Company Training of Perfumers —Part II

By Dr. Wladyslaw S. Brud, Barbara Toczylowska-Kucharczyk, MSc, and Zygmunt Marczewski MSc, Pollena-Aroma, Warsaw, Poland

In the first part of this series,* we described methods of selecting suitable candidates for perfumery training and how to test their abilities. This part is devoted to the preliminary training and testing of the trainee. This stage, usually three months long, should highlight the trainee's abilities and decide the program for further training. The basic subjects of a preliminary training program are:

1. Recognition, differentiation and memorization of the basic components of fragrances, both natural and synthetic, according to basic groups of odors.
2. General study of the theory and methods to create fragrance compositions.
3. Learning basic terminology used in perfumery (definitions and descriptions).
4. Preparation (under the supervision of a senior perfumer) of at least three simple floral compositions from just learned materials.

Differentiation and Memorization

This program, unlike many others, offers the possibility for creative work at the very beginning of the training. Difficult exercises such as recognition, memorization, and differentiation of odors, are boring and discouraging when not combined with other tasks. Of course, the composition created at this stage is very primitive, but more or less independent creative work is always very good for newcomers. Table I shows the most common raw materials used to create basic fragrances. These must be memorized by the trainee.

While the candidate is learning differentiation, memorization, and how to use basic raw materials, he/she should be under the constant guidance and supervision of an experienced perfumer. In addition to his/her knowledge, the senior perfumer's attitude to the perfumery profession and to the student are very important for good training results.

Learning simple differences between odors and memorizing basic products should be well planned in proper sequence and numbers. Collections of components scheduled for each day's work should be very carefully selected. The first collection of odors presented to the trainee is prepared by a perfumer or well experienced technician. The collection is in the form of smelling strips. Each strip is labeled and dipped into one product. First collections should not contain components which are very similar in

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Table I. Common Raw Materials

Rose

Rose oil and absolute
Geranium oils (Bourbon and Afric)
Phenylethyl alcohol
Geraniol
Rhodinol
Nerol
Citronellol
Phenylethyl acetate
Geranyl acetate

Jasmin

Jasmin oil and absolute
Tuberose absolute
Ylang-Ylang oil
Benzyl acetate
alpha-Amylcinnamic aldehyde
alpha-Hexylcinnamic aldehyde
Hedione
Aurantiol
Indole
Linalool
Hydroxycitronellal
Benzyl salicylate

Lily of the Valley

Hydroxycitronellal
Linalool
Phenylethyl alcohol
Geraniol
Nerol
Rhodinol
Citronellol
Phenylacetic aldehyde
Cinnamic alcohol
Jasmin absolute
Rose absolute

Lavender

Lavender oils (different types including Lavandin oils)
Lavender absolutes
Linalyl acetate
Linalool
Terpinyl acetate
Geranyl acetate
Bergamot oil

Hyacinth

Phenylacetic aldehyde
Cinnamic alcohol
Phenylethyl alcohol
Hydroxycitronellal
Benzyl acetate
Galbanum oil and resinoid
Styrax resinoid
Narcissus absolute

Lilac

Terpineol
Hydroxycitronellal
Phenylethyl alcohol
Cinnamic alcohol
Linalool
Anisic alcohol
Anisic aldehyde
Phenylpropyl alcohol (Hydrocinnamic alcohol)
Heliotropin

Orange Blossom

Orange blossom absolute
Neroli oil
Petitgrain oils (all types)
Jasmin absolute
Aurantiol
Methyl anthranilate
Phenylethyl alcohol
Linalool
Linalyl acetate
Indole (10%)
Nerolin-Bromelia
Methyl naphtyl ketone

Clove

Clove oil
Eugenol
iso-Eugenol
Benzyl-iso-eugenol
Cinnamic alcohol
Ionones
Ylang-Ylang oil

Violet

Ionones
Methylionones
Heliotropin
Anisic aldehyde
Hydroxycitronellal
Linalool
Phenylethyl alcohol
Methyl heptin carbonate (1%)
Nonadienal (1%)
Orris absolute
Violet leaves absolute
Ylang-Ylang oil

Sandal

Sandalwood oil
Cedarwood oils (Virginia and Atlas)
Sandela (Givaudan)
Santalex (Takasago)
Santalol
Santalyl acetate
Galaxolide (IFF)

Musk

Musk ketone
Musk ambrette
Musk xylene
Musk T (ethylene brassylate)
Galaxolide
Lactone MC15
Macrocyclic musks

odor. For example; ionones alpha, beta, and methylionone alpha; sandalwood oil, cedarwood oil, and sandela; or alpha cinnamic aldehyde, alpha hexylcinnamic aldehyde, and hedione. Each collection should contain 10-15 products with "contrasting" odors (see Table II). This method of memorization and differentiation of odors is called "study by contrasting odors."

Progress of the study is controlled each day by the perfumer (tutor). He gives his student a few coded smelling strips freshly dipped in selected products from that day's training collection. The trainee should recognize the odor and be able to name the product. Each day's results and trainee's progress are reviewed to evaluate the abilities of the candidate. Products which the student has difficulty identifying should be repeated in collections prepared for subsequent days. Several products which some of our candidates found difficult are repeated in example collections.

Each company may want to introduce its own specialties or important basic products at this stage of training. This is fine, but bear in mind the combination of odors in the collections rather than individual components. However, all important commodities should be studied at this stage. As the training progresses, the collections should become more complicated with products of similar odors combined in one group (see Table III).

Evaluation of Initial Trials

As stated previously, it is the tutor's responsibility to select proper odor combinations for the collections. The trainee also should be informed how to smell the strips (distance from the nose, time, breaks, etc.) and how to make notes. No special forms are used at this stage.

After two or three weeks of exercises "by contrasts," if the results are accepted by the tutor, the trainee should thoroughly study one group of

Table II. Possible Scent Collections

Collection 1

Jasmin absolute
Linalool
Hydroxycitronellal
Geraniol
Lavender oil
Phenylethyl alcohol
Galbanum resinoid
Terpineol
Clove oil
Galaxolide
Cedarwood oil

Collection 2

Rose oil
Ylang-Ylang oil
Benzyl acetate
Benzyl salicylate
Lavender oil
Cinnamic alcohol
Methyl anthranilate
Eugenol
Ionone alpha
Nonadienol (1%)
Sandalwood oil
Musk T

Collection 3

Geranium oil
Geranyl acetate
Hedione
Aurantiol
Linalyl acetate
Phenylacetic aldehyde
Styrax resinoid
Anisic alcohol
Orange blossom absolute
iso-Eugenol
Ionone beta
Cedarwood oil
Galaxolide

Collection 4

Hedione
alpha-Amylcinnamic aldehyde
Terpinyl acetate
Bergamot oil
Narcissus absolute
Phenylpropyl alcohol
Indole (10%)
Heliotropin
Violet leaves absolute
Sandela
Lactone MC15

Collection 5

Citronellol
Tuberose absolute
alpha-Hexylcinnamic aldehyde
Phenylacetic aldehyde
Lavender oil
Petitgrain oil
Anisic aldehyde
Nerolin-Bromelia
Methylionone gamma
Clove oil
Methyl heptin carbonate (1%)
Musk ketone
Galbanum oil
Hydroxycitronellal
Cedarwood oil

Table III. More Complicated Collections

Collection 6

Geranium oil
Benzyl acetate
Cinnamic alcohol
Geraniol
Linalyl acetate
Styrax resinoid
Eugenol
Geranyl acetate
Lavender oil
alpha-Amylcinnamic aldehyde
Bergamot oil
Sandalwood oil
Galaxolide
Ylang-Ylang oil

Collection 7

Linalool
Hydroxycitronellal
Terpinyl acetate
Galbanum oil
Phenylethyl alcohol
Bergamot oil
Phenylacetic aldehyde
Neroli oil
Ionone alpha
Hedione
Violet leaves absolute
Cedarwood oil

Collection 8

Clove oil
Petitgrain oil
Rose oil
iso-Eugenol
Jasmin absolute
Cinnamic alcohol
Tuberose absolute
Eugenol
Ylang-Ylang oil
alpha-Hexylcinnamic aldehyde
Narcissus absolute

odors (preferably floral). Then the first "compounding" work will begin, preparation of a simple composition with the studied odor.

The trainee should make his first trials alone without any assistance from the master perfumer. After the trainee decides that his composition is good and matches the selected odor, he can ask his tutor for evaluation and comments.

It is very important that during these final trails the trainee should not be limited in his work and inventions. If he decides that some products from other than the selected odor group will fit into his "creation," he should be encouraged to use them. For example, the trainee may be working on "rose" and wants to use galaxolide, hydroxycitronellal, or tuberose absolute. This should be considered a sign of good creative thinking, and used as a basis for discussion on the structure and construction of fragrance compositions. This discussion also will disclose if the candidate used the additional component on purpose or by accident.

We consider this part of the training a crucial point for the candidate's further work and motivation. The tutor's handling of initial test results and creative works could influence the trainee's future attitude toward perfumery. Also, preparing a composition is an excellent relaxing break for the trainee from otherwise annoying exercises.

During the first "creative" exercises the trainee should learn methods of compounding "by volume" and "by weight." After the candi-

date understands both methods he should choose a preference for further work. If your company requires that a specific method be used, there is no need to teach the other.

It is also important at this stage to include some study on the sense of smell, theory of odor, fragrance-structure relations, odor receptors and their performance, anosmia and so on. This should give the trainee basic information about his own sense of smell and help him use it properly with the highest efficiency.

During discussions with the student, the tutor should introduce essential definitions and descriptions used in the fragrance industry and perfumery. Some important terms include:

- essential oil
- aroma chemicals
- absolute
- resinoid
- fragrance composition, fragrance compound
- base—heart of the composition
- fragrant note, accord, dissonance
- volatility, tenacity, stability, intensity of odors
- odor threshold
- extraction, distillation
- fixative
- compatibility of perfume compound and product

After the candidate can identify all products listed in all collections, he should verify his "creations" and make all necessary improvements before examination. Some assistance from the tutor is helpful at this stage.

Examination Procedures

The preliminary training and testing ends with the examination of the trainee's knowledge and abilities. This is done by a panel consisting of the tutor, chief or senior perfumer, fragrance laboratory manager, and personnel manager. The following tests should be prepared:

1. 25 coded samples of products selected at random from the collections are given to the student. By smelling, he should be able to recognize them. 20 proper answers are the minimum for a passing grade.
2. Give five triangle differentiation tests on products selected from the collections. The third different sample should be either a very similar product, or the same as the other two but diluted, or the same but with some impurity added (or impure fraction). A minimum of three correct answers is required.
3. The candidate should present three floral compounds which he created during his training along with an explanation on how they were prepared and why each of the components was used.
4. The panel will ask the candidate basic theoretical questions and will evaluate his answers. The trainee's oral presentation demonstrates his professionalism—an important part of a perfumer's overall education. The following are possible sample questions:

—What is the difference between essential oil and absolute?
—Describe the terms "tenacity," "intensity," and "stability."
—Steam distillation is a basic method to prepare essential oils. Do you know any other methods?
—Describe the human sense of olfaction.
—How many products do you know which have "rose" odor?
—The stability of odor is an important property of fragrance. Are there fragrances which should not be stable?
—Define "odor threshold" and "just noticeable difference."
—What is the difference between "note" and "accord" in perfumery?
—Describe the production of lavender oil, concrete and absolute?
—Name the most important solvents in perfumery.
—How would you react to a fire in your laboratory?

Summary

Examination results should lead to a decision about the candidate's future career within the company. Very good results in odor recognition and differentiation and good odor memory with poor results in creative work will indicate a good odor quality control team member. Invention and creativity should start during the next stage, First Year—Basic Study as Perfumer-Trainee, which will be discussed in a future article.

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Address correspondence to Dr. Wladyslaw S. Brud, Dunikowskiego 28, 02-784 Warsaw, Poland.

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