believe I have made a mistake. I feel we should rediscover this remarkable chemical and use it more widely.

I would add, just to close this chapter of Sandalwood chemicals, that the traditional sandela is irreplaceable. All those sandalwood chemicals described in my work — Bacdanol, Sandel Mysore Core, Polysantol, Khrishnanone, Levosandol, Nirvanol, Ebanol, Sandalore, Indianol, Khrisnanol, Bergamotol, Brahmanol, Methyl Sandeflor, — trans-Decahydro-β-naphtol Formate, Mysoral, Firsantol and Javanol — have a very nice top note of sandalwood, but we should never forget that the natural oil is one of the most longlasting essential oils in the world. Our old sandela, seemingly weak and discovered more than 40 years ago, is the only sandalwood chemical that can add fixation and softness to all the newer chemicals, which absolutely need to be combined with it to be more tenacious. Many times we just want to use the sandalwood top note and fix it with musk chemicals, but sandela was, is and will always be great. Candalum or Sandel 80 were attempts to concentrate on the stronger smelling isomers of sandela, but what if we could synthesize its main olfactory isomer? Impossible? Nothing should be impossible.

What should I do if faced with the difficult option of using only one sandalwood chemical? Well, if I had to choose between Firsantol and Javanol, I would likely take Javanol.

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Artistry and Craft

Perfumery: Techniques In Evolution. Part V*

A meditation on the art, craft and latest science of fragrance creation

by Arcadi Boix Champs, Auram International Group Co. Ltd.

Woody-Rooty

The woody family and subgroup of rooty is often is confused with vetiver, because vetiver is rooty and woody at the same time. In the past I have mentioned products like Vetykone, Rhubaflor, Vigoflor (IFF) and Rhubafuran (Soofi) (rooty-vetiver), Rootanol (rooty-floral-woody), Geosmin, Huminol and Huminol M (humid and rooty), *trans*-2-nonenal, and Irivone, among others.

Roots are as ambiguous as woods are. Vetiver, patchouli and sandalwood are "woods," but do they really resemble each other? This is again proof of the difficulty of expressing emotions and sensory experiences through wording. I discussed this topic very often with Edmond Roudnitska. We both dreamed of having had Marcel Proust beside us in our laboratories and judging his assertions when smelling essential oils and chemicals. Unfortunately, we were born too late, or Proust too early. It would be interesting to see how Proust would describe contemporary olfactory ingredients (which he would surely love), not to mention how he would judge our modern arrogant society.

Within woody-rooty I would like to mention:

6-Hydroxydihydrotheaspirane: Previously, within the herbal tea subgroup of agrestical products, I described 6-acethoxytheaspirane as being herbal, slightly fruity and softly woody. However, 6-hydroxytheaspirane is totally different. Its scent is humid-earthy, such as when one opens a long-closed room for the first time. Yet there are more dimensions to 6-hydroxydihydrothesapirane. The material is more complex than Geosmin, Huminol or Huminol M. It is slightly fruity, herbal and combines well with all the damascones and cyclo geraniates, giving extremely good accords with Romascone, Deltanate of ethyl safranate. 6-Hydroxytheaspirane is also extremely good with alcohol NU and woody chemicals. In addition, it makes very good accords with Mitti attar (a codistillation of

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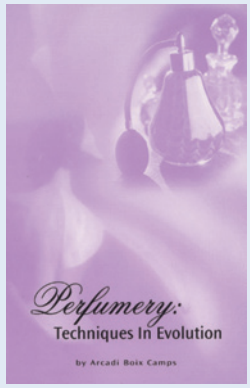
Further Reading



This latest installment of Arcadi Boix Champs' perfumery series follows the publication of his collected articles (1978-1999) — *Perfumery: Techniques in Evolution*, presented by Allured Publishing. Never before has a perfumer of this calibre provided such a constructive and open analysis of new perfumery materials. *Perfumery: Techniques in Evolution* reveals a profound knowledge in the use of perfumery materials in both new and traditional formulas. Though not a book of perfume formulas, *Perfumery: Techniques in Evolution* is an excellent guide for perfumers, as well as those involved in research and development in adopting new perfumery materials in their daily creative work.

Arcadi Boix Camps provides a remarkable review of new perfumery chemicals that have been introduced to the industry in the past 20 years. A definite staple in any creative perfumer's reference library.

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humid earth over sandalwood oil). I also frequently use it in new oriental creations in tandem with valerian root oil, costus oil (I apologize if I harm the sensitivity of anyone, but I still love it in spite of the harm its smell can supposedly do to my health), kunzea oil (an interesting and almost unknown natural product), rosemary (a natural oil mostly unknown since it is very hard to find pure), lavender spike, the so-called cantueso oil and hyssop. I also like its effects with special fruity chemicals, including oxo-α-ionyl isobutyrate, Roman and wild chamonile oils, Givescone, decenylcyclopentanone, and the so-called patchouli coeur. The material blends well with orris products, creating unbelievably beautiful effects. I like to mix it with natural thyme oil, too, in addition to gingergrass and, naturally, members of the limbanol family, which create an accord of unsurpassed beauty. 6-Hydroxytheaspirane is yet another underused gem, and not all of its properties have been discovered. I trust one day it will become an important chemical.

Woody-Floral

The subgroup of woody-floral, or violet-soft-flowery, has many interesting chemicals. This subgroup is extremely important in perfumery because some of its most prominent ingredients belong to it, including Iso E Super, Kohinool (IFF), Koavone (IFF), the ionones and methylionones, among others. Herein I would like to mention the following:

Tetrahydroionol: It has been said that the diastereomeric mixture of tehrahydroionols possesses only very weak and uncharacteristic odor notes, and the research has insisted in elongating the side chain by two carbon atoms, which has garnered us a series of chemicals that started with Timberol (*cis*-nor-limbanol) (Symrise), nor limbanol, dextro nor limbanol and Limbanol (Firmenich). Well, no doubt those chemicals are jewels, but why disregard tetrahydroionol? The material is less woody, but it has a lovely floral-woody note reminiscent of parts of the violet flower — the queen of the floral-woodiness. In my opinion, tehtrahydroionol is a very impressive and delicately warm woody chemical. It's not as strong as Limbanol, and of course not as delicate as the nor limbanols, but it is delicately warm, floral-woody, ambery, soft, and stronger than "pure" timberol (which is indeed more floral than tetrahydroionol) As a side note, do not forget that "commercial" timberol is more woody than tetrahydroionol only because it has as an impurity in its *trans* isomer (nor limbanol) (around 25 percent). There is also a so-called "timberol" made in India that contains but 11 percent nor limbanol, and which is comprised of a lot of dehydrotimberol, an almost odorless chemical. Pure *cis*-nor-limbanol, the main isomer of timberol, is not odorless as stated by some experts, but rather is delicately floral-woody. In fact, the isomer is more floral and less woody than real tetrahydroionol, a extremely elegant and pleasant chemical that has not been widely used. (Again, many people will ask: "What do you mean by pleasant?" It is for the reader to estimate — those having read my past writings may divine what I mean.) Tetrahydroionol is extremely pleasant, possessing a soft, delicate, woody scent that has filled my soul quite often. I believe tetrahydroionol cannot be compared in quality to timberol, Limbanol or nor limbanol, but aren't we perfumers using cedryl acetate — a material that cannot be compared to those described jewels, either? We do so because the latter adds special nuances and elegant velvety notes to many fragrances. I could say the same about tetrahydroionol. If I compare it to nor limbanol, I prefer nor limbanol, but perfumery combination is a great world, and tetrahydroionol can contribute interesting elements to accords that I would certainly not disregard. The same is true between Sclarex and Sclareolate. Sclarex is almost abandoned, and

It is very risky to judge what should be promoted and what should be withdrawn — one never knows all of a material's secrets.

Sclareolate is on the rise. But couldn't we find very good accords with Sclarex? Of course we could. The birth of a new chemical is naturally something to be happy about — to withdraw a chemical is always negative. We perfumers have seen that sometimes when a product is widely disregarded, suddenly one of us will find a great, unexpected accord with it. Let's just remember the cases of Magnolan (Symrise) and Majantol (Symrise). Would have been wise to discontinue Majantol because, maybe, Lyral (IFF) was better and cheaper? I believe Lyral is an undisputed jewel, but Majantol and Magnolan are also good. It is nice to have them around to experiment with, discovering all their possibilities. It is very risky to judge what should be promoted and what should be withdrawn — one never knows all of a material's secrets. I would not like to be forced to make such decisions. I believe that sooner or later tetrahydroionol will be discovered, just as dihydro-β-ionone and dihydro-α-ionone (charming and lovely violet chemicals) once were, following stints in oblivion.

Dihydro-α-ionone: This material is difficult to classify as floral-woody or floral-violet, just as β- and α-ionones and methylionones are. Actually, when we talk about violet we often incorrectly associate the so-called absolue de feuilles de violette — a very green material based on chemicals such as *trans*-2-*cis*-6-nonadienal or *trans*-2-*cis*-6-nonadienol — which is nowhere near as floral woody as the real flower. Real violet flower oil is something I have smelled just once in my life, while most perfumers have never had the opportunity. The real material is something that many totally ignore. Production of real violet flower oil would be the most expensive essential oil in the world market, if produced commercially — more than musk absolute of orris absolute — since the yield of the flowers is extremely low (around 35,000 kilos of petals are necessary to yield 1 kilo of oil). The natural smell of the flower of violet it is not green, but rather deeply floral-woody. For many years, chemists confused ionones and irones, labeling irones as "ionones," while believing that α-ionone was not a nature identical product. I am not talking here about the 19th century, but of a period as close to us as 1950. The research of the "key" element of the violet flower was indeed full of obstacles since the natural oil was too expensive to start a serious work with. When parmone was discovered, it was thought of as being the key of violet oil. However, after much research, it was proven that parmone was simply a mixture of α-ionone, dihydro-β-ionone, β-Iinone and dihydro-α-ionone.

Even today, many people confuse products as basic as methylionones. Real γ-methylionone (or α-iso) is absolutely floral. Its best quality in the world, cetone α, is completely floral and much better than other well-regarded qualities, including isoraldeine 95, methylionone γ coeur and methylionone γ pure (which is only a mixture of isoraldeine 70 with slight amounts of caryophyllenyl acetate). The γ isomer is so delicate that, by itself, it smells of violet flower. However, the flower it does not have methylionone, but rather a combination, as I said before, of α-ionone, β-ionone, dihydro-β-ionone and dihydro-α-ionone.

Dihydro-α-ionone is indeed an old product that is really outstanding, and although it has yet to affect the evolution of perfumery, it will, just as its β isomer does. Dihydro-α-ionone is an extremely nice floral-woody and ambery chemical. It has important shades of the so-called Cashmeran, and is less green than its β counterpart. The material has important shades of ambergris, although not as many as compared to its γ isomer, which is one of the main ingredients of the natural delicacy thrown to the oceans by whales. Dihydro-α-ionone combines extremely well with: α-irone, another great chemical that smells (when pure) floral-woody; vetyverol and vetyveryl acetates, which will fix it; georgywood and Spirambrene (Givaudan); ginger oils that will add a spicy nuance; animal products, especially amber chemicals such as amber

ketal, belambre or ambrocenide; methyl ambrinol, dihydroambrinol sclareolide and ambrox; floral chemicals, including Florol, Lyral, Mayol, 2,3-dihydrofarnesol, and its aldehyde, dihydrofarnesal; and long-lasting *trans*-2-tetradecenal, a chemical that combines citrus, magnolia and frangipani deep aspects. The mixture of dihydro-α-ionone and the so-called super muguet, frambinone crist., Berryflor (Givaudan), Moxalone, Cashmeran, Helvetolide (Firmenich), Kephalis (Givaudan) and Nirvanolide forms another extremely charming accord. The material is indeed a great chemical that I believe will be used in the coming years, when suddenly somebody will use it, and the masses will discover its delicacies and properties.

Rosamusk — 1-(1-acetoxyethyl-1)-3,3-dimethylcycloxane: This is a very interesting chemical that smells of rose, floral violet and musk, coupled with a very nice powdery note. It can be considered a rose chemical, but I believe it is better to classify it within the woody-floral family. Rosamusk (IFF) smells clean, and therefore is fantastic in powder detergents and other functional fragrances. It blends very well with Rosacetat, in addition to very detergent-stable musks such as Globanone 100 percent and Isomuscone (although it can be also used with Exaltolide and Habanolide, which can stand detergent PH almost as well as those mentioned before). I believe Rosamusk will find increasing use, in part because its accords with violet-smelling products are great. A mixture of Violettyne IPM, Violiff (IFF) and Parmanyl (Symrise) with Rosamusk is used in one of the world's top fabric softener. In this example, Rosamusk's powdery, soft-violet and musky notes combine excellently with the green, bright and lively natural-violet leaf notes of the three chemicals. Accords of Rosamusk with Florantone and Orinox are also great, and both could kick off a revolutionary trend when mixed with Nerolione, a new and powerful molecule.

Dihydro-β-ionone: While dihydro-α-ionone — a more flowery, powdery, ambery and less green material than dihydro-β-ionone — has not been widely rediscovered, or even (in some cases) discovered, dihydro-β-ionone has succeeded. The latter material forms part of several great accords, including fragrances like "Dolce Vita," "Bulgari for Ladies," "Sonia Rykiel," "L'eau d'Issey for Ladies," "Façonnable," "Aquaman," "Lolita Lempicka," "Essenza di Zegna," "Nu" by Yves Saint Laurent (in which dihydro-β-ionone is mixed with a beautiful cedarwood accord), "Macis" and "Helvetolide." This irresistible chemical forms an important part of the composition of osmathus absolute, and therefore is also present in great Middle East creations such as "Assam," "Prachinese," the greatest "Diwan" and "Shillong" — all of them mixtures of Indial rose oil, many different varieties of agarwood oils and spices. I have personally made bases that improve most of the top notes, such as Vert Tilleul (which includes helvetolide and dihydro-β-ionone), Vert fruitée (coranol, woolfwood, helvetolide, nor limbanol and the related chemical), Vert Lactone, Violette Verte, and Vert de Magnolia. It is a pity that dihydro-β-ionol is not produced, because it is also a part of osmanthus absolute, and although weaker than the ionone, it imparts a very delicate floral note to the natural product. I very much like the mixture of dihydro-β-ionone, tobacco, and osmanthus chemicals such as Tabanone (Symrise) (megatigmatrienone), dihydrotabanone, edulan, oxo-edulan, tetrahydro edulan, oxo-β-ionyl isobutyrate, oxophorone, megastigmadienone epoxide, oxo damascones, α-damascone and γ-damascone tetrahydronaphtalenone, among others. Dihydro-β-ionone blends very well with orris floral chemicals such as the irones, and with all the methylionones and leathery products such as the great 5-ethyl-2-nonanol (alcohol NU). The material also works well with traces of Costacide, Cetone V (allyl ionone) (Givaudan), cedarwood oils, patchouli coeur, pink pepper oil, nigelle absolute (the jewels of all the jewels), the so-called Myrrhone, the old Pentambrette, and Damascenine (methyl 3-methoxymethyl anthranylate), a badly known but interesting chemical.

Myrrhone — (E)-4-(2,2,cis-3-trans-6-tetramethyl-R-1-cyclohexyl)-3-buten-2-one: This is a totally unknown chemical, and one of the most beautiful I have ever smelled. While new, this product will absolutely influence the future of perfumery. It smells of a combination of irones, some of the finest parts of jasmine, Paradisone, epi methyl jasmonate and myrrh. Myrrhone is extremely floral, radiant, elegant — the result of the great research done by our industry's chemists as is the case with Myrrhone, Helvetolide and its newer cyclaprop analogue, Paradisone, Pentambrette, dextro nor limbanol, nor dihydro-β-vetyvone, *trans*-α-bergamottenone, georgywood, Moxalone, Nirvanolide, muscenone δ, exaltenone, exaltone, exaltolide, habanolide, ambrettolide, ambrocenide, irone α, Limbanol, super muguet, anapear, Romandolide, Khusimone, woolfwood, the newest *trans*-oppositadienal, the rose ketone. Should I continue? I am approaching the notion of perfection, and "perfection" is a dangerous word. Can we remain humble (a condition of wisdom) when smelling such treasures that impart so much beauty? Did perfumers feel they'd arrived at perfection upon the discovery of the aliphatic aldehydes, isoamyl salycilate, vanillin, ethyl vanilline, heliotropin, and the ionones? Possibly. This phenomenon best describes how small we are when trying to get a handle on high

concepts like "eternity," a condition of the fine arts. But we must admit: art cannot be described. As I said before, Michelangelo knew Phidias, but not Marc Chagall. Poussin knew Leonardo, but not Picasso. Protagoras knew the sophists, but not Plato. Plato knew Socrates, but not Marcus Aurelius, Julian the Apostate or Maximus. What is perfection? The eternal search for truth desperately required by the anonymous writer who wrote the poem in the first half of this installment? We should never lose our humility. Still, we have Myrrhone, and this for a perfumer must be an explosion of joy. Myrrhone is one of the most elegant chemicals. When smelling its delicacy, the eyes close, and dreams, for a while, seem as if they might come true. Its radiant, floral-woody and floral-resinous shades are paramount. It smells of the best part of sacred myrrh, and combines well with Cashmeran, Firsantol, dextro nor limbanol, Helvetolide, Javanol, Ambrocenide, Paradisone, Koavone, a touch of Zingerone, georgywood (a woody resinous chemical, too, although woodier and less radiant than Myrrhone), Iso E Super, Kohinool, Jasmine Lactone, Pentambrette, epi methyl jasmonate, the best musks (the cleanest and more crystalline). Myrrhone will affect the evolution of our art and science for the coming years. The material will be another Hedione, another Paradisone, another Helvetolide, another Cetone α, another Ionantheme 100 percent. We are reaching glory in perfumery and our dreams are coming true and have we not said that future belongs to those believing in their own dreams?

Methyl-α-ionone glycidate: This is a very typical floral-woody chemical with exceptional sweet amber and velvet effects. The mixture of dihydro-α-ionone, dihydro-γ-ionone, dihydroambrinol, ambrinoloxyde and methyl-α-ionone glycidate is one of the best — deeper than I have smelled in the violet flower and amber tonalities. Methyl-α-ionone glycidate also works extremely well with georgywood, and both products are synergetic, mutually enhancing its soft velvety notes. Less green than α-ionol and α-ionyl acetate, methyl-α-ionone glycidate combines well with these two chemicals, as they all do when combined with woolfwood, giving a great new accord that is used in our Soft Violet. This base has been pre-selected as part of a fragrance in a fabric softener that also contains lots of methylionone, Vertofix Coeur, Iso E Super, Hevetolide and Globanone 100 percent. I am introducing in this accord now, Isomuscone (Symrise), which unbelievably enhances the soft violet tonalities. Methyl-α-ionone glycidate is a very soft chemical, in addition to being long lasting (almost as much as woolfwood).

Musks

I will continue with the musks and I have mentioned before — Muscone, Exaltone, Exaltolide, Civettone, Ambrettolide, Ethylen Brassilate, Hexadecenolide, Habanolide, Muscenone δ, Exaltenone and so on. I will go to:

Helvetolide (+) 1'R,4S)-4-(3',3'-dimethyl-1-cyclohexyl-2,2-dimethyl-3-oxapentyl propionate: This chemical, relatively recently used in perfumery has become paramount. I would dare to say that it is as unique as Hedione or Paradisone. Helvetolide is musky, floral, having a certain fruitiness reminiscent of pears. It is very diffusive, and there are not many musk odorants, (although many diverse olfactory richness, it is mainly a musky chemical), that are diffusive but normally heavy. They are very clean and transparent notes, but heavy. On the contrary, Helvetolide is all aura, all diffusion. It has a capacity to harmonize the regular top notes based on linalool, ethyl linalool, dihydromircenol, coranol, sclareaolate, and green odorants, among others, and with the heavy musks like Galaxolide, Habanolide, ethylene brassilate, Ambrettolide, Scentolide, Isomuscone, Romandolide, Nirvanolide, Muscenone, Exaltenone, Globanone 100 percent, Muscone FAB, and others. All of these qualities make Helvetolide absolutely unique. It can't be replaced. (Naturally, the gentleman who made Sandalwood Givco without Javanol will be able to replace Helvetolide as well — but only him, nobody else, only him.)

Helvetolide is one of the chemicals that most affected the evolution of perfumery since 1999. The material has been used in so many accords in quantities that range from 0.5 percent to as much as 15 percent (its normal average dosage it is around 4 to 5 percent). Helvetolide possesses a very unusual chemical structure, considering it smells of "musk." However, as I mentioned before, it is not simply musky in character. The material is radiant, with aspects of flowers, cleanliness, harmony and softness. I have used this indispensable material many times. One remarkable perfume including Helvetolide (around 7 percent) is "Miracle" by Lancôme, a fantastic combination of ethyl linalool, linalool, linalyl acetate, pink pepper, ginger oil, Coranol, Florol, Neobutenone, Helvetolide, Cyclogalbanate, Irone α, cyclamen aldehyde, lilial, glycolierral, Iso E Super, muscenone (around 3.5 percent), Exaltolide, cassis bud absolute, Prunella, lots of Galaxolide, lyral and many other ingredients that have made possible one of the best fragrance creations of recent years. Other fragrances using Helvetolide are "Ultraviolet" for women in which the material is mixed with Mysoral, "Aquaman," "Oxygène," "Too Much Champs Elysées," "Flower" by Kenzo (a very good soft violet and flowery note), "BLV for Ladies" (Hel-

vetolide, ginger oil), "Nu," "Chance," "Chic," "Colgne de Thierry Mugler," "Creed White," "Pleasures Intense," "Sensi," "Freedom" by Tommy Hilfiger for men and just recently in "Bulgari Onmia" (around 15 percent). However, this list is too long to mention all that is being created and achieved by/with this key chemical. Research brings to us many great ingredients. Many of them are merely good. Others selected by a few visionary perfumers become the giants that set the trend — Helvetolide is in this class of materials. Hedione created history since it was first used by Edmond in "Eau Sauvage" in 1966. Then, the material was just a secret chemical called N378 B. Several other history-making chemicals followed: Iso E Super, Cashmeran, the damascones, Florol, ethyl linalool, nor limbanol and variations, Firsantol, Coranol, and others. Helvetolide is absolutely in the top level. Understanding this fact is of great importance in understanding the essence and the real meaning of this article — the creative evolution of perfumery.

Isomuscone — cyclohexadecanone: This is a crystallized chemical when pure, normally used at 50 percent. Isomuscone is an extremely good product. For me, after having smelled more than 900 musk chemicals, I felt that one of my favorites — because of its intensity, harmony, radiance, beauty, diffusion and auratic breathing — is Muscone. However, Muscone, which is slightly more animalic than Isomuscone, is very expensive and its use is therefore limited (despite its strength). Isomuscone, a captive chemical, is the closest musk that I have smelled to Muscone, but it is around 10 times cheaper. Isn't this a delight? Chemically, the two chemicals are similar, because Muscone is methyl cyclopentadecanone while Isomuscone is cyclohexadecanone.

Musks are very difficult to describe since every person smells them differently. As I said before, I do not smell Civettone, and I smell Muscone and Isomuscone quite vividly, yet some people have told me that Civettone is the strongest musk. The realistic solution we perfumers have adopted is to blend different musks, because they work together synergistically. Although I love Isomuscone on its own, mixtures of it with other musks increase its perception. For instance, a mixture of Isomuscone with ethylene brassilate at a ratio of 80/20 is stronger than both chemicals smelled separately. This results from a strong synergy amongst ketones, lactones and dilactones. The same happens when mixing Globanone and Isomuscone. The mixtures of 20 percent Isomuscone + 80 percent Globanone, or the inverse, 20 percent Globanone + 80 percent Isomuscone, are stronger than the chemicals smelled separately. It is very common to see mixtures of Galaxolide, Helvetolide, Habanolide, Muscenone, Ambrettolide and ethylene brassilate. Mixtures of Isomuscone, Habanolide, Velvione and Globanone are very, very good — approaching perfection.

These effects are very noticeable in applications. For instance, a mixture of Habanolide, Isomuscone

and Exaltolide is excellent in powder detergent, fabric softener and shampoo. As it is well known, the chemical stability of products like Velvione, Globanone and Isomuscone in powder detergent are even higher, than the stability of Habanolide and Exaltolide although these are very stable too. When seeing the same in the dilactones like Ethylene Brassilate it is very bad since dilactones almost degrade after some weeks. Isomuscone, absent in most laboratories and unknown to most perfumers, will have an important and bright place in the future of perfumery. Actually, the material has already been used in several new fragrances, including "Armani Night for Her," "Celine Dion" (so far only launched in the US, but with good success), "Into the Blue," "Versus Time for Action," "Dior Chris 1947," "So de Givenchy," and "Celine for Women."

I feel very excited, having found a scent so close to that of Muscone at such a good price.

Nirvanolide — 13-methyloxacyclopentadec-10-en-2-one: This musk is very different from Helvetolide, and is absent from most laboratories, just as Romandolide or Helvetolide are. It performs as a real musk chemical, but it is maybe the only material that is as powerful as musk ketone. Nirvanolide (Givaudan) is one of my preferred musks: powerful, clean, dry, not too long-lasting as compared with Exaltolide or Muscenone, yet still blending especially well with the key musks used today. Nirvanolide blends extremely well with a combination of Ambrettone, Ambrettolide, Moxalone and Ethylene Brassilate. The chemical's use is starting to be noticeable: "Higher Energy" by Dior and "Forever Elizabeth" from Elizabeth Arden, among others. This is yet another great product of research — this chemical is already starting to affect our profession, and will be of utmost importance in the future. When describing musks individually, as I do, it is really a tough job. It is well known that we all smell musks very differently. But what is certain is that Nirvanolide is among the most powerful musks, along with Vulcanolide. I would dare to say that the best musks are Muscone FAB, Muscenone, Exaltenone, Moxalone, Ambrettone, Globanone 100 percent, Isomuscone and Nirvanolide. However, it is so difficult to assert something like this. What about Exaltolide, Habanolide, Ambrettolide, Romandolide, Exaltone, Hexadecenolide and Isoambrettolide? They are just as beautiful as those rated as top.

Romandolide — (1S,1'R)-1-[3',3'-domethyl-1-cyclohexyl)-ethoxycarbonyl]-methyl propionate: This material is clean, heavy, long-lasting, and similar to Galaxolide in many respects — though it is less fruity and more camphoraceous. Chemically, Romandolide is, again, an unusual structure. Romandolide, however, is less radiant than Helvetolide, and less interesting since it is heavier. Although more diffusive than macrociclic and polycyclic musks, the material performs in a way quite similar to these musk chemicals. Romandolide is just now finding use in perfumes, including—"Absolu de Rochas" and "Angel Schlesser" for men.

This latter fragrance is remarkably creative, combining a green note essentially made of Triplal with a citrus-fresh floral note comprised of bergamot, lemon, mandarin, mandarin aldehyde, linalool, dihydromircenol and ethyl linalool, and an important fresh ozone character with traces of Floralozone and Melonal, in addition to considerable amounts of Calone and Helional — it is an important musky note using the described Romandolide, Habanolide and Ethylene Brassilate. The chemical possesses strong Hedionic diffusion with Hedione, Paradisone and Hedione HC, sandalwood with polysantol, agrestical shades of clary sage oils, violet harmony with traces of octine methyl carbonate, floral musk with Cashmeran, and an important shade of star anise oil that is difficult to combine in this accord.

The future of Romandolide? This is difficult to guess, but it will certainly be an expensive replacement for Galaxolide — if this product finds, eventually, problems with IFRA and other authorities that "care" about our health.

Ambrettone, Velvione — cyclohexadec-5-en-1-one: This is a relatively old but beautiful, transparent and very floral musk. Ambrettone is more floral and less animal that Muscenone or methyl cyclotetradecenone, a totally ignored great and new chemical that is more long-lasting than these two chemicals. Ambrettone works very well in enhancing very clear and white floral accords. It blends extremely well with the most floral musks, including Exaltolide and Ambrettolide, and forms nice accords with lilial, Florhydral, Precarone, Berryflor, ciclamen aldehyde, super muguet and many floral fresh ingredients. It also blends extremely well with the most floral musks such as Exaltolide, Ambrettolide, Ethylene Brassilate, Arova N, Scentolide, and cyclohexadecenolide, among others.

I sometimes repeat products already described in my work because it is very difficult to assert and accurately describe a chemical. This is not an inflexible series of writings, but a mutable dialogue that respects this art's inexactness. These writings aim to increase the understanding of the evolution of perfumery. To be as coherent as possible, I need to say that chemicals sometimes are very diverse, with many shades of scent. Therefore, the more one works with materials, the more one understands them in new ways. This allows perfumers to employ materials in ways more advanced than when the material is just launched or discovered. Perfumery is art and science — a very empirical profession. Observation, understanding, sharing concepts, feelings and ideas are supremely important. Unfortunately, as with many arts, perfumery is very often confused with design, and is affected by trends and passing fashions.

Now we see Muscenone being used widely. It is indeed a fantastic chemical, but it has animal and powdery shades in its smell, while when using Ambrettone we have a much more clean and floral impression. Ambrettone, I believe, has a very good future if we do not copy trends and keep our creativity free of influences in order to set our own trends. Doubtless Ambrettone is a great clean and floral white musk, and I adore the possibilities we may develop by using it.

Moxalone — 1a,3,3,4,6,6-hexamethyl-1a,2,3,4,5,6,7,7a-octahydro-1-oxacyclopropa-β-naphatlene: This is another interesting chemical structure that was discovered after the synthesis of Klausenone. Klausenone has a very clean and strong musky note, but though interesting, it is very difficult to synthesize. Thus the search for an industrially available molecule that smelled close to Klausenone was paramount, resulting in

Moxalone. The chemical has been used in very important perfumes, including "CK Be" and "Baby Doll," in which its special effect at a relatively low dosage, around 1 percent, shows its value. Moxalone blends very well with Habanolide and fruity notes such as Frambinone cryst. and the subtler Berryflor. This mixture of Habanolide, Frambinone and Moxalone is already a fantastic and very creative fragrance. If one adds to it Nirvanolide or Exaltenone, it becomes more powdery, a bit more heavy, but extremely good. Moxalone blends extremely well to with maltol, ethyl maltol, furaneol and some of its ethers — especially furaneol — *cis*-3-hexenyl ether (which is a completely unknown chemical that deserves to be described and used), and fir absolute. Its uniqueness in products with fruity powdery accords is really remarkable. Moxalone improves profiles like "Escada Collection," the newest "Escada Magnetism," or "Angel Innocent" in which Moxalone is not present, but if added the whole accord becomes magically harmonized, and imparts an impressive olfactory beauty that is simply unforgettable. Its warmth is a simple and angelical scent. Moxalone is very diffusive, floral, slightly fruity and musky. It is one of the musk chemicals with more top note, as with Helveloide, but it is less radiant than the latter, and more powdery. Moxalone is not as long-lasting as Habanolide, Globanone, Isomuscone or Ambrettone, but it is amongst the best of the hundreds of musky chemicals I have smelled.

Globanone — cyclohexadecen-8-one: This is another great chemical — a bit less animalic than Velvione (cyclohexadecen-5-one) and more floral-fresh, though Velvione is also very floral. Globanone (Symrise) and Velvione behave in quite the same way since both are very elegant floral musks. Blends of both with Isomuscone are quite interesting, although Velvione is much more expensive and thus it is advantageous to use Globanone. Globanone is one of the most stable musks in detergent powder. It also burns very well, and is therefore a very suitable musk for use in agarbati, joss stick and bakhoor fragrances. I have made a powdery rose-kewra perfume that won a big briefing for agarbatis and before finishing I tried many different musks. Those performing better were Velvione, Isomuscone, Muscone, Exaltone and Globanone. While taking into consideration the price, I simply used Globanone. Globanone works extremely well in very floral fragrances such as "Into the Blue" by Givenchy. The material produces a very interesting effect when mixing it with muscenone δ, benzyl salycilate, Galaxolide, Habanolide, Isomuscone, Nirvanolide, Moxalone and exaltenone, citrus oils like grapefruit and expressed lime oil (Globanone is the most 'citrus' of all the musks, and thus blends particularly well with grapefruit and expressed lime oils). The material also works well with Vulcanolide, in which the former is so strong that it enhances the whole musky accord.

I made a beautiful fragrance using around 35 percent of Iso E Super, 10 percent thujopsene pure (one of the most lovely and unbelievably unused sesquiterpenes). The thujopsene pure produced a velvet effect. Its synergy with Iso E Super increased the softness I'd been seeking. The formulation also included several green ingredients like Liffarome (IFF) and Triplal (IFF), nor limbanol, Helvetolide, Galaxolide, Isomuscone, Globanone, Muscenone δ, grapefruit and expressed lime oils, Ambrettolide, highly purified α-cedrol, amber ketal, lime dienes, cyclogalbanate, a touch of nootkatone, Ysamber K, a trace of rhum absolute, and other traces including cinnamon bark oil, cascarilla, Araucaria (a fantastic and unknown natural essential oil from New Caledonia, which possesses the most beautiful velvety-fruity effect), Javanol, Coranol, woolfwood, and many rare essential oils. Well, I will not give the formula because it is the result of more than a year of labor. The result, I can tell you, is auratic, clean and extremely pleasant. If one removed Globanone and Isomuscone, the charm and body would be greatly diminished. Globanone is a jewel with a smell/value that I consider when using Isomuscone.

Vulcanolide: This polycyclic musk (molecular formula: $C_{18}H_{26}O$) is a constitutional isomer of Fixolide, though it is an aldehyde with a methyl group added. The material is much stronger than Fixolide. Its effects are also unique and impossible to replace since it has an unusual humid note for a musk. Normally, it is used with many other musks, and it just rounds-off the whole accord, making it absolutely unique. Examples of its use are "CK one," in which it imparts the great final effect and "Light Blue" by Dolce & Gabanna, an absolutely great accord of lovely citrus oils such as lime expressed and grapefruit. The fragrance is very green, with Triplal and Liffaroma (around 0.2 percent pure) (an interesting woody amber note with a wonderful accord of amber ketal, nor limbanol, cedrol, Cetalox and Boisambrene Forte), with lots of Iso E Super (a great musky balance with Galaxolide), Muscenone (around 2.5 percent), and many more interesting ingredients. I modified the original perfume into an accord called Rainbow. In this exercise I changed the cedrènes and the crystallized cedrol via combination with a rich accord of cedrenols that included cedrol and thujopsene. The harmony is sacred and paramount. It is a kind of perfume that everybody likes, especially young and cultured ladies who look for a special freshness. The secret of the extreme freshness of Rainbow's top note

is the rare nature identical lime chemicals, in addition to the top and high volatile fractions of the natural essential oil of distilled lime.

Dimuscan — 1-(1,1,6,6-tetramethyl-1,2,3,6,7,8-hexahydro-as-indacen-4-yl)-ethanone: This material is indeed a great musk, though unknown to most perfumers. It has an empirical formula close to Vulcanolide, but with two less hydrogen ($C_{18}H_{24}O$). Like Vulcanolide and Fixolide, it is a crystallized chemical.

After so many musks and such lengthy, wide-ranging descriptions, one might be left to wonder: which is the best musk? It is very difficult to reply to this question because it is like asking a painter what the best color is. As in sculpture, painting, music, and all the arts, we know that choosing 'bests' is both foolish and useless. Each formulator may have his/her favorites, but in general there is no 'best,' but rather many great musks. Muscone, Exaltone, Exaltenone, Isomuscone, Helvetolide, Ambrettolide, Exaltolide, Habanolide-Globalide 100 percent, Globanone 100 percent, Velvione-Ambrettone, Hexadecenolide, Scentolide, Muscenone δ, Nirvanolide, Romandolide, Moxalone, ketodecanolide-cetolide, Ethylene Brassilate, Galaxolide, Tonalide, the powerful musk cetone, Civettone, etc. — which are the best? The truth is: probably mixtures of several, because, as I mentioned before, it is proven that combined musks improve synergistically, producing better results.

Ambergris/Amber-Woody

The family of chemicals smelling of ambergris has been treated extensively in my work. This class continues to be one of the main targets of research. The smell of natural ambergris is so complex, intriguing, mysterious and extraordinary that it has enchanted those familiar with it, making the material one of those natural products lodged in perfumers' consciences. Its impact is quite difficult to describe. I first spoke of amber ketal in 1978. In past writings I have described chemicals like α-ambrinol, ambrinoloxide, Ambrox, homo cyclo geraniol, Grisambria, Grisalva (IFF), Oxambrol, Muscambrol, Ambraldehyde, homo cyclogeranyl chloride, dihydroctinidiolide, dihydro ambrinol, methyl ambrinol, etc. As I said before, I have always admired the description of the natural product by Ohloff: humid, earthy, fecal, marine, algoid, tobacco-like, sandalwood-like, sweet, animal, musky and radiant. Many chemicals have woody and ambery notes that are difficult to place within the woody or ambergris families. Products like dextro nor limbanol, nor limbanol, Spirambrene, Kephalis (Givaudan),

cedramber, cyclamber, Limbanol, Ysamber K, amber core, Karanal, epoxycedrene, hydroxyambran, Trimofix "O" (IFF), and Boisanol, among others, all have many ambergris shades, but to my perception they are more woody than ambery, and therefore I tend to place them within the woody family. Products like amber ketal, although woody, are more ambery than woody, as are Ambrox, the ambrinols, Ambrinoloxide, Grisalva and Ambraldehyde. Some materials, such as the ambrinols or ambrinoloxide ambery, are fecal and not woody at all, and so fit perfectly in the ambergris family.

There is no doubt that the products bordering between ambery and woody are the most interesting and impressive I have smelled.

Amber ketal: In 1978, I described a product that was quite new then — amber ketal. When I first wrote of its wonders, amber ketal was only used as a trace in "Chanel 19," and as a key ingredient in "Anais-Anais." When I initially smelled the material in the early 1970s, I felt an indescribable emotion — an immense pleasure. I realized immediately that this chemical was going to affect and set the trend of the evolution of perfumery. Well, I was not wrong, and I was not wrong with my assessment of the damascones, damascenone and calone. Today, amber ketal is one of the most important chemicals enabling our modern perfumes — not only because of its particular smell, but because of its incredible fixative capacity. I would dare to say that amber ketal is as important as Hedione, Iso E Super, Helvetolide, Florol, ethyl linalool, Ambrocenide, Galaxolide, Muscenone, Muscone, Paradisone or lilial. Amber ketal is one of the most long-lasting chemicals. Its fixing properties are so impressive that it is added to many mixtures. It is still captive and used in certain bases, but the bases do not contain much of value, and one of them has a mossy effect, because it contains Evernyl (Givaudan), which distorts the real smell of the pure chemical. I like to use pure amber ketal much more than the base. Z-11 is a crude mixture of isomers and the real product. The crystalline version has one single isomer and is extremely beautiful. I use the pure isomer in my compounds and am quite pleased with its magical effects. However, when smelling its top note, it is not that impressive, as in the case of Sandela. The product develops with time, and to feel the real beauty of it, it should be sampled from the smelling strip at least 15 to 30 days after having been dipped. However, some jewels in this category have been discovered, and some of them will become absolutely essential to the development of perfumery in the coming decades. These materials will become gain classical status because they are among the top discoveries in the history of perfumery. I will describe several amber and amber-woody chemicals, including as following:

Ambrocenide — 4,5,7,9-octahydro-2,2,5,8,8,9-hexamethyl-methanoazulene-[5,6]-1,3-dioxole: If amber ketal is a diamond, the mixture of amber ketal with Ambrocenide is the River Kohinoor. Ambrocenide is the best discovery in the amber-woody family (where amber ketal also belongs) since Ambrox (Firmenich) was commercialized, mixed at 10 percent in the base Fixateur 404 and finally offered as a pure chemical.

Ambrocenide, a crystalline chemical, is the most powerful amber-woody odorant I have ever smelled. However, Ambrocenide is not as long lasting as amber ketal or hydroxyambran, and therefore the products are absolutely synergetic. If amber ketal was the product of the 1980s and 1990s, the mixture of Ambrocenide and amber ketal will be the key of the 2000s and beyond.

The top note of Ambrocenide is radiant, diffusive, elegant, ambery, woody — indeed, both precious and unique. The material is just starting to find use as a captive chemical, although many tons are produced annually due to its use in key detergents. However, it

has already impressed many fine fragrance creators who have begun using bases that include Ambrocenide, often without knowing exactly what it is they are using. One important base is San Dra C, which contains the old Indianol, a captive chemical on the sandalwood family that was discovered in the identification of important ingredients of the Indian oil. This was the early 1980s — the time of Dr. Klein, Hans Ulrich Warnecke and Ernst Joachim Brunke. (Brunke was one of the wisest and most humble men I have met in my life — a great friend and colleague until we lost him to a heart attack while still very young). I remember this time well, when Tabanone, dihydrotabanone, Brahmanol, Indianol, krishnanol, krishnanone, trimethyl naphtalenone, Isodamascone, cyclogalbanate and many other chemicals were discovered. I remember the attempts at synthesizing the pure isomer of amber ketal, and I remember the illusory optimism and energies we chemists and perfumers shared in our quest for new and outstanding chemicals. Brunke would have been extremely happy smelling Ambrocenide and Ysamber K, since without knowing it, while having dinners and long discussions about our dreamed chemicals, we in fact had Ambrocenide in mind. It is a wonderful thing that the product, the fruits of long research, effort and dreams, was finally achieved.

Another base of Ambrocenide is Timberol Forte, which is simply a mixture of Timberol and Ambrocenide; however, the whole spectrum is revolutionized. Timberol, the *cis*-nor limbanol isomer, which is weaker and more floral contains an impurity. *trans*-Nor limbanol, synthesized later and simply called nor limbanol, is a better chemical. A simple addition of Ambrocenide triples its strength. Ambrocenide will be one of the chemicals that will set a trend in the perfumery of this decade and beyond, during which it will be applied in perfumes at higher and higher doses.

There are not many products with a molecular weight of 278 that are so diffusive. Ambrocenide is a product like Calone, possessing an incredible perception by our senses. Therefore, I consider it the needed "sibling" I was seeking for its "older brother," amber ketal. Mixtures of Ambrocenide and amber ketal and, if still available, Hydroxyambran, are supreme. Mixtures of Ambrocenide, nor limbanol, limbanol and Ysamber K are also supreme. In these cases, we are again reaching close to perfection. Still, it is possible that new, amazing chemicals will be discovered in the future, leaving us to admit that art has no limit. Art cannot be contained in a single timeframe, because it is eternal. When, as young perfumer, I smelled amber ketal for the first time, I felt this was perfection. Well, 34 years later I realize it is very risky to talk about perfection, knowing that today the mixture of Ambrocenide and amber ketal is much better than amber ketal alone. Again I must state that we are achieving what I call olfactory glory, and I would rate Ambrocenide as one of the top 10 chemicals ever discovered. To date. What will the future provide us? This is one of the mysteries of life. The future is the key to the evolution of perfumery — this is our professional progress. The search for progress and truth is paramount in our profession and our lives. This search is identical to the expression of a poem (as the one I place in the first half of this installment) or the blending of a great fragrance or the cooperation of chemists in discovering a product like Ambrocenide.

What is this mysterious search for truth? We must go to the origins of our civilization again to find an answer. It was clearly expressed already in "The Odyssey." That work's main elements are: the situation in Ithaca, where Penelope, Odysseus' wife, and their young son, Telemachus, are powerless before her arrogant suitors as they despair of Odysseus' return from the siege of Troy; Telemachus' secret journey to the Peloponnese for news of his father, and his encounters there with Nestor, Menelaus, and Helen; Odysseus' dangerous passage, opposed by the sea-god Poseidon himself, from Calypso's island to that of the Phaeacians, and his narrative there (from book nine to book 12) of his fantastic adventures after leaving Troy, including his escape from the cave of the Cyclops, Polyphemus; his arrival back in Ithaca, solitary and by night, at the poem's halfway point, followed by his meeting with his protector-goddess Athena, his elaborate disguises, his self-revelation to the faithful swineherd Eumaeus and then to Telemachus, their complicated plan for disposing of the suitors, and its gory fulfillment. Finally comes the recognition by Odysseus' faithful Penelope, his recounting to her of his adventures, his meeting with his aged father, Laertes, and the restitution, with Athena's help, of stability in his island kingdom of Ithaca. This is simply wisdom. These elements are the forgotten origins of our once-great civilization. (And Antigone — do you remember Antigone?) Well, I cannot write here the whole wisdom of our Greek ancestors, but this wisdom is without exaggeration the spirit of those researching a chemical like Ambrocenide, and those mixing it. We must be optimistic, because although most of the Western world has forgotten Odysseus and Antigone, they — these great humanistic heroes — still live in the depths of our spirits and push us, Westerners, towards the invention of Ambrocenides, Paradisones, Helvetolides, hediones, georgywoods, nor limbanols and β-damascenones. These heroes also lead us towards the understanding of the real essence of our

lovely, mysterious and intriguing world. Culture may be at a weak point these days, but our syncretism, the eternal feeling with which we're born, remains unchanged. But despite partial declines in mankind's culture, we will definitely recover, in part with help from the discoveries achieved by great and humble chemists. Indeed, the public's embrace of the magical world of perfume is, I believe, a clear signal to we creators — if we are prepared to understand it.

As I said, Ambrocenide combines well with (the also perfect) nor limbanols. The material is stronger than pure Limbanol, a product not available because it is only used in dilution. Our Neo Agarwood mixed with Ambrocenide has produced a base with promising properties for modern perfumery. The combination includes the one isomer's amber ketal in big quantities, in addition to woolfwood and nor limbanol. It lasts on the smelling strip for more than one year. Agarwood could lead to a new trend in Western perfumery, too. It is currently being tested with success.

The mixture of Ambrocenide and amber ketal will improve many accords in which amber ketal has been used alone. As I mentioned before, we are just now seeing the beginning of a new era of great, novel fragrances that will mean real progress in the evolution of perfumery.

Nordidedhydroambrox: This is a very new chemical that imparts a novel and interesting twist to all the accords in which Ambrox, amber ketal, Ambrocenide, nor limbanol and Kephalis are used. It is still too early to predict its success since the product is only now being tested, but I like it — it is unmistakably ambergris in nature, with beautiful shades of wood and tobacco. It is indeed a challenge to write about something as new and as revolutionary as this chemical.

Sclareolide: It is well known that Ambrox is produced from Sclareolide, but many ignore the parent chemical itself, and have never smelled it. Although much weaker than Ambrox, Sclareolide is one of the best materials resembling natural ambergris. The only thing I can say is that when smelling ambergris, in Mahrah, Salalah, Aden, Al Mukhallah, the Maldives or Zanzibar, I have always felt something indescribable. It is a mixture of great pleasure, a total subjective feeling and charm, and I must say that I feel almost the same when smelling Sclareolide. Sclareolide is very expensive because relatively large amounts are necessary to achieve the desired ambergris notes. However, the material is the key in our Amber Gris. I want to use Sclareolide more and more, but it is a chemical whose qualities are not easily perceived. Great skills are necessary to impart the

sought note of the natural product, which has almost disappeared from our world except in the rich countries of the Persian Gulf and Saudi Arabia, where is still used by many. Sclareolide is another important material unbelievably considered by many as a lowly intermediate chemical. In truth, its beauty is overwhelming.

12-Norallisolongifolan-14-one: This is again a chemical in its early stages. Its smell is impressively natural, produced from the inexpensive isologifolene. What can I say about it? 12-Norallisolongifolan-14-one is being tested. The material impressed me because it is comprised, just as Sclareolide, of extremely interesting nuances of ambergris and tobacco. At the same time, the chemical is very different than Sclareolide, which is primarily ambery, just like Ambrox. This ketone is also woody and heavy, with a special fruitiness of tobacco and damascones. Again it is too early to predict this unique material's future success.

Belambre — 1,7,7-trimethyl-2'-(isopropyl)-spiro-(bicycloheptane)-2,4'-{1,3}-dioxane: If Ambrocenide is a diamond, Belambre is a Burmese Ruby, possessing many carats with magical, beguiling pink-red colors. This is another almost unknown material. Its smell is very natural-ambergris, and though less powerful than Ambrocenide, it can impart magic accords and very natural ambergris nuances. I should mention here that strength is not that important in perfumery. It is but one factor — relatively weak products like Sandela or Iso E Super count themselves amongst the bigger successes in our field. Belambre is 10 times weaker than Ambrocenide, but full of charm, beauty and warmth too. Can I describe it any better? Charm, beauty, warmth, velvety, softness — aren't these great and bewitching concepts?

Today, as I mentioned in previous parts of my work, we need to put "reason" in its place and not request from it more that it can give us. What is our biggest problem at the beginning of the 21st century? It is the fight between reason and our subjective world of emotions and feelings. Luckily we can realize that new relativist and quantic science is not rational anymore. Instead, as stated by Heisenberg, we lack a non-Aristotelian logic that complements the illogical results of quantic and relativist experiments.

We have reached the confines of reason.

The macro- and microcosmic reality is irrational or arational. We can no longer understand reality (such as it is) with reason alone. With reason we have rejected tyranny and settled upon secular ethics. The ideas that blossomed in the 18th century, the Enlightenment — which started not in France, as thought by many, but rather in England with Newton, Locke and Hume — is reaching an end. The ideas of that age were diffused by people like Voltaire, Diderot, Condorcet, Du Deffand and, finally, defined by Kant. According to Kant, the Enlightenment is the emergence of the humanity from its auto-imposed immaculate immaturity, its lack of courage to use the reason. This is Kant's assertion: "Sapere aude." Dare to know. The public use of reason, freely exercised, brought the Enlightenment to our society. The enlightened people of the 18th century used reason against religious dogma, a necessary controversy. However, today, this is no longer the struggle. Instead, we now struggle against the limits of reason. This is our young century's philosophical challenge.

Returning to Belambre, it does not matter if is weaker than Ambrocenide or stronger than Sclareolide. Belambre, Ambrocenide, Sclareolide, Ambrox, β-Coronal or Boronal, dihydro-γ-ionone, amber ketal, hydroxyambran and Karanal — all of these are great. Our friends the chemists have given us perfumers these treasures, and it is now our role to create beauty with them. Chemists provide us the materials, while we who speak a different creative language, must honor their efforts and energies by making successful scents.

Methyl phenylpropionate and ethyl phenylpropionate: It is well known that cistus oil's extremely complex odor is comprised by Ambrox and methallic ketones like 2,2,6-trimethylcyclohexanone, isocamphone, isocarvone, and L-bornyl acetate, among other important ingredients. Two of this precious oil's key ingredients are methyl and ethyl phenylpropionate. These materials are extremely strong, and can be classified between ambery and resinous. Certainly, cistus oil would not smell the way it does without these two chemicals. The oil is a combination, as I said, of amber, metallic and resinous notes. When deeply smelling cistus oil, it imparts notes of frankinscense, among other common chemicals. Methyl and ethyl phenylpropionates are very powerful, and thus need to be used carefully. I have worked with them for a long time, achieving beautiful accords that are quite unique.

Laevo-cetalox and dextro-cetalox: It is well known that commercial cetalox is racemic, produced via synthetic Sclareolide. Natural Ambrox is laevo (Ambroxan, Ambrox, Ambroxide), and although the racemic is quite similar to its laevo isomer, the latter is a bit more fecal and smells of key elements of natural ambergris. Laevo-cetalox is Ambrox produced through a synthetic source. Its smell is rather impressively identical to the natural product. Dextro cetalox is drier, a bit woodier and less fecal, and it has an interesting elegant note that, I believe, will be used in considerable quantities in the future. It is interesting to realize how chemistry evolves and how research al-

lows us to synthesize products that just few years back were simply unthinkable.

9-epi-Ambrox: Another interesting product on the amber family is 9-epi-ambrox, which is extremely powerful, even more so than Ambrox. The material is contained in Ambrox DL and Synambran (Symrise). Its synthesis is a reality, and soon we will see it used to impart notes that are an alternative to Cetalox (Firmenich).

Animal Coiraceous

The family of the animal coiraceous has some products that, while not new, are totally unknown by most. They deserve to be described.

Costacide: Costacide, I would again like to emphasize, is of great value. However, great care must be used when trying to formulate with it. The material's olfactive profile is: very strong, powerfully animal, lactonic, goat-like with strong costus tonalities than blend well with agarwood oils, musk-like, Muscone, Exaltone, and especially Moxalone, Ambrinol and Ambrinoloxide (a forgotten and unknown product), Ambrox and 9-epi-ambrox, Amberlyn, and several cresols and cresyl derivatives like p-cresyl ethylcarbonate. Important bases — such as Castorax, Castoral, Coirilys, Animusk, Bangla Desh and the revolutionary Muscambrene (an unbelievable product) — include it in its great formulas.

Costacide and its unsaturated isomer, Böcksaüre, has some resemblence to male sex hormones such as 3-α-hydroxy-δ-androsterone, a chemical that could be introduced in perfumes for its sex attraction. The material smells profoundly animal and ruinous. Its discovery and, later, synthesis by Karl Moore, Edward Doisy, Adolf Butenandt and Leopold Ruzicka was remarkable. They isolated estrone as well — one of the hormones responsible for sexual development and function in females. In 1931, Butenandt isolated and identified androsterone, a male sex hormone, and in 1934, the hormone progesterone. This hormone plays an important part in the female reproductive cycle. It was now clear that sex hormones are closely related to steroids, and after Ruzicka showed that cholesterol could be transformed into androsterone, he and Butenandt were able to synthesize both progesterone and the male hormone testosterone. The works culminated in the discovery that the molecules of muscone and civetone contain rings of 15 and 17 carbon atoms, respectively. Before this discovery, rings with more than eight atoms had been unknown, and indeed had been believed to be too unstable to exist. Butenandt's and Ruzicka's discovery greatly expanded research on these compounds. Both Butenandt and Ruzicka were awarded with the Nobel Prize in chemistry in 1939, although Butenandt was forced by the Nazi regime to refuse it. (He later accepted it in the late 1940s.) This hormone smells tremendously strong, and it could eventually be used in perfumes to achieve what very often those in charge of marketing desire: to show that perfumes stimulate the sex instincts. It is very expensive to produce such fragrances, but when smelling them, feelings become totally irrational. Could we expect some great surprises in future — something other than exaggerations by those in charge of marketing? I like the smell of Androsterone. It is not just that I like it, but that it affects me with very deep and strange sensations. I discovered that Costacid, a much cheaper product than androsterone and (perhaps) Aldrone, produced very strange feelings when deeply smelled and when used wisely dosed in fragrances. We are bordering, indeed, a fantastic area still to be discovered.

Combinations of Costacide and Böcksaüre with methyl 3-methoxyanthranylate (the so-called damascenine, a grape-honey-smelling, totally ignored chemical) are indeed very new and quite subjective. The material's combinations with Helvetolide, Ambrettone, Moxalone, Ambrinol, Muscone, Globanone, Ambrettone, Exaltenone, Muscenone δ, Isomuscone, Nirvanolide, Ambrinoloxide and cistus oil, etc., are, as I mentioned before, exceptional. These combinations produce an irrational subjective feeling similar to that suggested by perfume advertisements. Muscambrene and other variations are proof of this. This section will be more developed in Part VI of my writings.

Alcohol NU, 5-ethyl-2-nonanol: This is indeed another top discovery, though it is not new: the material has been a buried treasure. Alcohol NU is very elegant and leathery and combines very well with cedrene pure, thujopsene pure and cadinene pure (a fantastic mixture of δ-cadinene and *cis*-calamenene). This material is used in one of the best leathery bases ever created: allyl ionone. It is also used with orris chemicals such as Orriniff (IFF), Irivone, Ionones, methylionones, damascones, osmanthus absolute, linolenic acid, dephenolized fractions of birch tar oil, isobutylionone, isobutylquinoline, damascones, styrax gum derivatives, Prismantol (an unknown woody spicy, ginger-like chemical), isopropylquinolines and many other leathery ingredients. The chemical is also used in incredibly important bases, very often together with the corresponding aldehyde, Aldehyde NU, and 5-ethyl-2-nonanal, which smells more pungent and metallic.

Animal-Floral

The family of animal floral has great chemicals, including the following:

Jacinthaflor — 1,3-dioxolane, 2-methyl-4-phenyl: This chemical is indeed a great and new material. I must say that it does not smell chemical-like, but rather as a perfume compound, a harmonized base. Jacinthaflor (Symrise) smells typically of hyacinth and narcissus with a real animal note close to Indoflor (Symrise). The chemical is excellent compounded with ylang ylang and aliphatic aldehydes, especially 9-undecenal, Heliotropin and coumarin. It imparts a velvety, very natural top note superior to those provided by the various cresyl esters that smell less natural. The material is also good for developing classical accords like "Chanel No. 5," "Arpège," or to be combined with fruity bases like "Prunella." Jacinthaflor also works well in developing very new accords, as found in the last Cacharel fragrance "Amor Amor," a very nice new perfume. Combinations of Jacinthaflor with Narcisse ketone, Petunial and phenylethyl anthranylate are very beautiful, too. Another great accord is Jacinthaflor with dimethyl benzyl carbinyl crotonate, γ-decalactone, γ-nonalactone and diethyl adipate (which imparts more fruitiness to Jacinthaflor, as does another unknown chemical, prenyl ethyl ether). The combination of Jacinthaflor with Nigelle Absolute and rosoxime are also very, very novel.

Petunial — methyl 5-methylsalycilate: This is a strange chemical, smelling of gardenia, tuberose and wintergreen and, simultaneously, quite animalic. Pe-

tunial has an interesting flower bud note, very useful, as is Jacinthaflor, when seeking a more natural floral shade for compounds. The material also smells of leather. It works well with alcohol and aldehyde NU in imparting very new accords, thus achieving innovative tonalities in fine toiletries and functional fragrances.

Orinox — 4-terbutyl-2,6-dimethylacetophenone: This is another great product that can be classified in between the coumarin-tonka, orange flower, animal flower, woody flower and leather families. It is not well known, but is extremely powerful and very good in functional perfumery — especially in detergent powder fragrances. Combinations of Orinox with Rosamusk, Aphermate, coumarin, allyl phenoxyacetate, Nerolione, benzophenone, Coumarone and Rosacetat impart fantastic powdery-clean note. The material also combines well with cyclohexyl, methyl pentenyl and prenyl salicylates, Globanone 100 percent, isobutylquinoline, 5-ethyl-2-nonanol, isofreshal nitrile, isomuscone, ethylene brassilate and Muscenone δ.

Caramel/Balsamic

This is a very interesting family, and although most of its chemicals were in the past considered appropriate for the flavor industry, they are finding increasing use in perfumery. I described in other parts of my work chemicals like maltol, furaneol, methyl cyclo pentenolone, tiglic and angelic acids, ethyl cyclopentenolone, and ethyl maltol, maltyl esthers, among others. Herein I would like to add:

4-Hydroxy-5-methyl-3(2H)-furanone: This is a very nice chemical, sweet, but different from Furaneol, which is more powerful and strawberry-like. 4-Hydroxy-5-methyl-3(2H)-furanone smells more like chicory and burnt sugar (although less so than furaneol, the king of this family). The material blends very well in fruity, caramel fragrances as a top novel ingredient. It also blends well with vanilla accords, imparting a totally characteristic tonality.

Homofuronol — 2-ethyl-4-hydroxy-5-methyl-2(2H)-furanone: This is an extremely strong chemical. While the later-described 4-hydroxy-5-methyl-furanone is around six to seven times weaker than Furaneol, the best-known of the furanones, Homofuronol is eight to 10 times stronger! Its smell is, as in the case of 4-hydroxy-5-methyl-3(2H)-furanone, less strawberry, pineapple-like, and more maple, sugar cane and malt. It is used in trace amounts in relatively well-known bases like Maltarome. Its effects are drier than those achieved with Furaneol (and entirely different). Although it is not widely used in perfumery, I have applied it in many oriental accords. One of them, a variation of "M7" for men, included a small but essential dose of Homofuronol with natural rum absolute, introducing an extremely masculine top note to this remarkable fragrance. I have also mixed Homofuronol with success in a great fragrance that became one of the top selling in the Middle East — a fragrance of a "divine" singer in these Arabic territories. Therein, I used a combination of agarwood oils (Bio Indonesia, Bio Indian and agarwood Bio Cambodian) together with orris absolute, osmathus absolute, an important mossy note and honey accord, and lots of natural rose oils from many different origins. The result is a great, extremely diffusive fragrance in which Homofuronol imparts its role as one of the key ingredients (although a base called Vert de roses, full of rare rose and cassis notes, plays a role as important as Homofuronol). Homofuronol blends well with most fruits and "liquor chemicals" such as Levulinates, n-propanol and esters, furfuraldehyde and several of its diethylacetals, methyl furoate, fusel oil, lie de vin and the fantastic and not well-known wine lactone, a product that is still at the research stage and which is described in part IV of these writings. I like Homofuronol as much as Furaneol; they both have the same level of excellence, although they do have differences. Homofuronol is greener than Furaneol and blends very well with its n-hexyl and *cis*-3-hexenyl ether (furaneol *cis*-3-hexenyl ether and furaneol hexyl ether, both great chemicals almost unknown). Homofuronol is also great in herbal accords — even better than furaneol, which is too fruity and sweet. The material blends extremely well with benzoin resinoid, methyl cinnamate, Araucaria and Sunanda Kokhila oils, and other fruity, balsamic products. It also works well with Centifol Ether and Dianthox.

Sotolone — 4,5-dimethyl-3-hydroxy-2,5-dihydrofuran-2-one: This is again a product officially related to the flavor sector, but this classification is not correct. It smells of fenugreek oil and absolute, lovage, and celery. If we have always considered that propylidene phtalide and butylidene phthalide can be used in perfumery, and that they have actually been used in important perfumery bases like Chroniax, why not consider Sotolone, which is much more powerful and diffusive? Why can't it be used in perfumery? Sotolone blends particularly well when carefully and skillfully dosed with β-ionone, dihydro-β-ionone, α-ionol (a more long-lasting and violet-like chemical than those named previously), Violettyne, Violiff, Orriniff (a great orris-smelling pyridine almost unknown to everybody), the diverse irones, Myrrhone, the various quinolines, and the so-called Emoxyfurone (which, although extremely powerful, is slightly less so than Sotolone). The material also blends well with Precarone, Vetykone, woolfwood, Tetrascone,

Prysmilate and its alcohol Prismantol (a woody, spicy, important chemical), Tabanone, Tetrahydronaphtalenol, Oxo-Edulan and other tobacco chemicals, the diverse damascones, and strong coumarin-like chemicals such as ethyl laitone (these latter materials also blend quite well with Homofuronol). I believe Sotolone will be used in future, and perhaps we will see a new generation of fragrances influenced by it — naturally extremely dosed. Sotolone, as Homofuronol, is among the most diffusive chemicals I know. It works quite well too with so-called celery ketone, Toscanol and other rare products. Products like Sotolone and emoxyfurone must be handled with an extreme care since they can impart a total flavor note if not properly dosed. If properly dosed, its fenugreek tonality is wonderful.

Tobacco

This is one of my favorite families. I have previously described its key chemicals, including Tabanone (megastigmatrienone) (Symrise), dihydrotabanone, oxophorone, isophoryl acetate, oxotheaspirane, 4-oxo-β-ionone and others. Herein I will describe:

Mossenate — 2-ethylbenzoxazole: This is very strong erogenous-animal note with reminiscences of tobacco, orris and ylang-ylang. The chemical is quite new and more refined than the methyl homologue, which is more metallic, aggressive and synthetic. Mossenate blends well with ylang-ylang notes, and with aliphatic aldehydes. Its accords with 9-undecenal are absolutely great, and its beauty unparalleled.

Tabaxol — 2-methylbenzoxazole: This material is "chemical" and smells more metallic than Mossenate, but is useful when blending it with the quinolines, Castoreum, some ambergris pyrazines, and other ambergris chemicals such as Ambrox and ambrinoloxide. Tabaxol is also useful as a reinforcement of the tobacco note.

2-Acetyl furan: Tobacco leaf is a very complex smell — as complex as ambergris or tea. It has honey sweet notes, and herbal, burnt, fruity, spicy, and metallic characteristics. 2-Acetyl furan is similarly herbal and burnt, and smells of important tonalities of tobacco absolute. Perfumers very often ignore this chemical. It can give extraordinary tobacco effects, especially in the top note, and improves fragrances in which tobacco character is desired. The material combines very well with some of the caramel furanones described before, and also with key chemicals like 3,4-dimethylcyclopentadione and its isomer, and the very sugary and interesting 3,5-dimethylcyclopentadione (already described) in the caramel family. 2-Acetyl furan can improve profiles in which tobacco is sought, like "Davidoff" or the newer "Baldesarini" by Hugo Boss. The chemical also blends extremely well with osmanthus absolute, musk tonkin bases, furfuraldehyde, and agarwood oils in which 2-acetyl furan imparts very pleasant nuances. Its use with woody chemicals and woody essential oils is also great.

Some of the most impressive tobacco bases are our Cetotabac series, a series of bases to be used in flavors and fragrances that smell extremely close to the real tobacco leaf. The best one, a restricted item from our company only reserved for a very important tobacco maker, has some interesting and unknown ingredients such as Megastigmadienone and 7,11-epoxy-megastigma-5(6)-en-9-one.

Strength is not that important in perfumery; it is but one factor — relatively weak chemicals count themselves among the bigger successes in our field.

Tetrascone — 1-(1,2,3,4-tetrahydro-4,4-dimethyl-1-naphtalenyl)-propan-1-one: This is not a well known chemical, and is thus missing from most laboratories. Tetrascone is delicately floral tobacco, not very strong but long-lasting, and quite elegant. The chemical imparts the perfumery note that many perfumers try to get when blending tobacco-influenced fragrances. It blends very well with tobacco absolutes, myrrh, and the so-called and unknown essence of myrrh safranée. The chemical also blends well with tabanone, but only if skillfully dosed so as not to obscure the charm of Tetrascone. The material is fantastic with β-damascenone, β-damascone, all damascones, Precarone (which makes it more root-like), Myrascone, Romascone, Deltanate, ethyl safranate, and also with oils such as Roman chamomile, Eryocephalea, Santoline, wild chamomile and hyssop. The chemical is also great with Ysamber K, nor limbanol, Cetalox, Ambrinol and ambrinoloxide, muscenone δ, Exaltenone, Isomuscone, Velvione, Moxalone, Muscone, Globanone, Ambrettolide, ethylene brassilate, Exaltone and Ambrettolide, especially when touched by isobutylquinoline, sec-butylquinoline and Costacide. Tetrascone also has good accords with the linolenic, oleic and linoleic esters and with mimosa absolute.

Megastigmadienone: This is a very secret and impressive fine floral-fruity scent with an extremely deep and natural tobacco note. It will be more thoroughly described in part VI since it is too new and too captive to be discussed now. Megastigmadienone has been found in Virginia tobacco and passion fruit, where it occurs together with important sulphur-containing molecules like 3-acetylthiohexyl acetate, which in turn is also found in guava and grapefruit. These combinations of Megastigmadienone with other chemicals like oxane, tropathiane, thioterpineol, (a finer product compared to the better known and lesser thiocineol), 3-thiohexanol, 3-thiohexyl acetate, sulfocassione, mercaptomethylpentanone, the so called aruscol (an important chemical also to be described in Part VI), and the related previously mentioned 3-acetylthiohexylacetate are amazing and full of beauty. Megastigmadienone will have a good future in the development of our profession.

7,11-Epoxymegastigma-5(6)-en-9-one: This material is another impressive and magnificent jewel of the research, unknown by almost everybody. It is one of the newest and finest chemicals I have smelled. It is deeply fruity with strong tobacco, tea and osmanthus tonalities, with overall shades of great delicacy. It is more fruity than Megastigmatrienone or Megastigmadienone, and is still too new and too captive to be more widely described until Part VI. What is really amazing is that Givaudan chemists, in their published results, found around 79 percent of it in the headspace of the strong ionone-floral-smelling *Houlletia odoratissima*, a rare orchid native to the northern part of South America. In additional published results, the material was found at around 38 percent in another orchid from Peru, *Gongora cruciformis*. This chemical is so interesting, and I like it so much that I just have reprinted this rare "anecdote" of how exciting the future is for us…. A new base, Cetotabac, a 7,11-Epoxymegastigma-5(6)-en-9-one-containing accord I started in 1978 and have not yet finished, is one of the most complex, new and lovely creations of my career.

Coumarin

This family was well described in the Part IV of my work when I mentioned laitone, ethyl laitone, methyl laitone, tonkalactone, dehydrotonkalide, coumolide, tricyclone DIPG, cantryl and trivertanyl. And I would like to add:

Coumarone — benzofuran-2-yl methyl ketone: Extremely strong new structure, with more intense top note than coumarin but it has, as compared to it, a quite important tonality of methyl anthranylate and β-methyl naphtyl ketone that makes the product not only coumarin-like but also orange flower-like. However, it is more coumarin when compared to its relatively close and secret molecule Nerolione. It was found a bit by coincidence when a great chemist and its inventor, Berliner Steffen Sonnenberg, researched on the chemistry to find a non discoloring replacement for Methyl Anthranylate, and β-Methyl Naphtyl Ketone. He was successful and synthesized the badly known (since it is an important captive) Nerolione. When having synthesized Nerolione he played with the molecular structure and found Coumarone that did not smell only of orange but had a very unusual tonka-coumarine smell. Coumarone is stronger than coumarin. Coumarone is extremely important since the sought to push the impact of Coumarine in the fragrances based on it was a must. My friend Edmond Roudnitzka loved Coumarine and considered it one of the best chemicals ever discovered since its top qualities really smell of tonka, very natural and they

are unbelievably long lasting.(Coumarine is one of the longer lasting products in the world). Well, again as in the case of the Limbanols, Helvetolide, Paradisone, Ysamber K, Ambrocenide, etc. he could not smell Coumarone but I know because he was one of my best friends, he would have loved it. A 1 percent solution of Coumarone is difficult to control, its diffusion, as in the case of its orange flower brother, Nerolione, 1-(3-methyl-benzofuran-2-yl)-ethanone, is so impressive that once I smelled it, I realized I was again facing a product that will for sure be involved in the future evolution of perfumery. I need to work more with Coumarone, but I find its combinations with Ethyl Laitone DA, Tetrascone, Florex, Laitone, Dehydrotonkinolide, Oxophorone, the described tobacco chemicals Tabanone, Megastigmadienone, 7-epoxy-megastigma-5(6)-en-9-one, Osmanthus Absolute, Coranol, Dihydro-β and α-ionones, Cashmeran, the Limabnols, Ambrocenide, Javanol, Firsantol, Nirvanol, theaspirane, vityspirane and naturally Coumarine, are spectacular. Blendings of Coumarone and Florex are quite important. There is a need to rework important Coumarine fragrances like "Joop" for men, "Romeo & Gilli" for men, "Pandora for Men," etc. By introducing Coumarone and the sought diffusive effect boosting the coumarin accord it is possible to create a totally new "auratic breathing," that is to say a "new" perfume. And I say yes, a new perfume because although these fragrances are already well known, the inclusion of Coumarone will change them and will push the coumarine trend forward.

Isofreshal Nitrile: This is a floral-coumarine nitrile that works well with many products such as *trans*-2-tetradecenal, Methyl Decanile, Methyl, 4-dodecen-2-yl nitrile (a great and stable citrus nitrile that also belongs to Part VI as Nerolione and the newest citronone, a Nondienone derivative).

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Artistry and Craft

Perfumery: Techniques In Evolution. Part V*

A meditation on the art, craft and latest science of fragrance creation

by Arcadi Boix Champs, Auram International Group, Co., Ltd.

Citrics

I have previously mentioned important lemony, grapefruit and mandarin products like Lemonile (Givaudan), ethyl citral, the forgotten Citronile, Citralva (IFF), undecen-2-nitrile, Thiocineol, Thioterpineol, Mandaril, the nootkatones and so many great products that allow the perfumer to have a rich choice when needing to impart a citrus effect.

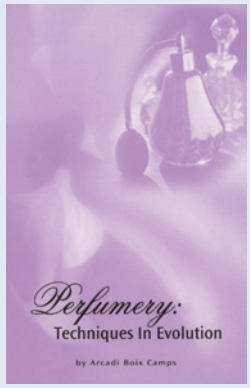
In fact, there is no chemical smelling of the "key" part of lemon other than citral. We have quite a lot of chemicals smelling of orange, mandarin, grapefruit and tangerine, but either the "key" sulphur-containing molecule in lemon oil, if it exists, has not been identified, or I simply do not know about it. Citral is a special case, and often when referring to lemon chemicals we actually refer to citral chemicals.

Azuril: Since the late 1940s, when George Igolen produced nitriles parallel to aliphatic aldehydes, the search for these chemicals started with a lot of interest. The better-known nitriles are Citralva and geranyl nitrile. However, Citralva, although indeed lemony, is by far more floral and more metallic than citral, while Azuril (Aroma and Fine Chemicals Ltd.) is more delicately citrus-like with a strong tonality of lemon. In addition, the latter material is very stable under mildly alkaline conditions, as in toilet soap. The material smells very cleanly of lemon, with shades of mandarin and orange. I like it as a creative and stable lemony chemical to replace the more powerful, but more oily-green and floral, geranyl nitrile.

Floridile — 9,10-undecadien nitrile: This is a real jewel again. If Azuril is more natural-lemon than Citralva, it is indeed less powerful, while Floridile (Givaudan) is the "product." Floridile is extremely clean and powerful — the best lemony chemical known to me. Its lemon character is not the material's only attribute. It is also diffusive, strong, fresh, and green-citrusy with effects of bergamot as well (here I refer to the citrusy part of bergamot, and

*Parts I-IV in Arcadi Boix Camps occasional series appeared in *Perfumer & Flavorist* in 1977, 1978, 1985 and 1999. The first two segments of Part V appeared in *Perfumer & Flavorist's* June and July/August 2004 issues.

Further Reading



This latest installment of Arcadi Boix Champs' perfumery series follows the publication of his collected articles (1978-1999) — *Perfumery: Techniques in Evolution*, presented by Allured Publishing. Never before has a perfumer of this calibre provided such a constructive and open analysis of new perfumery materials. *Perfumery: Techniques in Evolution* reveals a profound knowledge in the use of perfumery materials in both new and traditional formulas. Though not a book of perfume formulas, *Perfumery: Techniques in Evolution* is an excellent guide for perfumers, as well as those involved in research and development in adopting new perfumery materials in their daily creative work.

Arcadi Boix Camps provides a remarkable review of new perfumery chemicals that have been introduced to the industry in the past 20 years. A definite staple in any creative perfumer's reference library.

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Not Banned

In the June issue of Perfumer & Flavorist, Hydroxyambran was mistakenly identified as a material "withdrawn" from the market by a regulatory body ("Perfumery: Techniques in Evolution. Part V," page 57). In fact, the material continues to be fully available. We regret the error.

not its linalool, linalyl acetate, fresh floral side). Floridile, just one product among hundreds of nitriles, is still quite new, but I believe it will soon set a new trend in perfumery — especially in fresh lemony functional items, but also for mixing with new floral chemicals such as the outstanding Super Muguet. Azuril is not as purely lemon as Floridile since it has many shades of mandarin, orange and tomquat (and even bigarade), but Floridile will surely be part of fragrances that, once created, everybody will try to match. The material's lovely cleanliness will have a larger impact than is apparent today — after all, this chemical is still in its very early stages. Again I must say to the chemists: thank you friends! We needed Floridile. Finally we have a very stable citral that is even more natural than citral. This is always something to celebrate.

Orangeox: This is another chemical that I cannot mention here but which will appear in Part VI — an extremely powerful sulphur-containing molecule that was found in a very strange tropical orange from the Far East. The company that discovered and patented this unnamed molecule is already using it internally at just 0.01 percent. This material blends extremely well with Floridile. I am very excited by both jewels of research, and my optimism — related to the successes in research that provide perfumers with so many great new ingredients — is total. For the time being I'll call this material Orangeox — in Part VI I'll mention its real name and structure. As I said, the chemical is quite new, so I will mention just a few of its outstanding effects, such as when it is simply mixed with limonene. Orangeox is like a magical touch that renders this massive ingredient as precious as any top quality citrus oil. When mixing it with cedrat coeur, lemon, orange, grapefruit, lime oil expressed, tangelo, bitter orange, bergamot, mandarin, tangerine, or clementine it imparts an unbelievably lively effect. Orangeox will be as important as Sulfox (8-p-mercapto menthan-3-one) and thioterpineol, both of which are used by many people. Both Floridile and Orangeox will also blend revolutionarily well with the strong tropical fruit chemicals such as oxane, 3-thiohexanol, 3-thiohexanyl acetate, Sulfocassione, *trans*-p-menthen-3-one-8 thioacetate, 3-acetylthiohexyl acetate, Tropathiane (Oxford Chemicals), 3-acetylthiohexyl acetate and the so-called Aruscol (another great jewel so far only used in flavors, though I do not know the reason).

4-Methyl-2-dodecen nitrile: This is not a well-known product, but is quite impressive. It is very strong and natural with shades of all citrus, especially mandarin, tangerine, clementine and orange, but also lemon. It works very well with functional products in which the lively citrus note is desired. It enhances all the aliphatic aldehydes, alkenals and alkadienals. It also fixes citrus notes and provides them with an extreme diffusion. I love its blends with methyl decanile and Floridile because the products are totally synergetic. In fine toiletries, I have tested it in aldehydic, citrus and difussive fragrances such as profiles like "DKNY" for women. I believe it could find a good place if more widely known and properly promoted and understood. Its blending with Hydrocitronitrile is also very interesting.

Orange pyridine — 5-hexyl-2-methylpyridine: This is a totally new chemical, so terribly strong that it must be sampled in extreme dilution. Still, it is simply outstanding. In the past, I had always thought that the important "key" chemicals in the citrics where sulphur-containing molecules (thio terpineol, Orangeox) or aldehydes (*trans*-2-dodecenal, *trans*-2-tridecenal, *trans*-2-*trans*-4-dodecadienal, *cis*-8-dodecenal, *trans*-2-tetradecenal) or ketones (nootkatone, dihydronootkatone), but I never thought of a pyridine in such a way. Well, I was totally wrong, and this just illustrates how rich and wise nature is. Orange pyridine, found in orange oil, is one of the top key ingredients that impart the overall olfactory sensation that we call orange. As with all the pyridines, it has a certain burnt-plastic note, but this is nothing compared to its citrusy smell, which is paramount. Actually, petitgrain and neroli oils contain pyrazines and important pyridines, too, but these pyrazines and pyridines are green and contribute to the tangy-green note of the oils. In contrast, orange pyridine is simply orange — one of the most orange chemicals I have smelled in my life. The material is very useful in improving the citrus note of any compound, and it works very well with n-nonanal, n-decanal and lauric aldehyde, the so-called sinensal 15/20 percent, and the so-called orange carbonyls. Orange pyridine also works extremely well with alkenals and some alkadienals, and creates very good accords with mandarin aldehyde, *trans*-2-tetradecenal (which fixes it), and especially Orangeox (which improves its top note). It has been used in many accords, though being a top secret and captive product almost nobody knows about it.

Grapefruit

In the past, I have described key products like nootkatone, Methyl Pamplemousse (Givaudan), Pamplovert, thioterpineol (my absolute favorite, and still missing from most laboratories), dihydronootkatone (another forgotten treasure), Floralate (IFF), Pamplenol and Pamplefleur (IFF), among others. I will now describe isobutylcyclamide.

Isobutylcyclamide: This material is extremely strong-citrus, with a metallic note reminiscent of grapefruit, and elements including styrallyl acetate, a rhubarb-like character with aspects of vetiveryl acetate, nootkatone and dihydronootkatone. It is very diffusive and quite long lasting. This is a key captive chemical that has been used already in great fragrances such as the new "Lacoste" for men. (Another fragrance copied by the same friend who claimed to have copied Sandalwood Givco [Givaudan] without knowing Javanol [Givaudan]). Isobutylcyclamide, unknown to almost everybody, harmonizes this great accord, which has been recently launched with good success in the market. Isobutylcyclamide works well with neobutenone, cyclogalbanate, allyl amyl glycolate, methyl 4-dodecen-2-yl nitrile and Cashmeran (IFF), imparting diffusion and a special lift to citrus oils mixed with neroli, black pepper, cardamom, cassia and clary sage. It would work very well with Labienoxime (Givaudan), Vertamide and Buccoxime (Symrise), in addition to all the nootkatone derivatives. Its accords with dihydromircenol and Coranol are impressive, too — isobutylcyclamide fixes and harmonizes these two brilliant chemicals. Isobutylcyclamide, still a bit too expensive, has started setting a trend and influencing modern perfumery, and I foresee a great future for this remarkably beautiful product.

Citrus Florals

It is extremely difficult to classify a chemical as simply a "floral." Citronellol, Lilial (Givaudan), β-damascenone, Silvial (Givaudan), Super Muguet, β-phenylethyl alcohol, α-terpineol, l- and d-hydroxycitronnellal — all of these are considered floral. Here, we really need to rationalize; I would like to be more precise this time.

trans-2-Tetradecenal: If I-2-dodecenal, *trans* 2-tridecenal and *trans*-2,*trans*-4-dodecadienal are powerfully citrus/mandarin-like, *trans*-2-tetradecenal is powerfully orange, one of the best orange-smelling chemicals and by far more long lasting than those named above. *trans*-2-Tetradecenal is also flowery, especially smelling of flowers with strong citrus nuances — frangipani, magnolia and champaca. I remember when in the south of India, where frangipani and champaca (*Michelia champaca*) grow, how when the weather was pleasantly warm I smelled the fragrant auratic breathing of champaca. Champaca is an Asian tree of the magnolia family (Magnoliaceae), lustrous-leaved, pyramidal, and about 30 m tall. It bears fragrant, star-shaped yellow flowers that are the source of both champaca absolute and a yellow dye. Champaca is often grown as a boulevard tree in the tropics, and is also frequently planted on Hindu temple grounds because it is considered sacred to the god Vishnu. In India, this tree and the smell of its flowers are revered. The search for good, beguiling frangipani, champaca and magnolia scents is a challenge. In the course of my career I have developed compelling bases, especially Frangipani 4421-5/D, in which *trans*-2-tetradecenal is blended with epi methyl jasmonate, *cis*-jasmone, verbenone, farnesol, Oncidal (Symrise), farnesene and *cis*-jasmone lactone, along with breaking new chemicals such as 2,3-dihydrofarnesol (a key chemical too in natural lily of the valley [muguet] flower). I like combinations of *trans*-2-tetradecenal with dihydrofarnesal, the corresponding aldehyde and related sesquiterpene alcohol, which is almost unknown to most of the perfumers. *trans*-2-Tetradecenal is extremely long lasting — one of the most long lasting citrus chemicals; it is an indispensable ingredient to those favoring novelties, and a more natural touch in our fragrances. I very much like accords of this aldehyde with Mayol (Firmenich), Florol (Firmenich), Super Muguet and specially with a pure quality of bisobolene isolated from lemon oil. *trans*-2-Tetradecenal also interacts well with lime dienes (trimethylcyclohexadiene), expressed lime oil, thujopsene cedar oil, nor limbanol, Muscenone (Firmenich), Paradisone (Firmenich), green notes such as *cis*-3-hexenol, Liffarome (IFF) or Aladinate. It is indeed one of my favorite chemicals. It is not easy, if we exclude the nootkatones and α- and β-sinensal, to find such a long lasting citrus chemical, although, as I said, *trans*-2-tetradecenal is not just citrusy, but also soft floral.

Silvial — 2-methyl-3,(4)-(2-methylpropyl)-phenylpropanal: Although many consider Silvial (Givaudan) a pure muguet odorant, I disagree. It is by far less floral than Lilial and more citrusy. The material is like a mixture of Lilial, cyclamen aldehyde and *trans*-4-decenal. Silvial blends well with products like Super Muguet, Muguesia (IFF) and muguet alcohol, in addition to citrus products, particularly with the previously described *trans*-2-tetradecenal and related *trans*-4-decenal. Its accords with Dominal, Geraldehyde (IFF), Super Floral, Florhydral (Givaudan), methyl-4-dodecen-2-yl nitrile and Precarone are also great. I particularly like mixtures of Berryflor

(Givaudan), Florhydral, precarone (as found in Dossinia Givco [Givaudan]) and Silvial. The material also blends well with aldehyde C11 MOA and methyl decanile. In addition, Silvial imparts great nuances upon coniferous accords. Obviously the length of this work does not allow me to elaborate further and to mention more accords made with this beautiful chemical.

Hydrocitronitrile — 3-methyl-5-phenyl-2-pentan nitrile: This product is more floral and less citrusy than many nitriles. Although relatively mild, it is extremely long lasting. Its stability, even in difficult media like bleach, makes it very interesting. This chemical is much less powerful than Citronitrile (3-methyl-5-phenyl-2-penten nitrile), but is, as stated before, much more stable. I very much like its accords with Spirogalbanone (Givaudan) and Corps Racine VS (Symrise).

Rose Ketones

I will continue with several chemicals that I consider as radiant as always. Because of their complexity, I would now like to add several materials to the subgroup of floral-herbal-fruity — the so-called rose ketones.

In November 1978, during the fifth Convention of Perfumers (an event organized by the Spanish Society of Cosmetic Chemists), I mentioned for the first time the damascones and β-damascenone — at the time, totally captive products. β-Damascenone was called Dorisinone. All the damascones were at this time unknown and used only in bases like Cetylia (Firmenich), Damascenia (Firmenich) or Dorinia (Firmenich). Afterwards, a base called Rhodascone introduced γ-damascone to intrigued perfumers. In 1978 I wrote, "I am completely convinced that β-damascenone and the damascones will be amongst the greatest aromatic compounds of the 1980s, and its incorporation into great perfumes is assured." Well, I believe I was right and wrong — right because what I predicted absolutely happened, and wrong because the rose ketones' influence was not limited to the 1980s, but beyond into the 1990s and 2000s. They will remain indispensable for many years to come. Because at that time I touched only on the rose ketones, I did not describe these materials with all the care they deserve. I would like to include a complete description here.

β-Damascenone — 4-(2,6,6-trimethyl-1,3-cyclohexadienyl)-3,buten-4-one: I will just copy the description of β-damascenone I wrote in 1978. The material is perhaps the most revolutionary of this family of products. Present in the essential oils of Bulgarian rose oil as a minor component, its effects are of the greatest importance in determining the final odor of the natural product. Even in minimal doses, its effects are impressive. It imparts a freshness, naturalness, radiance, intensity, broadness, uniformity and character to any perfume. We could almost say that it imparts the very subjective feeling of a perfume wherever it is used. No need to add anything to my 1978 comments. As everybody knows, β-damascenone has been one of the capital ingredients influencing the evolution of perfumery since its effects became widely acknowledged. Although smelling of rose blooms (and being the rosiest of the entire family), it can hardly be classified only as a rose chemical. This chemical has 1001 shades, tonalities and nuances. It has an important tobacco and herbal, tea and mate-like note, too. As mentioned in *Tetrahedron*, "the history of the isolation and structure elucidation of β-damascenone from Bulgarian rose oil as told by Kastner is one of the most exciting chapters of the fragrance and flavor chemistry." Its isolation was in 1966. My description came in 1978. The original analytical results were published later, in 1987. So, I suppose I was really a pioneer: the first perfumer to describe this intriguing and amazing chemical. As I said before, β-damascenone is to me a tobacco chemical too, and therefore I introduced the material in my bases, including Cetotabac. I could write about thousands of accords involving this magical rose ketone, but this would go beyond the bounds of this work (which, after all, is not monographic). The bases Damascia, New Frutambria, and the Cetotabac series are personal examples of how β-damascenone behaves when mixed with incredibly new captive chemicals that improve either its rosy or herbal-tobacco character.

β-Damascone — 1-(2,2,6-trimethyl-2-cyclohexen-1-yl)-2-buten-1-one: As is well known, this is another great chemical in the series. β-Damascone is less herbal-tobacco than β-damascenone, and pure rosy, if a bit less natural than β-damascenone. The material is extremely delicate, soft, fruity, floral, rose-like, and combines very well with other soft ingredients such as geranyl crotonate, cinnamyl propionate and isobutyrate, and cinnamic alcohol, among others. Its harmony is delicious; it is like dreaming with all the senses. When smelling it properly diluted, it even affects the mood by via relaxation, activating the hormones that help us feel pleasure. Our examples of using β-damascone with other novel and unused chemicals are the bases Dulciflor 841/D and Vert de Magnolia 8758/D.

γ-Damascone — 1-(2,2-dimethyl-6-methylenecyclohexyl)-2-buten-1-one: This ketone was kept captive until 2002. It is very rosy and delicate, as are all these rose ketones. It is also fruity-plum-apple and possesses an interesting black pepper effect in its top note that is missing from the other isomers. According to my experi-

ence, γ-damascone is the rose ketone that best blends with sandalwood chemicals. Its accords with nirvanol, javanol, Firsantol (Firmenich), Sandalore (Givaudan), Dartanol, Ebanol (Givaudan), Sandela (Givaudan), Mysoral and Polysantol (Firmenich) are really great. It is fruitier than the other damascones, but less long lasting. As in the case of β-damascone, I love to blend it with cinnamyl propionate and cinnamic alcohol — a great chemical, provided its quality is appropriately high (see sidebar).

The major question with all rose ketones is this: why do these materials have such a relaxing effect on the body? How do they bring pleasure to our strained souls? I do not have any scientific proof of these materials' benefits, yet I (and many others) know them to be a reality. No doubt there are needs for stress remedies in our modern world: I believe our society promotes voluptuousness and consumption, the first of which brings apathy and indolence to our souls, while the second keeps us poor (that is to say, dependent). If only our culture and education ministers realized that the great secret of enlightenment and release from strain is to direct one's vanity towards prudent, judicious and sensible objectives such as sensory beauty.

α-Damascone. 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-2-buten-1-one: This is a very complex product. It smells floral, but less floral-rosy than β-damascone. It is also fruity, plum, apple and green, with a camphoraceous nuance. I like to mix this ketone with muguet and cyclamen chemicals such as Lilial, nerolidyl acetate, dimethyl benzyl carbinyl acetate, crotonate, isobutyrate and butyrate, myroxide, benzyl salycilate, Indoflor (Symrise), Rosacetat, Jacinthaflor (Symrise), cyclamen aldehyde, and myrac aldehyde, among others. Unfortunately, the dimensions of this publication will not allow me to describe all the uses I have found in my life while working with α-damascone. As in the case of hedione, what is important here is the commercial quality, which rests on two enantiomers — (R)-(+)-α-damascone, which is responsible for this related camphoraceous note, and the (S)-(-)-isomer, which is by far cleaner and around 100 times more intense than its enantiomer. This (S)-(-) isomer, found in tea, is one of the challenges now facing our chemists. It has been synthesized, and efforts are being devoted to produce it in an industrial scale. If success is achieved — and it will be, because those great chemists are extremely determined — a new era of creativity will come to us. Soon we will get the first perfume using this enantiomer separated and single. May I suggest the name of α-teascone for it? I am lucky because I have smelled this substance. The intensity of pleasure I felt as a result made me think of Plato. The material reminded me of what I've said elsewhere, in other writings: a "very small city, very, very small, isolated, very, very isolated and free from external influences." I would have loved to show Plato β-damascenone, β-damascone, α-damascone, α-feascone and γ-damascone at 1 percent solution in alcohol and wait for his reaction. I believe it could be a great, utopic experience. Imagine one of the greatest men in all of Western Civilization smelling some of the best olfactory chemicals, which surely would move, motivate, touch and thrill his senses.

δ-Damascone — 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-but-2-en-1-one: This material is also called Dihydrofloriffone TD. It is quite similar to α-damascone, but with a more striking metallic fruity nuance and less "cinnamic" impact. I say cinnamic

A Note on Material Quality

Many companies produce cinnamic alcohol, but personally I only accept the Givaudan and Symrise grades. Cinnamic alcohol, in spite of IFRA recommendations, is a chemical that I love. It is a material that I hate at the same time. The quality of the product in the market is a total disaster, overall, and again I must stress the fact that if we are not able to select the right grades of our ingredients, we will find ourselves hopeless while creating perfumes. Pure and well-distilled non-adulterated essential oils are paramount. The highest quality in ionones, methylionones, cinnamic alcohol, β-phenylethyl alcohol, Lilial, hedione, citronellol, Iso E Super (IFF), geraniol, and Vertofix Coeur (IFF), among others, are a must. Unfortunately, only few companies select the right grades — many others depend upon brokers that compete in the market by not adhering to incredibly strenuous standards and who, thus, will never produce profound fragrances.

One important broker uses technical castor oil to adulterate all its chemicals and essential oils! Can a perfumer imagine a worse disaster? One of the top perfume companies in Spain used to buy sandalwood oil Mysore mixed with 25 percent technical castor oil. The responsible party found that this was an acceptable solution until, presumably, they discovered (we hope) the fiasco.

because many shades of cinnamic alcohol are found in the diverse damascones. I believe δ-damascone smells closer to (R)-(+)-α-damascone than the described α-teascone. I like this chemical, although it is less linear and less clean than the other isomers. However, it is quite useful because of its striking fruity impact in functional perfumery.

Isodamascone — 1-(2,4,4-trimethylcyclohex-1-(2)-enyl-1)-2-buten-1-one: Presented by Dragoco in 1971, this material was the first of the related ketones to be commercialized. Its smell is good — a mixture of α- and β-damascones that results from the fact that its commercial quality is a mixture of α- and β-isodamascones. However, now the quality has changed; the material mainly contains α-isodamascone, which makes it more exciting than before. Isodamascone has a certain waxy, slight tonality similar to damascones and n-decanol, although this is not noticeable when not comparing it with the damascones. To me, the material is a very nice chemical, as all the damascones are. I like to compare isodamscone with γ-damascone (more peppery and fruity), β-damascone (more rosy and less fruity, but more subtle) and β-damascenone (more delicate, and most of all more rosy and herbal-tobacco-like). Its uses are similar to those of the related damascones.

Lily of the Valley

I will mention now some florals — lily of the valley — that represent outstanding innovations.

Super Muguet (6-ethyl-3-methyloct-6-en-1-ol): This chemical was discovered by my friend Philip Kraft. It proves that chemistry is a wise and astonishing science. We have long associated lily of the valley chemicals with aldehydes and rose chemicals with alcohols. It was once even assumed that only aldehydes could smell of muguet, despite that the natural flower is widely based on alcohols like *trans,trans*-farnesol, the unknown (and "key") 2,3-dihydrofarnesol, and nerolidol, among others. And still the synthetic reconstitutions were always based on aldehydes. I remember that once Roudnitzka told me that one of his favorite chemicals was hydroxycitronnellal ex citronella oil — he made his fantastic muguet perfume "Diorossimo" based on it. I believe this component has been changed to synthetic hydroxycitronnellal in the scent's present editions.

Lilial, Syringa Aldehyde (Givaudan), Cortexal, Lyral (IFF), etc. are considered muguet chemicals, but, as is well known, aldehydes are less stable than alcohols. This fact necessitated research targeted towards finding muguet odorants other than aldehydes. Thus came Majantol (Symrise), Mayol (Firmenich) (the closest material to hydroxycitronnellal), Florol (more magnolia that muguet), muguet alcohol, muguet alcohol acetate, Muguesia (IFF) and Meoparf. Soon we started seeing mixtures of these alcohols with the muguet aldehydes, as in "Good Life," "Dazzling Gold," "J'adore," "Fragile," and "XS for her," among others.

Meoparf (mixture of 6-ethyl-3-methyloct-6-en-1-ol and 6-ethyl-3-methylocte-5-en-1-ol): This is an outstanding chemical, a mixture of lily of the valley and rosy notes. When, for several reasons, it was not recognized for its fantastic auratic smell, Meoparf was abandoned. Chemists worked to find another synthesis that would allow perfumers not to lose this outstanding chemical, and finally came up with one of the isomers, which possessed a better isomerically enriched quality, which was more intense, more muguet (Meoparf was more rosy), more crisp and cheaper. This material was Super Muguet.

Super Muguet: This is the most amazing of these alcohols. It is unbelievably floral-muguet and has an outstanding diffusion that radically differs from products such as Majantol, muguet alcohol, Muguesia or Mayol. Used as captive for the past three years, Super Muguet will absolutely mark the evolution of perfumery, and will be one of the jewels that make this evolution possible. The chemical can be identified in formulas by its radiance, its beauty, its totally natural floral aura, its outstanding diffusion and intensity.

Super Muguet is so intense that it could be used as a keynote in many functional products as well. I am expecting any moment a big powder detergent or a top fabric softener in which Super Muguet will be used. It could be easily found, in the future, replacing hydroxycitronnellal, giving a new twist to so many fragrances and many bases that use the aldehyde as an indispensable lily of the valley note. However, the price must come down in order for its success to be assured. This material is extremely nice to mix with other softer lily of the valley/soft rose chemicals such as dimethylbenzylcarbinyl butyrate, Muguesia, dimethylphenylethyl carbinol (muguet carbinol), n-propyl benzyl carbinol, and Muguetanol, among others. It imparts impressive notes when mixed with Coranol, an accord that will move the senses because both products are vibrant. And, as I wrote before while describing other chemicals, both miraculously activate all the natural mechanisms that bring pleasure to our lives. A fantastic accord is Coranol, Super Muguet, Orangeox, thio terpineol, sinensal, Silvial, *trans*-2-tetradecenal and orange pyridine — this is the heart of the captive base Muguelone. I expect great success for this outstanding chemical, one of the top Burmese rubies described in this work.

2,3-Dihydrofarnesol: As is known, the key chemicals that compose the natural flower of lily of the valley (muguet) are not aldehydes but alcohols. The best naturally occurring product is 2,3-dihydrofarnesol. In the living headspace of the flower of muguet, this chemical is indeed the most important chemical. It is an extremely nice and unknown material. Its character is soft, long lasting, subtle, deeply bright floral, and tender as the smell of a garden of delicate flowers on a slightly windy day. I believe this material will ascend within our industry as strongly as similar products, particularly aldehydes [Adoxal (Givaudan), Oncidal (Symrise), dihydrofarnesal, etc.]. 2,3-Dihydrofarnesol blends extremely well with dehydronerolidol, oxo-nerolidol, *trans,trans*-farnesol, Profarnesol (Symrise) (the corresponding alcohol to Oncidal), nerolidol, Florol and Majantol, in addition to soft jasmine chemicals such as hedione, Paradisone, epi-methyl jasmonate and oils such as cabreuva, ambrette seed oil, angelica root oil, the unknown nerolina from Australia, araucaria from New Caledonia (an unusual essential oil based on eudesmols like amyris, but smelling of a velvet fruity note that is simply outstanding — it possesses wonderful softness and fantastic potential for new effects), white musks such as Habanolide (Firmenich), Exaltolide (Firmenich), Scentolide (*cis*-iso-ambrettolide), hexadecenolide Globanone 100 percent (Symrise), ambrettone isomuscone and ambrettolide, and the best floral musks, especially glycols de rose. 2,3-Dihydrofarnesol works magnificently with α-irone, pentambrette, aerangis lactone and, especially, myrrhone, which produces indescribable accords. I have also tried a fantastic accord of 2,3-dihydrofarnesol with natural bisabolene ex lemon and bisabolol, natural farnesene (a product containing around 70 percent β-farnesene and 20 percent δ-cadinene, which twists 2,3-dihydrofarnesol towards gardenia) and the previously mentioned cadimenene. 2,3-Dihydrofarnesol will emerge sooner or later. I have plenty of captive bases, particularly the Vermuguene series, based on the living headspace of the flower of muguet.

3,6-Dimethyl-1,6-octadienol: It is well known that nerol, a very rose alcohol, is *cis*-3,7-dimethyl-1,6-octadienol. This constitutional isomer, radiant of novelty, smells wholly of lily of the valley. (The mysteries of chemistry!) Due to its youth, the material will be described in the next installment of my writings. This is another instance of what happened with coumarone and nerolione. I believe it is these chemistry mysteries that give meaning to life, that they make being human exciting. Indeed, soul, spirit, intuition, astonishment, emotions and myths are the most important parts of our subdued lives. Like Paul Gaugin used to say, "Hommes bien intentionnées."

"Forgive those poor artists that are still children. Please be merciful with them and comprehend their spirit by loving the flowers and the most heady scents…" It is a touching, hopeful and sad phrase at the same time.

Dihydrofarnesal: This is 2,3-dihydrofarnesol's corresponding aldehyde. It is more intense, and blends extremely well with the alcohol. It is a great chemical, not only in imparting muguet accords, but again, as in the case of *trans*-2-tetradecenal, in contributing to subtle flowers such as frangipani, magnolia and champaca. By itself, it smells closer; to these "sacred" and revered flowers than muguet. It also works very well in all kinds of transparent accords similar to those mentioned while describing 2,3-dihydrofarnesol. Sometimes I mention very new chemicals not yet used, believing that they will affect perfumery. I do this because the essence of these writings is what has made, makes and, according to my individual intuition, will make possible the evolution of perfumery. I did this in the case of the damascones and β-damascenone. I did this while describing calone in 1978, at the time a totally unused chemical.

Muguesia — 3-methyl-4-phenyl-2-butanol: This material has long been used in a captive capacity, and now has been released. Muguesia is not as revolutionary as Super Muguet, which is very bright flowery. Muguesia's scent leans more toward muguet alcohol (described in the third part of these writings), Muguetanol,

Centifol (dimethyl phenylethyl carbinol) and methylethyl phenylethyl carbinol. Muguesia blends well with soft muguet chemicals, especially Majantol, but also with the forgotten cyclomethylene citronellol and 3-(4-methylcyclohex-3-enyl-1)-butanol. (Both are quite synergetic, and if the mixture is blended with Lilial, Lyral, an aliphatic aldehyde [especially the C13 (n-Tridecanal)], magnolan, bourgeonal and cyclamen aldehyde (one of the best chemicals ever synthesized), we can achieve fantastic results.) Again I mention araucaria for blending and harmonizing these accords, which also blend well with cabreuva, pei mou, copaiba and cangerana. Accords of Muguesia with Centifol ether and coumarone are also great. Softness and vibrancy are a must in perfumery. Muguesia is softness, while Super Muguet is vibrant. Muguesia also blends well with cinnamates such as benzyl, methyl, ethyl and cyclohexyl, tolu derivatives, and is enhanced by the mixture of ambrocenide and amber ketal.

Rose Chemicals

In the past, I said that Phenoxanol (IFF) was going to change the perfumery. Well, again I was absolutely right. Phenoxanol and its diffusion are a hallmark in our formulas today. However, I have also previously mentioned products like Peonile (Givaudan), Florol (another jewel that, just like hedione and helvetolide [and some other chemicals], is close to the heart of what we see today as a fragrance). I would like to add several others to this growing list.

β-***Phenylethyl anthranylate:*** This is an old product, though not widely used. In my opinion, perfumers should consider it more seriously because it smells very close to many shades found in rose absolute. β-Phenylethyl anthranylate works fantastically well with β-damascenone, and both are extremely natural rose-smelling ingredients. β-Phenylethyl anthranylate also blends well with geranyl crotonate (a more geranium chemical), Peomosa (IFF), cortexal (p-ethylphanylacetaldehyde), syringa aldehyde (p-methylphenylacetaldehyde) and Geranodyle (Givaudan). The material blends well with the extremely fine qualities of citronellol (another key product that many do not select properly since its technical qualities have very disturbing sides — Citronellol 96 [Millennium]) and Citronnellol Extra (Givaudan) (a synthetic, more expensive material neglected by many that know nothing about the sensitivity of perfumery and thus are swayed by price considerations; Citronellol Extra it is almost perfect, and even more beautiful than citonnellol ex citriodora, and almost as beautiful as laevo citronnellol). β-Phenylethyl anthranylate imparts extremely

important character to roses, by far more natural that those achieved with Rosacetat. It works very well with the most floral musks, Velvione (Givaudan), Globanone 100 percent and isomuscone, and naturally with floral woody chemicals such as vetyveryl acetate and vetiverol. I consider it an important chemical and I am sure, sooner or later, it will become widely used.

Rosoxime — (1R,4S)-3-p-menthanone oxime: This is another unknown and impressive captive chemical. It is earthy, green, rosy, geranium, musk and floral, smelling of a certain part of the greenness found in fig leaves. In the past, I often worked with Bromarose (1,3-dibromo-2-methoxy-4-methyl-5-dinitrobenzene) until environmental and other problems forced the end of this chemical's production. Its replacement was very difficult — it was used in great perfumes such as "Tea Rose" by Perfumer's Workshop, one of the greatest US successes. In short, it was a must. Well, again chemistry produced a miracle. Rosoxime has no structural resemblance with Bromarose, yet it smells about the same. I love the possibilities of Rosoxime with o-methoxy benzyl ethyl ether, (another component of "Tea Rose"), but it also produces beautiful accords with rose oxide high *cis*, furane de rose, neroloxyde and dihydroneroloxide, Stemone (Givaudan), Octalinol (which makes a revolutionary synergism between its typical cassis bud note and the metallic rose vibrations of Roseoxime), etaspirene, Labienoxime, Sulfocassione, the impressive naturally occurring Cassisthiol and many others. Rosoxime blends extremely well with our base Vert de Roses and Musk Fuitée. It also blends very well with powdery rose notes, creating a beautiful accord with both Muscenone δ, Exaltenone, isomuscone and Globanone 100 percent. In addition, Rosoxime blends very well with Florol and structures like Rosyrane and Doremox (a powerful rosy note with nuances of parsley and pear). Rosoxime is very stable: it will surely find increasing use.

Geranyl crotonate: This is another rose and geranium soft chemical. It is subtle and pleasant and smells between rose and geranium, although it is more intensely close to the floral-greenness of geranium leaves. The material works very well with Florol and ethyl linalool, creating a very elegant and fresh rose petal note. Geranyl crotonate makes good accords with benzyl and phenylethyl cinnamates and is extraordinary with ambrocenide, Timberol (Symrise) and amber ketal. It also blends well with Tetrascone, creating a very natural rose-floral-tobacco note that is quite interesting.

Geranodyle (Givaudan) — 1-hydroxy-2-(1-hydroxyethyl)-5-methylcyclohexane: This is a very new note between geranium and rose. It possesses shades of old baccartol, though is stronger and natural. It combines very well with the damascones, damascenone, cinnamic alcohol and cinnamyl esters, in addition to mint derivatives like the captive Isomint. Naturally, it blends well with geranium formates (geranyl and citronellyl), tolu and Peru derivatives, and musks. Accords of Geranodyle with dimethyloctanyl formate are also very good, as are accords of geranodyle with Roman chamomile and other wild chamomiles.

Rosilial (Rhodia) — citronnellyl lactate: This is another soft, rose/geranium note full of rich tonalities. It works in synergy with geranyl crotonate, imparting a nice citrus shade (very elegant and natural) to the mixture. Rosilial creates beautiful accords with Globanone 100 percent because this musk, whose price can be afforded by functional perfumers, is amongst the most floral of musks. The blending of Rosilial, geranyl crotonate, Globanone 100 percent, Exaltolide, ambrettolide, Habanolide, isomuscone, Moxalone (Givaudan), and green floral chemicals such as *cis*-3-hexenyl salicylate or benzyl salicylate is very natural and innovative — the result of Rosilial's new (and quite characteristic) rose note. Roslilal also works very well with lily of the valley chemicals, Florol, and cyclohexyl salicylate, which is the most stable of the salicylates in fuctional perfumery.

Rosalyptus (Rhodia) — N-N-diethyl-2-ethylhexanamide: This material initially smells pleasantly of rose absolute, and then of eucalyptus on dry down. What is impressive here is that eucalyptus is normally a very ethereal top note, while in Rosalyptus this specific tonality of eucalyptus comes when the product is quite evaporated.

Jasmine

Paradisone — (+)-cis-(1R,2S) methyl dihydrojasmonate: This is one of the greatest chemicals I have ever smelled. As many people may know, hedione is racemic. It is mainly a combination of (+)-*trans*-(1R,2R), (-)-*trans*-(1S,2S), (+)-*cis*-(1R,2S) and (-)-*cis*-(1S,2R).

The chiral iromers (-)-*cis*-(1S,2R) and (-)-*trans*-(1S,2S) are very weak, while (+)-*trans*-(1R,2R) is stronger — its scent has a heavy, narcotic, jasminic floral and even cheese-like earthy note that is difficult to describe. However, it is much weaker and very different when compared to the "key" chiral isomer — (+)-*cis*-(1R,2S). The latter is precisely the main chiral isomer of Paradisone. Paradisone is the subjective mystery of hedione; its contents in Firmenich's hedione are around 5 percent. The other isomers distort the great auratic and diffusive effect of hedione, being (as said before) heavier and with a certain "mushroom" tonality.

It is very funny, but I firmly believe that most perfumers know nothing about hedione, the major ingredient in modern

perfumery since 1966 when Edmond Roudnitska used it in "Eau Sauvage." At the time, hedione was largely unknown and simply named N378B. When, in 1968, I was with Roure Bertrand Dupond in Grasse, a period in which I combined perfumery with my chemistry studies at the University of Nice, I remember many perfumers trying to copy "Eau Sauvage" and talking about the "magic" of the original product, which they could not match. Well, everybody now knows that this magic was hedione. Now, and I beg the pardon of those that won't appreciate my opinion (which is, after all, the point of these writings), I have my own personal hedione — Firmenich's. It is, after all, the company that invented it. Firmenich's hedione flows, flies, diffuses with charm and grace through the air because it does not contain many impurities that can tend to make the product heavier and "mushroomy." Impurities destroy the charm of the chemical. The Firmenich material is distilled well, probably in the intermediate step. Other productions of hedione that I have used lack at least 50 percent of this subtleness and delicate diffusion, in addition to being bogged down with impurities. Warning: if we do not smell properly and only check a GLC/MS analysis of a material, we will mistakenly believe that 90 percent *trans* + 10 percent *cis* methyl dihydrojasmonate makes a proper copy of hedione. How far from reality! Many people coldly inject cheap hedione versions into GLC/MS without smelling the material, and are thus imbued with a false sense of comfort. "Well, I save 3 euros per kilo," these practitioners say, "what greatness." To me, these mistaken colleagues are what I call (in French) "des imbéciles heureux," or as Georges Brassens used to sing with great sensitivity and wisdom, "quand on est con, on est con…" Perfumery is a complicated profession, and without a proper observation and deep and serious professional evaluation of the materials used, nothing of import can be achieved.

How many times did I discuss this matter with Edmond Roudnitska? Without knowing it, we were simply trying to find the "heart" of the material, desperately looking to unveil the secret of hedione, which was hidden like the old Egyptians mummies. Roudnitska was simply looking for the lovely Paradisone — this was his obsession. He wanted a product that seemed out of reach without knowing the great secret lay within the mysterious isomeric mixture of hedione. I know because we discussed this many times. Roudnitska wanted to give a deeper reminiscence of lemon peel that was floral and hesperidic to "Eau Sauvage" and, later, to "Diorella" and his many other fragrances. These aspects, of course, are dominant in Paradisone. But hedione and Paradisone are different; still, they can find different usage.

Perfumery is empiric, and in this material society in which we live we do not have time to observe — we must decide quickly, work quickly, and we must buy inexpensive (if not cheap) materials. The results are predictable. For example, the qualities of cheap methyl dihydrojasmonates lack all the charm of hedione lost.

Paradisone, which mainly consists of around 85 percent (+)-*cis*-(1R,2S), 9 percent (-)-*cis*-(1S,2R), 5.1 percent (+)-*trans*-(1R,2R) and 0.9 percent (-)-*trans*-(1S,2S). Paradisone is an explosion of smell. About 94 percent epimerized, it is by far better than Hedione HC (Firmenich), a product that although good, is less pleasurable than the simpler hedione and, naturally, Paradisone. Paradisone is not per se more stable than Hedione HC; however, it smells much stronger because after decomposition Hedione HC reverts back to hedione, while Paradisone reverts back to the thermodynamic mixture of 90 percent (+)-*trans*-(1R,2R) and 10 percent (+)-*cis*-(1R,2S). The (+)-*trans*-(1R,2R) is the stronger smelling *trans*, so it is not diluted by the odorless (-)-*trans*-(1S,2S) and (-)-*cis*-(1S,2R) isomers — at least under normal decomposition conditions. That is why, in comparison with Hedione HC, it seems stronger, even after decomposition, despite that it is chemically not more stable. (This instability is the result of the fact that the material is an isomer, so it has physical properties similar to Paradisone.) Paradisone is one of the most unbelievable molecules I have smelled in my life. It is a pure storm of delicacy and diffusion — the most radiant product I have smelled, even more so than the radiant helvetolide.

Here we are facing a chemical that is affecting the evolution of perfumery in ways that will be felt in coming years — or perhaps even decades. One smelling strip in a 70 m^2 room diffuses the space with angelic impressions of millions of flowers. Again, as a perfumer, I must publicly say thank you to the chemists because this material's synthesis was not easy at all. On the contrary, it appears that helvetolide's creation was yet another in a long line of chemistry's miracles, a list that includes racemic, laevo and dextro ambrox.

I now dream of the day we will have both Paradisone and what I call α-teascone, the latter of which, as mentioned before, is the chiral great isomer of α-damascone, naturally found in tea — a material that is around 100 times stronger than normal α-damascone. Paradisone is a perfume by itself. Paradisone is soul, myth, charm, emotions, freedom, tenderness, wisdom, eternity and beauty. The material makes us feel the essence of perfume and the sides of our lives that are not rational. The need to feel happiness, spiritual plenty,

pleasure and subjective feelings are the essence of perfumery. These desires elevate perfumery to the level of art. Paradisone gives us access to this.

Green-Violet

This is not to be confused with wood-violet. As I said before, violet flower oil, if made, would be the most expensive perfumery material on the market. In addition, the violet leaves are by far less floral than green. This family has several outstanding chemicals.

Parmanyl (Symrise) — 3-(cis-3-hexenyloxy)-propane nitrile: This is indeed an outstanding chemical. While the flower of violet may be synthesized with α and β-ionones, dihydro-α and β-ionones, and synthetic products like the methylionones, dimethylionones, etc., the keys to violet leaves are *trans*-2-*cis*-6-nonadienal and *trans*-2-*cis*-6-nonadienol. These latter two chemicals are excellent but very expensive. Parmanyl is a new nitrile, an extremely stable material that smells very close to violet leaf absolute. Again, as in so many cases, such as Bromarose, Rosoxime, linalyl acetate, sclareolate, citral and citronone, Paramyl is a relatively unknown new jewel that is awaiting final patents and tests, and which will be widely described in a future edition of my writings. As in many cases, Parmanyl, being a pure nitrile, smells miraculous. The material is by far more natural than much more expensive violet nitrile and iris nitrile. It is a very young green note that has already been used in a very important fabric softener in which it imparts a noticeable violet note. However, its use is not limited to fabric softeners, instead finding application in many functional products such as hand liquid soaps, liquid and powder detergents, shampoos, natural products like candles, cosmetics, toilet soaps, air fresheners. Parmanyl is a great chemical that imparts its unusually clear and vibrantly young green violet note to many compounds. Needless to say that it blends fantastically well with methylionones, damascones, ionones, dihydroionones, jasmine products like epi methyl jasmonate, α-ionol and α-ionyl acetate, *cis*-jasmone, irones, myrrhone, and *cis*-3-*cis*-6-nonadienol (watermelon alcohol — not to be confused with the violet leaf alcohol and aldehydes mentioned previously, with which Parmanyl also blends well). Parmanyl makes distinctly green accords with *cis*-3-hexenyl acetate, *cis*-3-hexenol and Pearlate (Bedoukian) (an unusual new green-fruity note).

Violettyne MIP (Firmenich) — 1,3-undecadien-5-yne: This is one of the strongest violet leaf materials I know. This chemical is never used pure, but instead at around 10 percent solution in MIP, thus its name. The material has a similar tonality to Parmanyl, though less metallic and more oily-herbal, green bean-like. Violettyne MIP is a very elegant note that imparts its charm to accords in which it is used. These charms are quite similar to those described with Parmanyl. Violettyne MIP works very well with petitgrain bigarade oil and ginger from China, the latter of which creates great spicy accords. I also Violettyne MIP when mixed with Taragol and Toscanol (Givaudan) (1-cyclopropyl-methyl-4-methoxybenzene — a totally unknown anise-liquorice and sassafras oil chemical). Violettyne MIP is less long lasting than Parmanyl; the chemicals are quite synergistic with each other, producing and enhanced green-violet leaf note when mixed. Violettyne MIP, like several other key materials, is shaping the progress of perfumery — modifications of violet fragrances like "Fahrenheit" are wonderful when smelled deeply. Violettyne MIP also blends well with "ozone" chemicals. One such great accord is made with Parmanyl, Violettyne MIP, calone and Fleuranil (IFF). When blended with helvetolide and the white macro cyclic musks, a modern violet fragrance results — something simply unthinkable a few years back.

Violiff (IFF) — 4-cycloocten-1-yl methyl-4-carbonate: While Parmanyl and Violettyne are totally new violet chemicals, Violiff, a key captive chemical for many years, is a modifier for more classical green violet odorants such as methyl octine carbonate, methyl heptine carbonate and methyl decine carbonate. Violiff is more long lasting than Violettyne MIP and Parmanyl, but not as elegant as those described before. The material has shades of fatty aldehydes such as 2,4-decadienal and 2,4-undecadienal that (according to me) kill the cleanliness found in the two previously described odorants. Violiff is a part of the international base Violone, although it is not the only captive there. The material is good with floral woody and woody chemicals and blends well with metallic, fruity pineapple-like and galbanum products such as Dynascone (Firmenich), Neobutenone, Spirogalbanone (Givaudan), Pharaone (Givaudan), and Galbaniff, among others. I also like the effects of Violiff with Sulfox or the minty-bucchu note imparted by 8-menthatiol acetate. In addition, its effects with Sulfocassione, Cassiffix (IFF) and Prismantol are quite nice. (The latter material blends very well with ginger notes, as does Violiff.)

3-(5-Methyl-2-furyl)-butanal: This is not a well-known aromatic chemical that, for reasons I cannot comprehend, is mostly used in flavors. The material is extremely strong and thus must be smelled at high dilution, under which conditions it smells of a combination of green violet and frankincense, tonalities also found in the marvellous Cetonal (Givaudan). Methyl furyl butanal works well with violet nitrile

and iris nitrile. I cannot say this strongly enough: it must be used with *extreme* care, at very small traces.

Cetonal — 2-methyl-4-(2,6,6. trimethylcyclohexen-2-yl)-butanal: If Violiff and methyl furyl butanal are violently green violet, cetonal is delicately and velvety floral green. Cetonal has as methyl furyl butanal shades of frankincense. It is the heart of my base Incentsia in which I use some of the chemicals mentioned before, including galbanum and unusual juniper berry odorants that will be described in Part VI, in addition to dihydro-β-ionone, boronal, boronia absolute and other strange and rare new ingredients. Cetonal is extremely soft, and its accords with Cashmeran, dihydro-α-ionone and other amber odorants are paramount. Cetonal is fantastic in an accord with nor limbanol, ambrocenide, Ysamber K (Symrise), ambrinoloxide and Somalian frankincense oil (which is different than the Omani frankincense, yet still imparts interesting effects). I could spend hours mentioning the accords achieved with cetonal, but this would go beyond the bounds of this already long work. Suffice it to say that the material is impressive and one of my favorites.

α-Ionol: This is a great and ignored chemical. It is not far from cetonal, characteristically, but is weaker and less frankincense-like. α-Ionol is by far more green-violet than α-ionone, which is more floral-woody-fruity. α-Ionol has a very interesting tobacco tonality as well. Because there are so many, it is quite difficult to say what the best woody-floral and green-floral-violet chemicals are. To me they all possess advantages: top grades of diverse methylionone isomers, α-ionone, β-ionone (which is more orris-like), dihydro α-ionone (which is strongly amber with 1,000 different nuances), dihydro-β-ionone (more violet and less ambery), and dimethylionone, a great chemical. I believe that as in the case of musks, the best material is in fact the synergistic combination of several of them. Unfortunately, α-ionol is not widely used. This is a mistake because from within its charming molecule flows a torrent of floral character.

α-Ionyl acetate: This is less green than its corresponding alcohol, and is on the borderline between green-violet florals and woody-florals, though it is more elegant. Mixtures of α-ionyl acetate, methylionones (especially the greater of them), cetone α, Raldeine AGV (Givaudan), Xandralia and Iralia, dimethylionone, methyl-α-ionone glycidate, vetyveryl acetate, Vertofix Coeur and a touch of allyl ionone are simply great. They diffuse class and beauty. Even α-ionyl acetate and vetyveryl acetate alone together form a great accord of unsurpassed elegance. We have discovered dihydro-β-ionone and rediscovered β-ionone. A great tread forward will be to increasingly use this charming chemical, which is one of the greatest green-woody-floral materials I have smelled. Its mixture with ambergris chemicals like boronal, ambrinol and ambrinol oxide, ambrox or laevo-Cetalox (Firmenich), and the unknown and extremely interesting dihydro-γ-ionone is really exceptional. The woody-floral diffusion is tender and soft, and when the product is finally incorporated in a great perfume, the material will finally get its due.

Floral Fruity — Pineapple, Pear

Anapear — methyl octa-4,7-dienoate: This is a very noble and delicate material. It is fruity and green, with shades of pineapple and pear, which is why it is called Anapear. The material is very refined, and is more green and less pineapple-like and lactonic than ethyl octa-4,7-dienoate, methyl *cis*-4-octenoate or ethyl *cis*-4-octenoate (all very good chemicals as well). Anapear is more green and less apple than ethyl 2-methyl-3,4-pentadienoate, methyl 2-methylpentanoate, ethyl 2-methyl-3-pentenoate (Fruitaleur), methyl 2-methyl-pentanoate (Manzanate) and Prassinate (which is more liquor-like), but at the same time it is more pineapple when compared to those materials.

Anapear has been used in many perfumes because it creates a beautiful harmony when mixed with ethyl *trans*-2-*cis*-4-decadienoate — the so-called pear ester. It rounds off the top note, and even in trace amounts its effects are remarkable.

The first time we saw the accord Anapear-pear ester was in "Emporio Armani pour elle," and lately in "Higher" from Dior in which these two materials combine in a very creative accord with Peranat (Kao), a trace of melonal, and a fresh citrus (methyl pamplemousse) woody, marine (calone), musky (Velvione, ethylenebrassilate, Habanolide, ambrettolide), geranium, nutmeg, Cashmeran, etc. Anapear it is starting to find wider use, and in the future will affect many top notes with its diffusive and elegant green fruity note, which is full of harmony by itself.

I would also like to mention ethyl octa-4,7-dienoate, methyl *cis*-4-octenoate and ethyl *cis*-4-octenoate, all of which are extremely natural pineapple chemicals. By themselves they smell of the most intimate part of pineapple. They are fruity and lactonic at the same time, unlike Anapear, which is fruity and green. I would like to see these chemicals used in perfumery, although now they are mainly flavor ingredients. However, a trend in fruity scents is proving increasingly more and more fashionable, which will bring these great products to the palettes of many perfumers.

The products mentioned before in comparison with Anapear and other fruity odorants — ethyl 2-methyl-2,4-pentadienoate, methyl 2-methylpentanoate, ethyl

2-methylpentanoate (Manzanate) or ethyl 2-methyl-3-pentenoate (Fruitaleur) — are more apple-like, though very diffusive. The more widely used of the group is Manzanate, which may result from its heavy promotion.

Fruitaleur — ethyl 2-methyl-3-pentenoate: This material smells of cherries, apple and grape, and is extremely powerful. I like to use it in tropical fruit accords along with 3-thiohexanol, Passifloran, oxane, 3-thiohexylacetate and even a totally different molecule, Centifol ether. Fruitaleur is important in increasing the diffusion of the top note when large amounts of dihydromircenol, tetrahydro linalool and Mefloral (meta-lilial, not to be confused with lilial, which is the ortho isomer) are present. Fruitaleur blends well with lactones and ethyl crotonate, which is synergetic to it.

Peranat (2-methylpentyl 2-methylpentanoate): This material is green, herbal and especially fruity — a great note that combines very well with green materials such as Liffarome, *cis*-3-hexenyl acetate, Aladinate, *cis*-3-hexenyl *cis*-3-hexenoate, *cis*-3-hexenyl 2-methyl-2-pentenoate, hexyl 2-methyl-3-pentenoate, Triplal (IFF), and leguminal, in addition to violet-green-fresh odorants, especially the outstanding Parmanyl and Violettyne MIP. Peranat is less sharp than many of the products described in this chapter, and can be used in higher proportions since it has an herbal note that is more easily blended than fruity-dominated notes, which tend to be quite aggressive (and thus should be dosed very carefully). I very much like an accord of Peranat, Anapear, Aladinate, Nectaryl (Givaudan), methyl tuberate and furaneol that diffuses extremely well, creating a beautiful synergy. Peranat and Anapear impart here a pear-pineapple green note, while Aladinate produces a green-strawberry/apple note — both are softened by the great natural fruity-caramelized pineapple-strawberry note of Furaneol. In addition, they are all enhanced by two of my favorite chemicals, already described: Nectaryl and methyl tuberate. Peranat also blends extremely well with methylpentyrate and allylphenoxyacetate, especially when blending them with coumarin and coumarin derivatives (ethyl laitone, coumarone, Florex, Coumolide, tricyclone or octahydrocoumarine). Beautiful accords of chamomile can be achieved with these ingredients and a bit of creative skill.

Prassinate: This is a very particular fruity, winy chemical that is quite strong and diffusive. It smells very naturally of apple, grape and other fruits, in addition to licorice. I like accords of it with mettambrate, Rhumacetal, succan absolute, fruity esters and Nerolione (Symrise). Prassinate is also good with lactonic ingredients such as Nectaryl, decenylcyclopentanone, wine lactone (a great new naturally occurring product that will be described in the next installment of these writings), Anapear and ethyl octa-4,7-dienoate (the ethyl ester related to Anapear). I like Prassinate because it is a very interesting, elegant multi fruit/licorice note.

In Part IV of my writings I mentioned several great floral fruity chemicals smelling of melon and watermelon, including methoxymelonal, *cis*-6-nonenal, *cis*-6-nonenol, *cis*-6-nonenyl acetate, calone, Helional (IFF), floralozone and the great *cis*-3-*cis*-6-nonadienol (which possesses an incredible juicy-fruity watermelon natural tonality).

I also mentioned the cassis and bucchu family with "key" products like neocaspirene that was used for the first time in dewberry base. It is finding increasing use for the singular, indescribable note it imparts. The material is still absent from most laboratories, though it has been used lately in fragrances like "Kenzo le monde est beau" in which the material makes a great accord with theaspirane, a jewel that long ago I predicted was going to be used. It also turns up in the formulas of "Fiorucci" and "Angel Innocent."

I have previously described other products in this family, including isospirene (a key ingredient of the famous cassis base) and etaspirene (to me superior to all its isomers — isospirene, neocaspirene and etaspirene are constitutional isomers). One scents employing some of these materials is "Courreges 2020," an extremely creative perfume that is quite novel and radical enough to be nearly indescribable. In this fragrance we see etaspirene forming a cassis accord with fruity, herbal and green ingredients, including methyl cyclogeranate, ethyl caprilate, Verdox (IFF) (ortotertbutylcyclohexyl acetate), prenyl acetate, *trans*-2-hexenyl acetate and *cis*-3-hexenol, all harmonized by a combination of helvetolide and Firsantol. A second remarkable example of what etaspirene can do can be seen in "Pleasures" by Estée Lauder. I love this fragrance (although it can be easily improved with Paradisone), just as I love "Kenzo Le monde est beau."

Octalinol: this is another key chemical. It smells of cassis and has been used in important fragrances, including "Oxygene" for men and "Pamplelune *Aqua allegoria*," whose freshness and citrus radiations, emanations and exhalations are like a blessing from nature.

Labienoxime is an incredibly strong chemical that, to me, is even more interesting than the more famous neocaspirene. Labienoxime is more metallic and less fruity than neocaspirene — the former is stronger than the latter, yet its unique note gives accords of an incredible beauty and harmony, especially when skilfully dosed with thioterpineol, 8-menthatiol acetate and Sulfox (p-mercaptomenthanone). Both Labienoxime and thioterpineol are unique

jewels, as is Buccoxime (Symrise). A fantastic accord is the one mixing Labienxoime, Buccoxime and isobutylcyclamide with methyl pamplemousse. This is by far better than methyl pamplemousse alone. Labienoxime and Buccoxime typically blend fantastically with grapefruit odorants such as methyl pamplemousse, Decatone (Givaudan), dimethyloctenone, Floralate, thio terpineol, thiogeraniol, Vertacetal coeur (Symrise), Rhuboflor, α-vetyvone, dihydronootkatone, isobutylcyclamide and nootkatone, in addition to tropical fruit chemicals such as Tropathiane (4S *cis* and 4S *trans* 2-methyl-4-propyl-1,3-oxathiane), oxane and the great Passifloran (one of the best tropical fruit ingredients ever synthesized). A base that gives me much pleasure (it is my own creation) is a cassis-grapefruit accord called Buccovert Forte, which benefits from the outstanding harmony of these materials.

Cassis

Cassisthiol: This is an unknown product and one of the most powerful I have ever smelled. The material is naturally found in cassis bud absolute, the most important part in the top note (at least as important as sulfox). Cassisthiol is quite volatile — an impact chemical — and should be used at high dilution. As mentioned before, I made a base called Vert de Roses that is incorporated in one of the top fabric softener fragrances in the world. However, this base is composed of many captive chemicals. It is very important when trying to improve the top notes of natural, fruity and herbal shampoo fragrances, and the clean, floral notes of musks such as Nirvanolide (Givaudan), Muscenone, Globanone, Velvione, ambrettolide and especially Moxalone. Vert de Roses, when blended with Berryflor, frambinone crist., Nirvanolide and Moxalone, creates a new accord that I hope will one day win many functional briefings.

Sulfocassione: This material is also a part of Vert de Roses. It is extremely powerful and forms an unusual synergy with Cassisthiol. Both are much better together than separate, as is the case with many macrocyclic musks. Mixtures of Habanolide, Globanone and isomuscone are better and stronger than any of these chemicals smelled alone. This also happens with mixtures of ethylene brassilate, Habanolide, Muscenone δ and ambrettolide, and between Cassisthiol and Sulfocassione — two impact chemicals that form a storm of impact when combined. It is again to point out several materials that will shaped the future of perfumery: etaspirene, isospirene, Labienoxime, octalinol and neocaspirene — all of which make possible some of the most lovely fragrances ever created. I foresee the same success for the previously mentioned Orangeox, which will be described and identified in coming writings.

Fruity — Metallic, Galbanum

Although I have mentioned some of this family's jewels in the past, I have never dedicated a description to several of its members. Galbanum is one of the most complex essential oils in the world. It has sharp metallic green shades imparted by some pyrazines such as sec butyl-2-methoxy pyrazine, 3-isobutyl-2-methoxy pyrazine, 3-isopropyl-2-methoxy pyrazine, and green resinous notes imparted by various undecatriene isomers, the most important being 3-*trans*-5-*cis*-undeca-1,3,5-triene. However, there are some shades that are green, metallic and fruity and I would like to go a bit deeper into these materials. Three of the best known are allyl amyl glycolate, cyclogalbanate and Dynascone. When trying to synthesize α-Damascone, it was noticed that a strong galbanum-pineapple note was confronting the fruity beauty of the pure material, and after long work, two impurities, α- and β-Dynascone, were found and synthesized since they were of olfactory interest. Dynascone was thus born, but this was only the beginning. What is not so well known is that another, better chemical was discovered: neobutenone.

Neobutenone [mainly α-1-(5,5-dimethyl-1-cyclohexenyl)-4-penten-1-one]: Neobutenone is to Dynascone what Paradisone is to hedione. It is somewhat well known that Dynascone consists of two isomers, α- and β-Dynascone. α-Dynascone is bright, delicate, elegant, fruity, galbanum-like, extremely powerful, and has an immense capacity to diffuse and harmonize a fragrance. At the same time, β-Dynascone is weaker, more amber and by far less clean than its isomer. Dynascone consists of around 70 percent of the α isomer and 30 percent of the somewhat dirty, less fruity and more herbal β, which distorts the cleanliness and extreme elegance of the rich isomer. Neobutenone consists of between 88 to 90 percent of the α isomer and only 10 to 12 percent of the β isomer. When compared, neobutenone and Dynascone are like night and day. In my opinion, neobutenone is aristocracy while Dynascone is bourgeoisie. Neobutenone it is bright, clean, radiant, and diffusive and does not have any of the herbal sides that distort its purity. It is a jewel of harmony, when properly diluted. It is a perfume in itself, yet it is wonderful when mixed with perfumery's best odorants, such as Paradisone, myrrhone, nor limbanol, ambrocenide, amberketal, javanol, Belambre (Givaudan), Ysamber K, Cashmeran, ambroxide or laevo-Cetalox, dextro Cetalox (Firmenich), α and β irones, the best methylionones and

dihydro-β-ionone, Muscenone, Nirvanolide, Moxalone, ambrettolide, Velvione, Exaltone (Firmenich), Exaltenone (Firmenich), Exaltolide, and Habanolide, among others. Perfumers who may not know of neobutenone must have a lot of patience, using only Dynascone. Unfortunate for them. Just recently I modified a "Bvlgari Omnia" accord with neobutenone. It was absolutely heaven. The strong, diffusive musk accord that marks this fragrance (with at least 13 percent helvetolide) diffused even better with a mere trace of neobutenone. An accord of neobutenone, nor limbanol, Ysamber K and ambrocenide is also amazing. The radiance that neobutenone imparts to those lovely woody and woody amber odorants is in stunning contrast to the sometimes gray world in which we live. When smelling the accord at a very strong solution, it reminds me of the "pink cloud" in which Plato liked to find peace at the end of its life. When confronted with materials such as neobutenone, one must ask: is there any connection between perfumery and philosophy? Naturally, yes. I would like to insert the verse of an anonymous Central Asian writer from the Middle Ages who lived in then blossoming Samarkand (in modern day Uzbekistan), called the exotic paradise of the Old Persian Empire. This wise anonymous man's poem of the rose went:

Every bush of roses, a feast for the eyes
Grows from ashes of beauty
Every glade of grass we trod on,
Grows from hearts filled with emotions
only yesterday…

The wisdom missing from our technophilic and frigid age was well understood by this anonymous poet, citizen of the legendary Samakand, a monumental city that was quite isolated and characterized by a high conservative thinking in which only emotions were felt beneath the starry nights of Central Asia. I recall the world's great poetic and artistic works when smelling jewels like neobutenone, Paradisone, nor limbanol, myrrhone, ambrocenide, amberketal, irones, Ysamber K, Muscenone, Exaltone, Nirvanolide, Moxalone, Super Muguet, Pharaone, Belambre, the damascones, and β-damascenone, among others. Why? Because beauty, wisdom, freedom, as sensitivity are all intertwined. We live surrounded by the most important cardinal mysteries of life, those that distinguish cultured, sensitive and tender people from the indifferent. Perfumery, when properly understood, is for those who believe that a different world it is possible. Unfortunately, this different world it is more distant than the beauty already achieved with perfumery, our lovely profession.

Pharaone — 2-cyclohexyl-1,6-heptadien-3-one: This is an incredible and beautiful chemical. If neobutenone is more fruity pineapple, Pharaone is simultaneously citrus-grapefruit and galbanum-like. While Pharoaone differs from neobutenone, it does possess about the same strength and retention time in GLC/MS (Carbowax). Pharaone, though, is fresher, and although very new I see a fantastic future for the material, especially for eaux fraîches and fresh products. The material would serve to make such products more diffusive, while marking them with its galbanum citrus note, infusing applications with an indescribable charm. Accords of Pharaone and Labienoxime are great, as are Pharaone's effects with Orangeox and Haitian bitter orange oil (one of the most beautiful citrus essential oils in the world — in fact, Edmond Roudnitska's favorite citrus essential oil). However, I do not see Pharaone restricted to just these applications. Accords of Pharaone with cedrat coeur, expressed lime oil, grapefruit oil and various grapefruit chemicals are so novel that one can foresee a compelling age coming for this sensational chemical. When mixed with spirogalbanone, its fixation improves greatly, and its effects mark the fragrance from the top note to the last remaining dry down. Pharaone diffuses sensationally with hedione and Paradisone and produces good accords to with helvetolide and all the floral musks. I recently modified of a rather new musk fragrance, "Bvlgari Omnia," which contains large amounts of helvetolide, Habanolide, hedione, Muscenone, ethylene brassilate and Galaxolide (IFF); the addition of Pharaone and neobutenone changed the product, raising its intensity and boosting the excellent white musk heart of the fragrance, making it more lively, bright, young and diffusive. Pharaone will certainly be a key chemical affecting the beautiful evolution of perfumery. I am very impressed with this chemical, in case you could not tell. The first thing I did when smelling it was to use it in a "Light Blue" accord, and in a "Truth for men" accord. Both fragrances, which were already fantastic, were improved.

Galbaniff — 1-(3,3-dimethylcyclohexyl-1)-4-penten-1-one (dihydro dynascone): As I have said before, all of these molecules have an extreme diffusion in common (a 1 percent solution smelling strip perfumes a 20 m^2 room), and a fresh, green, galbanum-like, fruity scent. Yet there are distinctions. Neobutenone is radiant and fruitier than Pharaone, which is more citrus-grapefruit-like, while Galbaniff (dihydro dynascone), the key chemical of galbanol oliffac, is greener, rosier, β-damascone-like and less fruity α-damascone-like than neobutenone. Please do not misunderstand me: I do not claim that Galbaniff is like β-damascone and that neobutenone

is like α-damascone. Those materials are extremely diffusive green-galbanum-like chemicals. All these chemicals work very well with so many fragrances, but combine particularly well with woody, floral, citrus and exotic fruit notes. As I said, I would use Pharaone mixed with citrus and fresh fragrances, neobutenone with florals, and Galbaniff (which I like less than neobutenone and Pharaone) with many compounds. Which one is the absolute best? That is an impossible question. For me, however, a fan of fresh, white musk and citrus fragrances, I would rate Pharaone as the best, just as I might like Rubens while others prefer Van Dyck. What is certain is that the market is pluralistic, and my appreciation is purely individual — I must, as a perfumer, judge what I smell, though there are times I must solicit the opinions of my colleagues in cases in which I do not olfactively register well (civettone, karanal, etc.). When I was with Firmenich as a perfumer, we perfumers met every day from 9:00 AM to 10:00 AM, including with the great Philippe Sauvegrain, Michel Lambert, Roger Pellegrino, Paul Leger, Arturo Jordi Pey, Francis Fabron and others. During these sessions we would endlessly discuss ideas, accords, sensations, feelings, all the while joking with irony and speaking of the ideas and the impositions of the marketing department that at that time. I have always remembered this period as a very great one and I have never forgotten all these colleagues, men that gave everything for the profession, devoting all their best efforts for a company they all loved. To this day I maintain a nice friendship with several of those colleagues.

Spirogalbanone (Givaudan) — 1-spiro-[4.5]-dec-7-en-7-yl-4-penten-1-one: I would like to finish this extraordinary family with this chemical, which is outstanding. Its smell is green-fruity-pineapple, galbanum-like and extremely diffusive. The question is: if we have Pharaone, Dynascone, neobutenone, Galbaniff, allyl amyl glycolate and cyclogalbanate, why do we need more — why do we need Spirogalbanone? Does it make sense? Is it not a complication to have too many ingredients? The answer is: absolutely not. It is not a complication to have a plethora of ingredients. Yes, we need Spirogalbanone. Dynascone, Pharaone, neobutenone and Galbaniff have more or less the same boiling point eluting in a capilar Carbowax column at around the same retention time as β-phenylethyl alcohol, more or less. Spirogalbanone, on the other hand, has a retention time close to Lyral, so while having all the freshness found in the other chemicals, it is by far much more long lasting — this is a supreme characteristic, a radical difference. A 1-percent solution of this material remains on a smelling strip for about two weeks, while the other three chemicals last only two or three days under identical circumstances. Spirogalbanone is thus one of the most important members of this family. In addition, it imparts an important synergistic effect with the rest of the family's chemicals fixing their effects just like Amberketal fixes all the compounds. Spirogalbanone, by the way, is very clean and extremely diffusive. Accords of Pharaone and neobutenone with Spirogalbanone are perceived around 66 percent stronger than those chemicals tested alone. The effects of the mixtures remain much longer than the effects of the individual chemicals when used alone — this was the perception of 97 percent of the people I surveyed. After few days, a 1-percent smelling strip of Spirogalbanone recalls the smell of galbanum absolute or galbanum resinoid, though it is cleaner, and more diffusive and long lasting.

I do not have the time to extend into exhaustive descriptions of accords made with these chemicals, but I am sure good perfumers (there are not so many in the world) will be able to launch off from my starting point. These perfumers will understand that with raw material jewels it is easy to create final formulation jewels. Again, we must thank the chemists. I consulted with Dragoco from 1982 to 1986. In 1982 I was asked to work with two great chemists, Hans Warnecke and Ernst Brunke, in order to merge our chemistry and my perfumery points of view/approach to discoveries. The idea was to bridge R&D and perfumer. Who could be sure at its inception what the program would yield? Well, my memories of those two great colleagues and the time we spent together are among the greatest. Warnecke was always ironic while Brunke was very serious. While respecting them and feeling their reciprocated respect, both gentlement got along very well with me. We worked hard, we talked, we developed goals and acted, we achieved these goals and repeated the process all over again. It was a great experience in lovely Holzminden. We colleagues developed a close friendship and discovered many chemicals that afterwards became big successes, laying the foundations for new and even bigger discoveries. Unfortunately, we were not working in a vacuum. We were not alone. A great deal of our creative work was diluted within the frame of regulatory bureaucracies connected with well known "great" institutions that have, frankly, eroded and obscured the energies and feelings of those of us that appreciate the importance and wonder of research — we who are curious to discover what is beyond what we know today. In the end, it was easier to depart from the consultancy than to bear the meddlers. Sadly, my friend Brunke died very young while on holiday, cycling in the US. Warnecke, a man of great culture possessing a sensitivity to irony's

value in this world, is still working, surely feeling (as we felt together) the peaceful joys of lovely and placid Holzminden.

Green

There are many green notes, but we do not see much creativity in this category since its tonalities are imparted in most fragrances by a handful of products including Triplal, *cis*-3-hexenol, *cis*-3-hexenyl acetate, Liffarome, and to a certain extent *cis*-3-hexenyl propionate, butyrate and isobutyrate. Despite this traditional narrowness, there are many interesting new and old/unused chemicals that I would like to mention.

***cis*-3-Hexenyl *cis*-3-hexenoate:** While related chemicals — Triplal, *cis*-3-hexenol, *cis*-3-hexenyl acetate, *cis*-3-hexenyl propionate, *cis*-3-hexenyl isobutyrate, Liffarome and *cis*-3-hexenyl butyrate — smell mainly of grass, I find another kind of greenness on the green-floral spectrum. *cis*-3-Hexenyl *cis*-3-hexenoate is a member of this subgroup. The material smells powerfully of gardenia petals, but not just gardenia — most flowers' petals, in fact, have a green tonality, even spicy flowers like carnation. When I deeply smell *cis*-3-hexenyl *cis*-3-hexenoate in an attempt to perceive its wonderful note, I detect a general floral tonality that could belong to any number of flowers. The material is green, floral and very delicate, and works very well with top quality sesquiterpenes like bisabolene and farnesene. *cis*-3-Hexenyl *cis*-3-hexenoate combines very well with sandalwood chemicals such as Javanol, Firsantol and Nirvanol; floral-green *cis*-3-hexenyl benzoate and *cis*-3-hexenyl salycilate, jasmine hedione and Paradisone; and macrocyclic floral musks such as Velvione, habanolide, Globanone and ambrettolide, though especially well with helvetolide. *cis*-3-Hexenyl *cis*-3-hexenoate's accords with carnation materials such as isoeugenol, eugenol, Dianthox (Symrise), Carnothene (Symrise) and Centifol ether are also very impressive. This green note is one of the noblest I know. I love to work with gardenia accords that possess the best gardenias in the world, for example our Gardenia Blanche, a scientific reconstitution of the flower that took more than four years of research to be made. What significantly impressive in *cis*-3-hexenyl *cis*-3-hexenoate is its tremendously natural, vegetal petal-like tonality, which is easily conveyed to the soul of fragrances.

***cis*-3-Hexenyl tiglate and hexyl tiglate:** If *cis*-3-hexenyl *cis*-3-hexenoate is floral green with shades of many flowers, the tiglates are clearly gardenia — almost exclusively gardenia. Gardenia is a beauti-

ful white flower with evergreen leaves and large berrylike fruits. I have many of them in my garden, and they are some of the best smelling flowers in the world (however, this impression is diffuse: there is no one gardenia, but rather more than 200 species).

When smelling gardenias, I always recall my four years in the Pacific Islands where I visited New Caledonia, Fiji, Samoa, American Samoa-Pago Pago, Cook Islands, French Polynesia, Tahiti, Bora Bora, the exotically beautiful Marquise islands where I stayed quite a long time in the most beautiful land in the world, lovely Hiva Oa, and naturally Hawaii, where I used to spend all my summers as a child. Culturally, these islands are relatively homogeneous, with the exception of Pukapuka, which was settled by western, rather than eastern, Polynesia. And all these islands love their flowers; there is no Polynesia without flowers and flowers and flowers; they play an active role in cultural life, particularly in song and dance festivals for which the islands are renowned. A small library and museum in Avarua provide the most beautiful collection of exotic flowers I have seen in the world.

Traditional ceremonies have always featured the hallmark of flowers, such as in Hiva Oa's major 10-day national holiday. (A Tiare ["Gardenia"] Festival, a float parade, and a series of song and dance competitions fill the region's annual calendar of festivities.) I do not doubt that my perfumer vocation started in my child summers in Kauai, Hawaii, the greenest, most beautiful and floral of the Hawaiian Islands. When smelling *cis*-3-hexenyl and hexyl tiglates I smell Polynesia. I smell my childhood and great shades imparting the most beautiful fragrances. *cis*-3-Hexenyl and hexyl tiglates blend well with ylang ylang, tuberose absolute, dimethyl benzyl carbinyl acetate, phenylethyl phenylacetate, methyl anthranylate (from my perspective, Givaudan quality only), lilial, nigelle absolute, 2,3-dihydrofarnesol, lyral, *cis*-3-hexenyl salycilate, Super Muguet, benzyl cinnamate, sandalwood chemicals (*cis*-3-hexenyl *cis*-3-hexenoate, Dartanol, Sandalore (Givaudan), ginger lily flower [an unknown jewel], hedione and Paradisone). Can you, the reader, smell the fantastic perfume I am describing? I have created it with success many times. These floral green chemicals are entirely different from green grass chemicals and allow nearly endless flower variations.

***cis*-3-Hexenyl angelate:** This floral-green chemical is more vibrant, greener and less pastel than the tiglate. Again, this is one of the "Polynesian" chemicals that resurrect for me the years lived there. The material blends well with tolu derivatives, nerolidol and dehydronerolidol (an unknown and extremely interesting chemical). I use it in many of my bases combined with 2,3-dihydrofarnesol, ethyl phenoxyacetate and *trans*,*trans*-farnesol, ethyl p-methylphenoxyacetate, *trans*-2-tetradecenal, Haitian bitter orange oil champa attar (a co-distillation of champaca flowers and sandalwood oil that we produce in India) and amyris oil. All these possible accords are supreme. Combinations of these esters with Florol are great. These descriptions are what I call my Polynesian perfumes — fragrances that have a supreme harmony and velvety aura that stir emotive subjective feelings.

Aladinate — 3-methyl-2-hexenyl acetate: This is a totally unknown, elegant, quite specific and powerful green note. It is not as floral as the *cis*-3-hexenyl esters described above, and not as grassy as the traditional *cis*-3-hexenyl esters. Still, this chemical's fantastic harmony touches one's subjective world. Aladinate is very new, a recent fruit of research efforts. It will play an important role in the future of perfumery, setting a new trend in its evolution. Aladinate combines excellently with Liffarome and Lilyvert, and its great diffusiveness makes it essential when creating green fruity notes that are so fashionable today. The material works very well with cyclopidene and its related acid cyclopentacide, in addition to powerful citrus notes such as methyl 4-dodecen-2-nitrile and the so-called methyl decanile (one of the most elegant nitriles I have smelled).

***Pearlate — cis*-3-octenyl propionate:** This material is greener and less fruity than Aladinate. Pearlate is one of the green notes that I felt was improved when combined with Paradisone. (Pearlate is not as diffusive as Aladinate.) Paradisone does not require the addition of diffusive products — its diffusivity is already spectacular. Pearlate, Liffarome, *cis*-3-hexenyl tiglate, Paradisone, *cis*-6-nonenyl acetate, methoxymelonal helvetolide and calone create one of the most beautiful accords I have created. The accord is what I call "Green Paradise," and it brings back for me one of the most beautiful spots I have seen, the exotic and remote beach in an almost inaccessible part of Samoa. This exotic beach touched me; I was happily lost in Samoa. The recollection of its intriguing smell and colors is still a source of inspiration that I try to recreate with the new chemicals I have described in my writings.

***cis*-3-Hexenyl methyl-2-pentenoate:** This material is less powerful than Aladinate and greener than *cis*-3-hexenyl tiglate — another of my favorite "South Pacific" chemicals that reminds me of the flowers I have known there — periwinkle (*Vinca*), oleander (*Nerium*), yellow oleander (*Thevetia*), plumeria (the national flower of Hawaii), natal plum (*Carissa*) and crepe jasmine (*Tabernaemontana coronaria*). Several

species of the genera *Trachelospermum*, star jasmine (T-jasminoides), mandevilla and Allamanda are attractive woody vines. Dogbane (*Apocynum*) and Amsonia are widely grown as ornamentals. Many of them are Polynesian succulents with alternate leaves and strangely shaped trunks. The impala lily (*Adenium multiflorum*), which possesses star-shaped flowers and large underground tubers, is one of the most beautiful, though it must be said that beauty must be appreciated wisely — deadly arrow poisons are another feature of many plants in the dogbane family. (Although dangerous, some of the poisonous alkaloids of these species are used as drugs and medicines by local people.) Beauty, charm, delicious and beguiling auratic memories, life, joys and poisons: these are the metaphors of our dangerous indulgences of the world of the soul.

Methyl 3-nonenoate: This is an isomer of neo folione, and to me at least as interesting as it. The material is more vague than the well-known methyl 2-nonenoate, which is less green, and more violet and ylang ylang. Methyl 3-nonenoate is a wonderful chemical that is difficult to tame and control, and yet it is perfect for formulating intriguing and beguiling South Pacific fragrances.

I would like to finish my description of these chemicals by saying that if we are not more creative it is because either we are not enough daring or we are simply content to copy others' scents. Our friends the chemists work hard, yet the regulatory/governmental bureaucrats of this world also work hard to limit the bounds of chemical inventiveness. We as an industry have simply been too shy and obliging to denounce what smothers our creative souls, both in the environment of our profession and in society at large. However, in spite of all these obstacles I have become less pessimistic than in 1999. In the last several years we have seen exceptional perfumes and great ingredient discoveries. In a catastrophic world of desolation and injustice, our profession — the eternal art of perfumery — blossoms. I would posit that it may be the most successful art of our present days. In my opinion, our society has declined in the arena of the arts. We no longer make the great porcelains that the artists of Meissen, Sevres or Limoges once created because the rational materialistic lifestyle that has flourished since the close of the 18th century does not leave one for time to "waste" creating and enjoying such a beautiful objects. We do not paint as the painters of the end of 19th century painted. We do not have the time to decorate the façades of houses of our cities anymore — this is another one of the greatest and inhuman calamities of our century. Everything is iron, steel, coldness, ice and functionalism, but still, as a rebellion against the state of the arts, we do create great perfumes, and our customers buy them trying to find better and better ones almost as a collective obsession. This is clear air on the horizon: we need something else, higher, more cultured and more sensitive than what is now a reality, and evolution towards a better world is coming closer and closer. The world is changing and if we know how to do it — without fanaticism and without violence, the greater sins of 20th century and early 21st century — we will succeed.

Eternity: Ideas and Evolution

Perfumery is eternity. This is the feeling I've always had when smelling all kinds of flowers, woods, roots, herbs, seeds, spices, gums, leaves, sands and air. Perfumery helped me to understand the eternal mysteries of life, and as a fine art it helped me to express my feelings through olfactory beauty. I found myself working not to make money, but to discover the truth and nature of my existence. Actually, I was not working at all — I was enjoying every moment spent in my small laboratory in Cabrils. Soon, I realized the truth: this was art and a way to understand the cardinal mysteries that have astonished all the great philosophers since the dawn of Western civilization.

Nothing great is and nothing great can be definitely in the past forever. Eternal things and ideas are never irrevocable. Their being, similar to the wind, is in perpetual movement. Time does not spoil them if they are majestic, grand, lofty and sublime and all the fine arts are indeed majestic, grand, lofty and sublime. On the contrary, time, confirms them. The elapsing years, instead of provoking oblivion and deficiencies in its being, exalt and reveal the hidden faces of their essence. Time is past, present and future at every instant. Time escapes the measures that want to hold it. It is a gift, it is a present of eternity and to use the great conclusion by Plato, "it is the moving image of eternity." It is the unreachable glare and the unattainable image that flees away from the world of archetypes.

If you have read my past installments, many of my affirmations were speculations full of pessimism. I said that "our culture, which seems to worship little more than science and technology in the 'Kingdom of Omnipotent Reason,' sometimes seems to be leading our profession, if not the society as a whole, into a wasteland close to desolation — a desolation of the soul, of the spirit, of mystery and of myth."

However, we beings are deeply convinced that happiness and spiritual plenty exist. We also strongly believe in the existence of a different truth that surpasses all "rational" intelligence. We want something else, something different, and because of that, because we are not ruled only by reason, we buy hundreds of millions of bottles of perfume every year.

This cooperation between creative and cultured chemists and perfumers is what makes perfumery eternal.

Pessimism that holds absurdity (we know it) is equivalent to evil, misfortune and disaster. However, I would counter the negative reality and feelings — this "pessimus logos" of our period — with a quote that is far softer, brighter and more tender, which I discovered by coincidence during one of my frequent night time readings that. This durably marked and stressed my conscience: "Darkness is invisible to light and it becomes more invisible when light is strong!"

To me this light was and is perfumery. I chose to be a perfumer while very young because the many odors of the world pleased my soul. To me, all the odors I discover, smell, try to understand and mix are like the constant effusion of a bright light, which glorifies, elevates, raises and stimulates my senses and spirit. This light is, to me, like the symbol of the peaceful invincibility of my spiritual convictions.

Perfumery is evolving. In the five years that have elapsed since the publication of the fourth part of my work in 1999, we have seen great creations. We have seen a fantastic work of cooperation between chemists and perfumers, only hindered by the bureaucracy of "political" institutions that "brightly" warn us against many things. However, let me return to optimism by saying that this fantastic cooperation between chemists and perfumers has allowed us to make tangible so many beautiful fragrance creations. This cooperation between creative and cultured chemists and perfumers, with its prodigious and wondrous serenity, wisdom and the human aim to progress, is what makes perfumery eternal.

These great fragrances, fruit of this creative cooperation between chemists, perfumers and, let me also say, evaluators, are like a subtle, delicate and fresh shadow in a burning environment that makes if possible for our soul to live in splendor without pretending that we reached an end of the path. This kind of oasis and its soft shadow bordered by an unfriendly environment is blessed by the breeze that conveys the auratic breathing of the beguiling scents of jasmine sampac, champa, kewra, gul hina, rose, lily of the valley, violet, gardenia, magnolia, orris, freesia and frangipani.

Perplex, the spirit, assists to the wedding at the open sky between heart and eternity because it is convinced that the real face of the world it is not this happy luminosity but a series of dark masques that bring to mind rational thinking and resonant unhappiness. The most irreproachable of these masks is the one that keeps us far away from our celestial origin — our real being. It is a bit like the mask that inspired Milan Kundera when, sad and a bit despaired, he wrote the novel called "The Unbearable Lightness of Being," in which he explained his own participation in the brief but heady liberalization of Czechoslovakia in 1967-68. After the Soviet occupation of the country he refused to admit his political errors and consequently was attacked by the authorities, who banned all his works, fired him from his teaching positions and later stripped him of his citizenship.

The progress of perfumery, and I have changed my mind, is a reality in spite of many blunders that still exist around our professional environment. All the chemists I have met, and many of the top perfumers, work with an enthusiasm that can be summarized in the memorable phrase of the author of "La Cité de Dieu" that brightly says, "my soul burns because I wish to sense and I wish to know."

Carlyle use to say that, "the universal history is a writing that we need to decipher and to transcribe continuously." The same is true for the history of perfumery. We, chemists and perfumers, work to re-illuminate the passion that before, during the bight time of Hellenism wrought by so many wise men, took Western civilization to the summits of glory. This is the secret of our collective success when realizing that we have created such an olfactory beauty that people look into our creations with ardor, intrigue, passion and joy.

I do not know why I have always felt so encouraged when visiting the many ruins of the Hellenist cities through the eastern part of the Roman Empire. I do not know why, when returning from my exotic trips through Effessus, Perge, lovely Aphrodisias, Pergamom, Cnidus, Jerash, Afamea, Byblos, Petra and Balbek, I have been so creative. Maybe those admirable ruins of the past refer to a brighter time when spiritual emotions, culture, serenity, tenderness and freedom where abundant. And maybe I found there, as I find when smelling the scents of the world, invincible and passionate eternity. Since I discovered all these jewels in the Orient, I would like to homage those lands, cradle of our most mysterious ingredients (silver frankincense, myrrh, opoponax and agarwood), with what Rudyard Kipling once wrote:

"Si tu as entendu l'appel de la vérité et de l'éternité en Orient, tu n'entendras plus rien d'autre"

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