



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.

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

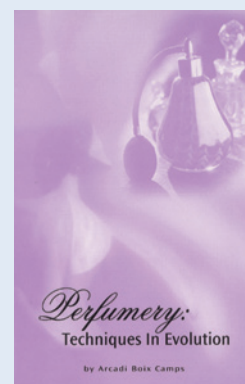
Next Month: the Conclusion of Part V

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, amberggris and musk notes, in addition to the battle between the rational and the emotional in perfumery. A must read!

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

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.

Hard cover, 125 pages, Published 2000,
ISBN: 0-931710-72-3

For more information, contact Allured Publishing's customer service; tel: 630-653-2155, x590; e-mail: customerservice@allured.com; www.allured.com

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 parchment 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? “Exhortatio ad Ulysses, 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

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

most of his convictions and culture.

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 Eleusian 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.

*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.)

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-

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 warranted. 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 vetiver, 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 safiron 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 scariosus, 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, Florhydal (Givaudan), Romascone (Firmenich), Deltanate, cedrat coeur oil, Laevo cetalox, Bourgeonal, Cedramber (IFF), Kephallis (Givaudan), Cashmeran (IFF), lemon and yuzu oils, cardamom, amber ketal, ambrocenide, Ysamber K (Symrise) and woolfwood.

A great natural oil is Ciperus scariosus, 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 scariosus 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 essences 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 (Firmenich), Ambrettolide (Givaudan), ethylen brasilate, Nirvanolide (Givaudan), Moxalone (Givaudan), super muguet and paradisine. 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, neroloxyl, 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), methyl-dioxaspiro undecane, 2,2,6-trimethyl-2-vinyl-tetrahydropyran (citroxide), 2-methyl-2-vinyl-5-isopropenyl tetrahydrofuran (herboxide), Oxaspirane (IFF), acetomarine, and 2,5-dimethylhepten-5-ol, or cis-verbenol. To these I will add the following.

Agresticals — Herbaceous, Lavender, Clary Sage, Isoacetate

These materials smell extremely fresh, linalyl acetate-like, quite stable and useful to blend 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 acetone or ethyl amyl acetone, 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 particular 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), Cassifix (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 Sclareolate, coranol and myroxide is also great with the patchouli fraction — very rich in norpatchulenol and patchoulol that is marketed under the name of patchouli 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 salicylate, 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, Cassifix 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 scariosus 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 unusually 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, Methoxymelonat (Aroma & Fine Chemicals Ltd.) and calone.

Sclarex — 5,5-dimethyl-1,4,4a,5,6,7,8,8a-octahydro-1,4-methano-naphtholen-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 -cyclogeraniate, methyl cyclogeraniate (methyl- β), Romascone (Firmenich) (methyl- γ -cyclogeraniate), ethyl safranate (“damascenone”)-cyclogeraniate, 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 damascenes.

Ethyl- β -cyclogeraniate: 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 Anthranilate, 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 -cyclogeraniate: 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 -cyclogeraniate 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, isopropyl 2-methylbutyrate, and cis-3-hexenyl tiglate; coriander, mandarin and lemon oils; damascenes 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 it is not longlasting, it combines well with Myrascone or ethyl- β -cyclogeraniate, 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 Cyclogeraniate.” This is an old product, and along with methylcyclogeraniate, 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 than ethyl safranate. It is spicier than its more famous cousin, and blends well with Saffracide, creating unusual accords. I like isopropyl safranate 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 Isopentylate (Firmenich), Methylcamomille, 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, oxaspirene and methyl pentylat. 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, isopentylate or methyl pentylate. The unknown methyl pentylate 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 pentylate; 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 Theaspirene was going to be widely used came true in many fragrances like “Kenzo le monde est beau.” Theaspirene is a jewel that will be used more and more in future. Now I would like to mention several other materials.

6-Acetoxydihydrotheaspirene: This chemical cannot be described as a pure “tea” material, but is interestingly herbaceous, delicately and especially 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 -Damascone 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 trimethylnaphthalenone, 4-oxo-isophorone and 4-hydroxy-isophorone (all mistakenly considered as flavour chemicals). 6-Acetoxydihydrotheaspirene’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 salicylate, methyl pentenyl salicylate, 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 occasion 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, Cassifix, 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-undecenals, while 9-undecenal is pure — in terms of commercial quality, the latter only contains some traces of 10-undecenal. 9-Undecenal is at 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, methylionones, 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-ocenoate, calone, methoxymelon and ethyl 3,4-pentadienoate. cis-7-Decenal produces unusual and promising 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 pentyl-cyclohexyl 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 Pinoac-

etaldehyde. 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 Salicylate (an interesting and infrequently used green-spicy salicylate), 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 salicylates. 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, vetiver: I previously mentioned fabulous chemicals such as nor Limbanol, dextro nor limbanol, Spirambrene (Givaudan), Boisanol, Tobacarol (IFF) and Hydroxyambran (Fragrance Resources). This latter material is 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-acetoxydihydroth-easpirane, 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-Tri-

methyl- 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 choose 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 complements 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, Woolf-

wood, 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, Sandalole (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 harmony. 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, rosemary, 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-Acetyoxydihydrotheaspirane 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 octahydronaphthalen-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, Lyrall (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 conclu-

sion. 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, including Caryolan (a special top quality of Caryophyllenyl Formate) and Vetyvenal (a special top quality of Caryophyllenyl 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. Research 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 northern 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-(1 α ,2 β ,3 β ,5 α)]-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 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 Woolfwood 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 lavandin 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, Dihydroneotkatone, 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 Citronnellol. In the case of Citronnellol, 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 Ral-deine AGV makes a great difference. The same is true with Xandralia. Many producers make mixtures of γ -, δ -, 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 Cumincic, 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, Woodwood, 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, Cedroxide, 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 scariosus*, 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), Mettambrate, 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 -Damascone, 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, Krishnanone, Levosandol, Nirvanol, Ebanol, Sandalore, Indianol, Khrisnol, Bergamotol, Brahmanol, Methyl Sandeflor, — *trans*-Decahydro- β -naphthol 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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