

By Calamondin

FAMILIES OF PERFUMERY CHEMICALS

Much of a perfumer's success in formulation of fragrances is due to a thorough knowledge of perfumery raw materials. The implications of this statement are varied. It assumes that the perfumer is capable of forming mental images of individual odorants. Such profiles consist of the principal odor features and the important nuances which affect its compatibility with other components of a fragrance. The statement implies that the perfumer can recognize relationships among odorous chemicals and use this kinship to create harmonious blends of these chemicals. A further benefit to the perfumer is ability to recall odor profiles. This permits partial formulation on paper of blends which will approximate a desired fragrance. Preliminary selection of the target profile and formula can take place before ever approaching the compounding bench.

In the process of gaining this knowledge the perfumer studies the profiles of single odorants both alone and in association with each other. This exercise brings recognition that many are related odorwise. Awareness should come that resemblance in chemical structure usually accompanies similarity of odor. It is important that the perfumer can appreciate these similarities and differences in what may be called families of odorants. This argument gives rise to the premise that it is possible to effectively formulate with blends of related chemicals rather than with single members of odor families.

Having developed this thesis we shall proceed through a variety of important perfumery chemicals, mention other members of their odor families, and discuss benefits achievable from these blends. The basis of this approach is recognition of main features and the character of the nuances which differentiate members of the family. This familiarity will allow one to predict what combinations should be made for a particular effect and to select the relative proportions.

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BENZYL ACETATE is a component of natural jasmine and its synthetic versions as well as of many floral compositions. Even in its purest commercial form its odor alone is harsh. Yet in combination it has a fresh bloomlike floralcy. Rounded and smoother effects are apparent if it is first blended with the related benzyl isobutyrate. Where hydrolysis of the butyrate and valerate are unlikely, trace additions of these esters is suggested. Benzyl propionate is more fruity than the acetate and may be useful, remembering that

propionates in general tend to have a metallic bynote. Each of the these related esters is normally used at lower levels than the acetate with the proportions determined by the effect desired.

AMYL SALICYLATE is much used in floral spice blends with orchid, clover and carnation features. Blending with the homologous isobutyl and hexyl esters provides floral notes of similar type but smooths out the effect. Benzyl salicylate increases the carnation while methyl in traces shifts the odor toward ylang. Phenyl ethyl salicylate introduces a rose nuance. A salicylate specialty combines the odor features of the individual esters and modifies the singleness of amyl salicylate.

METHYL CINNAMATE has a balsamic odor accompanied by a rather keen metallic note. Warm shading is derived from blending with benzyl cinnamate, an effect which is augmented from use of cinnamyl alcohol and cinnamyl acetate. Other cinnamates seem to have less value in such a blend.

METHYL PHENYLACETATE has a powerful honeylike odor which can be made less chemical by addition of isobutyl phenylacetate. Traces of phenylacetic acid are often useful.

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In another class of aroma chemicals, the **Alcohols**, similar family relationships exist and blends are useful.

PHENYL ETHYL ALCOHOL has a slightly green, floral rose petal odor which can be modified and shifted toward lilac with hydratropyl and styrallyl alcohols. Phenyl propyl alcohol and phenyl butanol are interesting modifiers. The group of structurally related carbinols, dimethyl benzyl, phenyl ethyl dimethyl and, possibly, phenyl ethyl methyl ethyl provide smoothness and more lily-lilac character.

LINALOL is widely used in perfumery and is ubiquitous in nature. Ethyl linalol and the very sweet honeylike isobutyl linalol form an interesting combination. The sesquiterpene alcohols nerolidol and farnesol are related and add freshness and naturalness.

CITRONELLOL blends with geraniol are common but these can be modified with related dimethyl octanol and nerol, the latter adding a lemon effect.

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Musks represent a family where the practice has been to use more than one member in formulations. When only nitro musks were available, blends were based not only on odor relationship but on acceptable discoloration limits. The large number of synthetic musks, both nitro and polycyclic, should encourage perfumers to study their several profiles and to prepare family blends. Low cost musk xylol with its sweetness and its slight floral nuance, musk ambrette with its warm animal sweetness, the powerful Galaxolid with its lasting warmth and sweetness

as well as a slight "hot stove" shading are but three of an increasingly large number of synthetic members of this family. A range of blends is desirable.

Ionones are another family of odor chemicals which are closely related in structure and odor. Blends of ionones can be used easily, proportioning them to achieve the desired levels of floweriness, woodiness, freshness and warmth. Alpha ionone has a pleasing woody, flowery character, beta ionone seems the most diffusive, alpha isomethyl ionone the lightest and most flowery, beta isomethyl ionone intensely woody and vetiver like. Consider using traces of the fruity, powerful allyl ionone.

Acetylenic chemicals are a class contributing importantly to green notes. Methyl heptine, methyl octine and methyl decine carbonates have green odors suggesting violet leaf. Each has features unique to this structure but differing in strength and shading. The octine carbonate has been found easiest to use singly but blending is suggested. Another chemical, 2-nonyl di-

methyl acetal, also has a green violet leaf odor and fits well with the esters.

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A few other chemicals usable as blends are alpha amyl and alpha hexyl cinnamic aldehydes, the first with a green, waxy jasmin like odor, the second more full bodied and with a fresh jasmin note. The three coumarins, coumarin itself, 6-methyl coumarin with a slight coconut note and dihydrocoumarin with a slight burnt note can be used as a blend.

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The list of important chemicals and families might continue but sufficient examples have been given to support the concept. The perfumer should study each member of these and other families and experiment with their use as blends in formulation. The suggestion is extended to new chemicals which may be additions to existing families or form bases for new groups.



The Way It Was

Leonard Stoller
Leonard Stoller Associates

From MARCH 1928

W. A. Poucher contributed an article on "Vanilla as a Raw Material" in which he noted that vanilla had been used not only as a flavor but to some extent as a medicine, mentioning specifically that it was esteemed by some as an excellent remedy for syphilis.

Benson Stofer, president of Stofer Laboratories, New York, commented on his evaluation of French and American perfume lines after a visit to Europe. "From careful sample tests," he said, "I found that the American products which I took over with me were far better than the perfumes made and bottled in France, which I could import to sell at the same prices. Much of the cheaper French perfume, I believe, could not be sold in America at all, and certainly not in competition with similar American products . . . Moreover, these lines could not compare in attractiveness of package with the competitive American perfumes in the same class, leaving aside the quality of the odors themselves."

Newly formed corporations included: McCormic Laboratories, Ann Arbor, Mich., toilet preparations, food products, \$50,000—Charles of the Ritz, Manhattan Borough, New York City, toilet preparations, 1000 shares of common stock—S. M. Moffat, 342 Madison Avenue, New York, N.Y.—Colgates, Limited, Jersey City, N.J., soaps, 250 shares of common stock.

From APRIL 1928

Leroy Fairman authored an article entitled "The Appeal to the 'Average Woman'" which he opened with the comment: "I have heard and read a great deal about the 'average woman,' but I am quite sure I never met one." While many manufacturers refer to their average women customers none have explained what the average woman is like. Mr. Fairman goes on to discuss the differences between women in various areas of the country and comments that no two of your average women are alike and "that the goods and the advertising which would appeal with peculiar force to one, would feebly affect, or be a flat failure, with most of the others!"

Continuing his series of articles, W. A. Poucher wrote on "Absolute Flower Oils." He discussed methods of extraction including enfleurage, the volatile solvent process and the resulting oils that are obtained.

The first part of a very interesting article entitled "Reflections on the Chemical Senses—a discussion of the Mechanisms and Chemistry of the Taste and Smell Sensation" was authored by Dr. E. G. Thomssen.

This issue contained a fairly extensive "Bibliography of Perfumery, Soap, Cosmetics" compiled by Sara P. Burns for Col. Marston T. Bogert. The listing included many works on the three subjects and where they could be found in the New York area.

From MARCH 1953

Ernest Shifan, in an article, "Progress in Perfumery," discussed developments in organic chemistry as related to perfumery, materials available to the perfumer and importance of the top note in a perfume. He also discussed the place of new chemical bodies in perfume creation.

Paul Z. Bedoukian continued his "Progress in