close linen cloth, and add the boiling syrup which has been clarified in the meantime; continue the boiling for a few minutes, then draw the pan from the fire and examine the syrup with the saccharometer to see if it weighs 32°. Boil to this degree, and filter, while hot, through a woollen bag lined with filtering paper (2 or 3 sheets) reduced to a pulp.

Alcohol at 90 degrees is used as a test for the presence of gum in syrup, and to approximate to its quantity, it is sufficient to pour into the liquid twice its volume of alcohol—white flocculent precipitate falls down, which is abundant in proportion to the quantity of gum which the syrup contains, and which is quite sensible even when the proportion of gum does not exceed a hundredth part.

**Syrup of Marsh Mallow (Guimauve) (althea officinalis).**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes</td>
</tr>
<tr>
<td>Dried root of marsh mallow, very white and crushed</td>
<td>5 kilogrammes</td>
</tr>
<tr>
<td>Pure water</td>
<td>29 litres</td>
</tr>
<tr>
<td>Whites of eggs, number</td>
<td>4</td>
</tr>
</tbody>
</table>

Wash the mallow roots carefully many times in tepid water, crush them with a pestle, or cut them into smooth bits, then place them on the fire in a pan with 20 litres of water, and boil for twenty minutes; strain through a sieve without pressing, add the sugar to the infusion, clarify, boil to 32 degrees, and filter as for gum syrup; add 25 centilitres of orange-flower water to render the perfume of the syrup more pleasant.

The syrup of marsh mallow is difficult of preservation, because of the large proportion of mucilage it contains.

**Lemon Syrup.**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes</td>
</tr>
<tr>
<td>Concentrated spirit of lemons (esprit de citron)</td>
<td>50 centilitres</td>
</tr>
<tr>
<td>Citric acid</td>
<td>400 grammes</td>
</tr>
<tr>
<td>Pure water</td>
<td>26 litres</td>
</tr>
<tr>
<td>Whites of eggs, number</td>
<td>4</td>
</tr>
</tbody>
</table>

Clarify and boil the sugar syrup alone to 32 degrees, strain through a woollen bag, then add the spirit of lemon and the citric acid, which has been previously dissolved in one litre of water and filtered; stir the mixture quickly, and bottle it as soon as it becomes tepid; cork it only when entirely cold.

**Tartaric acid** may, in case of necessity, replace the citric acid by doubling the quantity (800 grammes).

The process we have described is preferable to that in which the juice and rinds of the lemons are used; it is not liable to the objection of leaving mucilage in the syrup, which after a short time becomes turbid; besides the syrup of lemon, prepared by the above receipt, cannot be excelled for strength of perfume and delicacy of flavor.

Lemon syrup is liable to a species of alteration, of which we shall speak in the article on **Syrup of Gooseberries**.

**Syrup of Oranges.**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes</td>
</tr>
<tr>
<td>Concentrated spirit of oranges (esprit d'oranges)</td>
<td>50 centilitres</td>
</tr>
<tr>
<td>Tartaric acid</td>
<td>800 grammes</td>
</tr>
<tr>
<td>Pure water</td>
<td>26 litres</td>
</tr>
<tr>
<td>Whites of eggs, number</td>
<td>4</td>
</tr>
</tbody>
</table>

Pursue the same course in every particular, as described for the preceding.

The **syrup of bitter orange peel** is prepared like the preceding, employing the same quantity of the spirit of Dutch curacao (esprit de curacao de Hollande).

The syrups of citric and tartaric acids are prepared in the same way, using 500 grammes of the acid for the former, and one kilogramme of acid for the latter.

**Syrup of Violets.**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes</td>
</tr>
<tr>
<td>Fresh violets, separated from the stems and calices</td>
<td>5 kilogrammes, 250 grammes</td>
</tr>
<tr>
<td>Pure water</td>
<td>26 litres</td>
</tr>
</tbody>
</table>
Bruise the violets very slightly in a marble mortar; then place them in a tinned water-bath; pour on 15 litres of water at 60° Cent.; agitate for some minutes and press lightly, squeezing out the liquid; return the flowers to the water-bath, and pour on the rest of the water (11 litres) boiling. After infusing for twelve hours, pass with pressure through a clean moistened cloth which is free from odor; allow it to settle, and decant the clear liquid, which is returned to the water-bath; add the sugar and dissolve with a gentle heat, stirring it occasionally to hasten the solution; keep the vessel covered to prevent evaporation. When the sugar is completely dissolved, extinguish the fire; and after the syrup is entirely cold, filter. Cultivated violets are preferable to the wild ones, which are less aromatic and not so highly colored; the single to the double, which have scarcely any odor; and those of early spring to those which blossom in autumn.

The use of the tinned water-bath is indispensable for procuring a syrup of violets with a good blue color. The action of the tin appears to depend on its facility of oxidation, by reason of which it saturates, as they form, the acids arising from the organic matter, and prevents their reacting on the blue color. By means of a tinned vessel we may even restore the blue color to the syrup of violets, which has become red or weakened by a slight fermentation, by heating it therein and allowing it to stand for some days in contact with the tin.

Syrup of violets, when taken from the water-bath is sometimes observed to be decolorized; but a more or less prolonged contact with the air will restore the color. A syrup is often met with in the market prepared from an infusion of orris root, and colored by means of litmus, which is sold as syrup of violets; it may easily be recognized. From the first it is not of so clear a blue; it has a violet tint, and when the vial or flask containing it is held between the eye and the sunlight, or the flame of a candle, it appears to be of an intense red; its taste, far from being pleasant and mucilaginous like that of the syrup of violets, is, on the contrary, urinous and disagreeable. If a drop of an acid is added to this syrup of litmus, it instantly becomes of a very brilliant poppy red, while the syrup of violets under the influence of acids still preserves a violet tint very different from the preceding. Finally, the alkalies which change the color of syrup of violets to a brilliant green have no effect on the litmus.

The syrup of violets is often used as a reagent.

**Syrup of Orgeat.**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes</td>
</tr>
<tr>
<td>Sweet almonds</td>
<td>3 kilograms, 125 grs.</td>
</tr>
<tr>
<td>Bitter almonds</td>
<td>3 &quot; 125 &quot;</td>
</tr>
<tr>
<td>Gum tragacanth in flakes</td>
<td>10 &quot; 50 &quot;</td>
</tr>
<tr>
<td>Orange-flower water</td>
<td>60 centilitres</td>
</tr>
<tr>
<td>Pure water</td>
<td>23 litres, 50 centilitres</td>
</tr>
</tbody>
</table>

Throw the almonds into a basin of boiling water, and when the skins slip off easily, cast them on a sieve and place them in cold water; skin them and put them in another vessel of cold water to prevent them from becoming yellow; then take them out in parcels with a skimmer to be ground in a wooden bowl by a cannon ball, adding some of the 28 litres of water in small quantities in order that the almonds may not be transformed into oil; turn the bowl until the almonds are very fine, which will be ascertained by putting a little of the paste in the mouth and pressing it between the teeth. If it contains no bits of almonds, the operation of grinding is finished. Now put the paste of almonds in an earthen pan, and when all the almonds have been reduced to the same state, water is added to form about half the prescribed quantity (12 or 13 litres), heating it with the skimmer, then pass through a tolerably fine hair sieve and put the paste in a linen cloth; put it under the press; then return the paste to the earthen pan and mix it with more water so as to make 26 litres of milk of almonds; strain this milk through a silk sieve, and pour it into a pan over the sugar. Heat it with frequent stirrings to hasten the solution of the sugar; as

398 DISTILLATION OF ALCOHOL.

399 RECEIPTS FOR SYRUPS.
soon as it is melted remove it from the fire. At this moment, add the orange-flower water and the tragacanth, which latter has been dissolved in advance in two litres of cold water from the receipt, and passed through a wet cloth; mix the whole for some minutes and pass through a fine silk sieve.

Syrup of orgeat should never be skimmed; it is necessary to stir the mixture from time to time so long as it is tepid; then pour it into bottles and keep it in a cool place.

It often happens that the syrup of orgeat, in spite of all the pains taken with it, separates into two parts a very short time after it is made; the lower portion clear and transparent, the upper white and thick. This separation is due to the oil of almonds, which is not sufficiently dissolved in the grinding, together with a certain portion of the parenchyma in a minute state of division. The gum tragacanth is used for the purpose of maintaining the equilibrium of the parts in the syrup.

The action of the fire is injurious to the syrup of orgeat, and hence it must not be boiled; the parenchyma being only in a state of minute division and not in combination, and assisted by the mucilaginous principles of the almonds, will rise to the surface and act as a clarifier.

The grinding is also very important; for if it is neglected to sprinkle the water on the almonds in sufficient quantity, they turn to oil, the emulsion is imperfectly made, and the separation takes place all the more promptly.

A mustard-mill answers admirably for the operation of grinding; it allows of the use of a greater quantity of water than can be put into the bowl, and yields a milk of almonds which is a more perfect emulsion; and finally, those who use this mill affirm that the syrup of orgeat never separates even when it contains no tragacanth.

The Syrup of Pistachio is prepared in the same manner as the syrup of orgeat, the almonds being replaced by pistachio nuts.

RECEIPTS FOR SYRUPS.

**Currant Syrup (Sirop de Groseilles Framboisé).**

Refined white sugar . . . 50 kilogrammes.
Conserv of red currants (1st quality) . . . . 26 litres.

Decant and filter the conserve; then pour it on the sugar in the kettle, heat rapidly, stirring with a wooden spatula to hasten the solution of the sugar; mash and crush it if necessary; as soon as it begins to boil, remove it from the fire and let it stand for a moment for the scum to settle. When the scum shall have acquired a little consistency, remove it carefully with the skimmer; pass through a woolen bag without filtering; the hot syrup ought to weigh 32°.

The clarification of currant syrup is effected spontaneously, but care should be taken not to move it for a few minutes before it boils, for fear of disturbing it, and thereby injuring the limpidity of the syrup.

The syrup of Black Cherries is prepared exactly in the same way. It may answer for coloring syrups of too light a shade.

From whim or fancy, consumers demand a very highly-colored currant syrup, so that a very small quantity poured into a glass of water produces a very high color; the conserve is powerless to produce this result, and it is necessary to use other means.

The following is a receipt for a fancy syrup of currants (sirop de fantaisie à la groseille framboisé) with which the public has always been satisfied as well for color as for flavor and perfume.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>50 kilogrammes</td>
</tr>
<tr>
<td>Conserve of currants</td>
<td>12 litres</td>
</tr>
<tr>
<td>Dark wine of Loire</td>
<td>12 &quot;</td>
</tr>
<tr>
<td>Raspberry vinegar</td>
<td>1 litre, 50 centilitres</td>
</tr>
<tr>
<td>Tartaric acid</td>
<td>150 grammes</td>
</tr>
</tbody>
</table>

The wine, conserve, and vinegar are filtered together and poured on the sugar in the kettle, and the operation conducted as above. The acid, which should have been
dissolved in a half litre of water and filtered, is added only when the syrup is taken from the fire, in order to prevent the syrup, by its contact with the acid under the influence of heat, being converted into glucose.

As we have said above, the syrups of acid fruits are liable to an altogether peculiar alteration, and may form a considerable deposit or even granular mass, due to the separation of the sugar, which, when redissolved in water and concentrated anew, will be found to have lost its power of crystallizing, and presents the appearance of a granular, compact mass of grape sugar; it is merely glucose which has been formed under the influence of the acid of the fruit on the sugar. Citric and tartaric acids, which are found in currants, cherries, raspberries, and lemons, are particularly liable to produce this effect. It will be necessary now to explain why this transformation, which is so injurious to syrups, is not always produced, and what may be the means of preventing it. We quote from M. Guibourt, who is both a man of science and a skilful workman:

"I am far from denying the influence of heat on the transformation in question; but I attribute a much greater influence to the fermentation which may be developed in the syrup. Thus, when badly fermented juice of currants still contains pectine in solution, or when the sugar has been dissolved at too gentle a heat to destroy all tendency to fermentation in the juice, the syrup formicizes, and then it almost certainly assumes the form of a granular mass. When, on the contrary, a well-clarified juice is made up with the best quality of sugar, and the syrup is heated until by the escape of carbonic acid the boiling of the syrup is clearly distinguished, it will keep well and will not solidify. I have even seen syrup of currants prepared in this way which was boiled too much, which, instead of depositing concrete grape sugar, threw down transparent crystals of cane sugar. In my opinion, therefore, this transformation of acid syrups into grape sugar is not to be attributed to excess of boiling; it is rather due to

some remains of a tendency to fermentation which it is necessary to destroy."

**Syrup of Cherries (Sirop de Cerises).**

| Refined white sugar | 50 kilogrammes. |
| Conserve of red cherries (cerises) | 26 litres. |

Decant and filter the conserve and pour it into the kettle on the sugar; heat quickly; remove from the fire as soon as it begins to boil; let it rest a few minutes; skin and pass through a blanket, or filter if necessary; this syrup should weigh 32° hot.

Very often this syrup is made during the cherry season, in order to save the trouble of preparing the conserve; in which case the operation is as follows:

Take well-ripened cherries, express the juice and separate the seeds; allow this juice to stand twenty-four hours, then decant and filter; then finish the operation as for a syrup made with the conserve.

**Syrup of Raspberries (Sirop de Framboisés).**

| Refined white sugar | 50 kilogrammes. |
| Conserve of raspberries | 26 litres. |

Follow the directions given for syrup of currants.

This syrup may be made during the raspberry season by the following method, which requires less time than that by extracting the juice:

| White sugar | 50 kilogrammes. |
| Ripe raspberries | 50 |

Throw the fruit into a copper pan along with the sugar reduced to coarse powder; mix the whole together and boil, stirring all the while with a skimmer until the syrup marks 31°; strain through a bag, several times if necessary.

**Syrup of Mulberries (Sirop de Mures).**

| Refined white sugar | 50 kilogrammes. |
| Mulberries (not perfectly ripe) | 50 |
Put them in a pan; heat and boil, stirring the mixture until the boiling syrup marks 31°; then strain through a blanket, leaving the marc above to drain; do not filter.

The syrup of mulberries is usually employed in gargles for affections of the throat.

The marc or residuum of mulberries, raspberries, and other fruits which contain syrup, ought to be well washed and thrown into the infusion of black currants. The washings should be put into the bucket with the skimings.

**Syrup of Raspberry Vinegar.**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes.</td>
</tr>
<tr>
<td>Raspberry vinegar</td>
<td>12 litres.</td>
</tr>
<tr>
<td>Conserve of black cherries</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Pure water</td>
<td>10 &quot;</td>
</tr>
</tbody>
</table>

Dissolve the sugar in the conserve of cherries and water mixed; when the syrup is boiling, remove it from the fire and let it stand a moment; skim, and add the raspberry vinegar; stir the mixture well, and strain through a blanket, or filter if necessary.

**Syrup of Brandy Punch (Sirop de PUNCH au Cognac).**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown sugar of good quality</td>
<td>50 kilogrammes.</td>
</tr>
<tr>
<td>Cognac brandy at 55°</td>
<td>30 litres.</td>
</tr>
<tr>
<td>Concentrated spirit of lemon</td>
<td>10 centilitres.</td>
</tr>
<tr>
<td>Citric acid</td>
<td>60 grammes.</td>
</tr>
</tbody>
</table>

Clarify the brown sugar and concentrate to 32° boiling; strain and filter; put the syrup into a can; then add the cognac, spirit of lemon, and the acid; the last being dissolved in a little water; mix quickly; cover and lute the joints of the cover with paper bands to prevent the evaporation of the spirituous portion; rummage up well after it is perfectly cold.

By replacing the cognac brandy by reduced troix-six (dilute spirits of wine) of the same degree, we shall have sirop de punch ordinaire.

**Syrup of Cherry Punch (Sirop de Punch au Kirch).**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes.</td>
</tr>
<tr>
<td>Kirsch (cherry brandy) at 55°</td>
<td>25 litres.</td>
</tr>
<tr>
<td>Spirits of wine at 85°</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Spirits of nuts (dépist de noyaux)</td>
<td>1 litre.</td>
</tr>
<tr>
<td>Concentrated spirits of lemon</td>
<td>10 centilitres.</td>
</tr>
<tr>
<td>Citric acid</td>
<td>60 grammes.</td>
</tr>
</tbody>
</table>

Produce as with the last.

**Common Syrup of Rum Punch (Sirop Ordinaire de PUNCH au Rhum).**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown sugar of good quality</td>
<td>50 kilogrammes.</td>
</tr>
<tr>
<td>Common rum at 55°</td>
<td>20 litres.</td>
</tr>
<tr>
<td>Spirits of wine at 85°</td>
<td>7 &quot;</td>
</tr>
<tr>
<td>Concentrated syrup of lemons</td>
<td>10 centilitres.</td>
</tr>
<tr>
<td>Citric acid</td>
<td>60 grammes.</td>
</tr>
</tbody>
</table>

This is prepared in the same way as the syrup of brandy punch.

**Fine Syrup of Rum Punch (Sirop Fin de Punch au Rhum).**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refined white sugar</td>
<td>50 kilogrammes.</td>
</tr>
<tr>
<td>Fine rum</td>
<td>20 litres.</td>
</tr>
<tr>
<td>Spirits of wine at 85°</td>
<td>10 &quot;</td>
</tr>
<tr>
<td>Concentrated spirit of lemon</td>
<td>10 centilitres.</td>
</tr>
<tr>
<td>Citric acid</td>
<td>60 grammes.</td>
</tr>
<tr>
<td>Hyson tea</td>
<td>250 &quot;</td>
</tr>
</tbody>
</table>

Make a strong decoction of the tea with four litres of boiling water, and add it to the syrup concentrated to 36 degrees boiling; the rest of the operation is like that for syrup of brandy punch.

Remark.—There is no necessity for burning the punch made from any one of the four receipts, in order to serve it to consumers. To make a delicious punch, it is only necessary to add two parts of boiling water to one of syrup.
**Glucosed Syrups (Sirops Glucoses).**

Glucosed syrups are mixtures of pure sugar with glucose in variable proportions, according to the taste of the liquorist. They are now extensively sold in the market; indeed, it may be said that three-fourths of the syrups sold for refreshments are glucosed syrups. The preference of the public is divided principally between the syrup of currants and orgeat; although other syrups can be glucosed, yet these make up almost the entire consumption.

For this reason, we shall confine ourselves to giving the receipts for these two syrups.

Nevertheless, if it is desired to glucose any other syrup, it will be necessary to employ the quantity of syrup of starch indicated in one or other of these receipts.

**Syrup of Currants (Sirop de Groseilles Framboise).**

Refined white sugar . . . . 40 kilogrammes.
Syrup of potato starch, at 36° . . . . 15 litres.
Conservé of red currants (second quality) . . . . 10 "
Dark wine of Loire . . . . 9 "
Raspberry vinegar . . . . 1 litre, 50 centilitres.
Tartaric acid . . . . 150 grammes.

Put the syrup of starch with the other liquids in the pan on the sugar, and conduct the operation as for the syrup of currants made from pure sugar.

**Glucosed Syrup of Currants (Sirop de Groseilles Glucosé).**

(Product 52 litres.)

White sugar . . . . 33 kilogrammes.
Tartaric acid . . . . 100 grammes.
Conservé of red currants . . . . 9 litres.
Wine of Loire . . . . 9 "
Raspberry vinegar . . . . 1 litre, 50 centilitres.
Syrup of dextrine, at 36° . . . . 15 litres.

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**Glucosed Syrups.**

**Glucosed Syrup of Orgeat (No. 1).**

Best refined white sugar . . . . 40 kilogrammes.
Syrup of very white starch, at 36° . . . . 15 litres.
Sweet almonds . . . . 3 kilogrammes.
Bitter almonds . . . . 3 "
Gum tragacanth . . . . 30 grammes.
Orange-flower water . . . . 50 centilitres.
Pure water . . . . 21 litres.

The operation is the same as for orgeat syrup made with pure sugar.

**Glucosed Syrup of Orgeat (No. 2).**

(100 litres.)

White sugar . . . . 60 kilogrammes.
Glucose, at 40° . . . . 20 litres.
Pure water . . . . 40 "
Sweet and bitter almonds . . . . 6 kilog., 500 grammes.
Gum tragacanth . . . . 45 grammes.
Orange-flower water . . . . 75 centilitres.

(This ought to cost 115 francs per 100 litres.)

Attempts have been made to imitate syrup of orgeat in different ways, some with pumpkin-seeds, others with milk, &c.; but none of these preparations have the flavor of orgeat, nor can they be kept.

We have, however, compounded a syrup of orgeat from the tincture of benzoïn and volatile oil of bitter almonds, which was a perfect imitation of the true syrup of orgeat made from almonds. We may state that our compound, submitted to the taste of a limonadier in Paris, of high reputation, who did not know of its being an imitation, was actually preferred to the genuine syrup. This syrup, it is true, costs as high as the other, but it obviates a great deal of labor, and dispenses with the almonds.

The following, among others, is a ready test for the presence of glucose, derived from starch in syrups:

Place 8 or 10 grammes of the suspected syrup in a white glass bulb, add 10 grammes of a solution of caustic potash (caustic potash, 50 centigrammes; water, 45
grammes), then heat the bulb over a spirit lamp; if the syrup contains glucose, it will acquire by boiling a brownish color approaching that of coffee, and will exhale the odor of caramel; if, on the contrary, it contains no glucose, it will assume a beautiful golden yellow color.

This method, which may be adopted for testing syrups of gum, mallow, capillaire, and orgeat, will not answer for acid syrups, not even the whitest, for the sugar, being inverted by the acid, is also colored by the potash.

There is another test which is considered better for examining syrups containing glucose, which is as follows:—

Dissolve, in 400 grammes of water, 40 grammes of crystallized carbonate of soda, 50 grammes bitartrate of potash, and 40 grammes of caustic potash, and dissolve in 100 grammes of water 30 grammes of sulphate of copper; then mix the two solutions and filter.

If a certain quantity of this solution be introduced into a test-tube, along with a syrup prepared from crystallizable sugar, there will not be any change of color, either cold or hot; but, if there is any glucose or uncrystallizable sugar present, a deposit of protoxide of copper will be produced. However, it must be observed that syrups, which have been boiled for a long time, present the same reaction on account of the uncrystallizable sugar resulting from the prolonged action of heat on the crystallizable sugar.

CHAPTER XXI.

COLORING.

The various colors which have been given to liqueurs have been invented only with the view of gratifying the fancy of the public, which is ever seeking after novelties; in no case do they improve the liqueurs to which they may be added, and most generally they change or destroy the delicacy of the perfume.

Nevertheless, since it is customary to color certain liqueurs, it is necessary to endeavor to improve these colors as much as possible, in order that they may be healthy and pleasant.

A Fine Red Coloring.

Cochineal in powder . . . 125 grammes.
Alum in powder . . . 30 "
Bitartrate of potash (cream of tartar) . . . 30 "
Water . . . 2 litres.

Boil the water, and throw the cochineal into it; after boiling for a few minutes, add the alum and cream of tartar and stir with a small spatula, remove it from the fire and permit it to cool, and put the whole into a stone jar, with one litre of spirit at 85 degrees to keep it.

The alum fixes the color, and the cream of tartar intensifies the brilliancy of the red.

This coloring is used for fine and superfine liqueurs; it produces all tints, from the rose to deep red, according to the quantity employed.

Common Red Coloring (No. 1).

Cudbear in powder . . . 2 kilogrammes.
Alcohol, at 85° . . . 5 litres.

Place the whole in a stone jar and stir occasionally; after digesting four days, draw off the clear liquid and filter before using, if necessary. The cudbear may be charged with a second dose of alcohol (the same quantity), and allowed to infuse until the whole of the coloring matter is exhausted.

Common Red Coloring (No. 2).

Archil in paste . . . 2 kilogrammes.
Alcohol, at 85° . . . 5 litres.

Prepare as the last.

This coloring produces a crimson or violet tint, which may be easily changed or brought to a red by the addition of caramel.
DISTILLATION OF ALCOHOL.

Yellow Coloring.

Saffron . . 125 grammes.
Water . . 2 litres.

Boil one litre of water, and pour it on the saffron, in a vessel which can be tightly closed; after it cools, strain and express; boil the second litre of water, and pour it on the marc of saffron; when this is cold, strain and press; put the two liquids together, and add one litre of alcohol, at 85 degrees, to preserve the coloring. In order to exhaust the saffron entirely of its coloring matter, pour one litre of alcohol at 85 degrees over it, and, after straining it off, put it aside for absinthes.

This coloring is employed in liqueurs to which the flavor of saffron is not obnoxious, but it is not adapted for all those that are colored yellow. To procure a yellow coloring without flavor, place the quantity of saffron indicated above in a hair sieve, and, after having carefully spread it out evenly, place the sieve in a small pan with double the quantity of water, that is to say, four litres; heat it until the water boils, and this will drive the principle which causes the acrid taste of the saffron. Add a sufficient quantity of alcohol to keep it.

Caramel.

Good molasses . . 12 litres.
Water . . 5 litres.
Virgin wax . . 10 grammes.

Place the molasses in a deep pan and heat strongly, stir continually with a large wooden spatula, in order to prevent the molasses from attaching itself to the bottom of the pan, then, when it has arrived at the point of caramelization, which is recognized by the odor and the slight adhesion of the liquid to the spatula, remove the pan quickly from the fire and place it on the floor; then, little by little, pour in the water, which should be heated to 60 or 80 degrees, with caution, stirring all the time with a spatula. Finally, when this operation is finished, pass the caramel at once through a hair sieve.

The molasses when heated swells up and forms great bubbles, which would run over the top of the pan and furnace, if pains were not taken to throw into it the quantity of virgin wax indicated.

Caramel may also be prepared from brown sugar, or any other, but it will cost a great deal more, without being any better in quality. The best quality of molasses should have the preference.

Caramel will produce any shade of yellow desired, from the brightest to the most decided; it is used mainly for coloring brandies; its value for this purpose is very great. One litre of well-prepared caramel is sufficient to communicate an appropriate yellow color to brandy, to 1000 or 1200 litres of reduced trois-six.

Yellow Coloring (No. 2).

Certain liquorists employ for their yellow coloring an alcoholic infusion of turmeric (*curcuma*). In addition to this substance not possessing coloring properties of a high order, its peculiar action on the system should cause it to be rejected by the liquorist who is desirous of selling only good products.

Blue Coloring.

Indigo, in very fine powder . . 30 grammes.
Sulphuric acid, at 66° . . 300 "

Dissolve the indigo in the sulphuric acid in a stone jug or jar without corking it; shake until effervescence ceases; the product is *liquid blue* or *Saxony blue*.

In this form the blue cannot be used; it will deposit in the liqueurs, and communicate an unpleasant odor to them; the acid which is contained in it must be neutralized in the following manner:

Place the blue liquid in an unglazed earthen pot, of the capacity of about ten litres, add two litres of water, and then sprinkle the liquid with 300 grammes of pulverized white chalk, or 500 grammes of Spanish whiting (*carbonate of lime*), and stir with a stick. When the
effervescence shall have ceased, let it rest, decant it, and then filter.

This color is preserved by the addition of 25 centilitres of alcohol at 85°.

**Blue Coloring, No. 2.**

After preparing the liquid blue as described in the preceding receipt, put it in a kettle and add 8 litres of water; boil in it for a quarter of an hour a piece of white and new porous cloth, which will take up the coloring matter; then wash the cloth in many waters to remove the acid, and boil it again in 6 litres of water rendered alkaline by the addition of 5 grammes of carbonate of potash (sulphates of tartar). The blue coloring will leave the cloth and be disseminated in the boiling water. Filter when cold, and rinse the cloth well, that it may be used in other operations.

This coloring is to be preserved in a glass or stone vessel by the addition of 75 centilitres of alcohol at 85°.

This blue should be preferred to the preceding, because it certainly will not deposit in liqueurs, and will not vary in tint.

**Blue Coloring, No. 3 (Dissolved in Water).**

- **Prussian blue**: 60 grammes.
- **Oxalic acid**: 4

Reduce the Prussian blue to a fine powder, then place it in a vessel along with the acid; add the water in small quantities, after the solution is complete, filter and add 60 centilitres of alcohol to preserve it.

This blue may be distinguished from the indigo blue by being less brilliant.

**Coloring for Curacao (demifin).**

- **Brazil wood**: 2 kilogrammes.
- **Cream of tartar**: 2
- **Alcohol of good flavor at 85°**: 60 grammes.
- **Alcohol of good flavor at 85°**: 10 litres.

**Coloring for Curacao (surfín).**

- **Pernambuco wood (best quality)**: 4 kilogrammes.
- **Cream of tartar**: 60 grammes.
- **Esprit de Curacao surfín**: 10 litres.

Proceed as for the last.

Another very beautiful coloring for curaçao is obtained by the following process:

- **Pernambuco wood**: 2 kilogrammes.
- **Common water**: 16 litres.
- **Carbonate of potash**: 6 grammes.
- **Pulverized alum**: 90 '
- **Cream of tartar**: 60

Boil the water and the carbonate of potash in a copper kettle; add the Pernambuco wood and continue the boiling until the quantity of water is reduced one-half; remove it from the fire and then add the cream of tartar and the alum, and strain through a hair sieve.

The carbonate of potash facilitates the extraction of the coloring matter from the Pernambuco wood, but it causes it to pass to a reddish violet. The cream of tartar corrects this color and restores it to a decided red; the alum fixes the color.

Another substance, haematoxylin, which is but little known among liquorists, may be used for coloring curaçao.

**Haematoxylin.**

Haematoxylin is the coloring principle of logwood (*Haematoxylon Campechianum*); it was discovered by Chevreul.

In a pure state, haematoxylin presents itself in small
rose-colored crystallized scales; its taste is sweetish, astringent, and slightly bitter. Boiling water dissolves it readily with an orange-red color; but it is much less soluble in water than in alcohol.

Acetic and tartaric acids change the color of haematoxylin to a brilliant yellow. Soda and potash cause it to change to a reddish purple; by the addition of larger quantities of these alkalies it becomes a violet blue, then a dark red, and finally a brownish yellow. Lime and baryta produce the same effects.

A very suitable color is produced by the following receipt:

**Ezematosylin in powder** 100 grammes.
**Alcohol at 85°** 2 litres.

Digest for two or three days, shaking occasionally.

If it is necessary to produce the color at once, heat the infusion in a water-bath, or use boiling water instead of alcohol.

One hundred grammes of haematoxylin will color one hundred litres of curaçoa.

The color of the Brasiletto and Pernambuco woods, as well as that of haematoxylin, is red; to change this to a golden yellow or amber, it will be sufficient to add a few drops of one of the acids of which we have spoken; but care must be taken not to put in too much acid, lest the color become a pale yellow; the curaçoa in this case, when put into a glass with water, will no longer have a rose tint. This inconvenience may, however, be corrected by carefully adding to the liquid a few drops of a solution of soda or potash.

**Green Coloring.**

Green coloring is produced by mixing the yellow of saffron or caramel with the blue; with the former, the apple and grass green tints are prepared; the latter produces the olive green or dead leaf shades.

The leaves of balm, veronica, and nettles are used in combination or separately by some liquorists for color-
DISTILLATION OF ALCOHOL.

Consideration in this chapter were it not treated more at length in the preceding portions of this work.

The rules which are to be followed in preparing and distilling perfumed spirits, whether simple or compound, are the same.

1. Use very pure alcohol at 85°, free from all odor of marc, empyreuma or other; the trois-six of the South of France should be preferred.

2. Select with judgment and skill the substances which are to be treated with the alcohol.

3. Divide, crush, or bruise these substances in order to facilitate the extraction of the volatile or aromatic principle.

4. Digest the materials in the alcohol for twenty-four hours before distilling.

5. When the mixture is put into the still, add a sufficient quantity of water, about half the quantity of the alcohol (25 litres of water to 50 litres of spirits at 85°).

6. Distill over a naked fire, in a water-bath or by steam, in suitable and well-cleaned stills.

7. Pay particular attention to the management of the fire or steam for fear of explosions and starts, and to avoid communicating an empyreumatic flavor to the distilled liquid.

8. Renew the water about the coil as frequently as possible, so that it may be always cool.

9. Collect in the receiver only the quantity indicated in each receipt, being careful to set aside the phlegm.

We should remark that in certain perfumed spirits a very highly concentrated alcohol will have the inconvenience, when distilling by the ordinary heat, of passing over without being sensibly charged with the volatile oil of the substance treated. It is then necessary to add water in variable quantity, according to the difficulty of distilling the volatile oil with which it is desired to impregnate the alcohol.

Perfumed spirits have less odor than aromatic waters distilled from the same substances. This is due to the fact that the volatile oils being in solution, we might say in intimate combination in the alcohol, even when in large proportion, lose a part of their odor while they retain it in the water which only holds them in a state of suspension. Thus, if a small quantity of a perfumed spirit is poured into a glass of water, the odor will be at once developed, and if the proportion of the essence is sufficiently great, the water will become opalescent and even milky.

This effect is due to the well known fact that the more thoroughly a substance is divided, the greater is its tendency to be vaporized. It is in this way that rose-water diluted with common water becomes more odorous.

By age, perfumed spirits improve in quality, in consequence of the closer bond of union which takes place between the constituent principles: the acridity and sharpness which are always present for a while after the distillation, disappear with time. Perfumed spirits may, however, be improved at once, by exposing them, in bottles or vessels of medium size, to the influence of cold produced by a mixture of broken ice and salt. In less than six hours they will have acquired the desired fragrance and mellowness.

Perfumed spirits are kept in well-stopped vessels in some place which has the ordinary temperature.

Simple or compound perfumed spirits are used for the manufacture of all kinds of liqueurs. The liquorist should always have a certain quantity prepared in advance, so as to be able to use those only which have been standing for many months.

Rectification of Perfumed Spirits.

Generally it is all-important that perfumed spirits should be rectified, if it is desired that the product shall be of good quality.

This operation, which has been sufficiently described heretofore, should be conducted carefully and with intelligence.

Let us suppose that it is desired to rectify 52 litres of a perfumed spirit; 25 litres of common water should be added to the quantity, then distill in a water-bath until
418 distillation of alcohol.

50 litres of perfumed spirit are drawn off; the remaining two litres should be drawn off afterwards, and be set aside with the backings or phlegm. If, on the contrary, the same quantity of spirit is drawn off during the rectification as was put into the still, it will be exactly similar to what it was before, and all the advantages of the rectification will be lost.

backings or phlegm.

the last products of the distillation and rectification of perfumed or other spirits are called backings or phlegm. these products are watery and acrid; they contain much essence and very little alcohol; their odor is penetrating, persistent, and empyreumatic. nevertheless, the distillation or rectification should be pushed far enough to draw off all the alcohol which may remain in the still after extracting the perfumed spirit.

although the phlegm may be charged with a very considerable quantity of volatile oil, it should not be employed in a distillation or rectification of perfumed spirit to which it would communicate its empyreumatic odor; it should be collected together in a barrel and distilled; the product might be employed in the manufacture of common absinthe.

receipts for perfumed spirits.

the method of distilling perfumed spirits being always the same, with a few exceptions which will be pointed out, we shall not repeat the directions with each receipt.

essence of orange flowers (esprit de fleurs d'orange).*

fresh orange flowers separated from the calices . . . . 12 kilog., 500 grms.
alcohol, 85° . . . . . 52 litres.

* [note.—the english and french titles are both given as a matter of interest to those who do not care to hunt up translations for the labels of all the essences, liqueurs, &c., which are offered to the public.—trans.]

receipts for perfumed spirits.

digest the flowers in the alcohol in a water-bath for twenty-four hours, add 25 litres of water at the moment of distilling, lute all the joints, and proceed to draw off 51 litres of a good article; continue the operation to draw off the phlegm which should be collected, until nothing but water flows from the apparatus (which is ascertained by an alcoholometer marking zero), then rectify the first product, adding 25 litres of water, and draw off 50 litres of perfumed spirit.

essence of roses (esprit de roses).

fresh roses (the petals) . . . . 25 kilogrammes.
alcohol, 85° . . . . . 52 litres.
distill and rectify in a water-bath, to draw off 50 litres of essence. the process is conducted as above.

essence of violets (esprit d'œillet).

fresh violets, plucked from the calices, 12 kilog., 500 grms.
alcohol, 85° . . . . . 52 litres.
product, 50 litres.
process as above.

essence of absinthe (official) [esprit d'absinthe] (grande).

dried leaves and tops of wormwood (grande absinthe) (artemisia absinthium) . . . . . . . . . 12 kilog., 500 grms.
alcohol, 85° . . . . . 52 litres.
product, 50 litres.
process as above.

essence of absinthe (roman) [esprit d'absinthe] (petite).

dried leaves and tops of the roman (inser absinthe) (artemisia pontica) 12 kilog., 500 grms.
alcohol, 85° . . . . . 52 litres.
product, 50 litres.
process as above.