Company Training of Perfumers —Part 1

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Perfumers are the heart and soul of all effort in our industry. Having the best perfumers is a good omen and good staff policy at any company. One can have excellent management and brilliant staff, but there is no business development without perfumers.

Creativity is a born talent. Whatever training system is applied, real creative abilities are within the trainee. As in music or painting, one can know all the notes and colors, learn everything about music composition and painting techniques, and become Mozart or van Gogh—or become a noisy pop star of one season or a street painter endlessly repeating a mediocre picture. Therefore in a perfumery company, the main objective of the manager is to recognize talent and develop it properly. It is very difficult to uncover real talent although it is possible to recognize abilities.

In order to develop that real talent, some basic knowledge is necessary for both a good technician in a perfumery laboratory, as well as for the most brilliant creator. Although there are several well-known perfumery courses and training centers giving good basic knowledge of perfumery, for every company the most important training is in-house using the company's own raw materials and following the company's marketing policy.

The system presented in this series of articles is nothing revolutionary. It was developed as a three and a half year period of basic perfumery training including individual selection for creative work, control laboratories and other fragrance evaluation groups. The method was developed by our staff based on experience, published training sytems of known training centers and literature studies of books and papers written by famous perfumers.

The main point of the system is self training using our basic handbook (which is summarized in these articles), lists of books and journal publications, specified sets of samples and, at the beginning, some assistance of senior colleagues. Our trainees develop their knowledge and prove it by the passing of examinations and presentations of their own creations.

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The whole system is constructed in four stages:

1. Preliminary training and testing of trainee
2. First year—basic study as perfumer trainee
3. Second year—evaluation and basic creation as perfumer assistant
4. Third year—creation as junior perfumer

Each stage is followed by an examination which, when passed, allows our candidates to continue their training and receive higher rank (with appropriate salaries) in the profession.

After completing the course and the final examination, a candidate is given the title of perfumer with further positions of senior perfumer and chief perfumer to be available according to experience and achievement. Knowledge of foreign languages is also an important factor in the development of a perfumer's career.

For each step, the candidate completes a set of experiments, theoretical and literature studies and creative work. Usually basic training and the first year are supervised by a perfumer or senior perfumer, the second year by a senior perfumer while the third year is essentially independent work with occasional assistance of a senior perfumer or the chief perfumer. At times especially promising candidates are selected and guided by a senior or chief perfumer during all stages of training.

The most important consideration at the beginning is selection of an appropriate candidate. The following abilities of a future perfumer are most significant:

- Sensitivity to odors
- Differentiation (discrimination) of odors
- Odor memory and association
- Taste and creativity

The first three abilities are simply technical matters and can be somewhat easily tested. The fourth requires a kind of psychological examination and good intuition on the part of the manager. From our own experience, the following characteristics give a good indication for a future as a perfumer: good appearance, elegant but not necessarily conventional dressing (especially for women), wide interest in the arts (music, literature, painting) and unusual hobbies (e.g., astronomy, radio transmission, photography and so on). Self confidence and easy contacts with people are also very important for a perfumer who should communicate well with customers.

Simple, hard working, well-educated people can become excellent, invaluable members of odor control groups or routine perfumery laboratory staff, but they will never create really good perfumes. Creation in perfumery as in most of the arts needs fantasy and an open mind. These parts of someone's personality cannot be learned even through the best training course.

It must be very clear that all training methods, including the one presented here, can give good knowledge of materials, methods of compounding, replacements, sources of components, and economy in perfumery. Yet, although we can train professional craftsmen relatively easily, to have a really good perfumer we have to find a born artist to train for that profession.

As you will notice in later parts of this series, in our program we include some amount of background knowledge which is not essential for everyday work but which, in our opinion, is necessary for good creative professionals who should know more than just the technical side of the profession. Therefore we include studies on the history of the perfumery and cosmetic industries, agriculture, botany and sources of raw materials, basic chemistry of fragrances (our candidates are in most cases chemists with a university degree), theories of odor and olfaction and modern analytical methods.

Our system is intended for internal use in the company; therefore, it is based on the employment of raw materials, equipment and marketing practices characteristic of a company.

Selection of Candidates

In most cases, we take young people just after completing their formal education, preferably with a university degree in chemistry. However, it sometimes happens that candidates are recruited from our own staff and from other departments. After preliminary interviews, the candidates must pass the following tests to show the ability to smell, recognize, discriminate, and memorize odors.

Test for Smell Sensitivity

This test should show candidate's ability to smell odors, i.e., recognize difference between an odorless solvent and the same solvent with very small amount (down to threshold concentrations) of odorant. Three sets of samples are used. They are vanillin, benzyl acetate and citral solutions in odorless diethyl phtalate. Concentration of the solutions are given in Table I. The candidate is given (in sequence) sets of paper strips freshly dipped in one set of samples (the same odorant) coded with numbers at random. A blotter dipped in diethyl phtalate is marked "solvent." The candidate is requested to identify the

Table I. Test for Smell Sensitivity

	Vanillin	Benzyl Acetate	Citral	Points for Recognition of Odorant
Concentration of	0.005	0.07	0.03	12
the product in	0.008	0.10	0.06	7
diethyl phtalate	0.01	0.30	0.10	4
% w/w	0.05	0.50	0.50	2
	0.10	1.00	1.00	0

samples without odor (the same as "solvent") and those which differ in odor from the solvent. The samples with odor are to be placed in order of increasing intensity of odor. Ten minutes is allowed for each set, and a 30-minute rest is necessary between consecutive sets.

Points for each level of concentration are given (see Table I). For each properly placed sample, the candidate gets two points and for each one placed next to its proper position, one point. The minimum acceptable total is 15 points. It should be considered, however, that this is not the most important test, and the examiner should evaluate it carefully. Even well-trained perfumers sometimes do not recognize samples at threshold concentrations.

The following example will explain the method of calculation of mark points for the sensitivity test. The candidate reported as odorless vanillin at 0.005 and 0.01, benzyl acetate at 0.07 and 0.1, and citral at 0.03. Hence, he was given 2+4+7=13 points. Although vanillin at 0.008 was recognized as containing odorant, it was disregarded because at higher concentration, it was called odorless. Other samples were situated in following order: vanillin 0.05, 0.008 and 0.1, benzyl acetate 0.5, 0.3, 1.0, and citral 0.1, 0.06, 0.5, 1.0. This resulted 2+0+2 for vanillin, 1+1+2 for

benzyl acetate, and 1+1+2+2 for citral. The total is 27 points, a very good result.

Test for Odor Differentiation (Discrimination)

The odor differentiation test is a simple triangle method with four sets of samples prepared according to Table II. The candidate is presented with eight sets of three samples for each of four combinations of materials. The candidate is requested to specify which of the three samples in each set is different from two others or state that there is no difference within the set. A minimum of seven correct out of eight answers is necessary to accept the candidate.

Test for Odor Recognition (Association)

We cannot expect the candidates to name aroma chemicals or oils which they have never met before. But there are odors all around us which can be very easily associated with certain products or situations. A perfumer should have the ability to associate odors and remember them. To test this ability, we collected fifty products which can be associated with common odors. They are given in Table III together with the answers most often given.

During the test, the candidate receives ten samples selected at random from the collection and within one hour—as in other tests, left alone in a separate room—should indicate some identity for each one.

Table II. Test for Odor Discrimination

Sandalwood oil and 8 parts sandalwood oil with 1 part cedarwood oil.

Pine needle oil and 6 parts pine needle oil with 1 part terpineol.

Bergamot oil and 10 parts bergamot oil with 1 part terpinyl acetate.

α-Amylcinnamic aldehyde and 35 parts α-amyl-cinnamic aldehydege with 1 part benzaldehyde.

It should be emphasized that a variety of answers are acceptable. An organic chemist's answers for vanillin and anethol will be most probably "vanillin" and "anethol," but they can also be "ice cream" and "confectionery" which are perfectly acceptable. It is usual that within ten samples we give two very similar (e.g., lemon and orange oils, peppermint and menthol, or rose and geranium).

Each good answer is given two points. A fair one (e.g., fruit for lemon oil) will get one point. Hence, a maximum 20 points are available and 15 is accepted as minimum.

Test for Odor Memory

This test is most difficult and at the same time most important. It reveals a candidate's ability to learn odors, memorize them and use that knowledge.

Table III. Samples for Odour Recognition (Association) Test

Product Name	Example of Good Answer	
Lemon oil	lemon	
Sweet orange oil	orange	can be mixed
Mandarine oil	mandarine	
Grapefruit oil	grapefruit	
Black pepper oil	pepper	
Marjoram oil	marjoram	
Celery oil	celery	
Mustard oil	mustard	
Nutmeg oil	nutmeg	
Clove bud oil	cloves	spices
Cinnamon oil	cinnamon	
Eugenol	cloves	
Anethol	anis	
Badian oiT	anis	Pastis, Pernod
Anis oil	anis	
Acetic acid 1% in water	vinegrette	
Vanillin	vanilla	
Benzaldehyde 10%	bitter almond	
Nonadienal 0.1%	cucumber	
Diacetyl 0.1%	butter or margarine	
Phenylacetic acid	honey	
Sage oil (officinalis)	herbal	
Peppermint oil	mint	
Spearmint oil	mint	toothpaste
Menthol	mint	
Curry flavour	curry, Indian food	
Birch tar oil	tar	
Juniper berry oil	juniper (gin)	
Hay absolute	dry grass	
Pine oil	pine, turpentine	
Fir oil	pine, turpentine	
Costus oil	greasy hair, grease	
Gasoline	gasoline	
Turpentine	turpentine	
Naphtha	naptha oil	
Civet absolute 1%	foecal	
Paracresyl acetate	disinfectant	
Myrrh resinoid	fungi	
Rose oil	rose	
Lavender oil	lavender	
Geranium oil	geranium, rose	
Jasmine absolute 10%	jasmine	
Tuberose absolute 10%	tuberose	
Mimosa absolute 10%	mimosa	
Ionone α 10%	violet	
Aldehyde C-16 (strawberry)	strawberry	
Raspberry ketone	raspberry	
Aldehyde C-19 (pineapple)	pineapple	
Orthotertbutylocyclo-hexanyl acetate	apple	
Blackcurrant absolute	blackcurrant	

All solutions in diethyl phtalate unless stated otherwise.

Table IV. Samples for Odor Memory Test

Notes	Products
1. Citrus	Citral, lemon oil, sweet orange oil, bitter orange oil
2. Lily of the Valley	Hydroxycitronellal, Lilial (Givaudan), Lyral (IFF), Mayol (Firmenich)
3. Jasmin	Benzyl acetate, amylcinnamic aldehyde, hexylcinnamic aldehyde, Hedione (Firmenich)
4. Lavender	Lavender oil, lavandin oil, spike oil, linalyl acetate
5. Rose	Maiarom***, rose oil, rose absolute, phenylethyl alcohol
6. Violet	Methyl heptin carbonate**, ionone α, methyl octin, carbonate**, nonadienol*
7. Hyacinth	Phenylacetic aldehyde, Hiacyntharom***, Datarom***, Hyacinth body (IFF)
8. Orange flower	Methyl anthranilate, aurantiol, neroli bigarade oil, petitgrain bigarade oil
9. Geranium	Geranium Bourbon oil, geranium afrique oil, geraniol, citronellol
10. Anis	Anisaldehyde, anisalcohol, anethol, anis oil
11. Woody	Sandalwood oil, cedarwood oil, Fionon***, p-tert-butylcyclohexanyl acetate
12. Forest	Pine oil, fir oil, isobornyl acetate, cypress oil
13. Resin	Olibanum resinoid, myrrh resinoid, opoponax resinoid, elemi resinoid
14. Amber, Balsamic	Amyl salicylate, isobutyl salicylate, tolu resinoid, benzoin resinoid
15. Spicy	Eugenol, cinnamic aldehyde, clove oil, cinnamon oil
16. Herbal	Wormwood oil, thyme oil, sage oil, armoise oil
17. Earthy	Patchouli oil, Verdol (IFF), homocarenol acetate, Isolongifolanone (Naarden)
18. Musky	Musk ambrette, musk ketone, Traseolide (Naarden), Hibiscolide (RBD)
19. Fruity	Fruktarom***, Frestarom***, peach aldehyde, aldehyde C16
20. Honey	Phenylacetic acid**, phenylethyl phenyl acetate, Ethyfan***, Fenoyl***
21. Green	Styrallyl acetate, cis-hexenol, Encetal***, aldehyde AA
22. Vanilla	Vanillin, ethylvanillin, coumarin, heliotropin
23. Mint	Peppermint oil, spearmint oil, menthol, paramenthanol
24. Leather	Birch tar oil*, styrax resinoid, isobutylquinoline**, paracresyl acetate
25. Aldehydic	Aldehyde C10**, aldehyde C11**, aldehyde C12 lauric**, aldehyde C12 MNA**
26. Animal	Indole**, skatole**, castoreum**, civet absolute**

* 1% solution in dipropylene glycol
** 10% solution in dipropylene glycol
*** Pollena-Aroma specialty

Table IV contains a collection of 26 odor groups of various products which are used for that test. Each candidate receives 24 samples in the form of 12 pairs (from the same group) with names of the products given on the samples. There is no indication on the samples that they are from one particular odor group so as to reveal the pairs.

The candidate is given a full working day to learn and memorize the names and odors. The next day, ten samples (no two from the same pair) from the same 24 are presented to the candidate in coded bottles or numbered paper strips. If a candidate has any notes from the previous day, they may be used.

Each right answer is given two points, and each mistake within the pair (e.g., lavender for lavandin, myrrh for opoponax) is marked one point. It should be noted that samples given for recognition should not contain pairs. The minimum acceptable score is 15 points.

With all the tests passed, our candidate is accepted for preliminary training and further testing in work which lasts three to six months. The first period also covers basic training and more testing in a perfumer's job. At this stage a decision should be made on the future direction of training for our candidate. On the basis of observation and examination, a candidate may be rejected, accepted for odor control groups (with training focused on odor discrimination) or approved for training as a creative perfumer.

In later parts of this series, we shall describe the course of our training system.

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