alcohol, rose, jasmine; violet leaf absolute, the alkyne carbonate and other green notes; and a sweet persistence is assured by including a bouquet of 'crystallines' harmonising with the general tone.

PEONY

Peony (Fr. *pivoine,* Germ. *pfingstrose*) is not such a well known fragrant flower, perhaps, as it deserves to be. Its varieties have in the main two distinct types of odour. One of the red peonies is not very pleasant-smelling and recalls in fact the harsh green scent of the dahlia. On the other hand the white peony, with a few pink patches, and the completely pink peony, have a deliciously fresh odour. When smelling this perfume one has often had the impression of being in the presence of an excellent citronellol. The basic products for simulating the peony odour are primarily the rose-like odourants: cintronellol, rhodinol, phenylethyl acetate, dimethyl benzyl carbinol, the butyrate and isobutyrate esters of the rose alcohols, and linalool and ethyl linalool. For the base, there are the derivatives of guaiac wood oil, alpha ionone, styrax, ylang-ylang oil, heliotropin and vanillin. The green note may be given by styrallyl acetate associated with paracresyl phenylacetate and cinnamyl acetate. The peony is yet another of those flower types which could contribute rather more than they currently do to novel odour combinations.

PHLOX

Phlox, a herbaceous plant which has become well acclimatised in Europe. It includes many odourous species and varieties. The typical phlox is the one having scent of violet and heliotrope. This can be simulated by using a violet base rich in methyl ionone, fixing it with heliotropin and adding a touch of a hazel nut or *noisette* compound. Although the phlox deserves further investigation as a potential flower component in perfumery, the fact must not be overlooked that many people find its perfume disagreeable.

SWEET PEA

The sweet pea odour is highly regarded in Anglo-Saxon domestic circles. Basic odourants for its simulation include: phenylethyl phenylacetate, benzyl salicylate, benzyl isoeugenol, methyl acetophenone, and the various orangeflower notes. Hydroxycitronellal, cinnamic alcohol, terpineol, linalool and traces of rose de Mai absolute – are added.

WALLFLOWER

In nineteenth-century perfumery, especially at the beginning, the wallflower (giroflee) enjoyed great favour. The odour of this flower is fresh and agreeable. The base consists of eugenol, isoeugenol and acetyl isoeugenol, associated with benzyl salicylate, amyl salicylate and anisic aldehyde, to which there may be added small quantities of oils of cloves, pimento, bay, or even pepper, and a trace of methyl paracresol. The 'filler' consists of terpineol, hydroxycitronellal, cinnamic alcohol, phenylethyl alcohol, linalool, geraniol, rhodinol, nerol, dimethyl benzyl carbinyl acetate. There may be added an ionone or its derivatives and for the flowery touch, Lilial (Givaudan) and neroli too. The lower notes comprise heliotropin, vanillin, ethyl vanillin, methyl naphthyl ketone, and a little mace or mastic oil or guaiyl acetate.

The wallflower note, orientated towards the basic carnation-salicylate-aubepine base, could well contribute to the development of an interesting perfume.

WISTARIA

The wistaria, wisteria or glycine, grown for its climbing habit and its attractive drooping racemes of blossom. It has a sweet and diffusive odour of rather honeyed type, suggesting orangeflower, lily and mimosa. The odourants chiefly entering into the composition of artificial wistarias are hydroxycitronellal, benzyl salicylate; geraniol, phenylethyl alcohol and other rose alcohols; ylang-ylang, mimosa absolute, isoeugenol, terpineol, methyl naphthyl ketone, methyl anthranilate, isobutyl phenylacetate, paramethyl acetophenone, p.-methyl totyl ketone, p.cresyl acetate.

YLANG-YLANG

The essential oil of ylang-ylang is one of the most widely used of natural materials in perfumery. In old days, there were three types of natural products: ylang from the Bourbon islands of Madagascar, ylang from Manilla and canânga from the Java islands. To-day ylang from Manilla has almost entirely vanished. It had a very special note, more like orange-blossom than ylang from Reunion and lighter, too, with the base more like tuberose. Ylang is so useful that there have been numerous attempts at synthesising it. Some 'artificials' are in fact quite close in odour to natural ylang. For Bourbon ylang, the basic products are; methyl paracresol and paracresol. These very powerful products are only present in small quantities. Associated with methyl benzoate, benzyl benzoate, eugenol and

Yugoslav (Schmoller)	0.60
Bergamot oil	4.20
Oakmoss absolute (Camilli)	4.35
Jasmine	4.00
Geranium sur rose oil	1.80
Methyl ionone	11.30
Vetiver oil	3.60
Sandalwood oil	1.30
Linalool ex bois de rose	1.80
Dianthine (Firmenich)	7.60
Eugenol	0.75
Hydroxycitronellal	0.75
Gardenia 9058 (Givaudan)	4.00
Costus absolute 10%	2.10
Mace oil	0.15
Florizia (Firmenich)	3.15
Tincture of Musk, 3%	7.60
Tincture of Civet, 3%	1.00
Musk ambrette	0.70
Musk ketone	1.40
Coumarin	0.30
Vanillin	0.15
Aldehyde C_{10}, 1%	0.80
Aldehyde C_{11} (undecyclenic) 1%	1.20
Aldehyde C_{12} (MNA) 10%	3.60
	100.00

The following Chypre base is typical aldehyde.

Formula 14 (Base Chypre H)

Constituents	*Parts*
Coumarin	8.70
Vanillin	4.60
Ethyl vanillin	2.90
Heliotropin	1.80
Methyl ionone	1.20
Musk ketone	0.75
Rose	0.60
Orange oil, bitter, Guinea	4.50
Geraniol extra	2.90
Bois de Rhodes oil (Chiris-UOP)	1.00
Noisette (de Laire)	0.20
Sandalwood oil	2.80

Almost all the mixtures are prepared in cold. In certain cases heat is required to enhance solubility e.g., flower absolutes and fatty aldehydes. In this case heat is applied for dissolving and then blend is cooled.

In olden days mixing is carried out by hand methods. Modern methods of liquid mixers are more efficient. At the beginning the concentrate is matured on storage, then reduced or diluted with alcohol; chilled, filtered and filled into bottles.

The finished perfume is prepared by mixing the concentrate with equal quantity by volume of the alcohol and dilute with proper amount of distilled water. Then cool it completely and add concentrate and alcohol with stirring. This process presents colloidal precipitation of concentrate and easily solubilise all the constituents. After 24 hours, the alcoholic batch is chilled at –0.4 to –0.6°C and filtered, using asbestos wool and diatomaceous earth as filter aid.

Alcoholic Strengths

The perfume content of Colognes, eaux de toilette, eaux de parfum and other fancifully named 'dilute perfumes' may range from 3 to 8 per cent, although in some few cases this figure has been found to exceed even 10 per cent. There seems little point in marketing as a toilet water what is, in fact, a perfume – unless its water solubility has been artificially enhanced for the purpose.

Perfumes themselves range from the perhaps old-fashioned 'low' of 10 per cent to 15, 20, 25 and even, quite irrationally, 35 per cent. The alcoholic strength may lie between 85° and 95°.

Inexperienced perfumers, and some captains of industry in the perfumery world who are not perfumers, seem occasionally to believe that higher perfume concentration means enhanced strength and tenacity. This is not so. Sometimes the tenacity may be slightly increased but, beyond a certain optimum level, the strength is not increased. Indeed, too high a concentration lowers the tonality of a perfume and flattens it out, curtailing its ability to expand. With a very high concentration dull, non-diffusive perfumes result, and one of the most valued properties of a good grade of ethyl alcohol is wasted.

Control

Adequate checking and control methods are of course essential at all stages of perfume production: from the intake and assay of raw materials, through storage and processing to filling and packaging. The variability of certain materials because of batch or climatic deviations, etc., is an additional