

The Physiologist and the Perfumer

An exchange of ideas between Prof. Andre Holley of the University Claude Bernard, and Vice-President of E.C.R.O., and Edmond Roudnitska, Art et Parfum.

Edmond Roudnitska prepared the following papers for presentation at the 9th International Congress of Essential Oils in Singapore. Only the first "Conversation" with André Holley was presented in Singapore because of time constraints. It was read by Stanley E. Allured, Publisher, since Mr. Roudnitska was not able to attend in person. The conversation with André Holley was translated by Paul Johnson, Robertet, in Grasse. The conversation with Maurice Chastrette was translated in the U.S.A. and edited by Mr. Johnson and Mrs. Roudnitska.

A.H.: In your article entitled *The student perfumer and his palette* (Dragoco Report 1/82), you wrote about the exercise in composition you used to give your students: "exercise no. 1 consists in a very simple mixture of 6 products, all of them constituents of the essence of Neroli, but intermingled in such a way as not to make it too easy. The student will then be asked to reconstruct the composition, i.e., to

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identify—by smell alone—the constituents and their proportions.”

When one thinks of the skill required to properly prepare this mixture exercise, one is bound to conclude that if a certain number of precautions are not taken while blending the mixture, the student will—with a little care and attention—perceive not a synthesis but distinct elementary olfactory elements. Now, as far as olfactory mechanisms go, this is by no means obvious. For what we know of the way in which receivers work could just as well fit in with the perception of a totally (or almost totally) new form, no special precautions being needed to bring about such a confusion. If an art of the mixture is required in order to achieve a form which does not reveal its constituents, it is because our nervous system spontaneously applies to each peripheral form a treatment aiming at preserving its individuality and allowing it to be recognized even when part of a mixture. Biologically speaking, an analytical perception of the elements of a mixture is of more benefit to the survival of animals than a synthetic one which would erase all peculiarities and prevent the presence of individual constituents from being spotted, thus preventing the perception of olfactory messages pertaining to food, sex, danger. Hence the idea that evolution encouraged the development of nervous mechanisms which only allowed limited possibilities of analysis.

E.R.: We know by experience that analysis requires efforts of concentration and abstraction. The global aspect of perception seems to be the first to be naturally received. This corresponds to the behavior of the child, as Henry Piéron well understood. One's approach to smell is that of an animal, then—with the help of an investigating and informed mind—one can start decomposing this primitive sensation. In that, your first theory holds.

But, in fact, if fragrant ingredients are mixed up in a haphazard fashion, the resulting incoherence makes it easier to identify them. Each product stands out. While, on the contrary, by harmonious blending of individual olfactory elements, one can obtain a more or less original global form, whose components are well blended and do not stand out.

When preparing the Neroli exercise, for example, what do I really do? I try to *schematize* the arrangement worked out by Nature. Now what did Nature do but arrange constituents in such a way as to achieve the sensation of a

single homogenous olfactory form which is perceived by my receiver as the smell of Neroli.

What then is my problem? It is precisely to try and schematize, i.e., obtain by means of 6 products only the Neroli effect, which Nature achieved with several hundreds of constituents. And since it is more difficult to conceal the identity of 6 products than that of several hundreds well intertwined, this requires a great effort in conciseness and rigorous harmonisation. Such an effort belongs to the realm of art and will be fascinating if successful. This is also why Gauguin showed so much insight and introspection when saying that the artist worked *in the same way as Nature*. I feel this deeply too and it cuts short all quarrels around the “imitation of Nature.” For to work *in the same way as Nature* does not mean to imitate but to use comparable means to those of Nature in order to achieve one's aims. And this would be no bad definition of art.

One must therefore note that in the case of Neroli (as in many other similar cases) Nature did not care to make its mixture accessible to analysis, but on the contrary, strived to create a

coherent whole presented in such a way as to defy analysis for a long time.

Fortunately, our points of view complement one another. You stand on the side of the receiver and its complex network, trying to put yourself in its place (which is not easy), and I am on that of the fragrant molecule, be it simple or complex (though myself a receiver), so as to try and wrest from it some of its secrets, to get to know it better, in order to better use it, better serve it and better understand what exactly I am doing when I compose with it. That's not easy either.

Both our points of view are necessary in order to take in the olfactory phenomenon as a whole and to construct valid theories. But I do believe that these will in the near future merge into one, deeper point of view, each of us having adopted the other's point of view and mixed it up with his own.



I am well aware that it is vital for animals to be able to easily and quickly detect what is good, bad or dangerous for them. That's why Nature has given them superior means of investigation and defense (sense of smell, sonar, instinct) to those of man, who himself enjoys other privileges. And those privileges probably made it unnecessary for man to be equipped with as accurate a sense of smell as that of animals. We nonetheless know that our sense of smell is potentially quite remarkable and this can be demonstrated by exercising it, i.e., in the art of the perfumer and of the wine, butter or cheese tasters. If man's sense of smell is neither so keen nor so long-ranging as that of some animals, the fact that man's brain can register and intelligently process olfactory data quite makes up for it. There I must nevertheless point out that I one day was able to smell the odour of Tanneron's mimosas all the way from St Vallier-de-Thiery, that's to say from a distance of 15 km as the crow flies—the wind helping probably.

What I tried to do with the exercises proposed to my students—before coming to any synthesis—was to help them discover how good they could be at discriminating olfactory elements and encourage them to keep working at it.

Besides, the vital indicators required by animals do not in general consist in chemically pure bodies, but in fragrant complexes of which only the global form need be known for their meaning to be perceived. The wine taster does not, after all, need to analyse the wine in order to assess its global quality.

A.H.: During our researches on the olfactory bulb (works of Jeanne Pager, Rémy, Gervais and Michel Chaput), we have for some years been looking into the question of certain nervous fibres which—contrary to those which bring information to the brain—lead from the brain to the bulb. We know that these “centrifugal” fibres modify, modulate, the flow of incoming olfactory messages, without knowing precisely the reasons for this modulation, this monitoring of the sensorial inflow.

I have for some time now been wondering whether these could not help better define the forms which attention—motivation—wishes to privilege within the whole as it is perceived, when this whole results from blending. They could be part of a mechanism, an automatism thanks to which each element in an olfactory mixture would retain a minimum of individuality. One can imagine these centrifugal fibres to be particularly active in a student when per-

forming a task which requires analysis—all the more so as your teaching method makes this task more intricate due to a skillful choice of proportions. If we retain such considerations, we can be led to view the art of the perfumer as a successful outwitting of the olfactory system, or at any rate of its analytical power. What do you think of that?

E.R.: Having never heard of the existence of these centrifugal fibres, I had no opportunity to think about their possible function. They are bound to have one, for Nature does nothing without purpose.

The previous example about the study on Neroli showed that Nature likes synthesizing. This is obvious too in colours, in flowers and in animals. Nature combined them with such an art of synthesis and harmony that it is sometimes difficult to imagine how it can have done it. Did we not name saxifrage umbrosa “désespoir du peintre”?

If I did not try to synthesize and harmonize as I do when preparing the Neroli exercise with 6 products only, the reconstruction would really be too easy and this I had leisure to observe too. For the identification of the constituents largely depends on the student's attention, on the extent to which he concentrates on the problem, on his qualities as an observer. In what way can this mental effort act on the receiver so as to make it analyse? It would be interesting to find out and it may be that—as you suggest—these centrifugal fibres play a part in this. What you said of the functioning of the receivers who in a mixture tend to perceive a new form, seems to fit in with Nature's tendency towards synthesis. This implies that when the student is quite easily able to spot out the constituents, it does not mean that his receiver prefers to analyse but rather that the mixture has not been done so skillfully, so artfully as by Nature.

We cannot ignore the fact—which is true for man and not for animals—that analysis is the result of *thought* based on sensorial evidence rather than of this evidence itself. During the study of the orange blossom series, the student was able to take note of many olfactory indicators for each Neroli constituent, which he obviously did by using his nose; but it was his imagination which formulated these indicators, which qualified them and qualified the whole that they form in the Neroli fragrance itself, and which singularised its fragrance by means of a precise olfactory image. It is this image which will remain for good in the student's memory

while the receiver need no longer intervene, except for discreet reminders or further enquiries. The sense is no doubt a blind transmitter passing on raw data which can only be fruitfully exploited by an *active* brain.

Each attempt at reconstructing the formula in the Neroli exercise is for the student an opportunity to complete and define his mental indicators for the constituents tried out. He tries—mentally still—to find out those elements that could fit in with the references of Neroli itself, and most of all he must strive to follow-up the destiny of all those mental indicators within the mixture. By so doing, he will begin to acquire a knowledge of the mixture which will later on enable him to assess—without too many mistakes—that by mixing such and such elements, such and such a thing will occur. And when faced with that particular “thing,” he will quite accurately deduce that it is made of such and such products. Analysis will then have been done by his brain, his receiver being nothing but an instrument requiring that the data it transmits be sensibly interpreted.

You know that a perfume, like a piece of music, can be composed on paper without the help of any other sensorial references than those to be found in the mind or the memory, the senses being used only afterwards as a means of checking up. All the mental activities revolving around the creation of perfumes therefore owe nearly nothing to the way in which the receiver functions. This is not true for the user—nor for the perfumer himself when smelling—for they need to take into account the way in which their receiver works and its vulnerability, so as to spare, exercise, educate and improve it.

When reading your article, some questions and ideas come to my mind. How can we know that those fibres—which lead in the opposite direction to the flow bringing in information—modify and modulate this flow? The work of the brain being the result of many connecting electrical circuits, could these centrifugal fibres not simply help realise the connecting of the circuits which transmit the olfactory data? One could also imagine a kind of filtering or sorting out system that would clarify the data, make it easier to assimilate by the mind, since we know that olfactory information must create a state of consciousness. I also wondered whether we could not see in this an analogy with the inhibiting system which regulates the intensity of our perception, centrifugal fibres playing there a qualitative part such as the one imagined here above. They could thus play a part in the “iden-

tification of forms" realised by the receiver.

I do not believe the art of the perfumer to lie in the outwitting of the analytical power of the olfactory system, for the capacity for analysis seems to me a phenomenon of the mind rather than of the senses. The art of the perfumer does not lie in achieving dissimulation but in creating forms, *in the same way* as Nature. Nature composes—in all fields—and the artist tries to do the same, while keeping his own aims in mind. Through the practice of his art, the perfumer can improve his capacity for analysis, by developing to the extreme his capacities for observation, by multiplying and defining his indicators, by establishing and developing his *critical sense*.

This can be easily demonstrated by a game I played when I was 22 years old, in an analytical laboratory in Grasse. I had occasion then to analyze a lot of Ilang-Ilang oils, from various sources and of diverse qualities: extra, first, second, and third. The significant test was that of density which could fall within an approximate range of from 0.925 to 0.970, but the olfactory

test was the final judgment—which caused me to be all the more vigilant.

Examining my oils very closely as was my wont, I could not fail to draw up a correlation between the densities and the corresponding odors. Also, prior to measuring the density of an Ilang-Ilang, I would sniff it carefully and attempt empirically to estimate its density, correcting and widening my olfactory parameters in each instance. After fourteen months of this training—the length of time that I spent at the analytical laboratory—I was constantly successful in estimating, the density of an Ilang-Ilang, with my nose, nearly up to the third decimal: 0.954 instead of 0.959, for example.

Such a performance is not exceptional; even less does it demand an exceptional olfactory sense. I am in the right place to know this. What are required are intellectual and moral qualities: a liking for mental effort and will power. That is where the majority stumble, *not* on the physiologic level. I shall point out that the nose by the way can be a good measuring instrument for those who exercise it.

