In an experiment made in the early part of this investigation in which 1 percent solutions of strychnine (as sulphate) lost 49.1 percent, 42.6 percent, and 36.1 percent of their strength, respectively, the losses were found to be due to the presence of carbonate in the earth, though the carbonate was not sufficiently soluble in distilled water to produce an alkaline reaction.

For general use purified talc is the most satisfactory clarifying medium for pharmaceutical purposes, but care should be taken to avoid loss both of the solution and of strength, by excess. The smallest quantity that will do the work should be employed, both for economic reasons and for standard results.

Another point suggested by these experiments is that in making preparations which need to be clarified it is safer to adjust the final volume before clarifying than to make up to the full yield by passing enough menstruum through the filter to obtain it. Since the material absorbed in the filter is richer in dissolved or absorbed substances than the filtrate, washing with a relatively small amount of menstruum is not likely to displace it entirely, and the product is so much the weaker. The loss of a small portion of the product is better than the weakening of the whole.

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PERFUMES.*

BASIC MATERIALS, PRODUCTION, PRESERVATION AND SELLING POINTS.

BY WILLIAM A. HALL.

In considering this subject, I am impelled chiefly to throw what light I can for an educative effect, and from that, by deduction and the experience such statements as may, if followed, result in a better understanding of this article of commerce, the limitations and means to be taken for our financial benefit.

From the earliest written records the item of *perfumes* has ever played an important part and always has it seemed to be not merely a luxury but a necessity. Writers have vied with each other in describing the art of perfume manufacturing, and many uses to which the products were put. From sage to savage, from ruler to the humblest citizen, has come the demand for this invisible scent or perfume, and to furnish it have collectors, chemists, steam and sail, perfumer and dealer been requisitioned.

The crude methods of the ancients have yielded to the refined processes of the present, but the facts are as true to-day as of yore, and emphasis should be laid here that the floral odors, as produced by Nature and conserved by man, cannot be successfully supplanted by the synthetical coal-tar products of the present, so freely exploited.

Rankness, as against fragrance, variation *vs.* stability, greater present profit *vs.* permanent future business, you may have, but who wishes to exchange the promise for the reality, when it comes to our commercial efforts?

If one rose is fair and sweet, as is universally acknowledged, think of nineteen hundred sixty tones of roses, the product of one season, in the Valley of Var in the south of France; think of one hundred tons of roses a day, often gathered at Grasse, the rose centre of that region.

At Grasse, they use three thousand pounds of rose leaves to make a pound of attar or *otto of roses,* the well-known oil distilled from the fragrant petals, and

* Read before the Section on Commercial Interests, A. Ph. A., San Francisco meeting.

into every ounce of the rich essence is concentrated the odor of 400,000 roses, so that to make the whole pound it would take nearly half a million roses. The pound of French attar sells for as much as three hundred dollars; at retail, by the ounce or drop, the quantity in which it is more frequently sold, it would bring a great many times as much as that sum.

Many flowers are made into the perfumes of commerce, but the rose has ever been the queen of the perfume market of the world, as she is of every garden. From the earliest times, the fragrance of the roses of the Persian summers has been distilled for the delight of the whole year round. Later on, they began to cultivate roses in Turkey for the same purpose, and so in India, till down to the present time, when, though these older countries still furnish some share of the entire output, the greater part of the flower perfume supply comes from the fields of Bulgaria and France, the quality of France's product being recognized at the present time as superior to that of any other country in the world.

If the Valley of Damascus and the Vale of Cashmere deserve the fame that the poets have given them for their production of sweet scents, certainly Grasse is the spot to which the modern writer, to whom the sentiment of fragrant odor appeals, should go for inspiration. Grasse is the principal centre of the raw perfume trade of Europe, and through its steep and narrow streets have been carried every year, for centuries, the tons of rich substance heavily charged with the concentrated essences extracted in its factories from the blossoms gathered in the fields. It is said that the famous Catherine de Medici was the one who first discerned the possibilities of Grasse as a perfume centre, and that she gave the order for roses to be planted there for commercial purposes, and for the establishment of perfume factories in the place.

Though the output of roses is one of the greatest flower products of the place, there are many other flowers grown for market in the fields of Grasse. Among the crops next in importance are those of the violet, jasmine and neroli, which is the oil of the bitter orange flower. The crops are produced in regular succession by the flower farmers, just as ordinary peas and potatoes would be brought forward, each vegetable in its season, and the flowers are gathered and marketed with the same system that the truck farmer employs to dispose of what he has produced.

The fragrant harvest of this neighborhood, beginning in January with the violet and lasting late in the fall, gives employment to a great number of persons, mostly women and girls.

The rose that is grown at Grasse for the manufacture of perfume is a pink rose known in the neighborhood as "Rose de Mai." This is botanically the *R. Centifolia,* no doubt the same as the old-fashioned "Hundred-leaved Rose" of our gardens. The rose that is used in Bulgaria is the famous red Damask Rose, which originated in Persia, and was also very familiar to our gardens in days of the past, if it is not to be found there at the present time.

The Grasse farmer sets his bushes out in rows, not too close to each other, on ground gently sloping to the southeast, if possible. The young shoots are taken from a five-year-old bush, and are planted in the ground, which has been well broken up to a depth of three or four feet. When the plants begin to branch out, the tops are cut off about a foot from the ground. The buds that come out the first year are picked off so that none of the vitality of the plant may be spent in blossoming at that time.

By the fourth or fifth year, the rose bushes in the fields are in full yielding condition. A rosebush, though it lives to a good age, does not yield much after its seventh year; at that period the Grasse farmer digs up his bushes and burns

them. The land is then planted with some other crop for the space of a year, and then set out with roses again.

The rose harvest begins about the middle of April and lasts through May to early June. The time is so short and the blossoms come in such profusion that, even with the immense number of harvesters employed, great difficulty is experienced in dealing with the crop, especially as the orange flower harvest comes in at the same time. The roses must be carried to the factory at once and immediately used, or great loss of perfume occurs. The buds, on the point of opening, are picked in the early morning and dropped into baskets, each holding two bushels of flowers, which are carried on the arms of the pickers. The picking goes on until about ten or eleven o'clock, or all day if the weather happens to be cloudy. When the sun is hottest, no flowers are gathered, but toward four or five o'clock in the afternoon they begin again, and keep on until dark.

At the factory, the petals are first completely separated from the green parts and the pistil of the flower, the pink petals with the central yellow stamens being all that will produce any perfume.

Heaps of as much as four tons of these will sometimes be piled upon the floor of the factory at one time. The petals, after they are separated from the rest of the flower, are then either distilled with water for the production of attar and rosewater, or they are subjected to the process of maceration in warm fat or olive oil, for the purpose of obtaining the perfumed pomade or scented oil from which the bottled perfume is finally made.

This pomade gives the true scent of the blossoms. With attar of roses and rosewater the most delicate odor of the petals is destroyed by contact with boiling water, but with the pomade the grease absorbs the fragrance perfectly and it is afterward taken up by the solvent that is used to extract it. Formerly the olive oil was used for absorbing the scent directly from the blossoms, but now fat or ceresene is the macerating agent. The best fat for the purpose is beef suet mixed with lard of corn-fed pigs.

Some flowers, like the tuberose and jasmine, being especially delicate, have their odor destroyed altogether by contact with even a low degree of heat, so the scent of these is obtained by a cold process, a layer of flowers being placed upon one of refined lard, so that the odor may be extracted gradually by the cold grease.

The success of the pomade from which the perfume is made depends upon the absolute purity of the fat that is used. To bring it to a suitable condition, it is "pan-rendered" by dry steam and afterward washed and washed with various substances and manipulated according to the judgment and experience of the manufacturer until the grease has lost all trace of its animal origin and seems as pure and sweet as the roses themselves.

To make the rose pomade, one hundred-weight of the prepared fat is placed in a tinned copper vessel capable of holding five hundred-weight and melted by means of a water-bath or steam jacket. About one hundred-weight of the flower petals are added and stirred in with a wooden spatula. They are left for a day, being stirred occasionally, and then strained off. More roses are then put in the same pomade, stirred and left in the same way, and so on, until the grease is fully impregnated with the odor of the flowers.

When the pomade is fully scented, the clean upper part, free from impurities, is poured off into the canisters, and then is ready for sale or for immediate use in making the extract. This is done by heating up the purified pomade with refined cologne spirits. The spirits and pomade, kept constantly stirred by a special apparatus, are left together for from three days to a week, until the liquid has

taken up all the scent previously absorbed by the fat from the flowers. The fat and liquid are then separated, the one being of no further use now, except for soap making, while the other is just ready to begin an important career. The perfumer does not take the rose extract as it is obtained from the pomade to make rose perfume, nor violet, nor jasmine, nor any other flower that blows. He combines these extracts with each other and with certain animal perfumes, like musk or ambergris, or with fragrant resins, gums and spices known to those of his craft. One scent is made predominant and characteristic of the mixture; the rest give it body and permanence.

It is a fragrant experience to go, at any time, into a perfume factory, and there are large establishments of this kind to be found in the United States.

The quality of the products of our first-class perfumers is gradually convincing the public of the value of the best American perfumes, though people were slow to believe that anything as fine as the imported extracts could be produced at home. There are certainly perfumes produced in this country which rival, if they do not surpass, the products of the foreign manufacturers, but it is doubtful if the flowers used in making them can ever be grown in the United States. There is no country like the south of France for bringing to perfection the scented blossoms that are desirable for making the best perfumes, so that the American perfumer still imports his pomade from the south of France, and confines his skill to perfecting the combinations that will produce the most fragrant, refreshing and lasting results; and in this he starts even with the Parisian perfumer himself.

Musk is one of the animal perfumes most commonly used to give permanence to the more volatile scents of flowers. A small portion of musk mixed with violet or rose extracts, in connection with such other ingredients as the perfumer's art suggests, attains this object without detracting from the delicacy of the desired odor. While musk is used to a limited extent, as such, by a few, and in some cases by a connoisseur, seldom do persons of good taste use it these days, except unconsciously in the inoffensive quantities that are combined with the special odors of rose, violet, heliotrope, and other flowers which form the basis of a preferred perfume.

Musk is the product of the musk deer, which is found in China and Thibet, and is worth from $20 to $40 an ounce. Another expensive animal product which adds its sweet scent to flower combinations is ambergris, which is a formation taken from diseased sperm whales, while civet, also used in perfume-making, is obtained from an animal of the cat family, found in Abyssinia and the Soudan. These are not all, but the chief animal products used in perfumes.

Having wisely selected a good line of natural odors and placed them in stock, protect them as well as possible from heat and light and from the accumulation of dust and dirt. Frequently clean thoroughly the stoppers and necks of your open bulk extracts. It is desirable to have an enclosed wall case, protected from too strong a light, where all opened bulk extracts can be kept; and not too large a line carried—ten or twelve of the best odors of a first-class maker are sufficient to feature, with, perhaps, the specialities of other makers, providing the demand is created by personal call and not by free goods or special inducements. This case should be large enough so that in the bottom of same can be kept small bottles, 1½ drachms, ½ oz., 1 oz. and 2 oz. capacity, cleaned, corked and labelled in blank, but not filled until the sale, when you can fill directly from the bulk bottle, thus avoiding the use of the graduate commonly taken for all perfumes, and write in the name on the label. Never pour the dregs of an old bottle into a freshly opened one, and you avoid a common cause of deterioration of bulk extracts.

SELLING POINTS.

The demonstrators in large stores have their uses in many lines of goods and with a complete toilet line are more or less successful, but I believe the friend-to-friend advertising of good goods, when it comes to perfumes, is really more effective. The enormous number of petty grafters in the body politic for "samples" without purchase detracts from the demonstrator's success. Instead of the shotgun, why not use the rifle? Get up *yourself* a letter, carefully choosing your language, saying just what you wish and *no more* and send to your select trade on excellent stationery, well printed, under 2 cents postage.

The successful seller of perfumes should have a good *general* knowledge and all the *special* knowledge he can acquire. The tactful salesman shows the perfumes in the most convincing manner, as judgment dictates.

In showing the goods to a customer, find out, if possible, what the customer wants. If a rose, show him a rose, either from the point of the stopper with the spirit evaporated, a bit of clean absorbent cotton, or thin rice paper. Clean cigarette papers are good. Never show the perfume by placing on the hand, especially if you wish to show another odor. If the customer has no choice, then it is up to you to show him, by a similar method, some perfume that he knows has been successful. One must also have enthusiasm to sell perfumes, and the better the goods, the more lasting the result. Having made the sale, deliver the goods in as neat a package as you can, to convey all along the line all the artistic effect possible.

My experience of over thirty years tells me the synthetic odors, or a poor line, do not begin to have the power as a tradeholder that the natural floral odors do; also the latter excels as a business getter and business builder. "You cannot make a silk purse out of a sow's ear." There are reasons for this, too. The synthetic, in a relatively short time, undergoes a change, even to the breaking-up point, while the natural, especially if kept under proper conditions, holds for a long time, with but little change, in the bulk goods. A familiar example is solution of vanillin and tincture of vanilla. The former goes back, while the latter improves with age.

Featuring the product of one first-class line, as indicated in this paper, caused me to buy of that line the past three years: 1912, $295; 1913, $411; 1914, $315. I am indebted to one perfume manufacturer for some of the information given, but who requested his name should not be mentioned.