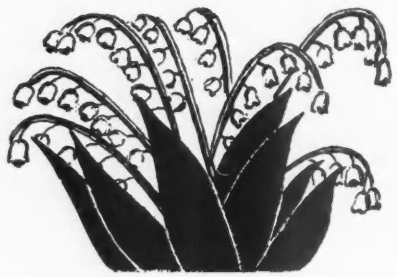
PERFUME FORMULATION

THE MUGUET GROUP

BY J. R. ELLIOTT, PERFUME-FLAVOR CONSULTANT



The mutual characteristic of the members of the muguet group is an intensely sweet yet ethereal lily note. Muguet is the most lily-like of the group. Orchid is basically a Muguet with amyl salicylate modifications. Clover is muguet plus amyl salicylate and coumarin. Cyclamen is muguet with a heavy accent on the hydroxycitronellal and cyclamen aldehyde. Magnolia is muguet plus neroli and citral notes.

The characteristic lily note is best illustrated by the single material, ylang absolute, when it is diluted to about one-half per cent in alcohol. In actual compounding work the cost of ylang absolute restricts its use to the role of adjuvant.

The lily note was originally built upon Linalool and Terpineol. When hydroxycitronellal (sometimes called lily aldehyde) was developed, it was added to this pair, and quickly became pre-eminent as the lily base. This trio of materials is still in use today, although terpineol is gradually receding into the background.

The later development of cyclamen aldehyde (isopropyl alpha methyl hydrocinnamic aldehyde) and the so-called "Cumin" ketone (a chemical variant of the cyclamen aldehyde) have further changed the lily picture for the better. In very recent years the advent of the propylene glycol cyclic esters of phenylacetaldehyde and hydratropic Aldehyde have helped to increase fidelity to the lily note. These materials are only touched upon in this text, because they are so new that they have not been adequately explored. The Schiff's base of amyl cinnamic aldehyde—methyl anthranilate, a material not too well known, but highly useful, has a combined lily-honeysuckle note, which gives a strikingly sweet nuance in muguets.

MUGUET

The muguet or lily of the valley is a flower having many species, each with its individual nuance. In general, however, the perfumer concedes to two fragrances: the forest muguet, and the cultivated spring muguet. The "forest" type is sweeter and more rosy than the cultivated type, which is more delicate and lilac-like.

The following are the "purpose" classifications of the muguet components:

Basics. Hydroxycitronellal, linalool, terpineol, cyclamen aldehyde, "Cumin" ketone, the propylene glycol cyclic acetals of phenylacetaldehyde and hydratropic aldehyde, the Schiff's base of amyl cinnamic aldehyde and methyl anthranilate.

Blenders. Ylang Bourbon extra, ylang absolute, rhodinol, citronellol, geraniol, nerol, dimethyl octanol, hydratropyl alcohol, phenylethyl alcohol, tolyl alcohol, linalool, oil of lemon, oil of bergamot, benzyl acetate, benzyl propionate, cinnamyl acetate, phenylpropyl acetate, benzyl isovalerate.

Adjuvants. Phenylpropyl alcohol, aldehyde C-14, sandalwood oil, phenylacetaldehyde dimethyl acetal, heliotropine, oil petitgrain, oil sweet orange, anisic aldehyde, anisyl alcohol, methyl cinnamate, methyl heptine carbonate, amyl benzoate, amyl salicylate, oil of cardamon, tolyl aldehyde.

Fixatives. Musk ketone, Musk xylol, indole, skatole, civet, phenylethyl salicylate, para cresyl phenylacetate, gum benzoin, benzyl cinnamate.

Naturals. Tuberose absolute, rose otto, rose absolute, jasmin absolute, jonquille absolute.

Comment. In the compounding of muguet (and such clearly odor-related flowers as the Easter, madonna, white, yellow and amaryllis lilies) the delicacy of the basic materials for these fragrances should be

clearly recognized. The blenders and adjuvants must be employed skillfully and in relatively small quantities, to avoid overpowering the characteristic, but delicate, basic note of lily.

MUGUET DE MAI E.015

(1)	30	Hydroxycitronellal
(2)	15	Rhodinol
(3)	10	Heliotropine
(4)	25	Phenylethyl alcohol
(5)	5	Hydratropyl alcohol
(6)	5	Linalool
(7)	12	Linalyl acetate
(8)	5	Benzyl acetate
(9)	8	Tolyl acetate
(10)	3	Terpineol
(11)	2	"Cumin" ketone
(12)	1	Ylang absolute
(13)	1	Oil lemon Italian
(14)	2	Dimethyl octanyl acetate
(15)	1	Anisic aldehyde
	125	

The foregoing composition represents the "springtime" muguet, which is more flowery than the "forest" muguet. This floweriness is built around the rose effect. Note the high percentage of rose materials (2, 4, 5, 14) and the lilac components (3, 8, 9, 3, 12, 15).

MUGUET DES BOIS E.016

40	Hydroxycitronellal
10	Rhodinol
10	Linalool
15	Linalyl acetate
8	Heliotropine
5	Benzyl acetate
2	Amyl cinnamic aldehyde
80	

MUGUET EXTRA E.017

(1)	35	Hydroxycitronellal
(2)	5	"Cumin" ketone
(3)	2	Amyl salicylate
(4)	6	Phenylacetaldehyde propylene glycol acetal
(5)	20	Phenylethyl alcohol
(6)	5	Hydratropyl alcohol
(7)	15	Linalool
(8)	8	Benzyl acetate
(9)	70	Rhodinol
(10)	10	Indole 10% in DEP
(11)	2	Cuminic aldehyde 10% in DEP
(12)	8	Amyl cinnamic aldehyde
(13)	3	Phenylethyl propionate
(14)	6	Geranium Algerian
(15)	5	Alpha ionone
(16)	10	Musk xylol
(17)	2	Musk ketone
(18)	13	Diethyl phthalate ("DEP")
	225	

The foregoing composition E.017 shows a muguet of the "Mai" type with an elaborate floral background. Note the heavy use of rhodinol (9) and indole (10) with the "flowering" agents (2, 3, 13, 15) and the musk fixatives (16, 17). This type of composition is excellent as a foundation in the creation of other floral fantasies.

MAGNOLIA

There are many species of magnolia that are fragrant in some degree, but not all of them can be described as pleasantly fragrant. In this discussion the familiar southern magnolia (M. grandiflora) is the only one considered. This is a tree often reaching great height with glossy, large green leaves, and cup-shaped flowers of about ten inches in diameter. The blossoms are intensely fragrant at night. Their odor is described as a mixture of ylang and orange blossoms. The single aromatic chemical best representing magnolia is phenylethyl dimethyl carbinol.

The following are the "purpose" classifications of the various components of the magnolia fragrance:

Basics. Phenylethyl dimethyl carbinol, benzyl dimethyl carbinol, guaiac wood resin, ylang absolute, ylang Bourbon extra, oil cananga terpeneless, hydroxycitronellal dimethyl acetal, phenylethyl alcohol.

Blenders. Linalool, rhodinol, citronellol, dimethyl octanol, geraniol, oil of lemon Italian, oil sweet orange Californian, oil bergamot, oil of petitgrain, terpineol, amyl cinnamic aldehyde, oil mandarin Italian.

Adjuvants. Eugenol, isoeugenol, hydroxycitronellal, isobutyl cinnamate, anisic aldehyde, ionone alpha, methyl ionone, heliotropine, oil of coriander, oak moss, aldehyde C-14, labdanum resin, vetyverol.

Fixatives. Musk ketone, musk xylol, balsam tolu, balsam Peru, benzylidene acetone methyl, benzyl isoeugenol, amyl benzoate.

Naturals. Rose, jasmin, tuberose and orange flower absolutes.

MAGNOLIA E.018

40	Hydroxylcitronellal
30	Methyl ionone
30	Phenylethyl alcohol
50	Musk ketone
25	Ylang Bourbon extra
10	Amyl cinnamic aldehyde
15	Benzyl acetate
18	Oil bergamot
12	Isoeugenol
20	"Alpine Violet" standard
10	Sandalwood oil
15	Vetyverol
10	Musk ambrette
25	Linalyl acetate
20	Hydroxycitronellal-methyl anthranilate base
10	Cinnamic alcohol

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5	Dimethyl anthranilate
5	Ethyl vanillin
30	Rhodinol
5	Aldehyde C-14 10% in DEP
5	Phenylethyl propionate
15	Lemon oil Italian
1	Oak moss resin
2	Aldehyde C-12 MNA 10% in DEO
8	Indole 10% in DEP
4	Styrallyl propionate
4	Rose otto
3	Citronellyl oxyacetaldehyde
23	Diethyl phthalate
450	

CYCLAMEN

The Cyclamen is a most attractive flower, usually seen as a medium sized potted greenhouse plant with large, exotically shaped white or pink petals, and no odor. The most fragrant member of this flower family is the cyclamen of the Alps, a tiny pink flower slightly larger than a violet. It is known in Germany as "Alpinveilchen" ("Alpine Violet"), a name which also applies to the chemical Paraisopropyl methyl (alpha) hydrocinnamic aldehyde whose odor closely resembles the flowers.

The fragrance of the cyclamen flower is predominantly a fresh lily, with substantial lilac character, and occasionally a touch of the hyacinth or narcissus. Most perfumers use a delicate sweet musk background for this fragrance, usually musk ketone and/or musk xylol.

The cyclamen fragrance does not seem to have much attraction as an extract or cologne product. Its peculiar lily-like odor does find some application in cosmetic products, because it covers up the fatty note of the cosmetic bases, yet shows up well as a clear fresh, flowery effect quite appropriate for cosmetics when they are applied to the skin. Furthermore the cyclamen fragrance is composed of materials which produce minimum irritation and no discoloration, factors highly important in cosmetic work.

The following are the "purpose" classifications of the synthetic components:

Basics. Paraisopropyl alphamethyl hydrocinnamic aldehyde, "Cumin" ketone, hydroxycitronellal, terpineol, alpha ionone, methyl ionone, hydroxycitronellal dimethyl acetal.

Blenders. Rhodinol, citronellol, geraniol, dimethyl octanol, oil of bergamot, oil of lemon Californian (or Italian), oil sweet orange, hydratropyl alcohol, phenylethyl alcohol, benzyl alcohol, tolyl alcohol, benzyl acetate, "Astrotone" BR, linalool, citronellyl propionate.

Adjuvants. Phenylacetaldehyde trimethylene glycol acetal, hydratropic aldehyde trimethylene glycol acetal, phenylacetaldehyde propylene glycol acetal, citronellyl oxyacetaldehyde, diethyl hydroquinone,

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amyl salicylate, heliotropine, paramethyl hydratropic aldehyde, anisic aldehyde, para methoxy acetophenone, methyl heptine carbonate, phenylpropyl alcohol, styrallyl acetate and propionate, cinnamic alcohol, methyl cinnamate, Ylang Bourbon Extra, ylang absolute, para-cresyl caprylate, oil geranium.

Fixatives. Vanillin, coumarin, musk ketone, musk ambrette, musk xylol, benzyl isoeugenol, styrax resin, olibanum resin, benzoin resin.

Naturals. Jasmin, rose, tuberose, orange flower, narcissus, and jonquille absolutes. Occasionally traces of cassie absolute are used for a green nuance.

	CYCLAMEN DES ALPES E.019
15	"Alpine Violet" standard
30	Hydroxycitronellal
10	Hydroxycitronellyl dimethyl acetal
2	"Cumin" ketone
8	Rhodinol
15	Linalool ex bois de rose
5	Ylang Bourbon extra
6	Oil lemon Italian
10	Benzyl acetate
2	Benzyl propionate
2	Amyl cinnamic aldehyde
1	Coumarin
4	Musk ketone
5	Methyl ionone
4	Alpha ionone
10	Alpha terpineol (best grade)
5	Oil geranium Algerian
1	Phenylethyl propionate
3	Hydratropyl alcohol
4	Cinnamic alcohol
5	Tolyl alcohol
5	Linalyl acetate
4	Petitgrain South American
1	Aldehyde C-14 10% in DEP.
4	Phenylacetaldehyde trimethylene glycol acetal
14	Benzyl alcohol
175	

This Cyclamen des Alpes E.019 is illustrative of the fragrance for cosmetics. It may also serve as a flowery adjuvant for the lighter type of floral fantasies.

ORCHID AND CLOVER

The components of both orchid and clover fragrances are so closely allied that they are discussed as a team.

The orchid fragrance presents a peculiar problem to the perfumer. There are innumerable varieties of this showy flower: some have a definite, pleasant fragrance, others none, and still others have a vile odor. The pleasant fragrances imitate many such well-known scents as: tuberose, narcissus, rose, hyacinth, lilac, carnation, honey, musk, lemon, muguet, heliotrope, cinnamon, and in fact nearly every floral or spicy fragrance.

In view of this confusion a base for the orchid fragrance was established which is more traditional than accurate. Today, the "orchid" fragrance is basically built around the salicylic esters and other materials

of the muguet class. One or more secondary compositions (any flower or spice fragrance) is then added to this base for modification. The clover fragrance is fundamentally a modification of the orchid with coumarin, lavender and new mown hay characteristics.

The "purpose" classification of orchid and clover components are as follows:

Basics. Isobutyl salicylate, amyl salicylate, methyl isobutyl carbinyl salicylate, n-hexyl salicylate, dimethyl salicylate (ortho methoxy methyl benzoate), isobutyl dimethyl gentisate (3, 6 dimethoxy isobutyl benzoate), isobutyl benzoate, amyl benzoate, dimethyl toluhydroquinone.

Blenders. Rhodinol, citronellol, geraniol, dimethyl octanol, Hydratropyl alcohol, nerol, phenylethyl alcohol, tolyl alcohol, benzyl alcohol, benzyl acetate, benzyl propionate, hydratropyl propionate, phenylethyl propionate, phenylethyl isovalerate.

Adjuvants. Hydroxycitronellal, phenylacetic aldehyde, tolyl aldehyde, anisic aldehyde, heliotropine, ylang Bourbon extra, ylang absolute, alpha ionone, methyl ionone, isoeugenol, methyl cinnamate, aldehyde C-12 MNA, aldehyde "Veronol," para-methyl hydratropic aldehyde, hydratropic aldehyde, citronellyl oxyacetaldehyde, oak moss resinoid, oil Galbanum, phenyl propyl aldehyde, "Palatone."

Fixatives. Musk ambrette, musk ketone, balsam Peru, phenylacetic acid, benzoin resinoid, coumarin, vanillin, castoreum resinoid, benzyl isoeugenol, benzyl salicylate, benzyl phenylacetate.

Naturals. Jasmin, rose, orange flower, narcissus, jonquille, tuberose, genet, cassie absolutes, rose otto.

ORCHID BASE E.020

55	Amyl salicylate
25	Anisic aldehyde
30	Rhodinol
40	Isobutyl salicylate
10	Heliotropine
2	Dimethyl hydroquinone
5	Acetophenone
15	Linalool
16	Phenylethyl alcohol
5	"Cumin" ketone
4	Coumarin
10	Phenylacetaldehyde 50% in benzyl alcohol
10	Hydroxycitronellal
2	"Veronol" aldehyde 10% in DEP
4	Phenylacetic acid
5	Ylang Bourbon
2	Vanillin
4	Methyl ionone
1	Oak moss resin
1	Alpha ionone
2	Citronellyl oxyacetaldehyde
2	"Palatone 5% in phenylethyl alcohol
6	Diethyl phthalate
250	

To illustrate the close relationship between Orchid and Clover, the following composition, a modification

of the foregoing Orchid Base E.020, is shown.

WHITE CLOVER E.021

250	Orchid base E.020
16	Coumarin
15	Ylang Bourbon extra
3	Dimethyl hydroquinone
6	Musk ketone
7	Oil bergamot
3	Lavender 40/42
2	Oak moss resin
3	Benzyl acetate
3	"Palatone" 5% in phenylethyl alcohol
5	Heliotropine
10	Amyl salicylate
2	Vanillin
2	Acetophenone
3	Isobutyl phenylacetate
2	Tuberyl acetate
13	Benzyl alcohol
325	

Special Comment on Cyclamen, Orchid, and Clover. These three fragrances do not enjoy much popularity by themselves as extracts or colognes, although cyclamen does have some importance in cosmetic perfumery. However, "fragments" or small parts of these compositions are used extensively in building other compositions. For example, the 15 Ylang, 16 Coumarin and 10 Amyl Salicylate in the above formula are just such a "fragment" that finds much use in fougeres and many cologne types. Many such fragments can be picked out of other compositions and used in many circumstances. The student perfumer should study these fragrances very carefully as he compounds them, to select those portions which he thinks may be useful to him. The cyclamen, orchid and clover have been presented here more as a source of ideas than as complete fragrances.

SCC SEMINAR

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the consumer expects and some measure of the product's appeal. *Norman Ishler* considered consumer testing to be a variable tool requiring care in its use. With an appropriately selected group of test subjects, the study can help the technologist in the development of the final product. *Noel Swartz* discussed measurement techniques and factors that can affect judgment. The latter include color, opinions, preconceived notions. The scale of values in determining the desirability of the product may range from best to worst in from five to nine stages.

COATED TABLETS

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TABLE I. DISINTEGRATION TIMES IN MINUTES OF COMMERCIALLY AVAILABLE COATED TABLETS

Active Ingredients		First	Second	Avge.
1. Carbozochrome Salicylate	1.0 mg.	19	21	20
2. Hydralazine HCl	25 mg.	22	24	23
3. Hydroxyzine HCl	10 mg.	13	12	12