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This is English translation
of the French text.

Arts & Trades, Secret Concerning Them
238 pages

V.G. Leather

Title Page Missing
early 1800's

9

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Concerning Them
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This is English translation
of French *Travail de*

Lettre to the Normans,
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800 and 240 pp.

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in the B. M. Catalogue.

p. 233 shows the original
in French. It is a small

book of 11 pages.



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S E C R E T S

C O N C E R N I N G

A R T S and T R A D E S.

C H A P. I.

SECRETS relative to the Art of ENGRAVING.

I. *A wax to lay on iron or steel.*

TAKE the bulk of a nut of white wax: melt it, and add to it the size of a musquet ball of ceruse of Venice. When both are incorporated together, form this composition into small sticks. With them rub your piece of steel, or iron, after having previously warmed it sufficiently to melt the wax, which you will spread well over it with a feather. When the wax is cold, trace whatever you will on it, and pass afterwards, on the lines you shall have drawn, the following water.

II. *A mordant water to engrave on steel.*

1. Take good verjuice in grapes, the strongest you can find; alum in powder, and a little salt dried and pulverised. Mix all together till perfectly dissolved: then pass some of that water on the lines of your drawing, repeating the same, till it is sufficiently deep engraved. That engraving will appear white, as silver, on a white ground.

2. Or else take verdigrise, strong vinegar, ammoniac and common salts, and copperas, equal parts. Set all together a-boiling, for a quarter of an hour: then strain it through a rag, and run some of that water on your
A plate.

plate. In about half an hour afterwards it will be perfectly engraved.

3. CALLOT'S varnish, of which the composition shall be found hereafter, in the *Chapter on Varnishes*, is an admirable composition to lay on the plate you propose to engrave.

III. *To engrave with aquafortis, so that the work may appear like a basso relievo.*

Take equal parts of vermilion and of black lead: two, or three, grains of mastic in drops. Grind them all together, on marble, with lintseed oil; then put this composition into a shell. Next to this operation, cut some soft quills, and let your steel or iron be well polished. Try first, whether your colour runs sufficiently with your pens: and, if it should not, you must add a little more oil to it; without making it, however, too limped; but only so as to have your pen mark freely with it, as if you were writing, with ink, on paper. Then rub well your plate of steel with wood ashes, to clean and ungrease it; after which, you wipe it with a clean rag, and draw your design upon it, with your pen, prepared as before, and dipped into your liquor. If you want to draw birds, or other animals, you must only draw the outlines of them with your pen, then fill up the inside of those lines with a hair-pencil; that is to say, you will cover all the space, contained between the first outlines drawn with the pen, with the same colour, which you will lay with a brush, to preserve all that part against the mordacity of the *aquafortis*. When that is done, you let your work dry for a day or two. When dried thus, you take some fire, made with charcoal, into a chaffendish, and bake over it your colour, by degrees, till it becomes quite brown. Take care notwithstanding not to burn it, for fear you should scald it when you come to scratch, with the point of a needle, those etchings, or places, which you want to be engraved, with the following *aquafortis*.

IV. *Aquafortis for engraving.*

Take verdigrise, roch alum, Roman vitriol, and common salt, of each three ounces; which you will pound into a very fine powder. Have a new pipkin, in which you will put a little more than a quart of water, and
your

your drugs, all together. Let them thus infuse a couple of hours; then place them over a charcoal fire: and, when the water has a little simmered, take the pot from off the fire and let it cool so, that you may dip your hand in it without scalding. Then have an earthen cup, with which you take of that water, and pour it over the work you mean to engrave; so that it may run well, and freely, over all the places which are to be marked, and then off into a pan placed under to receive it. Continue thus to water your work for three quarters of an hour. Then you will pour upon it clear pump water, to wash off the mud which the *aquafortis* shall have occasioned. You are then to try, with a needle, the depth of the lines of your engraving; and, if not at your liking, you must begin again watering it, as before. The only care you are to have, is, that your liquor should not be too warm: for, then, it would spoil the work. It is better to use it lukewarm only, and be longer at it.

V. *To engrave on brass, or copper, with aquafortis.*

You must put in your colour more mastick in drops, and bake it also rather more over the fire, after it is laid on your plate; so that it should turn almost black. And, if it be a flat work, as generally are all those on copper plates, you must raise around it a border of wax to prevent the *aquafortis*, which you are to pour on it, from running off, and which is to be a separating *aquafortis* with which you cover the plate to the thickness of a crown piece. After it has been thus left covered with that *aquafortis*, for a little while, this becomes green: then, is the time to throw it away, and to pour, in its place, some pump water, when you will examine whether the lines be sufficiently deep or not. If not, pour again fresh *aquafortis* on your plate, and thus you will obtain works of *basso relieve* by contrary; that is to say, raised grounds. You may thus engrave all sorts of works.

VI. *To engrave prints, by aquafortis.*

Take some ceruse, which you will grind well with clear pump water, and size it with isinglass. Lay this composition, with a coarse brush, or pencil, on the plate which

which you want to engrave. When it is dry, draw on it whatever design you please. Or, if you want to counterproof a copperplate print, blacken all the back of your print; and, placing that blackened part on your plate, prepared as before, go over all the strokes of your print, with a smooth ivory, or wooden, point; which will stamp the black of the print, in all those places, on the plate. Then you will go again over all the black strokes, which are laid on your plate, with a pen and ink: and, taking afterwards a steel point, very fine and well tempered, you will etch your plate with it, in following all the strokes marked on it, and pour *aqua fortis*, as before directed.

VII. *Another.*

Take white lead, and grind it well with mastick in drops. Cover your plate with it by means first of a brush, and then smooth it with the soft part of a goose feather. Let this dry, for a day or two; then give a second coat, of this composition, over the first; and spread it with the palm of your hand. When dry, bake it over charcoal, till it comes a little yellow; then draw what you will over it, with a black lead pencil; and proceed afterwards, as before directed.

VIII. *The method of engraving with aquafortis.*

1. You must have a very well polished plate, and perfectly clean. Set it to warm over a chafin dish, in which there is a charcoal fire. While on it, cover it with a varnish, either dry or liquid, for there are two sorts: Then you blacken that varnish with the flame of a candle, over which you pass, and repass, the plate on the varnished side:

2. This being done, you have no more to do than to chalk your design on that plate, which is infinitely more easy than to engrave with the graver. For, if you rub the back part of your drawing with some sanguine stone (red chalk) or any thing else, and lay it afterwards on your plate, to trace it with a point, the sanguine, which is on the back of the draught, will easily set off on the varnish: So that you may follow afterwards all the lines of the design, and be infinitely more correct

correct in all the turns, and the expression of the figures. This is the reason why all the painters, who have their own works engraved take the trouble of drawing also the outlines of their figures, that the spirit and beauty of the design may be preserved. Indeed it must be confessed, that we always discover a great deal more art in those pieces which are engraved with *aquafortis*, than there is found in them that are done by the graver. And, even in many of these, the *aquafortis* is often employed to sketch lightly the *contours*, or outlines, of the figures, and to have them more correct.

3. True it is, that it is some times found necessary to touch a little over, with the graver, certain parts which are not strong enough, or that the *aquafortis* has not eaten in sufficiently. For it is not easy, in a great plate, to get all the several parts so proportionably, and *a-pro-pos*, eaten in, as there should be nothing to find fault with.

4. It is not enough for an engraver to work with the point of his needle, or scooper, in all the different places of his work, with the strength and delicacy necessary to make appear, as he wants them to be, the most remote and the nearest parts. It is again requisite that he should take care, when he comes to put the *aquafortis* on his plate, it should not bite equally every where. This is prevented, as follows, by a mixture of oil and tallow, which you will drop in it, from a lighted candle.

5. To this effect he must have a framed wooden board, over-laid with wax, on which he fixes his plate a little slant way: then pours *aquafortis* on it, so that it may only pass over it, and run into an earthen pan, placed under to receive it. Therefore he takes care to examine when those parts, which are not to be so deeply eaten in, have received a sufficient quantity of *aquafortis*: in which case, taking off his plate, he washes it with pump water, by pouring it only over; dries it gently before the fire, then covers the most remote parts, and them which he wants to preserve weakest, with the above mentioned mixture of oil and tallow, that the *aquafortis* should not act any more, on those places. Thus, covering at several times, and as much as he pleases,

ses, such places of his plate as he wants to keep not so strong as others, it results that the figures, which are forwards in the picture, are constantly every time washed with the *aquafortis* which eats in them, till he sees they are sufficiently engraved, and according to the degree of strength which he is desirous of giving them.

6. That sort of *aquafortis* we have mentioned and described in this chapter at the article of the *water for engraving on iron*, and which is composed with verdigrise, vinegar, common and ammoniac salts, and copperas, is also made use of to engrave on copper, in pouring it on the plates, covered either with hard or soft varnish, and scratched, or etched, agreeably to the design you intend to engrave on them.

7. As for what concerns the refiner's *aquafortis*, commonly called *white water*, it is never used but upon the soft varnish; and never as the former, which is called *green water*, by pouring it only over the plate, and letting it run off into a pan under it. A border of wax must be made round the plate, on which, this being laid flat upon a table, some of that *white water* is poured, after having previously tempered it more or less with a proportionable quantity of common water, which is called *pickling*.

IX. To engrave on wood.

You begin by preparing a board, according to the size and thickness you want it, and finely polished on the side it is to be engraved. The sort of wood, which is generally chosen for such a purpose, is either pear-tree or box. And, of the two, this last is even still preferable, both on account of its being of a superior hardness, and also less liable to be worm-eaten. On that board you draw first your design, such as you want it to appear in printing. They, who have not the talent of drawing, as there are a great number, make use of the very drawing you give them, which they paste on their board, by the right side, with a paste made of good flour, water, and a little vinegar. You must take care that all the strokes of the drawing should touch well, and stick on the wood: and, when the paper is very dry, wet it gently, and with the tip of your finger rub it off by degrees, so that the strokes only of the drawing should remain

main on your board, as if you had drawn it with ink and a pen. These strokes, or lines, shew you all that you are to spare, or preserve; all the rest you are to cut off and sink down with delicacy by means of a sharp and well tempered pen-knife, small chisel, or gouge, according to the size and delicacy of the work, for you have no need of any other tool.

X. *To engrave on copper with the graver.*

1. When the plate, which is to be of red copper, is well polished, you draw your design on it with either the black lead-stone or a steel point. When that is done, you have no farther need of any thing but very sharp and well tempered gravers to cut in; and give more or less strength to certain parts, according to the subject, and the figures, you execute.

2. You must also have a certain tool of six inches long, or thereabouts, one of the ends of which, called a scraper, is made in the form of a triangle, sharp on each edge, with which you scrape on the copper when you want it. The other end, called a burnisher, has very much the shape of a fowl's heart, a little prolonged by the point, round and slender. This serves to polish the copper, to mend the faults, and soften the strokes.

3. In order to form a better judgement of your work, you must now and then, as you proceed on, make use of a stump, made with a piece of an old hat rolled up and blackened, with which you rub your plate, on the place you are working, which fills the strokes with black, and makes you see better the effect of your work, as you go. You must be provided likewise with a leather cushion, on which you lay your plate, while you engrave it.

4. We shall not give any further account of the art of engraving than this short epitome, and we shall not attempt to enter into a more particular detail of the various and curious circumstances attending this noble art. They, whose curiosity, on that subject, will prompt them to be more particularly acquainted with it, may amply satisfy themselves, by taking the trouble to read the treatise which *Abrabam Bosse* has purposely composed, on the art of engraving.

XI. *To engrave on steel or iron; such as blades of swords, knives, &c.*

1. Take one part of linden-tree coals; two of vitriol, and as much of ammoniac salt. Grind all together with vinegar, so as to obtain a soft paste of it. Then, whatever you want to engrave on steel or iron, begin first by sketching it with vermilion diluted with lintseed oil, which you shall have put a-drying to use it afterwards like a pencil. When your drawing is done, cover it with the above mentioned paste to the thickness of a finger. This composition must be applied warm; and the more warm it is, the sooner the work will be engraved; though you must have care not to burn it. When this composition is well dry, take that powder off; and wash well the engraved place.

2. You may to the same effect take Spanish verdigrise, or common salt, one part; and while you pound it in a mortar, add some very strong vinegar, and proceed as above.

3. Some make use of vitriol, alum, common salt, and linden-tree coals, which they prepare and use as above directed.

XII. *A water to engrave on iron or copper.*

1. Take Spanish verdigrise, sublimate mercurv. vitriol, and alum, equal parts. Pound it all well in a mortar, and put it in a glass vessel sufficiently large, with a proportionable quantity of the strongest distilled vinegar. Let the whole thus infuse for twelve hours, stirring it often. Draw next what design you like on a coat of wax laid on your iron, or copper, either with a steel point, or fictitious ocher, mixed with lintseed oil. Then pass some of your liquor on the places you shall have etched with a needle or steel point, in following carefully the strokes of your design, if it be first drawn on wax. For, in the use of this method, you must not fail to begin by covering first your plate with it, as we said elsewhere. You may again lay on your design, prepared as we said, some sublimate alone, finely pulverised: then pour over it good strong vinegar, which you will let lay for the space of half an hour, after which wash it with cold water, and clean off your plate.

XIII. *Another*

XIII. *Another more mordant water.*

1. Take Spanish verdigrise, *alumen plumbeum*, ammoniac salt, tartar, vitriol, and common salt, of each a quarter of an ounce. When the whole is well pounded, and mixed with the strongest vinegar, let it thus remain for the space of half an hour. If you want to have your design raised, make it with factitious ocher and lintseed oil, well ground and mixed together, and let it dry perfectly. Then set the aforesaid water a-warming over the fire in an iron pan well tinned with lead; and, leaving it on the fire, take your steel plate, and holding it in one hand over the pan, take with the other of the warm liquor, with a spoon, and pour it on your plate; so that, by falling again into the pan, you lose none of your water. Continue so doing, for a quarter of an hour's time: taking care, however, your water should not be too warm, lest it should set a-running the oil which is mixed with the varnish. When this is done, rub the aforesaid composition with pot-ashes mixed with an equal quantity of quick lime in powder, and you will find that what was covered with the composition will be preserved, and raised from the other parts of the plate which are eaten down.

XIV. *An ardent water to engrave steel deeply, or even eat it off entirely.*

Take two quarts, or thereabout, of thick black wine, the oldest and the best you can find. Dissolve into it quick lime, and brimstone in powder, wine tartar and white salt, of each equal parts, and as much of the whole as there can possibly be dissolved in that quantity of wine. You shall next put all that mixture into a *cucurbit*, or rather in a *retort* well luted. Adapt to it a *bolt-head* to serve as a receiver. Lute well the joints, then give it the heat gradually. There will distill a very mordant water, which you may keep in a phial, carefully stopped, for use.



C H A P. II.

SECRETS relative to METALS.

I. *A secret to cause the transmutation of iron into the finest German steel.*

1. TAKE of clean foot one pound; oak-wood ashes twelve ounces, and four of pounded garlicks. Boil all together in twelve pounds of common water, reduced to a third, or four pounds. Strain this, and dip in it the iron pegs, which you will afterwards stratify with the following cement:

2. Take burnt wood's coals, otherwise called *cokes*, and quick lime, of each three pounds: foot dried, and calcinated in an iron pan, one pound: decrepitate salt, four ounces: Make of this and your iron several beds alternately one over another; and, having well luted the vessels in which you shall have made those beds of iron and cement, give them a reverberating fire, for three times twenty-four hours, and the operation is done.

II. *To make tin.*

Take a discretionable quantity of rye-bran quite pure, boil it a minute or two in vinegar, then add to it a little water, and in that same instant plunge your sheets of black iron: then take out of the fire, and stop well, the vessel. Let your iron rest there and soak for twenty-four hours, after which time take off your iron sheets; score them well with the very bran with which they have been a-soaking, then rub them over a little with grindstones. This being done, make them soak again in a water wherein you shall have dissolved some ammoniac salt, whence having taken them off, set them a-draining, and rub them afterwards with rye-bran, and your *tin* will be done.

Observe that the vessel in which you lay your sheets soaking, must be large enough to receive them in their full intended size.

III. *To*

III. *To break an iron bar as big as the arm.*

Take melted soap with which you will rub your iron bar at the place where you would have it break. Then with any thing take off and clean away part of that unction, in the middle of it, about the width of half a crown. Then take a sponge, dipt into ardent water of three distillations; bring it round the bar, and, in six hours, it will break.

IV. *Another for the same purpose.*

In two pounds of *aquafortis*, dissolve orpine, sulphur, regal, and verdigrite, one ounce of each; of quick-lime, killed in two ounces of triple-distilled vinegar, one ounce. Place the whole in an alembic with one ounce of saltpeetre, and two of ammoniac salt: and, having given a gradual fire to it, you will take the spirits which shall have distilled, and put them again over the *feces* or residue, with an addition of two ounces of pulverised arsenic. Distill this a-new, and keep what arises from it. In this, if you dip an handkerchief and turn it round an iron bar, in three hours time it will break with the greatest ease. You must only take a great care to guard yourself against the fumes, in distilling this composition.

V. *To compose a metal of a gold colour.*

Take refiner's copper six ounces: melt them into a crucible; add one ounce of calaminary stone; half an ounce of tuty, and one of *terra merita*, in powder. Give to this a melting fire for five or six hours running, and no more: then take off the crucible from the fire. Put this composition in powder, and add to it two ounces of common mercury, six of sea-salt exsiccated, and a sufficient quantity of water. Set the whole a-boiling, until there appear no more mercury. Then put the matter into a crucible, and place it between two fires of kindled coals, avoiding carefully the breathing of the fumes. Give this a melting fire, for two hours, then wash the composition in water, till this runs off quite clear. Set this again in a crucible: and, when melted, pour it into an ingot. This will give you a metal, of the most beautiful gold colour which can be desired, and which you may make use of for plates, buckles, snuff-boxes, cane-heads, &c. But one cannot recommend too much the
avoiding

avoiding of breathing the fumes of this composition, while it is making.

VI. *Another composition of metal.*

Take a certain reasonable quantity of the leaves of *Perficaria urens*, called *Arsmart*, or, vulgarly, Water-pepper, which you will dry in the shade. Melt in a crucible six ounces of refiner's copper, and, when melted, throw in one ounce of powder of the arsmart's leaves, or even half an ounce; then cover the crucible with an iron lid, and keep this matter in fusion for the space of one hour, after which you cast it in an ingot. This process will give you a metal which (except the colour that artists can at any time give it by an industry well known to them) has otherwise all the qualities of gold. The only defect is, that it cannot bear testing, and that it must therefore serve only to supply common copper which rusts easily, and has not so much brightness. It may be used for candlesticks, and other similar works.

We thought it was proper here to give this receipt, as it is to be wished we could make ourselves those metallic compositions, which we import from Holland, and other countries.

VII. *To dissolve gold in your naked hand.*

Distill hart's blood just killed: and, after having drawn the spirits *per ascensum* in *balneo-mariæ*, cohobate again three different times. At the third distillation you sublime all the fixt: and, when done, lute well the vessel, and keep the liquor for use. This liquor, carefully preserved, will dissolve gold in the naked palm of your hand.

VIII. *How to give some perfection to imperfect metals.*

It is well known that gold is the most perfect of metals. After this comes silver, the principles of which are very near pure, and equally proportioned between them as those of gold. All other metals are reckoned imperfect and crude. Among them however that which approaches nearest to perfection, is copper. This therefore may easily be purified, by being delivered of all the superficial and combustible sulphurs with which it is loaded. And whoever will proceed, according to the following direction, will not fail to obtain it.

i. Take

1. Take what quantity you please of copper. Set it in a crucible over a melting fire. While melting in that crucible, throw in at different times some tatty powder mixed with equal parts of refined saltpetre. Then, the detonations being made, take the crucible out of the fire and let it cool. Break the crucible and separate the scories from the regulus. Put the copper-regulus into another crucible, and reiterate the same operation three times, till the copper is extremely fine and true gold colour.

2. Now, if you set it a-melting for the fourth time, and project on it persicaria's or hydro-pepper's leaves powder, you will render it still more perfect: and you might thus purify it so far, as to give it, at last, all the qualities of gold.

3. Whoever will know how to purify brass from its foreign sulphur, will turn it likewise into a very fine silver.

4. You may also whiten lead; and, giving it the hardness of silver, render it similar to it.

5. Pewter and quicksilver may likewise be purified, in separating from this last its arsenical sulphurs, and fixing it by the supplement of a fixt, metallic, incombustible and solary sulphur. The other may, by taking off from it its superfluous saline part, and uniting its mercurial one to the true metallic sulphur. But this we cannot expect to attain, if not previously versed in the method of dissolving, analysing, and dividing or separating, and then re-embodying again metallic substances; and this is known by none but the sons of the art, the adepts alone.

IX. To melt all sorts of metals in the shell of a nut, without burning it.

Take saltpetre two ounces; sulphur half an ounce; oak's, walnut trees, or any other very dry wood's saw-dust half an ounce. Let the saw-dust be sifted very fine, and the saltpetre and sulphur reduced to an impalpable powder. All this being well mixed together, fill the shell of a nut with it to the brim; then lay over it a piece of gold, silver, or any other metal you please; and, having covered it again with the same powder, set the fire to it, and you will see that the metal will melt and remain at the bottom of the shell.

X. *To increase the virtue of a loadstone.*

You must let it soak, for forty days, in iron-oil.

XI. *To restore gold to its weight, after it has lost it in regal water.*

Put a bit of *tortoise shell* to soak, for some time, in regal water. Then put your gold in it, and, by that means, it will recover its lost weight.

XII. *To operate the transmutation of silver into gold.*

1. Get a new iron-pan to grow red hot upon a trivet, and then put two pounds of lead in it. As soon as this is melted, throw over it, by degrees, some good salt-petre pulverised. This will melt likewise. Keep it thus in fusion till it is at least half dissipated. Should it take fire during that time, it does not signify; for, it hurts nothing, and the more concocted over again the salt-petre is, the stronger is the oil.

2. Let this cool, divide the salt-petre from the lead. After having well pounded it on a marble stone, carry it into the cellar. There, it will fall into *deliquium* which you will pour into a cucurbit, with double its weight of true French spirit of wine, added by little and little at a time; then distil by a slow fire. Grind on marble, as before, what remains in the cucurbit: and, being turned into *deliquium*, put it again into the cucurbit with some more spirit of wine. Take off these dissolutions and cohobations, repeating the same process over again as before, till the salt-petre remains at the bottom of the cucurbit resolved into a true oil which congeals itself no longer, and this will procure you what is called the Fix-balm.

3. Next to that operation, you will make an *aqua fortis* with equal parts of salt-petre, dried vitriol, and roch alum: and, before you put the receiver to the cucurbit, add steel-filings, antimony, verdigrise, in subtile powder, tatty and cinnabar, of each half an ounce, or one ounce, according to the quantity of *aqua fortis* you want to draw. Cohobate the spirits seven times over, upon the *faces*, which you will grind each time on a marble table.

4. Dissolve one ounce of silver in three of this liquor: and, on that solution, still, drop by drop, one ounce of
your

your nitre-oil in a bottle made like the hour-glasses, which after the operation must be at most only half-full, and which you will cover with another inverted, so that the neck of the under one should get into that of the upper one. Or, else, put it in a matrafs with a long neck, which you will seal hermetically; but, if you make use of bottles, take care to lute well the joints. Place this over hot ashes, and plunge it in them to the height of six inches. Give under this a lamp fire, which should not reach the matter by three fingers distance. You will get every day to the amount of a silver pennyweight of silver fixed into gold. And, when the whole shall have been fixed thus, day after day, the *aqua fortis*, which before was green as an emerald, will become as clear as pump-water. Let the composition cool, and divide the water from the oil, which will never be the worse for use, and must therefore be preserved. At the bottom of the vessel, you will find the silver fixed into gold.

XIII. *Fixation of gold into silver.*

1. Sublime, on a sand fire, some arsenic, with an equal weight of decrepitate salt. Take the middle and crystalline matter which sublimate, rejecting the subtiler flour which rises on the head, and the dregs which remain in the bottom. Sublime over again this crystal, and reiterate so many times as necessary that no flour should longer sublimate.

2. Calcinate some silver with mercury, with which amalgamate it, and this as many times as you may find necessary, that the water in which you wash your silver, after the dissipation of the mercury by means of fire, should run as fair and clean as when you poured it over it.

3. Take one ounce of this calcinated silver, and four of the aforesaid arsenic: sublime the whole so many times as necessary, that nothing should ascend any more. This sublimation may easily be performed in a matrafs laid on its side, which you must turn so as to put always underneath what is sublimed above. By means of such an industrious practice you avoid the necessity of breaking your matrasses every time you want to re-sublime what was already sublimed. At last the matter turns into a stone, which, having pounded, you put

on a digesting bath, till it is all reduced into a fixt oil; which you know to be done by the transparency of the vessel.

4. Take four parts of mercury, and one of that oil. Put first the mercury into the crucible, and, afterwards, this fixt oil. Give a gradual fire, till all the composition be reduced into a lump, which adheres to the crucible. Take it out and test it; you will find it to be the finest silver in the world.

XIV. *To extract mercury from lead.*

Take pearl ashes one pound; vine ashes four; quicklime one; and pebbles calcinated two. Make a strong lye of the whole with distilled vinegar. Dissolve in this two pounds of lead: and, when the lye is become white, throw in ten ounces of borax. When this is dissolved, throw the whole into a retort, and distil it with a gradual fire. You will get, into the receiver, ten ounces, at least, of quick silver.

XV. *Another mercury from lead.*

Take lead filings one pound; ammoniac salt four ounces; bricks, pounded into a powder, three pounds. Distil this composition, in a retort, on a gradual fire. The receiver must be very large, half full of water, and the fire must be continued for twelve hours, pushing it, by degrees, to the very last.

XVI. *Permutation of lead into silver.*

Take fine lead; calcine it with common salt, or, else, with that sort of salt which is extracted from the dregs, *feces*, or *caput mortuum* of Saltpetre and vitriol calcinated both together. Soak the whole warmly with oil of vitriol till you make it come into an unctuous paste. This you will put in a pot, or crucible, well luted, and placed in a pan full of sand, with which you will cover it over intirely. Make under this a digesting fire; that is to say, such a fire as is necessary to warm the sand: keep it so for ten days, then take off your matter, and test it. Out of one hundred and five pounds weight of lead, you will draw five marcs, or two pounds and half weight, of silver capable to stand the test.

XVII. *Fixation*

XVII. *Fixation of saltpetre.*

Melt some lead in a crucible, and project on it pulverised nitre, reiterating the projections in proportion as the matter fuses, till it is entirely melted.

XVIII. *Transmutation of iron into copper.*

Iron is easily changed into copper by means of the vitriol. To do this you put your iron *stratum super stratum* in a descensorium, and set it over a strong blast fire, pushed by bellows, till the iron melts and flows into copper. You must not forget when you have made your beds of vitriol, to water them a little over with vinegar saturated of saltpetre, alkaline, and tarter salts and verdigrise.

XIX. *Another to the same purpose.*

Pound some vitriol in powder, and distil the spirits from it by means of the retort. Replace the spirits on the *caput mortuum*, then plunge and extinguish in them some red hot iron laminas, or filings: and, by little and little, the iron will turn into copper.

XX. *Another.*

Dissolve vitriol in common water; pass it through filtering paper, then evaporate the water unto a *pellicula*, and put it in the cellar, for one night, and you will obtain some green crystals. Redden them in the fire, then dissolve them three or four times in distilled vinegar, drying them every time, till these crystals become red. Dissolve them again in the same vinegar and extinguish in it some red hot iron laminas, filings, or any other iron rubbish; they, and every one, will, by these means, turn into a very fine copper.

XXI. *To preserve the brightness of arms.*

Rub them with hart's marrow. Or, else, dissolve some allum powder with the strongest vinegar you can find, (that of *Montpellier* which serves to make their famous verdigrise is the fittest), and rub your arms with it. By these means they keep forever bright and shining.

XXII. *To manage steel so, that it may cut iron as it were lead.*

Draw, by an alembic, the water which will come from a certain quantity of earth-worms; join with this wa-

ter an equal quantity of horse-radish's juice. Then temper, four or five times, in this liquor your iron kindled red hot. That sort of steel is made use of for knives, swords, and other instruments, with which you may cut iron with as much ease as if it were lead.

XXIII. *To soften steel.*

Take a discretionable quantity of garlic, rob them of their coarsest peel, then boil them in oil of nuts till reduced in o an *unguentum*. Cover well your steel all over with that composition to the thickness of half a crown. When this is done, put your steel, thus covered, in the forge, in the live coals, and it will become soft. To restore it afterwards to the temper, called by artists *red cherry colour*, you must, after having made it red hot, plunge it in the cold water.

XXIV. *To extract mercury from antimony.*

Take antimony and decrepitate salt, of each one pound. Mix them together and put in a retort of two quarts. Set the retort on the bare fire, or on the gradual sand fire. Let the beak of the retort be in water, and at the bottom of that vessel, wherein the water is, you will find the running mercury of antimony.

XXV. *A magical mercurial ring.*

Take verdigrise half a pound, and an equal quantity of copperas. Pulverise each of them separately, and put these powders into an iron pan which hath never been used before for any thing else. Boil the whole, for about two minutes, in very strong vinegar. Then throw into the pan half a pound of crude mercury, which you will incessantly stir with a wooden spatula. Begin to boil first by a slow fire, and never cease to stir the whole well for fear of the adhesion of mercury. In proportion as the vinegar sinks you may add more, not exceeding, however, the quantity of half a pint, or thereabouts. When this has boiled about a couple of hours, the matter will remain in a lump at the bottom of the pan. Let it cool with the small quantity of vinegar which shall remain after the ebullition, then throw it into a large pan of cold water. Handle this lump well in that water, in order to purge it from all the *munditiæ*.

Throw

Throw that first water away, and put clean water in, and do the same again and again, keeping handling the matter well in your waters, till the last remains clear as rock water. When your mercury is thus well fixed, put it in a clean piece of linnen to take off the superfluous parts; and what remains well fixed after this second trial, you must extend on a sheet of white paper, on which, having flattened it quickly, and cut as hastily, for fear it should grow too hard, into small bits of the form and size you like, you expose it to the dew of one night, from the evening to the morning, and then you will find it as hard as iron.

XXVI. *To melt the aforesaid mercury.*

Take Alexandrian tuty, and *terra merita*, of each half a pound, separately pulverised and mixed afterwards together. Stratify your bits of the above mercury, making the first and last *strata*, or beds, with the powders and a little thicker than the others. Cover your crucible with another, and lute them so well that there should no chink remain, which you will examine well after having dried them in an oven. When perfectly dry, place your crucibles in a gold or black-smith's furnace, and surround them well with live coals every way, by the sides, top, and bottom, which you will make blasting for a quarter of an hour; and push by strength of bellows during half an hour, then let them cool gradually in the fire till the next day: when, taking off your crucible, you will find your matter turned into a gold colour. Throw it into a pan of water, and wash it well till the water remains clear. The whole being granulated, put it in a small crucible with half an ounce of borax, and melt it as you would gold or silver, then throw in it an ingot. With this matter you will make your rings in drawing this metal through the wiring bench, or otherwise.

XXVII. *The virtue of those rings.*

They stop the colds in the head, shew the disorders one may be affected with, particularly in those well-known monthly diseases of women. At such times the ring turns of a dull red colour. They are also very useful in killing the worms in small children, if you make them boil in a varnished new pipkin, with a glass (or four ounces) of water, reduced to a third, and drunk fasting.

XXVIII. *A fixation of copper which will be found to yield six ounces out of eight, on the test.*

Take two ounces of fine pewter, which melt in a crucible, adding gradually to it, after it is melted, an equal quantity in weight of flour of sulphur. When all is calcinated, and while still a little warm, add again to it half an ounce of common purified mercury, stirring continually with a spatula till the mercury disappears entirely. There will come a powder, of which if you project one, on four ounces of red copper in fusion, then stir and cast in ingots, you may obtain the promised advantage.

XXIX. *To whiten copper so as to make very fine figures with it.*

Take five parts of copper, which you will melt in a crucible, then throw in one part of zinc. As soon as the zinc is in it, take it off from the fire, and stir the matter a little with an iron rod, then cast it in the molds of your figures. They will look like silver casted ones.

XXX. *To give the finest colour of gold to copper, in order to make statutes, or other works, with it.*

Take one pound of copper, melt it in a crucible, then throw in it one ounce of Alexandrian tuty reduced into a subtle powder, and mixed with two ounces of bean-flour. Take care to keep stirring this matter, and to guard yourself against the fumes. After two hours of fusion, you will take this composition off, and wash it well, and put it again in the crucible with the same quantity as before of the same powders. When melted, for this second time, you may take it off, and cast it in the molds you propose, and had prepared for it.

XXXI. *To imitate tortoise-shell on copper.*

Rub copper laminas over with oil of nuts, then dry them over a slow fire supported, by their extremities, upon small iron bars.

XXXII. *To perform the same on horn.*

Make a cold dissolution of auripigment in filtered lime-water: then, lay some of this liquor with a brush on your comb or other horn work. Reiterate this, if you

you find it has not penetrated enough the first time, and turn it to do the same the other side.

XXXIII. *To soften metals.*

Take saltpetre and camphire equal parts. Dissolve them in a lye made with two parts of oakwood ashes and one of quicklime. Pass this solution through a filtering paper, and vaporise it over a slow fire in a glass vessel. There results a borax which, thrown in metals, while in fusion, softens them perfectly.

XXXIV. *To wash brass figures over, with silver.*

Take one ounce of *aquafortis*. Dissolve in it over a moderate fire one drachm of good silver cut small, or granulated. This silver being wholly dissolved, take the vessel off from the fire, and throw in it as much white tartar as is required to absolve all the liquor. The rest is a paste with which you may rub over any work made of copper, and which will give it the white colour of silver.

XXXV. *To operate the transmutation of iron into steel.*

Take beech and willow, burn them together. When in coals, extinguish them, before they are consumed, with water, or rather, with chamber-lye. Pound them well, and sift them through a very fine sieve. Then burn likewise ox horns, and prepare them the same way. Sift well also foot, vine ashes, burnt shoes ashes, and pomegranates' shells' powder, putting aside and separately each drug by itself, and mix them afterwards, when used, in the following proportions.—Coals twelve pounds; horns ten; shoes, vine, foot, and pomegranate, of each equal quantity, three pounds, all well mixed together. To make *one hundred* pounds weight of steel, there is required *one hundred and twenty* pounds weight of good, soft Spanish iron, not streaky: to which, if you give the aforementioned dose of the said powders, prepared as directed, and put to the fire, for the space of forty-eight hours, you will get the best steel which can be had.

XXXVI. *Another receipt for the same.*

1. Take one bushel of beech coals pulverised and sifted; alder's coals, thus prepared, one peck; vine ashes and foot, both well pulverised and sifted, equal parts,

parts, half a peck. Mix well these powders, and stratify your iron bars with them in a crucible well luted; then give a good fire for twenty-four hours.

N. B. Observe that you must take care to use new, and not floted wood, to make the said ashes.

2. If you want to have your steel white, you must add to all the above powders one peck of juniper-wood ashes.

3. If you want it purple, you must make a lexiviation of vine and shoes ashes, foot and garlick, well pounded, equal parts; and a sufficient quantity of water to make the said *bulliorium*, in which you will steep, cold, your iron bars before you cement them.

4. You must proportionate the quantity of wind-holes in each kiln to the quantity of bars, and of crucibles, for which you intend to fit it.

5. The *stratum super stratum* ought to be made one, or, one and an half, inch thick of powder to each bed.—The bars ought to be ranged cross-way one over another; and large crucibles are to be preferred to small ones.—You must take care to have them so well luted, as not to allow the least air to find its way in; for there would result an intire miscarriage of the whole operation; and, besides, your powder would hence lose all its virtue.—Should you likewise let it get air before you make use of it, it would become quite dead and flat. Therefore you are cautioned to keep it always very closely confined, in well-stopped vessels, of whatever kind they may be.—That which comes off from the crucible, after the operation, is not worse for having been thus in use. It wants, therefore, nothing but an additional supply of fresh powder, joined to it, to make up what is lost, or diminished, by the frequent handlings of it, in taking it out, and putting it in, the crucibles again.

6. The kiln ought to be wide by the inferior part, and go narrowly towards the top, which must end in a conical form. By such means, the heat contracted becomes strong, and acts with infinitely more power.—Neither must you neglect to have it so constructed as to be provided with an ash-hole, or a place underneath wherein the ashes may fall; and several openings to let the wind escape.

† *An estimate of the costs, and profits, of such an operation in France.*

The thousand weight of iron, in bars flat on one side, costs about *sixty livres*. Two thousands being requisite, at a time, for one single operation, make *one hundred and twenty livres*, or, *five pounds sterling*.

Ten crucibles this will employ ; *ten livres*.

Powders for the two thousands ; *forty livres*.

For two men to sit up, and watch, in order to keep up the fire ; *four livres*.

To prepare the steel, after it is out of the crucibles, and render it marketable ; *twenty livres*.

All the expence amounts to *two hundred livres*, or *eight pounds eight, or ten, shillings sterling*, or thereabout. Iron, thus turned into steel, whether white or purple, comes, on computation, to *two sols*, or *one penny*, a pound ; which makes *one hundred livres* per thousand weight.—Thus, the two thousands weight, which may be made in the same kiln, every week, come to *two hundred livres*.

If you sell your steel, on the footing of *six sols* per pound, there is, clear profit, *four hundred livres* a week ; which, in a year, would make *20,800 livres*.—Now, you may, on this calculation, have as many kilns as you please ; and each kiln may make a kilnful every week.

XXXVII. *To take immediately rust from iron.*

You must rub your iron with a piece of rag steeped into oil of tartar *per deliquium*.

XXXVIII. *To obtain good silver from pewter.*

1. Take quick lime made from rock or transparent pebbles, and one pound of common salt. With those two ingredients make a strong lye which you will evaporate on the fire to the reduction of one third part of what it made before. Next, melt in a crucible two pounds of pewter, to which, after fusion, you will add one pound of *haematitas*. The whole being well incorporated and melted, throw it in part of your aforesaid lye : and, when quite cold, melt it again, and throw it again into new lye, repeating the same process for seven different times, and using fresh lye, prepared as above, every time.

2. The

2 The next operation is to take one ounce of ammoniac salt, an equal quantity of borax, eight scruples of auripigment, reduce them into a very fine and subtile powder, and being mixed together, incorporate them into a paste with the whites of two new-laid eggs, and put all together with the pewter, ready prepared as before mentioned, in a crucible. When all is in fusion, continue the fire for one hour; then, take off the crucible. There you will find your silver, fit to stand the test of all the assayers.

XXXIX. *To soften iron.*

Take half an ounce of tartar; two of common salt; and two and a half of verdigrise. Mix all together, and expose it in a porringer to the dew of nine nights running. This will turn into water, in which, when red-hot, you may kill your iron.

XL. *To melt iron so that it will spread under the hammer.*

Take equal quantities of lime, tartar, and alkali salt. Pour over it a sufficient quantity of cow-piss, to make a thick pap with it, which you will set a-drying in the sun, or before the fire. Make an iron red-hot in the fire; then, plunge it in that matter. You may afterwards melt it as you would silver; and, then, work it the same way, when cold.

XLI. *To give iron a temper to cut porphyry.*

Make your iron red-hot, and plunge it in distilled water from nettles, acanthus, and *pilosella*, (or mouse-ears); or in the very juice pounded out from these plants.

XLII. *To soften all sorts of metals.*

Take sublimate mercury, euphorbium, borax, and ammoniac salt, of each equal parts pulverised. Project some of that powder over any metal when in a state of fusion, and you will obtain the desired effect of making it soft.

XLIII. *To soften a sophistic metal.*

Take black soap and common salt, of each two ounces; human excrements dried and pulverised, four ounces; rock alum an equal quantity, and nitre salt, half an ounce. Incorporate all together in a pan, over the fire.

fire, with bullock's gall, keeping stirring with a spatula, till you feel no longer with it any saline particle. Then take off the pan from the fire, and let the composition cool. Of this you may throw some into the crucible in which your metal is in fusion.

XLIV. A good temper for arms.

Take tythimalus, or spurge; roots of wild horse-radish, bryonia, and purslain, of each equal quantities. Pound all together, so that you may get at least one pound of juice. Add to this one pound of red-haired child's water; saltpetre, alkaline, gem and ammoniac salts, of each one drachm. When you have mixed all well together in a glass vessel perfectly closed and stopped, bury it in the cellar, and let it there lie for twenty days. Then bring it up again, and put it in a retort, to which you will adapt and lute well its receiver, and begin to distil by a gradual fire. Now, when you want to get arms of a good temper, you have only to plunge them in this distilled liquor, after having previously made them red hot in the fire.

XLV. Another very hard temper.

Take nettles' juice, bullock's gall, child's water, or strong vinegar, and a little salt. Incorporate well all this together, and plunge any red hot iron in it.

XLVI. To melt iron and make it soft.

Take two pounds of auripigment, and four of oil of tartar. Make the auripigment soak up all the oil of tartar, and dry it up afterwards over a soft fire. Then put small bits of iron in a crucible; and, when very red, throw by little at a time about half a pound of that auripigment prepared as before; and you will find your iron soft and white.

XLVII. To whiten iron like silver.

Melt iron filings in a crucible, along with realgar, or red arsenic. Then take one ounce of that matter and one of copper; melt all together, and put it in a cappel. It will give you one ounce of good silver.

XLVIII. To

XLVIII. *To render iron brittle, so as to pound like glass.*

Take the distilled water from rock alum, plunge in it seven different times your pieces of iron, or steel, beaten very thin, and made red hot every time. This operation will render them so brittle, that you may pound them in a mortar, afterwards, as you could glass.

XLIX. *Ingredients which serve to the melting of iron.*

Iron is to be melted with any of the following ingredients; *viz.* pewter, lead, marcasite, magnesia, auripigment, antimony, crown-glass, sulphur, ammoniac salt, citrine-mirolans, green, or fresh, pomegranate rinds, &c. &c.

L. *To melt or calcinate the blade of a sword without hurting the scabbard.*

You must drop into the scabbard of the sword some arsenic in powder, and squeeze over it some part of the juice of a lemon. Then replace the sword into its scabbard. In a quarter of an hour afterwards, or little more, you will see what a surprising effect this will have.

LI. *A spirit which will dissolve all sorts of stones, without excepting the most hard.*

Take rye-flour and make small balls with it, which you will dry; then put them into a retort well luted, and place it over a gradual fire to draw the spirits by distillation. If in the spiritous liquor, which will come from this operation, you put any stone whatever, it will dissolve.

LII. *To refine pewter.*

Take fine pewter, and put it into a crucible. When melted, project over it, at different times, some nitre, till it comes to a perfect calcination. Repeat this three different times, pounding the matter into powder, which you will mix with charcoal's dust. Then, being thus melted for the third time, it will resume its former substance of pewter, with this difference, that it will be refined to an infinitely superior degree.

LIII. *To fix mercury.*

Take verdigrise in powder, which you will put in a crucible. Make a hole in that powder, and place in it a knot

knot of mercury previously impregnated with white of eggs' water. Cover this knot over with borax, and add again over this some more verdigrise and pounded glass, one or two fingers deep. Lute well the lid of the crucible, and give a pretty smart fire, though gradually, and not at once, for the space of two hours.

LIV. *To extract mercury from lead.*

Take lead and beat it into sheets, or laminas, very fine. Put these in a glass vessel with common salts, a double quantity of the lead. Cover this well, and bury it under ground for nine days at least. After that time, if you open the vessel again, you will find your lead turned all into running mercury, or quicksilver, at the bottom of it.

LV. *The composition of cast mirrors and cylinders.*

Take one pound and a half of red copper; eight ounces of refined pewter; one and a half of stellular mars-regulus, otherwise regulus of antimony; half an ounce of bismuth; one and an half of nitre, and a discretionable quantity (that is to say as much as you please) of silver.

LVI. *The true composition of metallic mirrors, or looking-glasses, used among the ancients.*

1. Take one pound of decapitated, or well purified, copper, which you will melt; then throw over it three pounds of refined pewter. As soon as they shall be both in good fusion, add six ounces of calcined red tartar, two of arsenic, half an ounce of saltpetre, and two drachms of alum. Leave all this in fusion together for the space of three, or four, hours, that all the salts may well evaporate, then you will cast this composition in the flat sand mould prepared for it.

2. To give these mirrors the requisite polish, you proceed as follows. Begin first by taking the coarsest part away with the wheel over a grinding-stone, after the same method as the pewterers and braziers do, and then you smoothen them with water till they are sufficiently polished by attrition. The second step is to take the mirror from that wheel, and put it on the wooden one covered with leather, after having rubbed it well with emery in order to give it a fine polish, and

eat off the scratches which may have happened to it on the first wheel. Then you must take it again from this wheel and put it on another of the same kind, covered likewise with leather, after having previously rubbed your mirror with prepared blood-stone, and washing it afterwards with magister of pewter. Take notice that you are to make your mirrors observe, on both these last leathered wheels, the same oblique direction in turning them, and continue so long till the mirror has acquired a sufficient fineness and brightness.

Convex and ardent mirrors are rubbed and polished in the same manner.

LVII. *To make convex and ardent mirrors.*

1. Take one pound of copper in laminas. Cut them in small pieces to get them into a crucible, and impregnate them with oil of tartar. Then take a quarter of a pound of white arsenic in powder, with which you will stratify your laminas, putting bed upon bed till the crucible is full. Cover this crucible with a lid of the same earth; lute it well and set it to dry. When done, plunge it to the lid in the sand, and give it a gradual fire, till it is strong enough to evaporate the oil. During that time the oil prepares the copper, in detaining the arsenic and making it pass into it with the same facility as oil passes through leather.—You may, if you chuse, place your crucible in the furnace on the bare fire; but then you must manage the fire gradually till the oil is quite evaporated. This being done, let the crucible cool, and break it; you will find your copper variegated with several colours, and it would be still more so, if, instead of arsenic, you had used auripigment.

2. Take of this copper one part, and two of brass. Melt first the brass on a blasting fire; then throw in your prepared copper. When they shall have been in good fusion a pretty good while, throw this metal into a pan full of lukewarm water, over which you shall have placed a birch-broom, to force your metal to granulate in falling through its twigs into the water. By such precaution your metal will be so hard as to resist the file; will not be brittle; and acquire the same qualities as steel.

steel, instead of which you may even employ it, on many occasions, for various sorts of works.

3. Now take of this hardened metal three parts; of the best Cornwall pewter, and perfectly free from lead, one part. Melt first the metal, as we said before, on a blasting fire, then put your pewter to it; and, when both are well melted together, you will throw this composition in the convex mould to make the concave, and in the concave to make the convex mirrors. This composition is the best which can be employed for the manufacturing of these sorts of mirrors. It is white, hard, never brittle, and susceptible of receiving the highest and most finished polish.

LVIII. *To give tools such a temper, as will enable them to saw marble.*

Make the tool red hot in the fire; and, when red cherry-colour, take it off from the fire, rub it with a piece of candle, and steep it immediately in good strong vinegar, in which you shall have diluted some foot.

LIX. *To soften iron, and harden it afterwards more than it was before.*

1. Make a little chink lengthways in an iron bar, in which you will pour melted lead. Then make it evaporate by a strong fire, as that for copelling. Renew this operation four or five times, and the bar will become very soft. You harden it afterwards in steeping it, when red hot, in mere forge water; and it will be of so good a temper as to be fit for lancets, razors, and knives, with which you will be able to cut other iron without its splitting or denting.

2. It has been found by experience, that an armour can never be good proof against fire-arms, if it has not first been softened with oils, gums, wax, and other incitative things, and afterwards hardened by steeping them several times over in binding waters.

LX. *To operate the transmutation of iron into damask-steel.*

You must first purge it of its usual brittleness; and, after having reduced it into filings, make it red hot in a crucible; steep it several times in oil of olives, in which you shall have before thrown several times melted lead.

Take care to cover the vessel in which the oil is contained, every time you throw your steel into it, for fear the oil should catch fire.

LXI. *To guard iron against rusting.*

Warm your iron till you can no more touch it without burning yourself. Then rub it with new and clean white wax. Put it again to the fire, till it has soaked in the wax. When done, rub it over with a piece of serge, and this iron will never rust.

LXII. *To cut pebbles with ease.*

Boil it a good while in some mutton-suet; and, then, you will cut it very easily.

LXIII. *To whiten copper.*

Take auripigment and eggs' shells calcined, equal quantities. Put all together in a pot covered with another having a little hole on the top. Give it first the wheel-fire for three hours. Then increase the fire, and, what shall have been sublimed remix with the *faces* again. Sublime anew, and mix again the *faces* and the flours together. Then, for the third time, there will be no more sublimation; only the flours will swim over the *faces*. Now take arsenic of one single sublimation, and crude tartar, of each equal parts well mixed together, and stratify with this mixed powder some very thin copper laminas. Then push the fire with violence to the degree of fusion, and granulate it in water, which you are to put in great agitation for a good while before you throw the matter into it, in order to prevent thereby your matter from sparkling when you throw it. In reiterating this operation on the same metal, you will render your copper as beautiful as silver.

LXIV. *A projection on copper.*

1. Take fine pewter two ounces, which you will melt in a crucible. When melted, throw in it by little at a time the same weight of flour of brimstone. Stir every time with a rod, till you see both your pewter and sulphur well calcined. Then take the crucible out of the fire, and throw in half an ounce of crude mercury. Let it cool and pulverise this.

2. Now

2. Now melt four ounces of molten copper. When in good fusion project on it, by degrees, one ounce of the above powder, stirring carefully, while you do it, with a stick. Leave it thus in fusion for a little while, and then you may use it for making all sorts of plates. It is so beautiful, that, if you test it on the coppel with lead, it will stand it perfectly.

LXV. *A receipt for the preparation of emery.*

1. Calcine eastern, or Spanish emery, three, or four, times in the fire; then let it cool. Pound it and make *strata super strata* of it, with double the quantity of sulphur-vivum in powder. Leave this crucible in the furnace with a strong fire during three or four hours. Repeat this process four different times over, then reduce your emery into an impalpable powder. Put it next into a matrafs, pour over it regal water, that it swim over by three fingers deep. Put this in digestion for eight hours. Pour off by inclination your regal water impregnated with the dye. Put new water on your matter, and set it on digesting again for eight other hours, as the former. Then take your thus tinged waters, which you will mix and put in a retort. Distil most part of it, till you see that what remains in the retort is yellow. This is the true oil of emery, in which you will put the bigness of a filbert of camphire.

2. Exsulphurate in a crucible, on a good fire, and during two hours, what quantity you please of arsenic. Then take two ounces of the aforesaid oil of emery, one of your exsulphurated arsenic, an equal quantity of salt of tartar drawn with distilled vinegar, two of sublimate, and two of silver; which you will have dissolved in an *aquafortis* made with nitre and vitriol. Put all together in a matrafs so large that the composition should occupy no more than a third part of it, and of which you shall have cut the neck off, to obtain a more easy evaporation of the compounds from it. Put this matrafs in the sand as high as the matter, and give it a moderate fire for two hours, then a strong one for six, after which you will let the fire go out of itself. When done, you will find your matter in a stone in the matrafs. Take it out and pound it into powder. One ounce of this powder,

der, projected upon another ounce of salt in fusion, if you keep it a little while in that state, and throw it afterwards into oil of olives, will increase your gold by a third of its primary quantity and rather more: And you may thus increase it again and again by repeating the same operation.

LXVI. *A facitious amiant; or the way to make an incombustible cloth.*

Take rotten oak-wood which you will calcine into ashes, and mix with an equal quantity of pearl-ashes. Boil all together in ten times its weight of water. When this has boiled one hour, add as much water to it as there may have been evaporated, and boil now in it a large stick of *alumen plumosum*, during one hour. Take off the vessel from the fire, and carry it into the cellar. In a month's time you will find your alum as soft as flax. Spin it, and get it weaved into a cloth. The fire will never have any power over it. On the contrary, the best way to wash it is to throw it on red hot coals; and, after having there let it burn throughout, take it off, and you will find it perfectly clean.

LXVII. *To render tartar fusible and penetrating.*

1. Stratify cakes of white tartar with vine branches. When done set them on fire by the top, and when arrived at the bottom your tartar will be calcined.

2. Dissolve this calcined tartar in *aquavitee*, then pass it through the filtering paper, and next evaporate the brandy. What shall remain is the salt of tartar, which you must find to be as white as snow. Pour over it the best and the truest French spirit of wine, so that it should exceed over the salt the thickness of an inch. Set it on fire. As soon as your spirit of wine shall be all consumed, your salt of tartar will be fusible and penetrating.

3. Now should you make any iron red hot, and project on it a little of that salt, it will penetrate it through and through, and leave after it a vestige as white as silver in the place where it touched.

LXVIII. *To extract mercury from any metal.*

1. Dissolve lead, antimony, or any other metal, in good common *aquafortis*. When that water shall have dissolved

dissolved as much of it as it can, pour it out by inclination, and on what shall not yet be quite dissolved, but corroded only in a white powder, pour some hot water. Shake then the matras in which the metal is, and you will find that the water will finish to dissolve what the *aquafortis* could not. Next to this pass it through a filtering paper; and, what you will find not able to pass, dissolve it now with some fresh *aquafortis*, or only water, if it so appear to you that this may do. Continue thus the same dissolving process, till you have obtained a perfect dissolution of all the powder, and you have made it pass through the filtering paper. Now take all your several dissolutions, both those made with hot water and those made with *aquafortis*, and mix them all together. Make a precipitation of that dissolution to the bottom of the vessel in form of white curds, by means of a water impregnated with salt. Edulcorate this twice, with cold common water, and once with some a little warm, then dry it.

2. Take one ounce of that dissolution, thus edulcorated and exsiccated into powder; half an ounce of ammoniac salt sublimed over common salt. Grind all together on a marble stone with a mullar for a long while, that it may be well incorporated, as the painters do their colours; and, to succeed better in that incorporation, impregnate it with distilled vinegar. Now put all this into a pan, and pour cold water over it, so that it should swim over the matter, stir it well twice a day with a stick, for three whole weeks. Then take quick lime, which you will slack with the swimming liquor which covers your matter; and, with equal quantities of the powder which lies under it, and the slacked lime, make small bullets, which you will put into a retort well luted, and push it on with a great fire. You will soon see the mercury going into the receiver, which you must have had the precaution of filling with water, and under which, at the bottom, you will find it.

3. The same process carefully attended to, may procure you mercury from all the metals and minerals without exception.

LXIX. *To dye in gold silver medals, or laminas, through and through.*

1. This curious operation is performed by means of the admirable salt of *Glauber*, which is made with nitre and vitriol oil, in the following manner.—Take what quantity you please of nitre salt, pour over it a sufficient quantity of oil of vitriol, to have it swim over. When the ebullitions arising from that mixture shall be ended, distil to dryness; there remains a white salt known under the name of salt of *Glauber*.

2. Dissolve in what quantity of warm water you think proper, or be in need of, a sufficient quantity of that salt as may saturate it, which you know when you see the water can dissolve no more of it. In this dissolution put a drachm of calx, or magister, of gold. Then put in digestion in it silver laminas cut small and thin, and let them so for twenty-four hours over a very gentle fire. At the end of that term you will find them thoroughly dyed gold colour, inside and outside.

LXX. *To refine pewter.*

Take fine pewter, melt it in a crucible. When done, project over it at several times some nitre till you see it calcined. Then pound it into powder, and mix it with an equal quantity of charcoal pulverised very fine. If, in this condition, you melt it again, it will resume its form of pewter, only refined in a much superior degree.

LXXI. *To make a perpetual motion.*

Take *aqua fortis*, in which you will throw some steel filings well dried. Leave this mixture to lay for six or eight hours. Then pour out the *aqua fortis* in another bottle, in which you will throw a small loadstone of good quality, and stop it well that no air get in. You will observe a perpetual motion.

LXXII. *A secret fire.*

Have a barrel open by one end, and pierced with a dozen of holes on the other. Put in it three or four bushels of oat straw cut very fine, as that which is given to horses. Get next half a bushel of barley, which shall have soaked for three days in lime water, and drained in

a sheercloth of all the water which can run out of it. place this wet barley in a lump over the oats' straw, then cover it with other similar cut straw, and let it rest till the time that, when you thrust your hand in it, you feel it warm. This heat you may keep up by throwing, with a gardner's watering-pot, about half a pint of water every other day.

LXXIII. *An oil, one ounce of which will last longer than one pound of any other.*

Take fresh butter, quick lime, crude tartar, and common salt, of each equal parts, which you pound and mix well all together. Saturate it with good brandy, and distil it in a retort over a graduated fire, after having adapted the receiver, and luted well the joints.

LXXIV. *To make a coppel with ashes.*

Take equal parts of the ashes resulting from vine-branches, mutton-bones, and harts' horns burnt and calcined. Moisten them with a little common water, then press them very hard in a mould called *Coppel*. Then take ashes from the jaws and teeth of a jack, which you put over the other ashes to the thickness of a crown piece, pounding well these also over the others as hard as you can. These last ashes serve to set off clean the grain of the metals you are testing on them. The harts-horn ashes serve to bind, or unite, those of vine-branches and mutton-bones together, and to draw down at the same time the lead. You must use eight times as much lead as the composition, you want to test by the *coppel*, weighs.

LXXV. *To solder iron, or any other metal, without fire.*

1. Take one ounce of ammoniac, and one of common salts; an equal quantity of calcined tartar, and as much of bell-metal, with three ounces of antimony. Pound well all together and sift it. Put this into a piece of linen, and inclose it well all round with fullers' earth, about one inch thick. Let it dry, then put it between two crucibles over a slow fire, to get heat by degrees. Push on the fire till the lump contained in the crucibles become quite red hot, and melt all together. Then let the vessels, and the whole, cool gradually and pound it into powder.

2. When

2. When you want to folder any thing, put the two pieces you want to join on a table, approaching their extremities as near as you can one to another. Make a crust of fullers' earth so, that holding to each piece, and passing under the joint, it should be open over it on the top. Then throw some of your powder between and over the joint. Have again some borax, which put in to hot wine till this is consumed, and with a feather rub your powder at the place of the joint; you will see it immediately boiling. As soon as the boiling stops, the consolidation is made. If there be any roughness you must smoothen it by rubbing with a grinding-stone, for the file will have no power over it.

LXXVI. *To solder with fire.*

Make a paste with pulverised chalk and gum-water, which you will put round the two broken pieces placed on a table, and prepared as before mentioned in the preceding receipt. The only difference is, that you are to rub over the two united extremities with melted soap; and, after having thrown some of the above powder at the place of the joint, you are to hold a kindled piece of charcoal over it. This will immediately set the matter in fusion, which is no sooner done but you may take off the paste, and you will find it consolidated.

LXXVII. *To make Borax.*

Take two ounces of rock-alum; dilute it and mix it with two ounces of alkaline salt which is used in making of glass. Put all into a pewter pot, and set it a-doing, for the space of half an hour, over a gentle fire; then take it out of the water. Take next two ounces of gem salt in powder, as much of alkaline salt, two pounds of virgin honey, and one of cow-milk. Mix well all together, and set it in the sun for three days. Then the borax is done.

LXXVIII. *To render iron as white, and beautiful, as silver.*

Take ammoniac salt in powder, and mix it with an equal quantity of quick lime. Put then all together into cold water, and mix well. When done, any iron piece, which you shall have made red hot, will, if you steep it in that prepared water, become as white as silver.

LXXIX. *To*

LXXIX. *To calcine pewter, and render it as white, and as hard, as silver.*

Melt well your pewter in a crucible, so that it may be very fine and clear. Pour it afterwards into a very strong vinegar, then into mercurial water. Repeat that operation as many times as you please, you will each time give it an additional degree of hardness and whiteness, drawing near to silver; so much that it will, at last, be very difficult to distinguish it from silver itself.

LXXX. *Another to the same purpose.*

Make again a good lye with vine-branch ashes and vinegar. Throw in it your pewter when in fusion. Repeat this, seven different times.—Have next some new goat's milk in which you shall have added some white arsenic in powder. Melt your pewter again; then throw it in this preparation. Repeat twelve times the same; and the pewter will become as hard and as white as silver.

LXXXI. *To whiten brass.*

1. Take rosin and saltpetre, equal quantities. Pound all in a mortar, and reduce it into an impalpable powder. Put this into an earthen pan made red hot, and thus burn the matter. As soon as done, you must wash and dry it; then grind it again well into an impalpable powder as before, with the addition of an equal quantity of auripigment. Then put all this into a crucible, cover it with another well luted and having a little hole in the top, which you will stop by laying only a medal on it. When calcined take what you will find clear in the bottom, not what will have sublimed on the top. Make a very fine powder of this matter; and, with one single ounce of that powder, you will be able to whiten two pounds of brass, in proceeding about it as follows.

2. Melt first your brass as usual; and, when in good fusion cast it into very good vinegar; an operation which you must repeat three times. Then, when you melt it for the fourth time, you are to project on it, as we said before, one ounce only (if you have two pounds of brass) of the said powder, which will render your brass as white as silver.—*N. B.* To melt the brass with more facility there are some who throw in the crucible a certain discretionary quantity of mice-dung; and I recommend

to do the same. It will be found of no small service, in hastening the fusion of that metal.

LXXXII. *An other method.*

Brass, copper, iron or steel may also be easily whitened by means of the butter from Cornwall tin, or pewter, prepared with sublimate, proceeding as follows.

Take Cornwall pewter, about one pound; add to it half that quantity of sublimate. Set it on a strong fire, and sublime. The first water which sublimes is not good, throw it away. The second is good, which you know by its white colour. Now, if you make a piece of copper, brass, steel, or iron, it does not signify which, red hot, and steep it in that water, it will become as white as silver.

LXXXIII. *To extract gold from silver.*

1. Melt, whatever quantity you please, of lead, in a crucible, over a fire of clear and bright live-coals. Have at the same time in fusion an equal quantity of sulphur. Then take your first crucible, in which the lead is melted, off from the fire; and, before the lead shall congeal, throw in the same quantity in weight of quicksilver. Stir and mix well this with a stick. When this is done, pour now your sulphur, from the other crucible, over the mixture of lead and quicksilver you have just made, & which coagulates, continually stirring carefully the matter with a spatula, for fear the sulphur should blaze and be consumed before it is all poured in. When the whole is come quite cold, grind it on a marble table with a mullar. Then put all again into a crucible over the fire, and leave it in fusion till all the sulphur is burnt out, and the matter be fluid enough to be cast in an ingot. This will look like the regulus of melted antimony. It will have even its brittleness.

2. Reduce now this composition into powder; and, with an equal quantity in weight of it and of silver laminas, make *strata super strata* of them, alternately, in a crucible beginning and ending always with the powder. Then, over the last bed, put about half an inch thick of Venetian glass, or crystal, reduced into an impalpable powder. Observe however that the crucible should not be filled so near the brim as to let the glass boil over.

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Make a fire strong enough to melt both the matters and the glass, and set them thus in fusion all together for a good hour at least. Then take off, and let cool, your regulus, in breaking your crucible, make a coppel, or test, in which you will put lead in fusion, till it is as fluid as it can be. Throw in your regulus to purify it by that test in the same manner as silver-smiths do.—When your silver shall be fallen to the bottom very pure, put it in laminas, or granulate it; then put it to dissolve in *aqua fortis*. You will see some small particles precipitating from it, in the form of black powder. It is fine gold. Wash these in warm water; then put them in fusion, in a crucible, and you will have very true, and good pieces of gold, fit for any of the chymical physics, and capable to stand any test whatever you may put it to.



C H A P. III.

SECRETS for the composition of VARNISHES, &c.

I. *A gold varnish.*

TAKE *karabe* or amber, eight ounces, and two of gum-lac. Melt first the *karabe*, in a varnished earthen pot, or in the retort of an alembic, over a very strong fire. When this is melted, throw in the gum-lac, and let this melt in the same manner. Then take some of the fire off, and let it cool; observing with a stick, whether the matter has got all its fluidity. Mix in it six, or eight, ounces of turpentine oil. Keep stirring, with a stick, in order to incorporate well this oil with the rest. Add also a spoonful of lintseed oil, prepared with *hepatica-aloes*, to the consistence of a balm: which, in order to thin, and reduce it to the thickness of a syrup, you mix with a sufficient quantity of oil of turpentine, tinged with *rocou*.

II. *How to prepare the lintseed oil with the hepatica-aloes, for the above purpose.*

You prepare the lintseed oil with *hepatica-aloes*, by mixing four ounces of this in powder, with one pound
of

of the said oil, which you do over the fire, till it has acquired the consistence of a very thick syrup, and you see your oil beginning to scum, and to swell much.— Then pass it through a piece of linen, let it cool, and bottle it, to keep for the above-mentioned use.

III. *How to draw the tincture of rocou used in the composition of the above varnish.*

In order to draw the tincture of rocou, put four ounces of it in oil of turpentine. Set this over a gentle fire, in the retort of an alembic; and, as soon as the oil begins to boil, take it off from the fire: stir well with a stick, and filter it through a paper, to use it as directed before.

IV. *A varnish for iceing.*

Concoct some turpentine with water, and white wine of brandy. When concocted, dissolve it in wine and oil of turpentine.

V. *An excellent varnish.*

Take what quantity you please of verdigrise, grind it with vinegar, put it in a piece of dough, as you would an apple to make a dumpling. Bake it in an oven as bread; then cut open your dumpling, and get the verdigrise out of it. Mix it with wine, and use it. Lay over it a coat of four ounces of gum arabic; then polish as usual. You will find it will answer your expectation, and be a very fine varnish.

VI. *Another, as good.*

Put, in a glass bottle, one pound of white mastich. Pour over what quantity of oil may be requisite to cover all the mastich. Place the bottle over the coals, or very hot ashes. The mastich will melt. Take the bottle off from the fire, and shake it well, to see that the whole be perfectly dissolved. This varnish is excessively good to lay over prints, statues, columns, wood, &c.

VII. *A red varnish.*

I. Take three ounces of gum-lac; half an ounce of sandarak; as much of mastich in drop, and a pint of true French spirit of wine. Put all in a matras, which you must take care to lute well with potter's clay, and stop with paper. Have a large iron kettle, two parts of which shall be filled with sand. Place the kettle over
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the coals, and lay the matrafs on the fand. Get the composition to boil in that fituation for three hours. Strain it through a sheercloth; bottle and stop it well, and keep it for use.

2. To make this varnish red, you put one ounce of vermilion to fix of the said varnish. But to dilute the vermilion, you must begin by pouring, first, some oil of aspic over it, and then the six ounces of varnish, which will take near a quarter of an hour to mix well together.

3. Observe that the wood, on which you want to lay it, has been first well polished. Rub it again, besides, with a pounce stone and vinegar, that all the pores may be well filled, and should appear no more. Then lay, with a brush, first a coat of simple varnish, without vermilion. Let this dry for three hours. Put on next your second coat, of that which is prepared with the vermilion; then a third and a fourth, according as you want it of a more, or less, deep red, and allowing a distance of three hours time between each coat of varnish, to let them dry.

4. If the last coat of varnish, after being dry, become rough, rub it with shavegrafs dipped in oil of olive. After which rub it again with a cloth, till it become bright. Over this, when done, lay another coat of pure varnish, like the first. And this coat, as well as all the others, must be left to dry, at least three hours.

5. As for the black and venturine, you must first lay a coat of varnish on the wood; then, while fresh, sieve the venturine over it, and let all dry for three hours. When dry, you lay one, two, three, or more, coats, of varnish, according to your judgement or liking, and allowing always three hours to dry between each coat. Then polish, and give the final coat after.

VIII. *A black varnish.*

1. Take gum-lac, four ounces: sandarak and black rosin, equal quantities, one ounce of each. Pulverise all separately, and keep them distinct, to proceed afterwards in their mixture according to the following directions. Dissolve the rosin over the fire in a sufficient quantity of spirit of wine; then add the sandarak to it. As soon as this is also dissolved, add the powder of gum-lac, and stir

well till all is well melted together. Strain it, while warm, through a cloth. If any thing remain in the linnen afterwards, add some more spirit of wine to it to dissolve it as before; and strain it again after like the other. Such is the first preparation of this varnish.

2. The black colour is given to it by means of *two drachms* only of ivory black to every *two ounces* of it.

IX. How to make a good ivory-black for the above purpose.

Burn any quantity of ivory you please, in the fire, till it is black. Put it into powder on a stone of porphyry. Add some water to it, and make a paste, which you let dry. Then grind it again, as before, with spirit of wine.

X. A varnish for floors.

Put a little petroly or rock-oil with varnish and turpentine, and stir well. Lay it on your floors with an old hair broom, after having mixed in it the colour you want them to be.

XI. A varnish, from Flanders.

Take æthereal oil of turpentine, and Venice turpentine, equal parts. Mix them over a moderate fire, and use this boiling.

XII. A varnish to lay on canvas sashes.

Take fine and clear turpentine, four ounces; oil of nuts, two. Melt all together over a fire; and when it begins to boil, scum it, and use it hot with a brush.

XIII. A varnish of shell-lac, for miniatures and other pictures.

1. Take spirit of wine, one pound; picked shell-lac, five ounces; sandarak, two and a half; white karabe and massich, equal parts, two drachms of each.

2. First boil and skim the shell-lac and sandarak together, to have them the whiter. Then add the massich and karabe to that, and put all in a matras over a sand fire, to digest and concoct together by a gentle heat.

XIV. Another varnish for pictures.

Take four ounces of gum arabic, the clearest and whitest you can find. Put it to infuse in a pound of water, over ember ashes, for one night. Strain it in the morning through a cloth, after having added to it the bulk

bulk of a nut of Narbonne-honey, and half that quantity of sugar-candy. It is not to be used with a brush.

XV. *Another sort.*

Take *aquavite*, sugar-candy, and whites of eggs, a reasonable quantity of each. Beat all well together to a froth. Underneath is a liquor: that is your varnish. You may lay it, with a soft brush, on any sort of picture.

XVI. *The Chinese varnish.*

1. Take pulverised and sifted sealing wax, two ounces. Put it in a matras with four ounces of turpentine oil. Give a gentle fire, that all may melt. If the wax be red, you need add nothing but the oil. If black, some lamp-black is requisite to be added still. And, with this first composition, you lay on the first coat.

2. Next to this have aloes and karabe, of each two ounces. Dissolve this in a varnished pipkin, along with twelve ounces of lintseed oil, till all is well incorporated. There will fall a ground to the bottom, over which will swim a very fine and transparent liquor. Of this you are to make your second coat of varnish, laying it over the other after it is dry.

XVII. *How to imitate a black jasper, or variegated black marble.*

Take *sulphur-vivum*, quick lime, *aquafortis*, and the green rind of walnuts, equal quantities, one ounce of each. Dilute all together; then lay it with a brush on what you want to be jaspered, whether a column, a table, or any thing else. This done, put your table or column, &c. thus blackened, in a dunghill, for the space of twelve days, and then take it out again. You will find it well veined and variegated. To give it a fine gloss afterwards, you rub it with a varnish composed as prescribed hereafter. See Art. xix.

XVIII. *Another way.*

Make a large ball, with the drugs prescribed in the above receipt, to compose your black. Lay it for a week in a dunghill. When, by that means, it is well variegated, rub your intended piece of furniture with it. This being thus variegated, you lay on it the following varnish, to give it a fine lustre.

XIX. *An excellent varnish to give a fine gloss to the above-mentioned jasper, or variegated black marble.*

Take oil of spikenard, three ounces ; sandarak, well picked and clean, two. Have a new earthen pot well glazed. Set it before the fire, a-warming, without any thing in it. When hot, throw in it one half of the sandarak, and one half of the oil. Stir well, lest it should burn, or stick to the pot. When it is nearly melted, throw in the remainder of the oil and sandarak. When all is well dissolved and mixed, add a piece of camphire, to take away the bad smell of this composition, and let it dissolve ; then bottle and stop it for use. Warm it every time before you lay it on, for it requires to be used hot.

XX. *A varnish which dries in two hours time.*

Melt four ounces of yellow amber, in a new earthen pan, over kindled coals. Take care, in that operation, that the fire should but just reach, and touch, the bottom of the pan, and none should rise along the sides. Never cease to stir, from the moment it is melted, with a deal stick, and add, directly, one ounce of sealing-wax. As soon as this is also melted, add again one spoonful, or half an ounce, of lintseed oil, previously thickened with a little gold litherage ; then take it off from the fire, and cease not to stir as before. When the matter begins to be a little cold, then is the time of adding what quantity of turpentine oil you may find necessary to make a true varnish of it.

XXI. *A varnish for copperplate prints.*

Prepare water with some isinglass. Lay, with a very soft brush, a coat of this on the print. Next to this, lay another of the following varnish.—True French spirit of wine, half-a-pound ; gum-elemi, two drachms ; and sandarak, three.

XXII. *An admirable varnish.*

Take white mastich and lintseed oils, what quantity you please ; a little turpentine, pounded glass, burnt verdigrise, and pounded amber. Boil, and melt, all together in a new earthen pot. When done, you will find it to be an admirable sort of varnish.

XXIII. *A varnish fit to lay on all sorts of colours.*

Take one ounce of white amber ; half an ounce of spirit.

Spirit of turpentine; four ounces of rectified spirit of wine (the true French sort); one drachm of mastich, and as much of juniper gum. Put all together to infuse for eight days. Evaporate two parts of it over a gentle fire. What remains is a varnish fit for laying on all sorts of colours, and which will hurt, spoil, or damage none.

XXIV. *A varnish known under the appellation of Beaume-blanc, or, white-balm.*

Take spirit of wine, four ounces; gum-lac, half an ounce; sandarak, two drachms; mastich, one. Pulverise the ingredients, and put them, with the spirit of wine, in a square bottle large enough to be but half full after the whole is in it. Dissolve this over a slow fire, and take care the bottle should be well stopped first with a cork, and besides with wax and leather.

XXV. *A varnish to be used on plaister, and any other sort of materials.*

To the varnish of copal and spirit of wine, only add some calcined talk.

XXVI. *An excellent varnish, in which may be put, and diluted, whatever colour you like.—It suits, equally well, goldsmiths and limners.*

Take aspic and turpentine oils, of each one ounce; clean picked sandarak pulverised, four drachms; gum copal, two. The whole being well pulverised, put it along with your oils in a matrafs, with the addition of half a pound of spirit of wine; and set it in a *balneo marie*. When the matter is dissolved, strain and keep it for use, in a glass bottle well stopped.

XXVII. *A Chinese varnish suitable to all sorts of colours.*

1. Take one ounce of white amber; one quarter of an ounce of sandarak; as much of gum copal. Pound well all these together, and put them in a matrafs perfectly dry. To every ounce of these three drugs, pounded and mixed thus together, put three ounces of spirit of wine. Stop well the matrafs with a rag, over which you will put some paste made with flour, and then another rag, well tied over. Boil the varnish thus, over ember ashes, till the whole is dissolved, and this varnish is done. The method of applying it is as follows.

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2. The piece intended for varnishing being previously well polished, you lay on it the proposed colour or colours, diluted in *aquavitæ* with some isinglass. When these are dry, pass on them two or three coats of this varnish, according to discretion and taste; allowing the proper time between each coat of varnish to dry; and, when dry, you polish it with olive oil and tripoly, then rub the oil off with a rag.

Note. That if you intend this varnish for miniature pictures, you are to make an addition of equal parts of gum copal and white amber.

XXVIII. *Another Chinese varnish, more particularly calculated for miniature painting.*

Take one ounce of white *karabe*, or amber; and one drachm of camphire, which you reduce into a subtile powder, and put in a matrafs, with five ounces of spirit of wine. Set it in the sun to infuse, during the hottest days in July and August, and stir it two or three times a-day constantly. After a fortnight's infusing thus, put the matrafs, for one hour only, over hot ashes; then pass all through a cloth, and keep it in a bottle well corked.

XXIX. *How to make a red, with varnish, of a much higher hue than coral itself.*

Take Spanish vermilion, grind it on a marble with brandy, and add to it the sixth, or eighth, part of lac.—When done, mix this composition with as much varnish as you may find it requisite to apply.

XXX. *To make it gridelin colour.*

Dilute with your varnish some blue verditure, lake, and whitening.

XXXI. *To make it green.*

Substitute for the above ingredients, German green verditure, pewter in grain, and white lead.

XXXII. *Another way for the same.*

Grind, with water, on a marble stone, the finest orpine you can find, and a little indigo. Let it dry, then pound and mix it with varnish.

XXXIII. *To make it yellow.*

Take some Naples yellow, and mix it well with your varnish; then use it.

XXXIV. *To*

XXXIV. *To make it blue.*

Take ultramarine, lake, and whitening, and proceed as ordered in the other receipts above mentioned, and according to the directions of your judgment, and experience from them.

XXXV. *Another sort of varnish.*

Take shell-lac, in grains, two ounces; two of sandarak; black rosin, two drachms; and, spirit of wine, one quarter. Dissolve and prepare the whole as above.

XXXVI. *A clear and transparent varnish fit for all sorts of colours.*

Take oil of nuts, and a little of the finest Venice turpentine. Boil them well together. Add a little brandy to it, and boil it well also. Should then the varnish prove too thick, thin it with an additional quantity of oil. And, to apply it, make use of a very soft hair brush, and lay it carefully over the colours.

XXXVII. *To make sashes with cloth, which will be very transparent.*

Take a fine white cloth; the finer you chuse it, the clearer and more transparent the sashes will be. Fix the cloth very tight on a frame. Then make some starch with flour of rice, and lay a coat of it, as smooth as you can, on your cloth, with a stiff brush of swine's hair. Lay that starch on both sides of the cloth, and let it dry. When it is perfectly dry, pass, on both sides also, of the said cloth, thus prepared, the following varnish, with a soft brush of swine's hair likewise, having care to lay it on as equally and smoothly as possible, and let it dry afterwards.

XXXVIII. *The composition of varnish fit for the above sashes.*

1. Take of the finest and whitest wax you can find, six pounds; of the finest and clearest Venice turpentine, two; one and a half of the most perfect lintseed oil. Have a new and varnished pipkin, larger, at least by one third, than is requisite to contain all these ingredients. Put, first, in this pot the lintseed and turpentine oils together, and set it over a small charcoal-fire. When this begins to be a little warm put in the wax, cut in small bits,

bits, and take care to mix all well with a very clean wooden stick, till the wax, being thoroughly melted, is also well incorporated with the rest.

2. Now, take the pot off from the fire; and, while this composition is still a little warm, give a coat of it on both sides of the cloth, fixed on the frames, and prepared as before directed, and let it dry in the shade.

Note. You may render your fishes still more transparent, if, on both sides of them, you lay a smooth and equal coat of the following varnish, with a soft brush; then let it dry.

XXXIX. *A fine white varnish.*

Take one pound of fine Venice turpentine, and as much of spirit of turpentine. Put this in a glass-matras, larger, at least by a third, than is wanted to contain the matter. Stop this matras with another smaller matras, the neck of which is to enter into that of the former. Have care to lute well both necks together with paste and paper; and, when the luting has acquired a perfect dryness, set the first matras on a sand bath, then set the varnish a-boiling, for near an hour, after which take it off from the fire, and let it cool. When cold, bottle and stop it for use.

Note. Turpentine, well purified from all its greasy parts, is the best, and fittest, to make the varnish for fishes.

XL. *A curious and easy varnish, to engrave with aquafortis.*

Lay, on a copperplate, as smooth and equal a coat as you can, of lintseed oil. Set the plate on a chaffing-dish, in which there is a gentle heat of half consumed charcoal, that the oil may congeal and dry itself gently on. When you find it has acquired the consistence of a varnish, then you may draw with a steel point in order to etch your copper, and put on the *aquafortis* afterwards.

XLI. *A varnish to prevent the rays of the sun from passing through the panes of window-glasses.*

Pound gum adragant into powder; and put it to dissolve, for twenty-four hours, in whites of eggs well beaten. Lay a coat of this on the panes of your windows, with a soft brush, and let it dry.

XLII. *To raise a relief on varnish.*

1. Dissolve one ounce and a half of gum arabic in two pounds of water. Grind with it bol Armeniac, and whitening on a porphyry stone, till all is well united and incorporated. With this composition, fill up the vacancies between the outlines of your design, and form, as it is proper, the various reliefs, with the suitable proportions, and according to the sorts of things you are to imitate or represent. Then smooth the parts, and let it dry.

2. Next have ready prepared, in shells, the different sorts of metals which you want to use, diluted with gum-water; and, with a pencil, cover what places you are to cover. When this is also dry, burnish it skilfully with an ivory tooth, and lay a coat of clear varnish over the whole. A moderate heat is required for a moment to help that varnish to dry.

XLIII. *To render silk stuffs transparent, after the Chinese manner; and paint them with transparent colours likewise, in imitation of the India manufactured silks.*

Take two pounds of oil of turpentine, very clear; add to it two ounces of massich in grain, and the bulk of a filbert of camphire. Let this dissolve by a gentle heat; then strain it through a cloth. Of this oil lay one coat, or two, on both sides of your stuff. Allow, however, a sufficient time, between each coat, for each to dry, and let the second lie two days on, before you touch the stuff again. When that time is over, draw the outlines of your design, and flowers, &c.; cover this with a preparation of lamp-black and gum-water. Then fill the intervals with the intended and proper colours, suitable to the purpose, and which ought to be all transparent colours, diluted with a clear varnish. When this is done, and dry, lay on both the right and wrong sides of the stuff another coat of clear varnish.

XLIV. *To make a transparent blue hue, for the above purpose.*

Take nine drachms of ammoniac salt; six of verdigrise, distilled and exsiccated. Put both these into powder. Dilute these powders with tortoise oil. Put this on a very thick glass, which you stop well, and set over

hot ashes for a week. After that time your colour will be fit for use, and make your drawings with the clear varnish, as directed in the preceding article.

XLV. To make a transparent yellow hue, for the same use.

Take a new-laid egg of that very day, make a hole in the shell, to draw the white out of it. Replace, by the same hole, with the yolk, two drachms of quick silver, and as much of ammoniac salt; then stop the hole with wax. Set that egg in hot dung, or over a lamp fire, for four or five and twenty days. When that time is over, break the egg, and you will find a very fine transparent yellow, fit for the use above mentioned.

XLVI. To make a transparent green.

Take verdigrise, gold litharge, and quicksilver, equal parts. Grind the whole in a mortar, with the urine of a child. Put it next into a bottle, and set it over a gentle and slow fire, for the space of seven, or eight, days. This composition will give a very fine transparent green, for the above purpose.

Note. We have given, in the Sixth Chapter, several receipts for the composition of sundry transparent colours. We shall therefore take the liberty thither to refer the reader, for more ample satisfaction, and the completion of the above mentioned operation.

XLVII. To give the abovementioned painted silks, all the smell, and fragrancy, of the India ones.

It is well known, that the silks, and other things, we receive from India, are all tainted with a certain particular smell, and agreeable fragrancy, which, being their peculiar, distinctive, and most obvious character, if not imitated also, would help not a little in ruining the deception intended by the above labor. To imitate, therefore, even this, you must observe the following direction.—Have a small closet, if it be for works at large; or, only a fine basket with a top to it playing upon hinges, stuffed and lined all over in the inside, if it be for one single piece of silk. Put, in either of them, and according to their extent, a proportionable quantity of cloves, whole-pepper, mace, nutmeg, all-spice, camphire, &c. &c. Put your works among these ingredients, and keep either the closet, or the basket, perfect-

ly close shut, till you see they have received a full impression from the odour of those ingredients.

N. B. With the various compositions of varnishes, and preparations of colours, we have just given, there is almost no sort of works, coming from the Indies, but can be performed and imitated.

XLVIII. A most beautiful Chinese varnish.

Take one ounce of the whitest karabe (amber); or, instead of this, the same quantity of the whitest gum copal: four drachms of sandarac; two, of fine mastich, in drops. Put all this, reduced into a powder, in a fine glass matras; then, pour over it one ounce of the finest turpentine oil. Stop the matras first with a cork, then with a bladder wetted. Set this to infuse, over a slow fire, for twelve hours. After this, uncork, and let cool, the matras; then pour, gently, in it six ounces of good spirit of wine, and stop it again as well as before. In that situation, set it on ember ashes, or, rather, in a *balneo marie*. In the space of another twelve hours, you will find that the spirit of wine shall have dissolved all the gums. Then, while the varnish is still quite warm, strain it through a cloth; bottle and cork it, to keep for use.

XLIX. The true receipt of the English varnish, such as is that country is laid on sticks and artificial-made canes.

Smoothen and polish well your sticks; then, rub them, or your artificial made canes, with a paste made of flour. Then, having diluted, in water, a discretion-able quantity of Flemish glue, and red orpine, give one coat of this, very smooth and equal, to your sticks. If, after this is dry, you do not think it sufficient, give them another, and let them dry. Then, give them a third coat, of clear varnish, made with turpentine and spirit of wine. After this is done, put a soaking, in an equal quantity of water and chamber-lye, some turnsol cut very small. With this colour you touch your sticks, or canes, here and there with a hair brush. Then, holding them perpendicular, on their small ends, between both your hands, you roll them quick and brisk, (as when you mill chocolate), in contrary senses. This operation gives them a negligent and natural-like marbling,

bling, over which you are to lay another coat of varnish, and set them to dry.

L. A fine varnish for all sorts of colours.

1. Take two pounds of double-rectified spirit of wine; seed-lac, four ounces; sandarac, as much; gum copal, one. Set all a-dissolving, on hot ashes, in a marris, or a vessel with a long neck. When perfectly dissolved, strain it through a jelly-bag, made of new cloth. Mix, with that which shall have strained out of the bag, one spoonful of oil of turpentine; then bottle and stop it well, and set it in the sun. There will happen a separation, and a certain coarser part will shew itself at the bottom, while another more clear will appear swimming on the top. Divide carefully, by inclination, the clearest from the thickest part.

2. This last you may use with fine lamp-black, well picked, and free from all sorts of hard nobs, to make a black-colour varnish. With it, you rub whatever you want to be varnished, and lay, one, two, or three coats of it, more or less, according as you think proper, letting dry between each coat. And, when this is done, you put, of the first separated clear part of your varnish, as much as you find requisite to give your work a fine lustre.

N. B. It is proper there should be some fire, so near to the work, as it may receive from it some gentle heat, while all this is performing: and when the whole is well executed, you must let dry in the shade what is varnished, and guard it against the dust.

3. If, instead of black, you want a red colour, you must, from the very beginning of the operation, join some tacamahaca-gum with the spirit of wine of double rectification above mentioned; and, in lieu of lamp-black, in the second part of the operation, you put some cinnabar in powder. Then, when you have done with laying the several coats of varnish, in which the cinnabar is, you put in the clear varnish, which is destined to make the last coats, for lustring, some dragon's blood in tears.

4. You may put, in the same manner, whitening in your varnish, if you want it white; or verdigrise if you want

want it green; and so on any other colour you want it to be, proceeding, in respect to each of them, as before directed for the others.

N. B. These varnishes, when dry, do all require to be polished. For that purpose, you take a cloth, dip it in tripoly, and rub, with moderation, over the last coat of varnish, till you find it has acquired a sufficient degree of lustre, and equality.

LI. *A varnish to lay on, after the isinglass.*

Take spirit of wine, four pounds; white amber, fourteen ounces; massich, one; sandarac, seven. Put all in digestion, for twenty-four hours. Then, set the matrass on the sand, and give the fire for three hours, till all is perfectly dissolved. Add after, four ounces of turpentine oil.

LII. *A varnish to gild with, without gold.*

Take half a pint of spirit of wine, in which you dissolve one drachm of saffron, and half a drachm of dragon's blood, both previously well pulverised together. Add this to a certain quantity of shell-lac varnish, and set it on the fire with two drachms of *jocotrine-aloës*.

LIII. *A varnish water-proof.*

1. Take lintseed-oil, the purest you can find; put it in a well-glazed pipkin, over red hot charcoals, in a chaffing-dish. With that oil add, while a-warming, about the fourth part of its weight of rosin. Make all dissolve together, and boil gently, lest it should run over the pot. At first, the oil will turn all into a scum; but, continuing to let it boil, that scum will insensibly waste itself, and disappear at last. Keep up the fire till, taking a little of that oil, with a stick, you see it draw to a thread like as varnish does. Then, take it off from the fire. But if, trying it thus, it prove too thin, add some more rosin to it, and continue to boil it.

2. When it is come as it ought to be, varnish whatever you want with it, and set it in the sun to dry, or before the fire, for it cannot dry without the assistance of either of these.

N. B. This composition of varnish has this particular property, *viz.* that, if you lay it on wooden wares, hot

water itself cannot hurt it, nor have the least power on it. You may, therefore, make a very extensive use of it. But you must take care to chuse the finest and the most perfect rosin; and to boil it well, for a long time.

Quære. Would not such a varnish be extremely useful, to preserve what is much exposed to the injuries of the weather, in gardens and elsewhere; such as fashets, statues, frames, hot-houses? etc.

LIV. *Callot's varnish, mentioned in Chap. I. p. 2.*

1. Take two ounces of the finest lintseed-oil; benjamin, in drops, two drachms; virgin-wax, the bulk of a filbert. Boil all this together, till it is reduced to one third; and, while it is a-boiling, never cease to stir with a little stick. When done, bottle, or pot it in a large-mouthed vessel.

2. To use that varnish, warm a little the plate you intend to engrave upon; and, taking a little of the varnish with the tip of your finger, spread it delicately over the plate. Observe to put as little of it as you can, and to lay it on as smooth and equal as possible. When done, smook the plate, on the varnish side, with a candle, passing and repassing it gently, over the flame of it, till it is black every where. Set it again, now, on the chaffingdish, wherein there are kindled charcoals; and, when the plate has done fuming, then the varnish is sufficiently hardened. You may then chalk, draw, and etch, whatever you will on it.

Such is the true receipt of the varnish, which the famous *Callot* made use of, to engrave his most admired, and truly admirable, subjects.

LV. *A varnish to lay on paper.*

Begin by laying on your paper one first coat of very clear and thin size. This being dry, melt three parts of oil of spike and one of rosin together: and, when come to the consistence of a varnish, you lay one second, and light, coat of this over the first made with size.—This varnish is very fine, when very smoothly, and equally, laid on.

LVI. *How to cast figures in moulds.*

Take one pound of Paris-plaster, and an equal quantity of bricks, pounded into an impalpable powder; join

join to this one ounce of *alumen plumbeum*, and one of ammoniac salt. Dilute all together, gradually, in clear water, without absorbing it, as you are to make a paste of it; and make your moulds with it.

LVII. *Another varnish.*

Take maffich's and sandarac's, equal parts, of each two ounces. Pound them into a fine powder. Have three ounces of lintseed-oil, and as much of spirit of wine, in which, being mixed, you put your powders. Set this, in a well-stopped matras, in a *balneo marie* to boil and concoct together for one hour: and this varnish is done.

LVIII. *L'Abbe Mulot's varnish.*

Take of spike oil, one ounce; pulverised sandarac, half an ounce. Put all in a bottle, and set it in the sun till perfectly dissolved. This composition is particularly fit to varnish gold or silver, in shell, which has been laid on, with a hair pencil.

LIX. *A varnish to lay over plaster-works, or figures.*

Take fine white Alicante soap; rasp it fine, and put it in a well glazed pipkin. Dissolve that soap, in the pipkin, with your finger and a little water, added gradually, and little at a time, till it comes thick and milky. Cover this, for fear dust should come to it; and let it rest so for seven or eight days. Take, next, a soft and short hairy brush; dip it in this soapy preparation, and wash the plaster figure all over with it, then set it a-drying. When dry, rub it gently with a piece of cloth, placing yourself between it and the light, that you may perceive better the places which take the polish; when done, thus, every where, your statue will appear as white, shiny, and beautiful, as alabaster.

LX. *A very fine red varnish.*

1. Take oil of spike, one pound; and litharge as much. Boil both together, for one quarter of an hour, in order to clarify the oil, or, what is called, ungreasing it. When thus clarified, or ungreased, take one pound of it, and six ounces of shell-lack, which you melt together in a matras, or a varnished pipkin. Then, dilute in it some cinnabar, which had previously been grinded on a stone, with chamber-lye; and the varnish is done.

2. Of this composition, lay first three or four coats on your work, and allow time sufficient, between each coat, to dry. When the last is given, lay on another of pure and clear varnish without cinnabar, made with one part of spirit of wine, and four of oil of spike, and some shell-lack.

LXI. *A varnish to gild certain parts of stamped leathers, silvered in some places with pewter-leaves, and otherwise adorned with running stalks of flowers, of various colours, figures, and other sorts of embellishments.*

1. Take lintseed-oil, three pounds : of that sort of varnish called *Arabian sandarac*, and rough pitch equal quantities, one pound each ; and saffron, half an ounce. Instead of saffron, you had better, if you have that opportunity, make use of the stamens of lilies, which are infinitely preferable.—Put all into a varnished pipkin, and set it over the fire. Take great care not to have it burn ; and, to avoid it, keep continually stirring the matter with a spatula. When you want to know whether it be, or not, sufficiently done, have a hen's feather, just dip it in, and off quickly. If the feather be grizzled, it is a proof the matter has sufficiently boiled. Therefore, take it off from the fire, and throw in one pound of well-chosen and picked hepatica aloes, in powder. Mix well this with the spatula, and set it again on the fire, to concoct well this addition with the rest. If you see that your matter boils and swells, you must take it off, and let it rest awhile ; during which time, you take some of the coals away. Set it now again upon this more moderate fire, stirring always well, that all may be perfectly incorporated. As soon as this seems to you done, you take it off, let it cool a little, and strain it through a strong coarse cloth, and keep it for the following use.

2. Apply the silver, or pewter leaves, on the leather, with the white of an egg, or gum-water. When these are properly laid on, give one coat of the abovementioned varnish, quite warm, on such places as you want to appear gilt, and set it in the sun. When dry, it looks like gold.

N. B. The *Arabian sandarac*, we have prescribed above,

bove, is known by some, under the denomination of *Gum of Juniper*.

LXII. *To imitate porphyry.*

Take English brown red. If too red, add a little umber, to it, or some foot. Pound all into powder. Then have a plank, or marble stone, of a fine polish, which you overlay with oil. Make a colour composed of brown red, and a little flat, or Venetian lake, previously grinded with gum adragant. Then, with a largish brush, take of that colour, and asperse your oiled marble with it, by striking the handle of the brush on your wrist, as the book binders do to stain the covers of their books. When your marble shall have been thus well speckled all over with that red colour, you let it dry. Then, taking your lump of brown red and umber, you dilute it, make a thin paste of it, and lay it on your speckled marble. When this is also dry, it admits of a very fine polish, and looks like porphyry.

LXIII. *To imitate serpentine.*

1. Take auripigment, which you grind well first with water, and next with a little addition of indigo. Let this dry; and, when dry, reduce it to an impalpable powder; then mix it with a little gumadragant, and make a paste of it, as in the above receipt.

2. After this is done, take some lighter green, put a little more auripigment with the indigo, till you come to obtain the true hue of the spots which are in the *serpentine*. Of this colour you take with a brush, and asperse with it a marble piece in the same manner exactly as described in the preceding article; and when this is dry, you lay your first prepared paste on it.—For the rest, do as above.

N. B. You may thus, with a brush, imitate, or even invent, all sorts of marbles, according to your taste and fancy; and, when the first laid colours are dry, lay your paste over them, let them dry likewise, and polish.—For example, have several different colours prepared as above; asperse, or mark with each of them separately, and one after another, on some piece of glass, or well polished marble. Then make a paste and lay it over them, of whatever colour you will. If you will
have

have it white, it is done with whitening, or white-chalk, and a little mixture of yellow ocher.—These sorts of works admit of being overlaid with an exsiccative varnish.



C H A P. IV.

SECRETS relative to MASTICKS, CEMENTS, SEALING-WAX, &c. &c.

I. *A subtil mastick to mend all sorts of broken vessels.*

TAKE any quantity of white of eggs, and beat them well to a froth. Add to this soft curd cheese, and quick-lime, and begin beating a-new all together. This may be used in mending whatever you will, even glasses, and will stand both fire and water.

II. *Another.*

Take rosin, yellow wax, sulphur, and cement. Sift this last very fine, and melt all together; then use it.

III. *A mastick to make rock-works.*

Take six parts of Paris-plaster, and one of soot, well mixed together.

IV. *An excellent mastick.*

Take coarse turpentine, four ounces; fricasseed and pulverised bullock's blood, one ounce; black pitch, four; wax, two; rosin, one; pounded glass, one; cement, one; and sulphur, half a one. Boil all together, after having well pounded and grinded each of them separately.

V. *A mastick for broken awares.*

Pound a stone-jar into an impalpable powder, and add to it some white of eggs and quick-lime.

VI. *Another mastick.*

Take quick-lime, cotton and oil, of each equal parts in weight.

VII. *Another.*

Take frankincense and mastick, of each half an ounce; bol armeniac and quick-lime, of each, two ounces.

VIII. *A cement.*

Take rosin, one ounce ; grinded tile, half an ounce ; mastich, four ounces.

IX. *A glue to lay upon gold.*

Boil an eel's skin ; and a little quick-lime together : when boiled gently, for the space of half an hour, strain it, and add some white of eggs beaten : bottle, and keep it for use.—The method to use it afterwards, is to warm it and lay a coat of it on marble, delfe, Worcester, Stafford, or any other earthen wares, &c. and, when nearly dry, write, paint, or draw, what you please on it with a pencil, and gold in shell.

X. *A size.*

Take half a pound of fresh-cod's tripes ; boil it in two quarts of white-wine, reduced to one third. To take off the bad smell, add, while it boils, a little cloves and cinnamon. Then, throw this size in whatever mould you please, to make it in flakes.

XI. *An exceeding good size, called Orleans size.*

Take the whitest isinglass you can find ; soak it in finely filtered quicklime-water, during twenty-four hours. When that time is over, take it off, bit by bit, and boil it in common water.

XII. *A cement for delfe, and other earthen wares.*

Take what quantity you will of wax and rosin. Melt them together, and add, while in fusion, a discretionable quantity of marble pounded into a very fine powder.

XIII. *Another, for the same purpose, which resists water.*

Take quick-lime, turpentine, and soft curd-cheese. Mix these well together ; and, with the point of a knife, put of this on the edges of the broken pieces of your ware, then join them together.

XIV. *A cold cement for cisterns and fountains.*

Take litharge and bol in powder, of each two pounds ; yellow ocher and rosin ; of each, four ounces ; mutton suet, five ounces ; mastich and turpentine, of each two ounces ; oil of nuts, a sufficient quantity to render malleable. Work these all together ; and, then it is fit for use.

XV. *A*

XV. *A lute to join broken vessels.*

Dissolve gum arabic in chamber-lye over a chaffing-dish: stir with a stick, till perfectly dissolved, then add an equal weight of flour, as you had of gum arabic, and concoct the whole for one quarter of an hour, or more, if requisite.

XVI. *A strong glue with soft cheese.*

1. Take a cheese from Auvergne. Let it be the fattest and newest you can find, and neither dry, nor moist; wash it in very warm water, so long as it should remain clear; then set it to rot, in clean water, till it begins to stink. As soon as you find it is so, boil it in water, with quick lime; and, when dissolved into a glue, take it off from the fire, it is done.

2. If you dry some whites of eggs in the sun, and that, pounding them into powder, you should add some of that powder with the cheese when you dissolve it along with the lime, the glue will be so much the stronger.

N. B. Observe that no other cheese, besides that which comes from Auvergne, has the quality requisite for this composition.

XVII. *To make a strong mastich.*

Take one pound of rosin; one quarter of a pound of shoe-makers rosin, two ounces of new wax, two of black pitch, and one of tallow. Boil all gently together on a slow fire: and, when well incorporated together, add some brick-dust, finely sifted, according to discretion.

N. B. The quantity of tallow is to be proportioned to the degree of dryness you require in this composition; so that you may, on that principle, discretionally increase, or diminish, the prescribed dose of that ingredient.

XVIII. *To make corks for bottles.*

Take wax, hog's lard, and turpentine, equal quantities, or thereabouts. Melt all together, and stop your bottles with it.

XIX. *To imitate rock works.*

Take white wax and rosin equal parts; and brimstone, a quarter part of both the other two put together.

Melt

Melt the whole at the same time, and throw it in cold water. It will form itself like the scum of the sea. When you want to apply it, warm only that part by which you design to stick it.

XX. *To rub floors with, whether boards, bricks &c.*

Take a pail full of scarlet wash from the dyers, with this stuff, rub your floor by means of an old hair broom. Let it dry, and observe not to tread upon it, till it is perfectly dry, then have from the plumber some black lead which is generally of a black or reddish hue, squeeze well all the nobs you may meet with between your fingers, and rub your floor all over with it, with your hands, then, with a rough dry brush, scrub well your floor, till it comes fine and shiny.

XXI. *A composition to make a relief fit to gild over, or even to raise an embroidery.*

1. Take one pound of lintseed oil; sandarac, mastic, burgundy pitch, assa-fœtida, new wax, and turpentine, equal quantities, four ounces of each.

2. Pound all, and put it in a varnished new pipkin, to boil for two hours, over a slow fire. Then keep it in that same pot to make your paste at any time afterwards with it, and as you want it.

3. This paste is made as follows. Take ceruse and umber reduced into a subtile powder, which you dilute, with the above composition, in sufficient quantity to make a sort of dough with it; observing never to make more of it at a time than you think to employ directly; for when, dry, it becomes as hard as marble.

4. The method of using it, is to draw, on whatever you will, whether cloth, linen, silk, thread, plaister, &c. the outlines of what you want to have raised in relief, as arms, trophies, figures, fruits, flowers, &c. according to your design, or fancy. Then you fill up those sketches, and raise them with the above paste, while it is soft; and, when it begins to dry, you gild, silver, or paint it over, as you like.

5. You may paint also the ground of those reliefs with whatever colours you please, and enrich it with gold spangles, if you chuse. The way to do it, is by laying

first a coat of varnish of isinglass and rosin melted together.

N. B. There is a work of this kind to be seen, at Vienna, on the great altar of the Virgin Mary.

XXII. *Sealing wax*: Recipe 1st.

Take one pound of shell-lack; benjamin and black rosin, half an ounce each; vermilion, eight drachms. The whole being melted, make your sticks on a marble table, rubbed over with oil of sweet almonds; and take care to have done before the wax is cold.

XXIII. *Another sealing wax*. Recipe 2d.

Take turpentine and sailor's pitch six drachms of each; either shell-lack or dragon's blood, one; sulphur citrinum, two. Mix and incorporate all together over the fire, and form your sticks.

XXIV. *Another*. Recipe 3d.

Take gum *baederacea*, shell-lack, sandarac of the ancients, otherwise printers rosin, and mastich, two ounces of each: rosin, four ounces; turpentine, half an ounce. Mix all in a very warm bell-metal mortar, and make your sticks.

XXV. *Another*. Recipe 4th.

Take shell-lack and mastich, of each, one ounce; dragon's blood, three; cinnabar, half an ounce; turpentine, one. Mix all, and make your sticks.

XXVI. *Another*. Recipe 5th.

Take greek pitch, one pound; white mastich, five; frankincense, five ounces; cinnabar, as much as you see it requisite to give the red colour.—Put the pitch first on the fire, to melt; next put the mastich and the powder of frankincense; and, last of all, the cinnabar grinded with a little oil. Incorporate all well, and take it off from the fire, to make your sticks.

XXVII. *Another*. Recipe 6th.

Take shell-lack, twelve ounces; mastich and rosin, of each, one ounce; dragon's blood, three; minium, half an ounce. Dissolve the shell-lack in vinegar; add, if you will, some turpentine-oil and sulphur to the quantity of four ounces of each, and two of ammoniac salt.

The

The whole being melted, make as fast as you can your sticks of the form and size you like.

XXVIII. *Another.* Recipe 7th. *Excessively good.*

1. Take shell-lack, &c. &c. pound them all into a very fine and impalpable powder. Then have two wooden pallets present upon them, before the fire some powder of one sort, to melt, then move it, and stir it with the said pallets. Take again of another powder in the same manner, and mix it in the same way before the fire with the first. Then another, and another, till they are all, by this method, perfectly well amalgamated together.

2. Have now some cinnabar in powder, which you put in a pan with water. In that water and cinnabar-powder, set to infuse, or only touch your incorporated gums, to make the composition take colour. When thus sufficiently coloured, take it out of the water with both your hands and the wooden pallets, and have a person to help you. This, having wetted his hand, will draw some of the said gum, and handling it on a table, will form the sticks.—For two pounds of gums, two ounces of cinnabar are wanted.

XXIX. *Another.* Recipe 8th.

Take gum-lack, four ounces; cinnabar, half an ounce; rosin, four and a half. Melt the rosin with a little vinegar, and skim it. Then take it out of the fire; then mix it with the lack and vermilion both well pulverised; and, when the composition begins to cool, form your sticks with it.

XXX. *An excellent sealing wax, by Girardot.* Recipe 9th.

1. Put four ounces of rosin, and four and a half of whitening, and melt them together, in a non-varnished pipkin, over kindled coals. While this is in fusion, have another pot, similar to this, in which you keep two ounces of shell-lack, in dissolution with vinegar. Now steep a wooden stick in the first pot, and another in the other pot; then, over a chaffing-dish, turn quickly, one over another, the ends of your two sticks together, to mix and incorporate well what matter they shall have brought along with them from each pipkin. And when, after having turned them thus a reasonable time, you see
both

both matters are well embodied, steep them, at different times, in the following liquor, to colour them.

XXXI. *A colour for the above wax.*

1. Grind, upon a porphyry table, two ounces of cin-
nabar, with a sufficient quantity of nut-oil, to make it a
liquid. In this you dip your sticks, at several times;
and take care, in doing it, the composition should not
grow cold. Wherefore you must, each time you steep
them in the colour, carry them again over the chaffing-
dish, to keep them in a due state of malleability. And
when you find the matter sufficiently tinged with red,
form your sticks as usual, on a marble, or other well
polished, table.



C H A P. V.

SECRETS CONCERNING COLOURS & PAINTING.

§ I. *To paint in varnish on wood.* (Useful to Car-
riage painters.)

I. *The preparation of the wood, previous to the laying of
colours, and the general process observed in laying them
on it.*

1. **Y**OU must first lay on the wood two coats of
Troyes-white, diluted with size-water. Next,
lay over these a third coat of ceruse. Then having
mixed the colour you want with turpentine oil, add the
varnish to it, and lay it on the wood, previously pre-
pared as follows.

2. Polish the wood, first, with shavegrass or horse-
tail, and then with pounce-stone. Lay afterwards six
or seven coats of colour mixed with varnish, allowing
after each coat a sufficient time to dry, before laying on
the next; then polish over the last coat with pounce-
stone grinded on marble into a subtile powder. When
this is done, lay two or three coats of pure white var-
nish. As soon as this is dry, rub it over with a soft rag
dip into fine olive oil, then rub it with tripoly reduced
into

into subtile powder; and having wiped it with a clean piece of linen, pass a piece of wash-leather all over it.

II. *To make a black.*

1. The black is made with lamp, or ivory, black, grinded on a marble stone, with vinegar and water, till it is reduced into the most impalpable powder. To keep it, put it in a bladder.

2. There is a sort of black which, from its hue, may be termed a velvet black. This is made of sheep's trotters' bones, burnt and reduced by grinding, like the other black, into an impalpable powder. You keep it the same as the other.

III. *To make a blue.*

Burnt turnsol mixed with quick-lime and water, then sized with leather size, makes the blue.

IV. *To make the Gridelin.*

Grind cochineal with white lead and a little Venetian lake. According as you put more or less of this last ingredient, you make it darker or clearer.

§ II. *To paint on paper.*

V. *For the red.*

To make a red; take flat, or Venetian lake and Brasil wood, and boil all together, with an addition of black lead.

VI. *To make a fine yellow.*

To make a yellow, you must boil some kermes in a water impregnated with orpine.

VII. *To make a green.*

The green is made of a mixture of verdigrise, sap-green, Hungarian green, and *ter-verte*. The whole grinded on marble with a pretty strong leather size.

VIII. *To transfer a print on vellum, and then paint it.*

Chuse your print, and fit a sheet of transparent, or varnish paper to it, for width and breadth. Lay it on the print, and fix it by the four corners, and the middle part of the four edges, on that print, by means of a little white wax, the bulk of a pin's head. Then, with a very fine lead pencil, sketch out the varnished paper, all the outlines and turns of the print which you plainly

see through. When done, rub the back of this varnished paper all over with red chalk, and carrying it on the vellum, fix it on it, as you did on the print. Then with a wooden, or ivory, blunt point, if you pass over all the strokes which are delineated on the varnished paper, the red chalk of the back will set off in all those parts, and lie on the vellum, whereon you will find the print perfectly sketched, and fit to receive what colours you like.

§ III. *Compositions for Limners.*

IX. *How to prepare most colours for limning.*

Most colours are prepared, or grinded, with gum-arabic. Ocher makes the yellow; *courant mourant*, the white; verdigrise, the green; ceruse, the grey; lamp-black, the black; cinnabar, the red; and gold in shell, the gold.

X. *To make what is called lamp-black.*

Put a large week of cotton in a lamp filled with nut oil, and light it. Prop over the flame an earthen dish, and now and then visit this dish, and gather all the black which fixed itself to it.

XI. *Another way of making black.*

Burn some nut shells in an iron pan, and throw them in another full of water. Then grind them on marble with either oil or varnish.

XII. *To make a blue.*

Whitening grinded with verdigrise will make a very fine blue.

XIII. *To make a turquin blue.*

German turnsol infused for one night in chamber lye, then grinded with a discretionable quantity of quicklime, in proportion as you want to have it paler or darker.

XIV. *A fine green for limning.*

Grind some verdigrise with vinegar, and a very small quantity of tartar. Then add a little quicklime, and sap-green, which you grind also well with the rest, and put in shells for keeping. If it become too hard, dilute it with a drop of vinegar.

XV. *Another for the same purpose.*

Grind on a marble stone, verdigrise, and a third of tartar, with white-wine vinegar.

XVI. *To.*

XVI. *To make what is called the Sap-green, or black-berry green.*

Express the blackberry juice, when full ripe. Add some allum to it, put all in a bladder, and hang it in the chimney to dry.

XVII. *To make lake.*

Take three parts of an ounce of Brasil wood ; a pint of clear water ; one drachm and a half of roch-alum ; one dozen and a half of grains of salt of tartar ; the bulk of two filberts of mineral crystal ; three quarters of a pound of the whitest sould, or cuttle-fish bones, rasped. Put all together in a saucepan to boil, till reduced to one third. Strain it three times through a coarse cloth. To make a finer sort, strain it four times. Then set it in the sun under a cover to dry. That which dries the soonest is the finest.

XVIII. *To make a liquid lake.*

Pound some cochineal and alum together ; then boil them with a certain quantity of lemon-peels cut very small. And when it is come to the right colour you want ; pass it through a cloth.

XIX. *Another way.*

On a quantity of alum and cochineal pounded and boiled together, pour, drop by drop, oil of tartar, till it comes to a fine colour.

XX. *For the vermilion.*

Vermilion becomes very fine in *aquavita*, or in child's urine. But it will be still finer, if you put it in *aquavita* with a little saffron. It is used with whipped whites of eggs.

XXI. *For the making of carmine.*

1. Boil two quarts of spring water in a varnished pipkin ; and, when it boils, throw in seven pugils of pulverised *cbouam*. After this has thrown two or three bubbles, take it off from the fire, and decant it in another clean pipkin. Then put in this water five ounces of cochineal in powder, and boil it for a quarter of an hour. Add three pugils of *autour*, in fine powder, and make it throw four bubbles. Then add three pugils of Roman alum in powder, and take it out directly from the fire, which must be made of live coals.

2. Strain

2. Strain all this through a linen cloth, and divide this liquor into several delft veffels, and fo let it remain for three weeks. At the end of that term pour off the water by inclination. You will find under a kind of mouldinefs, which you muft carefully pick off, and then gather the carmine.

Note. Every five ounces of cochineal give one of carmine. It is to be grinded on marble.—A general opinion prevails, that this operation is beft done in the crefcent of the moon. How far it is needful to obferve this precept is left to the wife to determine.

XXII. *Of the choice of colours fit for expreffing the various complexions.*

1. For women and children; mix a little white and a little turnfol.

2. For men; a mixture of white and vermilion is proper.

3. For old folks; you muft ufe fome white and ocher.

4. For horfes; you muft chufe biftre, ocher, and white.—The dark brown horfes require a little addition of black.—The grey want nothing but biftre and white.

§ IV. *To make transparent colours.*

XXIII. *For the green.*

Put in very ftrong vinegar, verdigrife, rue-juice, and gum-arabic. Set this in the fun for a fortnight, or, if you have no fun, boil it on the fire. Strain it, bottle and flop it.—Shake it well before ufing.

XXIV. *For the red.*

Make a lye with falt of tartar. In it, put to infufe for one night, fome India wood, with a little alum. Boil all, and reduce to one third. Run it through a linen cloth, and mix fome gum-arabic with it.—With more or lefs alum, you make it of a higher or paler hue.

XXV. *For the yellow.*

Bruise Avignon feed, which we, in this country, call *French Berries*, and put it in a lye of falt of tartar to boil on the fire, to the reduction of two thirds. Run it, and boil it one bubble more. Then bottle and cork

cork it.—It must be shaken before using.—A small addition of saffron renders it more lively.

XXVI. *For the blue.*

Soak in chamber-lye, for one night, a certain quantity of German *Palma Christi*. Take it out and grind it with a little quick lime.—More or less quick lime will raise or lower it in hue. And nothing more is required to dilute it than chamber-lye and gum-arabic.

XXVII. *Another blue, very like ultramarine.*

Grind some indigo on porphyry with turpentine oil. Put it afterwards in a glazed pipkin, and lute it well. Let it thus lay for the space of six weeks. The longer you leave it there, the more blue it will be.

XXVIII. *A pale red to paint on enamel.*

1. Take the filings of a piece of good iron. Put them in a matrafs with *aquafortis*, and set it on a slow fire. Let it boil gently till the filings are all dissolved.

2. When this is done, pour a little warm water into the matrafs, and let it remain a few hours on the fire, then pour all into another vessel. When the liquor shall be quite clear, decant it out gently, and leave the powder, which is at the bottom, to dry.

3. Put this dried powder in a new crucible well covered and luted, and then heat it gently on a very regular fire; and, a little while after, take it out and let it cool.

4. Now one drachm of that powder, and three of yellow Dutch beads well grinded with mastich-oil, will give full satisfaction.—This is far from being a contemptible secret.

XXIX. *Process of making the purple, for painting on enamel; a most admirable secret.*

1. Take one drachm of very fine gold, forged weak. Cut it in small bits, and heat it. Put that gold into a matrafs, with one ounce of ammoniac salt, and two of good *aquafortis*, and set it on a gentle fire to run all into liquor.

2. Have two ounces of clear water, nearly boiling, and throw it in the matrafs. This done, pour the whole in a glass phial of more than a quart size, to which

which you will add one ounce and a half of oil of tartar drop by drop. It will occasion an ebullition, which being ceased, you must fill the bottle with water, and let it rest till the gold falls to the bottom.

3. When the water is quite clear, decant it out gently, for fear of disturbing the gold and losing it. Then fill the bottle with new water, and do the same, repeating this operation till the water is as clear when you decant it out, as when you put it in, and has no more smell.

4. Take your gold out of the bottle, and put it on a fine brown paper, folded in four or five doubles, and turned up by the edges, in form of a little case or mould. There let it dry; and, when dry, keep it for use.

5. Grind, next, some fine white frost-glass; mix it with water, put it in a bottle, and shake it, then let it settle. When this powder has fallen to the bottom, decant off the water, and let the powder dry in the same vessel in which it is.

6. Now the proportion to make the purple colour: Take three grains only of your aforesaid gold dust to thirty of the white frost-glass, thus prepared. Mix both these powders in a calcedony-mortar with a good deal of clear water. After the powder has settled to the bottom of the mortar, decant out the water, and let the powder dry in the mortar itself.

7. This done, take the powder out of the mortar; and, putting it on a white bit of paper, dry it by a slow fire, till you see it has acquired a fine purple hue.

8. Grind, now, this powder with a little oil of spike, and put it in little cases made with cards, of which the edges, are turned up. When the card has soaked the oil, the whole operation is accomplished.—It is to be preserved by putting it in small boxes, and put them in a dry place.

XXX. *How to make a fine flesh colour.*

9. The mere addition of a little black to the above composition will make the finest colour for complexions, or flesh-colour, and may justly be deemed a ninth article in the process which is to be observed in its fabrication.

XXXI. *A good way to make carmine.*

Make a little bag, tied very close, of fine Venetian lake. Put it in a little varnished pipkin, with rain-water and cream of tartar, and boil it to a syrup. Thus you will have a fine carmine colour.

XXXII. *Another way.*

Grind dry, on porphyry, some of *coccinella urfuta*; sugarcandy, rock-alum, and gum-arabic, all nearly in equal quantities, except the gum, of which you put a little less. Put these powders into a glass phial, and pour over a sufficient quantity of brandy to cover them, and squeeze over the juice of a lemon. Stop well the bottle, and set it in the sun for six weeks. Run the colour into shells, taking care that none of the ground should run out with it.

XXXIII. *The whole process of making ultramarine, three times experienced by the author.*

1. Make some of the brownest *lapis* red-hot in a crucible, then throw it into vinegar. Repeat this three times. When calcined, pound it in a mortar, and sift it. Then grind it on porphyry, with a mixture of lintseed oil and spirit of wine, in equal quantities, and previously digested together in a matrafs, and often shaken to prepare them for this use. When you shall have subtilised your *lapis* powder, then incorporate it with the following cement.

2. Lintseed oil, two ounces; Venice turpentine, three; mastich, half a one; *assa fœtida*, two; black rosin, as much; wax, half an ounce; yellow rosin, three. Boil all in a glazed pipkin, for a quarter of an hour; then run it through a cloth into clear water. Take it out of that water; and, taking of this, and of the grinded *lapis*, equal quantities, incorporate them in a glazed pan, and pour some clean and clear warm water over, and let it rest for a quarter of an hour. Stir this water with a wooden spatula; and, in less than another quarter of an hour you will see the water all azured. Decant, gently, that water into another glazed pan. Pour new warm water on the grounds, and proceed as before, continuing to stir and beat it well; then decant again this new azured water with the former.

Repeat

Repeat doing so, till the water is no more tainted with any azurine particles.—When done, set your azured waters in evaporation, and there will remain at the bottom a very fine Azure of Ultramarine, *viz.* four ounces of it for every one pound of composition. Of the remainder, you may make what is called *cender-blue*.

XXXIV. *Another very fine and well-experienced ultramarine.*

Take the finest *lapis-lazuli* you can find. Break it in little bits, and make it red hot in a crucible, between blasting coals. When red hot, throw it in white-wine vinegar; then dry it, and pound it in a marble mortar with a wooden pestle. Should it not pound easily, calcine it again as before, and throw it again in vinegar, &c. then try it again in the mortar, and if it do not pound yet, repeat again the same process, till it does at last easily submit to be pulverised. After it has been put into a fine powder, grind it on a porphyry stone, with good *aquavita*, till it is impalpable. Then gather it up in little cakes, which you set a-drying on paper or slates. When dry, if you pulverise it, you have a fine ultramarine of it.

XXXV. *A very good and experienced pastil to make ultramarine of.—The doses as for one pound.*

Take nut or lintseed oil, three ounces; new wax, and fine rosin, three ounces of each; rosin, one; Burgundy pitch, four; *oliban*, otherwise male frankincense, two drachms; dragon's blood, one. Melt all these ingredients, one after another, in the same order as they are here prescribed. That is to say, put in a varnished pipkin, the oil first; and, when a little warm, put in the rosin by little bits. This being dissolved, put in the chalk pulverised, pouring it gently, and by little at a time, lest it should blaze. As soon as the rosin is melted, pour the rosin in powder, and by degrees likewise. Next add the Burgundy pitch, broken in small bits, for it does not admit of pulverisation; you must, notwithstanding, put it in but by little at a time; and, when all are introduced and well dissolved, you add gradually the dose of dragon's blood powder, and let it dissolve like the other drugs.—Stir this composition with a stick, by means of which

which you are to judge whether or not your pastil is done. To know it, let a drop fall from the stick into a pan of water; then, working it between your fingers, you see whether or not it stick to them. If it stick, the pastil is not done, and you must let it remain longer on the fire; then repeat the trial again, till it does not stick to your fingers, as a proof of its being arrived at its degree of perfection.—Throw it in a glazed pipkin filled with cold water; and when it becomes a little cold, make it into a ball with your hands, which you shall have previously greased with lintseed oil. Then you may keep it as long as you please for use. Stay, however, three or four days before using it the first time.

XXXVI. *The way of mixing the lapis with the pastil, to make ultramarine.*

1. Dilute, as thick as you can, a quantity of the before-mentioned impalpable powder of *lapis lazuli*, with a liquor made of two parts of *aquavita*, and one of lintseed-oil.

2. Melt in another glazed pan, without the assistance of water, and over a gentle fire, the pastil described in the preceding receipt.—Observe that your pastil be perfectly purified from any particles of water it might have carried away with it, when you threw it in water in order to form it into a ball.

3. When the pastil is melted, throw into it the thick paste you had previously made of *lapis lazuli* with brandy and lintseed-oil. Stir and mix this so well, that the whole be most perfectly united and incorporated. Then let it remain twenty-four hours, and cover it well for fear of any dust getting at it.

4. After the said twenty-four hours are elapsed, put in this pan a quantity of lukewarm water, proportionable to that of the matter, and work well the whole together with two wooden pestles, till the water becomes quite blue, which you will immediately decant off into a china basin, and cover carefully for fear of dust.

5. Put new lukewarm water again on the same pastil. Work it a-new as before, and proceed the same as for the first time.—Repeat this operation as many times as you find the water coming blue, and till you perceive

it begins to turn gray or white, which is a convincing proof that there is no more any thing good in the paffil. — Be careful to range in order the different bowls in which you have decanted your tinged waters; and, to avoid mistakes, number them by first, second, third, &c.

6. Let these waters settle, and when quite clear as when you put them in, decant them again with all the gentleness possible, each into another similar vessel, for fear of loosing any of the ultramarine which lies fixed all round the sides and bottom of the bowls, and might be, though never so little, carried off with the decanted waters. When these waters are duly decanted off, cover again, carefully, the bowls, for fear of the dust, and let the ultramarine, which lies round them, dry perfectly. When dry, brush it down gently to the bottom, with a new and soft hair brush, and gather your powders separately with the same numbers on each parcel, agreeable to that of the bowls whence they come.

7. The first ultramarine is the finest; the second is not so much so as the first; neither is the third so fine as the second. And it goes thus, decreasing in beauty, merit, and value.

Observations on the above process.

1. Ultramarine might be drawn from the paffil, by working it with the hands instead of pestles. But, as it fatigues a great deal more the articulations by that sort of working, than by the other, there is room to think, that by this mode of proceeding, each single operation might be attended with some imperfection; which is the reason why the pestles are preferable.

2. Some people make their *lapis* red hot on the bare coals, then steep it in distilled vinegar, repeating this several times till it becomes fryable.

3. But it is much preferable to make it red hot in a crucible; because, should the fire make it split, the bits will remain in the crucible. Now it need not be wondered at if it does, particularly when calcinations are often repeated.

4. The *lapis*, which is of a fine blue, and striped with gold or silver, is the best to make ultramarine of.

5. The *lapis* is also reckoned to be of a good quality, when

when it preserves its fine colour, even after it has been made red hot in blasting charcoals.

XXXVII. *Another secret to compose a fine blue, fit for washing, in drawings, instead of ultramarine, which is both too dear, and too strong, to be used for that purpose.*

1. Gather in the summer, a large quantity of blowart which grows in the fields among the corn. Pick well their blue leaves off, and throw the remainder away. Have lukewarm water impregnated with impalpable powder of alum. Put the above picked blue leaves into a marble mortar with a sufficient quantity of that alum water, to soak them only. Then, with either a wooden or marble pestle, pound them, till the whole is so mashed, as to give easily all the juice by expression through a new cloth. When you strain it, you must do it over a china or glass bowl, in which there is water impregnated with the whitest gum-arabic you can find.

2. Observe that you must not put much alum in the first water, if you are desirous of preserving the brightness of the colour: for, by putting too much of that ingredient, as well as of the water impregnated with it, you darken the tone of the colour.

3. *Note.* By means of the same process, you may likewise draw the colours from every flower which has any great eclat. You must not neglect to pound them with alum water, which prevents the colour from suffering any alteration; as it sometimes happens at the very first bruise.

4. To render these colours portable, you set them a-drying in the shade, in china or glass vessels, well covered to fence them against the dust.

XXXVIII. *The true secret of making Iris-green.*

1. Take a large quantity of the flowers of that name in the spring. Pick them; that is to say, pick out the green and the yellow, which are at the bottom of the petal of the flower. Next to this, pound them in a marble mortar, with a little lukewarm water, impregnated with alum. When pounded, express the juice through a new cloth, over a china bowl. Then mix some gum-arabic water with it.

2. If

2. If you want a tone of colour different from the natural colour of the flower, you may change it by only adding, after the flowers are pounded, a little quick-lime dust in the mortar, and give two or three strokes of a pestle more to the whole; then strain it.

3. *Note.* If you should pound these flowers in a wooden mortar, you must be cautioned at least to take care it should not be one of walnut-tree wood, because it is apt to tarnish the colours, and destroy their brightness, which is one of the chief things always required in colours.

4. In the month of March, you may, by means of the same process, obtain the colour from garden, or double violets. But this is never so fine nor so lively.

XXXIX. *To make a dark green, whether for the grounds of miniature pictures, or for washing on paper, or, in short, for draperies and terraces.*

Take, towards the end of autumn, a good quantity of wallwort's stalks, with their fruits on them, and very ripe. Let them rot for five or six days, in the cellar; and, when you see the fruits have fomented sufficiently to give easily their juice by expression, strain it through a new cloth in alum-water. Divide the whole into several glass tumblers to dry it more easily. Set them in the air, but not in the sun, and lay some paper over them to prevent any thing from falling into the glasses, but which should not at the same time stop the exhalation of the liquor, and thereby cause it to become mouldy. By these means, you shall have a colour fit for the wash of a green hue, and dark at the same time.

XL. *To make the Bistre, for the wash.*

1. Grind, on marble, with child's water, some chimney-foot. Mullar it thus so long as to bring it to be as fine as possible. When done, put it in a wide-mouthed bottle, which fill up with clear water; and, then, stir and mix all well with a wooden spatula. Let the coarsest parts settle for about half an hour's time, and fall to the bottom of the vessel. Decant out now the liquor gently into another vessel. What remains in the bottom of the first bottle, is the coarsest bistre.

2. Proceed the same with respect to the second bottle,

tle, and after having left this to settle for three or four days, instead of half an hour, decant it into a third. This gives you the finest bistre.

3. It is thus you are to proceed in the manipulation of all the colours which are intended to serve in drawing for wash whenever you will not have them rise thick above the surface of the paper, which would undoubtedly look very bad; for, the neatness required in a draught, forbids the use of any coarse colour.

XLI. The secret for a fine Red for the wash.

1. Make a subtile powder with any quantity of cochineal. Put it in a vessel, and pour so much rose-water over it as will exceed above it by two fingers.

2. Dilute calcined and pulverised alum, while it is yet quite warm, into plantain-water, and mix some of the liquor in which you have dissolved the cochineal.

3. This process will give you a very fine red, much preferable for the wash, to that which is made with vermilion, because this last has too much consistence, and, besides tarnishes too soon, on account of the mercury which enters into its composition.

XLII. A secret to make Carmine, at a small expence.

Break and bruise, in a bell-metal mortar, half-a-pound of gold colour Fernambourg-Brasil. Put this to infuse with distilled vinegar in a glazed pipkin, in which you boil it for the space of a quarter of an hour. Strain the liquor through a new and strong cloth: then set it again on the fire to boil. When it boils, pour on it white-wine vinegar, impregnated with Roman alum. Stir well with a wooden spatula, and the froth that will arise is the Carmine. Skim it carefully in a glass vessel, and set it to dry.

§ V. *Composition of colours, to dye skins or gloves.*

XLIII. A lively Isabel.

To make a lively Isabel colour, you must, to a quantity of white, add one half of yellow, and two thirds of red and yellow.

XLIV. For the same, paler.

If to a quantity of white, you put only one half of yellow, and another half of red, you shall have an Isabel of a paler hue than the first.

XLV. *For a pale filbert colour.*

1. Take burnt umber; a little yellow, very little white, and still less red.

2. This is made darker, only by adding to it a quantity of burnt umber as much yellow; a little white, and as much red.

3. Its darkness is still increased, if, putting no white at all to the umber you add only some black chalk, a little yellow, and as much red.

XLVI. *For an amber colour.*

To make an amber colour; to much yellow, you add very little white, and no more red than white.

XLVII. *For the gold colour.*

To much yellow, join a little more red; and this mixture will give you a very fine bright gold colour.

XLVIII. *For the flesh colour.*

To imitate well the complexion, or flesh colour, you mix a little white and yellow together, then add a little more red than yellow.

XLIX. *The straw colour.*

Much yellow; very little white; as little red, and a great deal of gum.

L. *A fine brown.*

1. Burnt umber; much black chalk; a little black, and a little red, will make a fine brown, when well incorporated together.

2. The same is made paler, by decreasing the quantity of black chalk, and no black at all in the above composition.

LI. *To make a fine musk colour.*

Take burnt umber; very little black chalk; little red and little white. These ingredients well mixed will produce as fine a musk colour as ever was.

LII. *To make a Frangipane colour.*

1. This is made with a little umber; twice as much red, and three times as much yellow.

2. The paler hue of it is obtained by adding only some white, and making the quantity of red equal to that of yellow.

LIII. *An Olive colour.*

To make the olive colour, take umber, not burnt; a little yellow; and the quarter part of it of red and yellow.

LIV. *For the Wainscot colour.*

Much yellow; little white; little umber; and of red half the quantity of yellow.

LV. *How to make Skins and Gloves take these Dyes.*

Grind the colours you have pitched upon with perfumed oil of jessamine, or orange flowers. Then range the grinded colour on a corner of the marble stone. Grind, of gum-adragant, an equal quantity as that of the colours, soaking it all the while with orange flower water. Then grind both the gum and the colour together, in order to incorporate them well. — Put all into a pan, and pour a discretionable quantity of water over it, to dilute sufficiently your paste. Then with a brush, rub your gloves or skins over with this tinged liquor, and hang them in the air to dry. When dry, rub them with a stick. Give them again, with the same brush, another similar coat of the same dye, and hang them again to dry. When dry for this second time, you may dress them, the colour is sufficiently fixed, and there is no fear of its ever coming off.

LVI. *To varnish a Chimney.*

Blacken it first with black and size. When this coat is dry, lay another of white lead over it, diluted in mere sized water. This being dry also, have verdigrise diluted and grinded with oil of nuts and a coarse varnish, and pass another coat of this over the white.

§ VI. *To colour, or varnish, Copperplate-prints.*LVII. *To varnish Copperplate-Prints.*

1. Have a frame made precisely to the size of your print. Fix it with common flour-paste, by the white margin on that frame. Let it dry, then lay the following transparent varnish on it, which is to be made without fire.

2. Dilute in a new glazed pipkin, with a soft brush, as big as your thumb, about a quarter of a pound of Venice turpentine, and twopenny worth of spike, and

as much turpentine oils, and half a gill, or thereabouts, of spirit of wine.—This varnish being no thicker than the white of an egg, lay with your brush a coat of it on the wrong side of the print; and, immediately, another on the right. Then set it to dry, not upright, but flat. And, if it should not dry quick enough, pass a light coat of spirit of wine on the whole.

LVIII. *How to colour these prints, in imitation of Pictures in oil colours.*

1. To paint these prints, you must work them on the back in the following manner: Prepare, first, your colours on a pallet, and then proceed thus :

2. The flesh-colour is made with a little white and vermilion, which mix with your pencil according to the degree of redness you will have it.—For the green of tree-leaves, you must have mountain-green, ready prepared from the colourman; and, for the finest green, some verdigrise: As for the lighter shades of these colours, you only add some yellow to either of the above two, more or less, according to the circumstances.—To paint woods and trunks of trees, nothing more is required than umber.—To express sky-colours and clouds, you mix some blue ceruse with white lead; and, with these two colours only, you alter your blues to various degrees of shades, diminishing or augmenting one of the two, according to the darkness or lightness of the skies which you want to express. For the distances, a mixture of yellow and white lead; &c. and so on for the other colours you may want.

3. You are to compose them yourself on the pallet with the pencil; and, to mix or unite them, use a little oil of nuts, which you take up with the point of the pallet-knife. Then with the pencil, you apply them on the wrong side of the print.

LIX. *A varnish which suits all sorts of Prints, and may be applied on the right side of it.—It suits also pictures and painted wood.—It stands water, and makes the work appear as shining as glass.*

Dilute one quarter of a pound of Venice turpentine, with a gill, or thereabouts, of spirit of wine. If too thick, add a little more of this last; if not enough, a little

little of the former, so that you bring it to have no more thickness than the apparent one of milk. Lay one coat of this on the right side of the print, and, when dry, it will shine like glass. If it be not to your liking, you need only lay another coat on it.

LX. *To make appear in gold, the figures of a Print.*

1. After having laid on both sides of the print, one coat of the varnish described in the above *Art. lvii.* in order to make it transparent, let it dry a little while. Then before it is quite so, lay some gold in leaves on the wrong side of the print, pressing gently on it with the cotton you hold in your hand. By these means all the parts, whereon you shall lay these gold leaves, will appear like true massive gold on the right side.

2. Now when this is all thoroughly dry, you have only to lay on the right side of it, one coat of the varnish described in the preceding *Art. lix.* it will then be as good as any crown-glass. You may also put a paste-board behind the print, to support it the better in its frame.

LXI. *A curious secret to make a print imitate the painting on glass.*

Chuse a crown-glass of the size of your print; and lay on it two coats of the following varnish.

1. Put on the fire, in a glazed pipkin, and let boil for the space of one hour, Venice turpentine, four ounces; spirit of the same, and of wine, equal parts, one ounce and a half of each; mastich in tears, two drachms.

2. After it has boiled the prescribed time, let it cool, and then lay the first coat on the glass; this being dry, lay another; and, as soon as this is nearly dry, then lay on it, as neatly as possible, the print, previously prepared as follows.

3. Have a glazed vessel so broad at bottom as to admit of the print flat with all ease in its full size. Let this vessel be also as wide at top as it is at bottom, that you may get the print in and out of it on its flat, without bending it in the least. Pour *aquafortis* in this pan or vessel, enough to cover all the bottom then lay the engraved side of your print on that *aquafortis*. Take it out,

out, and wipe the *aqua fortis* off gently with soft rags, then steep it two or three times in three different clean fresh waters, and wipe it each time in the same manner.

4. This being done, lay the right side on the before-mentioned glass, before the second coat of varnish be quite dry, and while it is still moist enough for the print to stick upon it uniformly, equally, and smoothly, without making any wrinkles or bladders. When it is perfectly dried in that situation, wet your finger in common water, and moistening the print on the back part in all the white places, which have received no impression from the engraving of the plate, rub it all off. By these means, there will remain nothing but fairly the printed parts. On them you may paint in oil with a brush, and the most bright and lively colours; and you will have pictures, on which neither dust nor any thing else will be able to cause any damage.—To do this, there is no need of knowing, either how to paint or draw.

LXII. *Another to the same purpose.*

1. Heat before the fire, a crown glass of the size of the print, and then rub it over with Venice turpentine, which, on account of the heat of the glass, will spread the more easily.

2. Boil next your intended print, in spirit of wine, for about half a quarter of an hour; and then lay it by the right side on the glass.

3. This glass being cold, wet your finger, and moistening the back of the print, scrape, with your nail, the paper off the glass, so that there remain nothing but the strokes of the engraving.

4. Boil, in a matraass, for about a quarter of an hour, or rather more, and in *balneo marie*, one part of turpentine with four of spirit of wine. Then lay two coats of this composition on the back of the print, after you have scratched off all the paper, and allowing time between each coat to dry.

5. As soon as the second coat is dry you may lay on water-colours on the print, according to taste and judgement, and you will have a choice of beautiful pictures, agreeable to the beauty of the prints used.

LXIII. *The*

LXIII. *The method of chalking, for those who are not acquainted with drawing.*

They who are not acquainted with the principles of drawing, may amuse themselves with chalking some beautiful prints, on white paper, where they shall have nothing more to do afterwards than shade, in the same manner as they see done in the original. When they shall have practised for a while in that way, they will soon become able to strike out themselves some good piece of design. And to obtain that point, the following method is recommended.

1. With a soft, and one of the best, black lead pencils, rub one side of a white sheet of paper, cut to the size of the print, so that nothing of the paper can be seen, and only the black lead colour.—Lay this sheet, on the clean side, upon the face of the print, that it may not soil it; and on this sheet, the black side of which now lies uppermost towards you, lay another sheet of clean paper, and fix these three sheets together by the four corners, and on the edges, with fine minikin pins, so that the sheets may not vary one from another, which would quite confuse and mar the whole design.

2. Now take a blunted needle, or ivory point, and slip it, in pressing gently, all over the turns of the prints, going gradually and orderly for fear of forgetting some places, which may be prevented by laying a flat ruler across the print under your hands. When the whole is finished, unpin the papers; and, on the under part of that which lays at top, you will find all the outlines of the print most exactly drawn.

3. You may now, on these outlines, pass a stroke with India ink and a brush, or with ink and a pen; after which, with a crum of stale-bread, you rub off clean all the useless marks of the pencil, and leave none but those marked with ink. And to shade this design, you wash it with India ink, or colours, and a brush.

LXIV. *How to prepare a transparent paper to chalk with.*

In order to render themselves sooner, and more easily, masters of chalking neatly, and not to go out of the fine turns and outlines of a drawing, beginners should first

first know how to prepare a transparent paper, which, as it lets them see the minutest parts of the strokes as through a glass, gives them of course an opportunity of acquiring, by practice, a correctness, precision, and truth, in the expression of all the turns of a piece of drawing, be it whatever it will. This preparation then is as follows.

1. Have, one or several, sheets of fine and very thin paper, and rub them over with oil, or spirit, of turpentine, mixed in double the quantity of oil of nuts. To cause the paper to imbibe that mixture, steep a sponge or feather in it, which pass on both sides of the paper, and then let it dry.

2. When you want to use it, lay it on a print. Then, with a brush, a pencil, or a pen, pass over all the strokes, lines, and turns, of the design laid under. You may even thus learn to shade with neatness, if you wash that same design, while fixed on the original print, with India ink.

Thus practising often, and for a certain while, you may learn to draw very neatly, and even with boldness, provided you apply with attention, and are blessed with some share of memory. This method will certainly prove very agreeable, useful, and entertaining, for those who have not the patience to learn by the common method, which seems too tedious to some, and generally disgusts beginners.

• LXV. *Another, and more speedy method of making a transparent paper, to be used instantly.*

The above receipt for making transparent paper for drawing being attended with some difficulty, *viz.* the length of time which it takes to dry, we thought it would not be unacceptable to the public to be apprised of another, more speedy, and no way inferior to the other, by means of which, in a hurry, it may be made and used directly, as in a case, for example, where any one, being glad of copying a design, had not at hand varnished, or transparent, paper.

With a sponge, rag, feather, or any thing, spread lintseed oil on both sides of any common thin sheet of paper; then, as soon as done, wipe it with a handful of
the

the soft rags which are scraped off from leather at the tanner's. The paper is instantly dry and fit for immediate use.

Note. Nothing else can supply the tanner's leather rags, as nothing could soak the superfluous oil from the paper so fast, and so thoroughly. It is that which dries it so quick, and makes it fit for instant use.

LXVI. *A varnish to render transparent the impression of a print which has been glued on glass, and the paper scratched off as mentioned in Art. lxi. and lxii.*

Take turpentine, and a very little oil of the same. Dilute all well together, and lay one coat of it on the strokes of engraving, which are left fixed on the glass.

§ VII. *For painting on glass.*

LXVII. *How to draw on glass.*

Grind lamp-black with gum-water and some common salt. With this and a pen, a hair pencil, or any thing you please, draw your design on the glass; and afterwards shade and paint it with any of the following compositions.

LXVIII. *A colour for grounds on glass.*

1. Take iron filings, and Dutch yellow beads, equal parts. If you want it to have a little red cast, add a little copper's filings. With a steel mullar, grind all these together on a thick and strong copperplate, or on porphyry. Then add a little gum-arabic, borax, common salt and clear water. Mix these a little fluid, and put the composition in a phial for use.

2. When you come to make use of it, you have nothing to do but with a hair pencil lay it quite flat on the design you shall have drawn the day before; and having left this to dry also for another day, with the quill of a turkey, the nib of which shall not be split, you heighten the lights in the same manner as you do with crayons on blue paper. Whenever you put more coats of the above composition one upon another, the shade, you must be sensible, will naturally be stronger. And when this is finished you lay your colours for garments and complexions as follows.

LXIX. *Preparation.*

LXIX. *Preparation of lake, for glass.*

Grind the lake with a water impregnated with gum and salt; and then make use of it with the brush.—The shading is operated by laying a double, treble, or more coats of the colour, where you want it darker. And so it is of all the following compositions of colours.

LXX. *Preparation of the blue purple, for glass.*

Make a compound of lake and indigo, grinded together with gum and salt water; and use it as directed in the preceding article.

LXXI. *Preparation of the green, for glass.*

Indigo mixed with a proportionable quantity of gamboge, and grinded together as above, will answer the intended purpose.

LXXII. *Preparation of the yellow for the same.*

Gamboge grinded with salt water only.

LXXIII. *Preparation of the white.*

You have only to heighten much the white parts with a pen.

LXXIV. *The proper varnish to be laid on glass after painting.*

Boil, in oil of nuts, some litharge, lead filings, and white copperas calcined. When done and cold, lay it all over the colours which you put on the glass.

LXXV. *How to paint on glass without fire.*

Take gum arabic and dissolve it in water with common salt, bottle, and keep it. With this liquor, if you grind the colours you intend to paint with, they will fix and eat in the glass. Should you find they do not enough, increase only the dose of salt.

§ VIII. *Preparations of colours of all sorts for oil, water, and crayons.*LXXVI. *An oil to grind colours with, when the works are much exposed to the injuries of the weather.*

Take two ounces of mastich in drops, very clear, and grind it with lintseed oil. Then put in a well-glazed pipkin any quantity of that oil, and set it on the fire to boil. By little and little introduce in that boiling oil
the

the above prepared mastich, stirring well the whole to mix and incorporate it better. When done, take it off from the fire, and let it cool.—Such is the preparation of oil with which you are to grind your colours, when they are to be much exposed to the injuries of the weather, for they will resist it.

LXXVII. *To marble and jasper paper.*

1. Grind all the colours you want to employ (such as lake, massicot, indigo, yellow and red ocher, *etc. etc.*) with bullock's gall; grind each separately, and keep them so. Then have a large and wide pan filled with lukewarm gum-water. Stir well that water with a stick. While it is thus in great motion, and your colours being ready under your hand, with a large brush take of each separately, as much as the tip of the brush will carry, and touch only the surface of the water with it. The colours will immediately expand. Each colour requires a particular brush to itself. Therefore, with another brush, take of another colour, and do the same; and, with another, of another, and so on, till you have put on your water all those you have destined for the purpose.

2. When the water ceases to turn, you will plainly perceive all the variety occasioned by the different colours. Then, taking your sheet of paper, lay it flat on the water, leave it there for about two or three minutes, and, without taking it out, give it one turn round on the water, then pull it by one of the edges to the side of the pan, wash it, dry it, and burnish it afterwards.

Note. The paper must be chosen good, and the water sized with gum-adragant.

LXXVIII. *To clean pictures.*

Take the picture out of its gilt frame. Lay a clean towel on it, which, for the space of ten, fourteen, sixteen, or eighteen days, according as you find it necessary, you keep continually wetting, till it has entirely drawn out all the filthiness from the picture. Then, with the tip of your finger, pass some lintseed oil which has been set a long while in the sun to purify it, and the picture will become as fine as new.

LXXIX. *Another*

LXXIX. *Another for the same purpose.*

Put into two quarts of the oldest lye one quarter of a pound of Genoa soap, rasped very fine, with about a pint of spirit of wine, and boil all together on the fire. Strain it through a cloth, and let it cool. Then with a brush, dipped in that composition, rub the picture all over, and let it dry. Do the same again once more, and let it dry too. When dry, dip a little cotton in oil of nut, and pass it over all the picture. Let this dry again; and, afterwards, warm a cloth, with which rub the picture well over, and it will be as fine as just out of the painter's hands.

LXXX. *A secret to render old pictures as fine as new.*

Boil in a new pipkin, for the space of a quarter of an hour, one quarter of a pound of grey or Bril-ash, and a little Genoa soap. Let it cool, so as to be only lukewarm, and wash your picture with it, then wipe it; Pass some olive oil on it, and then wipe it off again. This will make it just as fine as new.

LXXXI. *An oil to prevent pictures from blackening.—It may serve also to make cloth to carry in the pocket, against wet weather.*

Put some nut, or lintseed oil, in a phial, and set in the sun to purify it. When it has deposited its dregs at the bottom, decant it gently into another clean phial, and set it again in the sun as before. Continue so doing, till it drops no more *faeces* at all. And with that oil, you will make the above-described compositions.

LXXXII. *A wash to clean pictures.*

Make a lye with clear water and wood ashes; in this dip a sponge, and rub the picture over, and it will cleanse it perfectly. —The same may be done with chamber-lye only; or otherwise, with white wine, and it will have the same effect.

LXXXIII. *Another way.*

Put filings in an handkerchief, and rub the picture with it. Then pass a coat of gum-arabic water on the picture.

LXXXIV. *Another*

LXXXIV. *Another way.*

Beat the white of an egg in chamber-lye, and rub the picture with it.

LXXXV. *A very curious and simple way of preventing flies from sitting on pictures, or any other furniture, and making their dung there.*

Let a large bunch of leeks soak for five or six days in a pailful of water, and wash your picture, or any other piece of furniture, with it. The flies will never come near any thing so washed. This secret is very important and well experienced.

LXXXVI. *To make indigo.*

Put some *isatis*, otherwise woad, or *glastum*, with slacked lime, to boil together in water. There will rise a scum, which being taken off, and mixed with a little starch, makes the indigo.

LXXXVII. *To make a yellow.*

What the *luteola* dyes yellow, becomes green by the woad, or *glastum*. Whence we may justly conclude, that green is not a simple colour, but a mixture of blue and yellow; as the yellow itself is a compound of red and white.

LXXXVIII. *An azure of mother-of-pearl.*

Take any quantity of superfine tested silver in laminas. Put it a little while in vinegar; then, taking it out of it, strew over the laminas some pounce-powder to alcoholise them. Next stratify them in a crucible; and when red hot, take them off from the fire, and you will have a fine azure.

LXXXIX. *A white for painters, which may be preserved for ever.*

Put into a large pan three quarts of lintseed oil, with an equal quantity of brandy, and four of the best double distilled vinegar; three dozen of eggs, new laid and whole; three or four pounds of mutton suet, chopped small.—Cover all with a lead plate, and lute it well. Lay this pan in the cellar for three weeks, then take skilfully the white off, then dry it. The dose of the composition for use is six ounces of that white to every one of bismuth.

XC. *Another*

XC. *Another white for ladies' paint.*

The pomatum which ladies make use of for painting is made as follows.—To four parts of hog's-lard add one of a kid. Melt them both together, then wash them. Re-melt and wash them again. Then add four ounces of ammoniac salt, and as much of sulphur, in subtile powder. This white will keep as long as that mentioned in the preceding receipt.

XCI. *A good azure.*

Take two ounces of quicksilver; sulphur and ammoniac salt, of each one ounce. Grind all together, and put it to digest in a matrafs over a slow heat. Increase the fire a little; and, when you see an azured fume arising, take the matrafs off from the fire. When cool, you will find in the matrafs as beautiful an azure as the very ultramarine itself.

XCII. *An azure from silver, done in less than a fortnight.*

Dissolve in very strong vinegar, as much gem-salt and roch-alum, as it will be able to dissolve. Put this in a new pipkin; and, over it, hang up laminas of the finest tested silver. Cover the pot, and lute it well. Bury it in the cellar; and ten or fifteen days afterwards take off the azure, which you will find about the laminas. Replace things as before; and, ten days afterwards, the same again; and repeat this process as many times as you can get any azure by it.

The silver laminas may steep in the vinegar if you think proper.

Besides gem-salt, and roch-alum, some likewise dissolve alkali in the vinegar.

XCIII. *To make an azured water.*

1. Gather wallwort's grains between green and ripe, and bake or stew them in a pan. When they have boiled a considerable time, strain them through a cloth, and keep the juice in a glass phial; its colour will never change, and will keep for ever very fine.

2. Have next dog's dung very dry. Pulverise it very fine, and sift it through a silk sieve. Then grind it on a marble with the wallwort's juice, and a mullar, as painters do their colours, and you will find this paste of a very fine azure colour.

3. Now,

3. Now, if you tinge any water with this, by putting it in a phial to soak, you may dye whatever you will with it, such as thread, cotton, cloth, &c.

XCIV. *Another way of making azure.*

Take the bulk of a filbert of ammoniac salt, which you dissolve in a common half-pint glass tumbler of water. Then pound and sift, all together, one ounce of vitriol, and one and a half of quick lime. Put this powder into the water in which the ammoniac salt was dissolved. Leave this to infuse for the space of forty-eight hours, and at the end of that term the azure shall be done.

XCV. *A fine azure.*

Make an incorporation of three ounces of verdigrise, and of an equal quantity of ammoniac salt which you dilute with a little tartar-water, so as to make a thick paste of it. Put this composition into a glass, and let it rest for a few days, and you will have a fine azure.

XCVI. *Another way.*

Pulverise and mix well together one part of ammoniac salt, and two of verdigrise, with a little ceruse. Then pour over it oil of tartar enough to make a clear paste of it. Put this in a glass vessel, which take care to stop and lute well. When done, put it in an oven along with the bread, and take it out with it also, then the azure will be done.

XCVII. *Another way.*

Take sublimed mercury, four parts; ammoniac salt, two; sulphur-vivum, one. Pulverise the whole, and put the powder in a matrafs, which lute well with the lute of sapience. Put this matrafs on a mild and slow fire; and, when you see a white fume beginning to rise, stop the fire. When the matrafs is cold, break it, and you will find a very fine azure at the bottom. Now take it and work it with lukewarm water first, and then with cold.

Note. There are some who absurdly wash it with lye, or a strong lime-water; but they most undoubtedly spoil their azure entirely.—What is most advisable, and indeed the only preparation allowable, is to boil a little white honey in the water, and skim it; and when that
water

water becomes lukewarm, wash the azure with it. This last may contribute to give it a fine colour, but the other will certainly hurt it.

XCVIII. To make an admirable white lead, fit for oil painting and colouring of prints.

Grind the finest white lead in flake you can find, on the stone with vinegar. It will immediately turn black. Wash it well in a panful of water, and let it settle. Pour the water off by inclination, and grind it again with fresh vinegar, then wash it a-new. Repeat this operation four or five times, and you will get a most beautiful white.

XCIX. The preparation of verdigrise.

Grind the verdigrise with vinegar, and put it in a piece of brown bread dough. Bake it as you would bread; and, when done, cut it open and take it out. You will then have a very fine verdigrise, fit to work with, either in oil or water, as you like.

C. A fine liquid green.

Mix well together, one pound of Montpellier verdigrise, and half a pound of white tartar from the same place. Put this a-soaking for twelve hours in two quarts of the strongest vinegar, then reduce it by boiling to one half. Let it rest for two days, and filter it afterwards in a bottle, wherein you will keep it for use.

CI. To make the Stil-de-grain, which we call Brown pink.

Bruise and boil in three quarts of water four ounces of French berries, to the reduction of one half. Strain all through a cloth, and put in this juice a discretionable quantity of whitening, pounded and sifted into a subtile powder, so as to make a thick paste, which you put into small tied bags, & set to dry on tiles. When dry, it is used with gum. And to render it finer, you may put some gamboge.

CII. To make a fine vermilion.

Make a mixture of cochineal powder and burnt alum. Stifle it quite hot in rose or plaintain water. It will give you the finest vermilion in the world.

CIII. A secret to draw without either ink or pencil.

Rub a sheet of paper with tripoly. Then, with any blunt

blunt point, form your drawing on it. Whatever you trace will be visible.

CIV. *To make an imitation of enamel on tin, for chimney-branches, &c.*

Get a sheet of block-tin very clean, and cut it in the form, shape, and figure, you chuse to make your flowers and other things. Grind what colours you propose to make use of, with clean water, and each separately, then let them dry. When you want to employ them, dilute them, each apart, with liquid varnish, and lay them on with the brush. Set the work in the open air for fear the colours should run, and when they are a little thickened and consolidated, finish drying them before a gentle fire.

CV. *A very valuable secret to make exceeding good crayons, as hard as red chalk. This secret is of the discovery of Prince Robert, brother to prince Palatin.*

Grind, on the stone, some tobacco pipe clay, with common water, so as to make a paste of it. Then take separately each colour, and grind them, when dry, on the stone, so fine as to sift them through a silk sieve. Mix, of each of the colours, with your first white paste, as much as will make it of a higher or paler hue, and embody the whole with a little common honey and gum-arabic water.

Note. You must be attentive to make crayons of various degrees of hues in each colour, for the *chiaros* and *oscuros*, or lights and shades. Then you roll each crayon between two boards very clean, and set them to dry on a sheet of paper for two days in the shade. To complete their drying lay them before the fire, or in the sun: and then you may use them with satisfaction. It is, it must be confessed, a very valuable composition.

CVI. *To render the stone-cinnabar and vermilion finer; and, at the same time, to prevent them from blackening.*

1. You raise the hue of the stone-vermilion, if, in grinding it, you add gamboge water, tinged with a little saffron. This preparation extends only to the red.

2. With respect to the orange colour you must add some minium to it.

3. For the yellow, put a discretionable quantity of orpine.

orpine in cakes, prepared as follows.—Take the finest orpine you can find, and grind it well with water. Make it in little cakes, and set it to dry on paper, as you do with every other sort of colour. When dry, pulverise and use it.

4. For the *gridelin*, take French sorrel and boil it by itself in water, to draw as strong a tincture from it as you possibly can. Then have white lead, (dried in cakes, and prepared after the method above mentioned for the orpine), and grind it a-new with this sorrel tincture, then dry it. Grind and dry it again, and repeat this operation with the sorrel tincture, till you have obtained the desired point of colour.

CVII. *The true process used in the composition of the Eastern carmine.*

1. Have a glazed pipkin, quite new, holding fully two English quarts. Wash it with boiling water, then fill it with spring or river water, very clean and filtered. Set it on blasting coals, and when it begins to boil throw in a drachm of *chouan* in fine powder, which you boil very quick for near a quarter of an hour. Then strain this water through a cloth washed in lye, and not with any soap, and receive it in another new glazed pipkin, cleaned and washed as the first. Put this on a fire, not quite so blasting as the first; and, when it begins to give signs of boiling, throw in one ounce of the finest cochineal, pulverised very fine. Stir often with a little hazel-tree stick, stripped of its peel, and let boil gently for near a quarter of an hour; then throw in sixty grains of *autour*, in subtile powder, and keep it on the same degree of fire, boiling for half a quarter of an hour. Take it off from the fire, and throw in sixteen grains of Roman alum in powder, then strain it immediately through a clean cloth, washed with lye, and no soap, and receive it in two different large china bowls, capable to contain more than three pints of liquor a-piece, new and perfectly clean. Place these in a room, where they will be perfectly free from dust, and let them rest there for a week, that the carmine may have time to make a precipitation.

2. At the end of this term, decant out gently your tincture

tincture into two other China bowls, of the same size as the two former, & as perfectly clean, taking great care in decanting, to do it so gently that the liquor may not carry the carmine along with it. Then letting dry in a shade the carmine, which shall have been left in the bottom of your bowls, gather it with a little brush, and keep it very cleanly.

3. Eight or ten days afterwards, more or less, decant again the tincture which is in the second bowls, into a new varnished pipkin, then dry and gather the carmine, which is at the bottom, in the same manner as the first.

4. Then set the pipkin, in which the carmine has been decanted for this second time, on the fire, and vaporise the liquor gently, till the ground remains in the consistence of a pap. This pap-like ground must then be put into several small china cups, and place in the sun to dry, which will procure you again another carmine darker, and much less valuable than the first. Should there happen any moistness on your last cups, take it off immediately, but gently, and with a great deal of care.

5. In order to take the water off from your china bowls. you might make use of another method, *viz.* a very fine and clean sponge, in the following manner. Dip your sponge into very clear and pure water, and there work it well with your hand, soaking and pressing it alternately till you have rendered it very soft. Then press and squeeze it quite dry in a clean towel. Now, if you only approach it to the surface of the tintured water, it will immediately fill itself with it, and you may squeeze it into another empty bowl, thus repeating the same process, till you have got it all out of the first bowls; taking care every time you approach it to the surface of the water, lest it should touch the carmine; for no doubt but it would carry some along with the water.

6. If you dissolve one drachm of mineral crystal into this tincture, by boiling it to that effect for five or six minutes, it will help a great deal the precipitation of the colour, from which you take out afterwards the water with a sponge, as we said before. Should the water you have thus drawn out be still tinged, you may add some
more

more mineral crystal to it again; boil it as before, strain it through a cloth, and let it settle. By these means you will have very fine crimson carmine.

CVIII. *The process observed in making the lake.*

1. Take one pound of Alicant kali or Bril-ash, pulverised, which put in a kettle with four quarts of spring water. Boil the whole for the space of a quarter of an hour, keeping stirring all the while with a stick, then take it off from the fire, and let it cool so as to be able to keep your finger in it without scalding. When it is in that state, throw it in a jelly-bag, made of cloth, to filter it, and render it perfectly clear. Put it, next, in a new glazed pipkin, with one ounce of finely pulverised cochineal, previously diluted by degrees with some of the same lye. Set it a-boiling for half a quarter of an hour, and never cease to stir with a stick all the while it is on the fire.—You may, if you chuse, add one drachm of *terra merita* in fine powder, at the same time with that of the cochineal; it will render your lake the redder.—When the whole shall have boiled the prescribed time of half a quarter of an hour, take it off the fire, and let the tincture cool, in order to pass it through a cloth, or the above-mentioned jelly-bag. Set a large stone pan under the bag to receive the tincture which shall filter; and, when all is well drained, take the bag, turn it to throw off all the dregs, and wash it well, inside and outside, in clear water, and wring it quite dry.

2. Now hang again this same bag at two feet distance, or thereabouts, above the pan wherein the tincture did run, and now is. Dissolve, in about two quarts of warm spring water, six ounces of Roman alum well pounded, that it may more readily melt. When this dissolution is no more than lukewarm, have somebody to pour it for you in the above jelly-bag, while you stir with a stick what runs from it into your tincture, and do so till the whole is passed through, and the tincture froths no more.—Then wring well your bag again, to express all the alum's dissolution from it into your tincture, and wash it again afterwards in clear water, as before.

3. Have another stone pan like the first, hang your bag again over it, and pour all your tincture in it. If

it run clear like water, you may then let it go so ; if not, put it again in the bag over the other, and continue so to do till it absolutely does run clear. If, however, after having repeated this three or four times, it should continue to run tinged, dissolve two or three ounces more of pulverised Roman alum in about two quarts of that very tinged water, then stir and mix it well in the whole quantity of tincture, then pour it again in the bag where the lake is, re-pouring again and again what shall run first from it, till it runs quite clear, and does not even stain the paper.

4. Then let well drain the lake which is in the bag ; and, with a box-spoon take it, and spread it on pieces of cloth, laid on plaistered stones, and let it dry in the shade where there is no dust, or where, at least, you may preserve it from any.

CIX. *To make the fine columbine lake.*

1. Take half-a-pound of the finest Brasil wood you can find. Cut it in small bits, and pound it in an iron mortar. Put this in a new and glazed pipkin ; pour over it two quarts of strong wine vinegar. Let this infuse without the assistance of any heat for three whole days. Boil it next for half an hour, then add one ounce of pulverised Roman alum, and boil it again for the space of three quarters of an hour, that the alum may the more perfectly be dissolved. and the stronger the colour.

2. Take the pot off from the fire ; and, rasping the softest part of a dozen of sound or cuttle-fish bones, add this powder to it. Replace the pot on the fire, and stir the contents, with a bit of cane, till you see a froth rising on the top of the composition ; when immediately taking the pot off from the fire again. you cover it with its lid, and let it stand for a week. During that space of time you must, however, carefully stir this matter, with the cane above-mentioned, four times a-day.

3. Have next a glazed pan, which you fill with dry sand as high as three fingers from the brim. In this sand put your pot half-way in. Place all on a charcoal fire, till it nearly boils ; then, taking the pot off from the fire, run the liquor through a clean cloth. Put it in different retorts, and set them half-way in your sand again, which,

by this time, ought to be quite cold. Replace all on the fire, as before, and keep it there till it begins to simmer; then, taking it off from the fire, let it cool, and the lake is done. But it must not be used till twelve days after, during which time let it rest.

Note. When the tincture is in the retorts, you may, if you chuse, put in each of them half a gill of lye, made with vine-branch ashes.—When you put the powder of cuttle-fish bones in the tincture, you must take care it is warm.—The residue which is found at the bottom of the retorts ought not to be thrown away, as it is very good to paint in water colours.

CX. *A fine red water, for miniature-painting.*

1. Put, in a new glazed pipkin, one ounce of *Fernamburg Brasil* wood, finely rasped. Pour three pints of spring water on it, with six drachms of fine white isinglass chopped very small. Place the pot on warm ashes, and keep it there for three days, during which you are to keep up the same degree of heat.

2. When the isinglass is melted, add two ounces of kermes in grain, one of alum, and three drachms of borax, all of them well pounded into powder. Boil this gently to the reduction of one half; then strain the liquor through a cloth, bottle and stop it well, and set it in the sun for a week before using.

Note. This water may very properly be used as a wash to give an agreeable bloom to pale faces.

● CXI. *The receipt of the fine Venetian lake.*

1. Take one pound of good pearl ashes. Put it in a large copper; then, pour over it six gallons of spring water. Should you not have any spring water, take river, but no pump water. Let the pearl ashes soak thus twenty-four hours, after which, set the copper on the fire, and boil it for one quarter of an hour. Then filter this lye through a cloth jelly-bag, and receive the filtration in a stone pan.

2. If, at first, the lye did not run quite clear, filter it till it does; and then, changing the pan only underneath, pour what ran thick in the first pan in the bag again. When all is new filtered and clear, put it in the copper again, which must have been previously well washed,

washed, and set it on the fire to boil. When it does boil, throw in two pounds of fine scarlet flocks, which you boil to whiteness. Then filter again this lye tinged with scarlet colour, in the before-mentioned jelly-bag, and press well the flocks, that there may not remain any colour in them.

Observe, that in order your bag may serve you both for the lake and tincture, without being at the trouble of cleansing it, you must not filter through it the second lye in which the scarlet is. For should you pour this lye from the copper, directly into it, the scarlet flocks would undoubtedly run with the lye, which would give you an infinite deal of trouble to get out of the bag, after the filtering of the tincture. And the least bit of it would entirely spoil the lake. Therefore, to avoid all these inconveniences, strain your second lye either thro' a cloth suspended by its four corners, or through another bag by itself.

3. While the tincture is filtering, get the copper well scoured, cleaned, and wiped dry. Put the filtered tincture in it. Dissolve, over the fire, and in a copper or glazed earthen sauce-pan, half-a-pound of Roman alum in one quart of spring water. Then strain it quickly, and, while warm, pour it in your tincture, keeping stirring all the while, and afterwards, till all the froth has quite subsided. Boil, next, all together for the space of half a quarter of an hour. Then throw it in the same bag that filtered your first lye, and receive the filtration into a clean stone pan.

4. Besides this; boil again, in another quart of spring water, half a pound of *Fernamburg Brasil wood*, cut and bruised in an iron mortar. Strain it through a cloth, and pour it, along with the above dissolution of Roman alum, in the jelly-bag, and stir it to run all together.

5. After all is run out of the bag, throw in again half a pint of quite clear and pure spring water.

6. When nothing runs any more out of the bag, the lake is left in it. Take it out with a box spoon, as we said in the preceding article, and spread it on plaister flat stones, three fingers thick, and about half a foot square, covered

vered with white cloth of the same size. For should there be no cloth on the plaister, the lake would stick to it.

Note. It often happens for the first water which runs out of the bag to be muddy, and to carry some lake along with it. But you must continue filtering till it comes bright and clear. Then, taking off the pan from underneath, and substituting another, you put that muddy liquor into the bag again.—Should, by chance, the filtration continue to run red, as it sometimes happens, you must still keep filtering the liquor through the bag, till it is clarified.

CXII. *Directions for colouring prints.*

1. All the colours which are used for colouring prints are grinded with gum-water; the calcined green only excepted, which grinds with vinegar.

2. The chief of these colours are, fine azure, vermilion, Venetian lake, fine verditure, white lead, calcined green, umber, Cologne earth, indigo, French berries' juice, yellow ocher, yellow massicot, white massicot, brown ocher, bistre, or, prepared foot, lamp-black, and brown red.

3. For complections, you make a mixture of white and vermilion, more or less, according as you want the colour more or less bloody. For the lips, it is a mixture of lake and vermilion. And the shades are made with white and vermilion, and a great deal of umber.

4. For fair hair, you join a good deal of white with very little umber. If a carrotty colour, take yellow ocher and brown red; the shade with bistre and lake mixed together. If light and like silver, you only mix some black and white and umber together.

5. Cloaths are made, if linen, with white lead and a little blue; if stuffs, with white lead alone, and the shades with a grey colour, made by means of a mixture of black and white lead together. If a white cloth, you must make a mixture of white and umber together, and you shade it with a compound of umber and black. If a red cloth, use vermilion in the lighter parts of the folds; lake and vermilion for the clear shades; and the lake alone, laid on the vermilion, will form the dark shades.

CXIII. *Directions*

CXIII. *Directions for the mixture of colours.*

1. The pale yellow, for the lights, is made with white massicot. The *chiaro oscuro*, with the massicot and umber. The dark shade, with umber alone.

2. The orange colour is made with black lead for the lights, which you shade with the lake.

3. The lake is used very clear, for the lights, in draperies; and thicker, for their shades.

4. The purple is made with blue, white, and lake, for the lights; blue and lake only for the clear shades, and indigo and blue for the darker ones.

5. The pale blue is used for the lights, and for the clear shades a little thicker; but, for the darker shades, mix the indigo and blue together.

6. The gold-like yellow is made with yellow massicot for the lights; and the clear shades with a mixture of black lead and massicot; the darker shade, with lake, yellow ocher, and very little black lead; and the darker of all, with Cognac earth and lake.

7. The green is of two sorts.—The first is made with massicot and blue, or blue and white; and for the shades you make the blue predominate in the mixture.—The other is made with calcined green, and French berries' juice, mixed with calcined green; and you may form their shades by an addition of indigo.

8. For trees you mix green and umber together.

9. The grounds are made in the same way; wherever there is any green, you take calcined green, with French berries' juice.

10. For the distances, you mix green and blue together; and mountains are always made with blue.

11. The skies are likewise made with blue, but you must add a little yellow to them, when it comes near the mountains; and, to make the transition between that and the blue, mix a little lake and blue together to soften it.

12. Clouds are made with purple; if they be obscure, you must mix lake and indigo together.

13. Stones are made with white and yellow mixed together; and their shades with black.

CXIV. *Directions*

CXIV. *Directions for painting fresco.*

Begin first, by laying on the intended wall a coat of sifted river sand, mixed with old slacked lime, pulverised and sifted also.—This coat is not to be laid on the wall, but in proportion as you paint; therefore, you are to prepare no more at a time than you are sure to paint over in one day, while fresh and moist.—The body of the wall on which you lay this coat must previously be pargetted with plaister, or with a mortar made with sand and lime. And if the paintings are to be exposed to the injuries of the weather, the mason's work must be made of bricks or free stones very dry.

2. Before you begin to paint, you must prepare your designs in their full intended size on paper, and chalk them one after another, as you go on, on the wall, in proportion as you work, and no longer than half an hour after the coat of prepared river sand above mentioned has been laid on, and well polished with the trowel.

3. In these sorts of paintings all the compounded and artificial-made colours, as well as most of the mineral ones, are rejected. They use hardly any other but earths, which may preserve their hue, and defend it from being burnt by the lime. And, that the work may for ever preserve its beauty, you must observe to employ them quickly, while the coat underneath is still moist; and never, as some do, touch them over after they are once dry, with colours diluted in yolks of eggs, glue, or gum, because these colours always blacken, and never keep that vivacity and brilliancy those have which have been laid at first when the ground was moist. Besides, in the case of paintings exposed in the air, this sort of *touching up* is never good for any thing; and, too often, scales off in a very short time.

CXV. *Directions for the choice, use, and composition, of the colours employed for the above purpose.*

The colours made use of, for the above purpose, are such as follow.

1. The white. This is made with a lime which has been slacked for a great while, and white marble in subtile powder, mixed in about equal quantities. Sometimes

no more than a quarter part of marble dust is required; which depends entirely on the quality of the lime, and cannot be known but when you come to use it; for if there be too much marble, the white will turn black.

2. Ocher, or brown red, is a natural earth.

3. Yellow ocher is also a natural earth, which becomes red if you burn it.

4. The obscure yellow, or yellow ocher, which is also a natural earth, and slimy, is to be got by the streams of iron-mipes. It receives a fine colour from calcination.

5. Naples yellow, is a sort of filth which gathers round the mines of brimstone; and, though it be used in *fresco*-paintings, its colour nevertheless, is not so good as that which is made of earth, or, yellow ocher and white mixed together.

6. The purple-red is a natural earth, the product of England, and it is used instead of lake.

7. The *terverte*, from Verona in Lombardy, is a natural earth, which is very hard and dark. There is also another sort of *terverte*.

8. The ultramarine, or, *lapis lazuli*, is a hard stone, and of a very difficult preparation. This colour, of the manner of preparing which we shall give (§ ix. Art. cxxxiii.) a just and precise account, subsists and keeps itself fine much longer than any other colour. It is not to be grinded, but diluted only on the pallet with oil. As it is very dear, you may spare using it in *fresco* paintings, and supply it by smalt, which answers the same purpose, particularly in skies.

9. Smalt is a blue colour, which has very little substance. It is used in great landscapes, and stands very well the open air.

10. Umber is an obscure earth. It requires to be calcined in an iron box, if you want to make it finer, browner, and of a better look.

11. Cologne earth is a sort of rusty black, which is apt to discharge, and to turn red.

12. The earthen black, is a black which comes from Germany.—There is also another sort of German black, which is a natural earth, and makes a bluish black, like that of charcoal. This sort of black is that which is
used

used for making printers' ink.—There is another still, which is made with burnt wine-lye.

Such are all the colours which are preferably to be used in *fresco*-painting. Grind and dilute them with water.—Before beginning to work, prepare your principal colours, and put each by themselves, in small galipots. But it is necessary to know, that except the purple-red, the brown-red, the yellow ocher, and all the blacks, (those particularly which have passed thro' the fire) turn paler as the *fresco* dries.

CXVI. *Directions for painting in oil on a wall.*

Method 1.

You must, when the wall is perfectly dry, give it two or three coats of boiling oil, or more, if necessary, so that the face of the wall may remain greasy, and can soak in no more; then, lay another coat of siccativè colours, which is done as follows. Grind some common whitening, or chalk, red ocher, and other sorts of earth, pretty stiff, and lay a coat of it on the wall. When this is very dry, then draw and paint on it whatever you will, observing to mix a little varnish among your colours, that you may not be obliged to varnish them afterwards.

CXVII. *Method 2.*

There are some who prepare the wall another way, in order it may sooner dry, and that the dampness should not occasion the colours to scale, as it sometimes happens, on account of the oil which resists it, and prevents it from sweating out through the pores of the wall.—They make a cement with lime and marble dust, or grinded tiles; this they lay on the wall with a trowel, with which they smoothen it, and then give it a coat of lintseed oil with a large brush.—In the next place, they prepare a composition of Greek pitch, mastich, and coarse varnish, which they boil all together in a pipkin, and lay afterwards, first with a brush, then smoothen with a hot trowel, in order to spread it better, and more equally.—When this is done, they lay on the wall the coat of siccativè colours above mentioned, then draw their design and paint.

CXVIII. *Method 2.*

CXVIII. *Method 3.*

Others again make a cement, or mortar, with lime, brick-dust, and sand. And, when this is dry, they make another with lime, sifted brick-dust, and smiths' embers, or iron scum, all in equal quantities. Beat and incorporate all this together, with whites of eggs and lintseed oil, and it will make so strong a cement as cannot be equalled by any thing else. Its nature is such, that while you are laying it on, you must not stop and leave it till you have finished, otherwise it will assuredly crack in every one of those places where you shall have resumed your work. Therefore, as soon as you begin to lay it, go on without interruption, till the whole wall is entirely covered with it, and totally polished.—And when dry, lay the above-mentioned coat of siccative colours, and proceed according to the other directions.

CXIX. *Directions for painting in oil on wood.*

Lay, first, one coat of size on the wood; then another of whitening diluted with size; then another again of boiling oil, as mentioned in the above Art. cxvi. When this last is thoroughly dry, you draw your design, and paint as usual.

CXX. *Directions for painting in oil on canvas.*

1. Chuse a fine and smooth tick or cloth, which nail on a frame. Pass over it first a coat of size, and when dry, rub it over with a ponce stone to eat off all the knobs and knots. The size which you put first on the cloth is intended to lay down all the threads, and fill up all the small holes, that the colour may not pass through.

2. When the cloth is dry, lay on a coat of simple colour, which may not destroy the others; for example, brown-red, which is a natural earth, full of substance, and lasting. You may mix it, if you like, with a little white lead, it will dry the sooner.—To grind this colour, they use nut, or lintseed oil; and, in order to lay it as thin as it is possible, they use a large knife made on purpose.

3. When this colour is dry, you are to rub it again with the ponce stone, to render it smoother. Then lay another

another coat of white lead and charcoal black, to render the ground greyish. In this, as well as in the preceding coats, you must take care to put as little colour as you possibly can, to prevent the cloth from cracking, and for the better preservation of the colours which are to be laid afterwards in painting. For it is proper to observe, that could there be no ground at all laid on the canvas of a picture, previous to the painting of it, and should one paint directly on the bare cloth, without any other preparation at all, the colours would appear much more to their advantage, and preserve their brightness much longer. A proof of this assertion may be found in the practice of *Paul Veronese*, and *Titian*, who used to impregnate their canvas with water colours only, and paint afterwards in oil over that ground. This custom of theirs has not a little contributed to render their pieces more lively and bright, because the ground in water-colour draws and soaks the oil off the colours, which must render them much finer; since the greatest cause of their dulness arises from nothing but the oil with which they are diluted.

4. They therefore, who wish to see their works keep bright and lively, use as little oil as possible, and keep their colours more stiff, mixing a little oil of spike amongst them, which indeed vaporises very soon, but assists in rendering them more fluid and tractable in working.

5. Another cause of the colours not keeping a long while their beauty, is when they are too much tormented on the pallet, as it often happens that painters confuse them in working. Whenever this is the case, they must needs be hurt, as there are many which adulterate, and otherwise corrupt, the others, and spoil the vivacity of their taint. Therefore, we cannot recommend too much to be cautious and clean in employing them, taking care to lay them as distinct and separate as possible, each by themselves, on the pallet, without mixing them too much with the brush or pencil. Never mingle together those colours which are enemies to each other, as all the blacks are, particularly the lampblack; but, as much as possible, try to use them separately by themselves.

selves. Nay, when there is an occasion of giving more strength to some parts of a picture, stay till it is dry before you touch it up again, if those colours are obnoxious to the others with which you are to do it. Therefore he shows his judgement in painting, who is not precipitate in laying his colours on his pictures, but lays them thick enough, and covers at several times the carnations, which, in terms of art is called *empater*.

6. As to what concerns the first laying of grounds on canvas in water colours, it is a method not commonly practised, because they may scale, and cannot be rolled without some difficulty. For this reason, the custom prevails of grounding the canvas with oil colours. But when the canvas is good and very fine, the less colour you can lay on for that purpose, the better. Take care only those colours and oils are good.—The lead which some painters use to help their colours to dry the sooner, soon destroys their brightness and beauty.

CXXI. *Which colours are used for the above purpose.*

1. Though all the different sorts of colours which are used in painting in oil are not fit for that called *fresco*, yet it is true, however, that (except lime and marble dust, which indeed cannot strictly be called colours) every one of those used in *fresco* are good in oil. Therefore, without entering into a repetition of those already mentioned in Art. cxiii. we shall content ourselves with making only the following addition to them.

2. White lead; this colour is made with lead which you bury. Several years after, this lead turns into some sorts of flakes, which are of a very fine white.—Though this white exists in painting, and is in positive use, it has always, however, a very bad quality, which the oil corrects a little, when you grind it on the stone.

3. Ceruse, or flake white; this is a sort of rust gathered from lead, but of a coarser nature than the other.

4. Massicot; there are two sorts of this colour. The one is yellow, and the other is white. It is made with calcined lead.

5. Orpine, otherwise auripigment. It is used calcined and non-calcined.—To calcine it, they put it in an iron box, or in a pot well stopp'd. But few either calcine

cine it, or even use it at all, as the fumes are mortal, and it is very dangerous to use it.

6. Black lead. This comes from lead mines. They make very little use of it, because it is a bad colour of itself, besides that it is a great enemy to the others.

7. Cinnabar, or vermilion. This colour is drawn from the mines where they gather quicksilver. As it is a mineral, it is the reason why it does not resist the impression of the air, nor the injuries of the weather.

8. Lake. This colour, which is an artificial made one, is composed with cochineal, or with scarlet flocks; or again, Brasil wood, and some other sorts of woods. There are several sorts of lake made. It does not stand the weather.

9. Blue verditure and green verditure. It is very seldom used in any other works but landscapes.

10. Indigo. This colour is generally used for making skies, or draperies; when properly used, it keeps its beauty a great while. You must not mix it with too great a quantity of oil, but lay it a little thick and dark, because it discharges very much. They use it with great success diluted with gum-water. It is a good colour for the composition of greens.

11. Brown-pink, otherwise called *stil-de-grain*. This colour is drawn from what is called French berries, which they soak and boil, then mix the result with vine-wood ashes, or calcined white chalk, to give it a proper consistence. When this is done, it must be strained through a very fine cloth.

12. Lamp-black. This is a bad colour, but handy to paint black draperies.

13. Ivory-black. This black is made indifferently with common bones, as well as ivory, burnt. *Appelles* discovered this sort of black, if we believe *Pliny*, Book xxxv. Chap. v.

14. Verdigrise. This is the most pernicious of all the colours, and capable to ruin a whole picture, if there were never so little in the colour with which the canvas is first impregnated. It is however of a very agreeable look. They sometimes calcine it to prevent its malignant effect; but it is as dangerous to use it that

that way as orpine; and it is an undoubted truth that, however well prepared as it may be, it must be employed alone by itself, for it would spoil all the colours with which it may be mixed. The chief reason why they use it is, that it dries very much, and for that purpose they mix a little of it with the blacks, which can never dry without some assistance of that kind.

N. B. You must be very careful never to use, for other colours, the pencils with which you shall have laid any verdigrise.

15. There are again some other sorts of compound colours, which are never used but in oil.

CXXII. Which oils are used in painting.

1. The best oils which are used in painting are those of nut and lintseed. To render the colours more fluid, and spread more easily under the pencil, they use also oil of spike. This oil absorbs itself in the canvas, and leaves the colours without any gloss. They use it also for cleaning pictures; but you must take care it should not carry the colours away with it. It is made with the flowers of a plant called Spikenard or Lavender Spike.

2. There is another oil drawn from Melezian-resin, firs, &c. wherefore it is called Oil of Turpentine. This sort of oil is also very good for touching up pictures; but it is chiefly good for mixing with ultramarine, and the different sorts of smalts, because it serves to make them spread with more facility, and evaporates almost immediately. When you make use of this oil, the less there is of any other oil in the colour, the better, as they all serve only to make it turn yellow.

3. There are other oils again which are denominated siccative oils, because they serve to dry up the others the sooner. These are many in number and species. One sort is nothing but the oil of nut, boiled with gold litharage and a whole onion peeled, which is taken off after boiling; this onion serving only to exsiccate the greasy parts of the oil, and to clarify it. Another sort is made with azure in powder, or smalt, boiled in oil of nut. When the whole has boiled, you must let it settle, and then skim off the top. It is fittest for diluting the
white.

white, and such of the other colours as you want to preserve purest and neatest.

CXXIII. *To take off instantly a copy from a print, or a picture.*

Make a water of soap and alum, with which wet a cloth or a paper; lay either on a print or picture, and pass it once under the rolling press; then going round the other side to take it up, you will have a very fine copy of whatever you shall have laid it upon.

CXXIV. *Directions to make the Spanish carnation.*

Take bastard saffron; wash, dry, and grind it well. While you grind it, put in four ounces of pearl ashes to every one pound of saffron. Incorporate them well, both together, and throw it into a double cloth jelly-bag. Then set half a pint of Spanish lemon's juice on the fire, and, when just luke-warm, pour it on the saffron in the bag, and lay under it what you want to dye. —The stuff which is to be dyed ought previously to have been boiled in alum-water, then rinsed and wiped between two cloths, as a preparatory process to make it take the dye the better.

CXXV. *To make the Spanish ladies rouge.*

This rouge, is a vermilion, which is carefully laid on a sheet of paper, from which, by means of wetting the tip of your finger with your spittle, you may then take it off, at will, and rub your cheeks, lips, &c. The method of making it is as follows.

1. Take good scarlet flocks and spirit of wine, or, in their stead, lemon's juice. Boil the whole in an earthen pot, well glazed and well stopped, till the spirit of wine, or lemon's juice, has charged itself with all the colour of the scarlet flocks. Strain this dye through a cloth, and wring it hard to express well all the colour out. Boil it afterwards with a little Arabic water, till the colour becomes very deep.

2. On half a pound of scarlet's flocks you must put four ounces of spirit of wine, and a sufficient quantity of water, to soak well the flocks. Then, in the colour you extract from it, put the bulk of a filbert of gum arabick,

rabick, and boil the whole in a silver porringer. When this is ready, as we said before ; proceed as follows.

3. Steep some cotton in the colour, and wet some sheets of paper with it : let them dry in the shade, though in a place by no means damp at all. Repeat this wetting and drying of the same sheets over and over again, as many times as you please, till you find they are charged with *rouge* to your satisfaction.

CXXVI. *A fine lake, made with shell-lac.*

1. Boil, and skim well, sixteen pounds of chamber-lye ; then put in one pound of fine shell-lac, with five ounces of roch alum in powder. Boil all together, till you see the chamber-lye is well charged with the colour, which you may easily know by steeping a bit of white rag in it ; then take it out again to see whether or not the colour please you ; and if it do not, let it boil longer, repeating the same trial, till you are perfectly satisfied.

2. Throw, now, the liquor in a flannel bag ; and, without suffering what runs into the pan under to settle, repour it into the bag so many times, till the liquor runs at last quite clear, and not tinged. Then, with a wooden spatula, take off the lake, which is in form of curd ; form it into small cakes, or balls, and dry them in a shade on new tiles ; then keep them for use.

N. B. For want of chamber-lye, you may, if you chuse, employ a tart lye made of strong pearl ashes.

CXXVII. *Directions to make cinnabar, or vermilion.*

1. Put mercury (or quick silver) in a glazed dish. Set it on a sand-bath, and let it be well surrounded with the sand every way. Pour some melted brimstone over it ; and, with an iron spatula, keep constantly stirring, till the whole is converted into a black powder.

2. With this powder, fill the quarter part of a retort with a short and wide neck. Place it first on a fire of cinders. Then increase the fire by degrees, and continue it so for ten hours ; after which you may make a blasting one for twelve hours.

3. Observations.—By the first fire, there will arise a black fume.—By the second, a yellow.—And by the last

last a red ; which signifies the perfect accomplishment of the cinnabar.—As soon as this is the case, let the vessel cool, and you will find, in the receiver, and in the neck of the retort, a very fine cinnabar.

N. B. There are many who, instead of a glass retort, use earthen, or stone ones, which all equally bear the fire. They make a slow fire for about half an hour, then increase and continue it till they see the red fumes arising.—Both methods are equally good, and answer perfectly the same purpose.

CXXVIII. *Another, very different, method of making cinnabar.*

1. Melt, in a pipkin, some brimstone over a slow fire. When melted, take it out, and with one hand squeeze a knot of mercury between your fingers through a cloth into the melted sulphur ; and, with the other, stir well till the lump is become quite cold and black.

2. Put this into a subtile powder, with which having filled the fourth part of a very long retort, you will lute it well, and very exactly, with a good lute. Place it next, without a receiver, for two or three hours, on a very mild fire ; then introduce into the retort a long funnel which will reach as far as the matter, and even to the bottom of the retort ; through that funnel pass a long spatula, which touching also the bottom of the retort, should come out of the funnel five or six inches. In the middle of the spatula let there be a bung of lute round it, well dried, which will stop so well the retort as to prevent it from breathing any air. When all this is done, push on the fire to a pretty smart degree, and keep it so for five hours.

3. At the end of this term, draw out the spatula, and introduce, through the same way that it came out, two spoonfuls, or thereabouts, of your prepared powder of brimstone and quicksilver, with which you intend to make cinnabar, and which you shall, for that purpose, have kept warm in a vessel by the corner of the fire, that it may not cool the retort in going in, and thereby retard the operation.

4. Continue so to do, adding every hour new matter, by means of the drawing out the spatula to introduce
the

the new powder, and replacing it quickly, till you have increased your lump of cinnabar to the quantity of one hundred weight.—The spatula's use in the neck of the retort is to prevent its filling itself up by the sublimation of the matter, which would occasion two evils, that of breaking of the retort, and of preventing the introduction of new powder to increase the lump of cinnabar. So that, at the same time it keeps a free passage into the retort, it nevertheless stops it too, by means of the ball of lute which is round it.—But, in the last place, in order there should remain no vacancy in the middle of the cinnabar-lump, take off the spatula for the last time, and inject fresh powder; then, without reintroducing the spatula, stop the retort with a lump of lute only.—Thus, the longer you keep the fire up, the harder and redder the lump of cinnabar becomes.

5. Observations.—This cinnabar is the very same which empyricks use in fumigation, along with aloës wood, myrrh and other aromatics, to excite the mouth, or belly, flux, which they reiterate two or three times, or till that flux is abundant enough to procure the cure of the venerian disorder.—It is the same also which painters make use of; and which enters into the composition of sealing wax.

There are alchymists who maintain, they can with the natural or fictitious cinnabar we have just mentioned resolve irreductibly either gold or silver; because they are of opinion, that these metals have sprung from it in the entrails of the earth. But it is proper to tell them here, that they would not perhaps commit so gross an error, if they attempted this process with the cinnabar, which the philosopher endeavours to draw from quick gold and silver, and which are known to him alone. To which reflection I shall add, that he to whom quick gold and silver are known can do with them also every thing as with the metals; but as the old saying is, *Non licet omnibus adire Chorientam.*

CXXIX. *An azure as fine as, and which looks similar to, ultramarine.*

Grind well together into powder three ounces of ammoniac salt, and six of verdigrise. Then wet it, in con-

tinuing to grind it with oil of tartar, till you have made it pretty fluid. Put this into a glass matrass, and bury it for five days in hot dung. At the end of that term you will find your composition turned into a fine azure.

CXXX. *The same, another way, as practised in Germany.*

Here is another method of proceeding, to make azure, as they practise it in Germany, and which is very fine and good.

1. Distil, in an alembic, one pound of vitriol, half a pound of nitre, and three ounces of cinnabar. In this water put tinsel or copper; they will dissolve. When the dissolution shall be perfected, add a sufficient quantity of calcined pewter to render your liquor quite milk-white. Let the whole rest for three days, and then you will have a middling azure.

2. A very good observation. The liquor which stills from the vitriol, cinnabar, and nitre, has the power to dissolve any sort of metal whatever.—It has again this additional virtue, that if you rub the forehead of a horse with it, the hair will instantly turn, and remain, white at that place.

CXXXI. *Another very fine azure.*

Dissolve, in one pound of the strongest double distilled wine vinegar, two ounces of ammoniac salt in powder, one of copper filings, and one pound of the whitest eggs shells calx. Put this composition into a copper vessel, which you must stop and lute so well, with its copper lid, that nothing can possibly exhale from it. Place this for one month in hot horse dung, and at the end of that term you will find a very fine azure.

CXXXII. *Another.*

Take vitriol calcined to redness, one part : *sulphur vivum*, two ; and quick silver, three. Mix well all into one powder, which you must put into a glass retort, and bury it over in hot horse dung for forty days; after which term the composition will be turned into a very fine azure.

C H A P. VI.

SECRETS relative to the ART of GILDING.

I. *The method of gilding with size, or with oil.*

THE gold leaves which are commonly used in gilding are of different sizes, as well as of various degrees of thickness, as there are some the thousand of which comes to no more than three pounds altogether, and others which come to three pounds ten shillings, and four pounds, *per thousand*.

To gild on iron and other metals, the strongest and the purest are preferable. That which is not so pure is commonly employed by carvers in wood, as it comes cheaper to them.

We are indebted to the discovery which has been made a few ages since, of the secret of painting in oil, for the means of gilding in such a manner as to resist the injuries of the weather.—An art the ancients were not acquainted with, and they could not obtain from their method of applying gold, since they used nothing else but whites of eggs for gilding marble, and such other bodies as do not admit of being committed to the fire. As for the wood, they made a composition which was used with size. But neither size nor whites of eggs can resist the water. Therefore they could not, with propriety, gild any other works than such as were sheltered from the intemperance of the weather, *viz.* their arches, their cielings, which were all gilt in that manner. The composition they used for gilding on wood was made of a slimy earth, which held the place of the sized white we use now-a-days, and with which gilders make that first coat, called by artists *assiette*, or burnish-gold size.

II. *To gild with size, or what is called in burnish-gold.*

1. You must first begin by preparing your size, which is made as follows.—Take about a pound of odd bits of parchment, or leather, such as is prepared for gloves or breeches. Put this a-boiling in a pailful of water,
till

till it is reduced to one half, and your size is done as it ought to be.

2. When you want to use it for wood which is to be gilt, it must be boiling hot, otherwise it would not penetrate sufficiently into the wood. If you find it too strong, you may weaken it, by adding water to it. Then with a brush made of boar's bristles, you lay the size in smoothening, if it be a plain work; but, if a carved one, you must lay it in stumping with the brush; either of which ways is equally termed *to size*.

3. When the wood is thus prepared with size only, you must make another preparation, called *an infusion of white*, in the following manner. Take a certain quantity of size boiling hot, as much as you think will be sufficient for your work. Dilute a discretionable quantity of pulverised whitening in it, and let it infuse some time. When it seems well dissolved, strain it through a cloth to make it finer; then, with a brush, as above, give seven or eight different coats of it in stumping on your work, and two more coats in smoothening, if it be on carved work; but if on a plain one, you must give a dozen of coats at least; for the white is the nourishment of gold, and serves to preserve it a great while.— You must be very careful not to give coat upon coat, unless the last be dry; otherwise the work might scale. You must even have a great care that each coat should be laid on as perfectly equal as possible, both in the strength of the size, and thickness of the white, to avoid the same inconveniency.

4. When you have given the requisite number of coats, whether in stumping, or in smoothening, you must let the work dry thoroughly before you polish it. As soon therefore as it is perfectly dry, you must have a coarse rough cloth, quite new, and as closely weaved as possible, with little deal sticks, cut square, angular, or pecked, according as the nature and carving of the work require; and, thrusting one of these sticks into the cloth, you rub and smoothen the white. Then, taking a brush made of boar's bristles, which has been already used, because it is softer, dip it into some clean water, and wet the work in proportion as you go on in polishing, with

your little sticks wrapped up in cloth. This precaution completes the smoothening of the work, by levelling the small bumps and imperceptible undulations you may have made either in giving the white, or in polishing it. For, the smoother the work is made, the more easy to be burnished the gold will be, after having been applied. The wetting and brushing thus your work, in proportion as you polish it, with a brush a little worn, has again that other object of cleansing it of the mud you occasion in so doing; therefore spare not to purge your brush of all the filth it gathers about the point of its hair, by washing and squeezing it again as soon as you see them grow thick in the least with that dirt.

5. When the white is once more dried, rub it with shavegrafs, or rushes, in order to level still better all the grains and inequalities which may be on it. Do not however rub it too much with the shavegrafs, because you may thereby fall from one error into another, and make your white what is called greasy or smeary, which would prevent it afterwards from uniting with the burnish gold size, which is to precede the laying on the gold.

6. Now, as it is difficult that after ten or a dozen of coats of white the carving should not be choaked up, they who are fond of finishing their work highly, take a certain iron instrument, made on purpose, and curved by one end, (called by the French, a *fer-a-retirer*); with this ruffling-crook they go over all the turns, and open all the places which want it, to restore them to their former sharpness. Or else, you take what is called a *fermoir*, or a *gouge*, or a *cizel*, and give to the ornaments the same form which the carver observed when he first cut them, turning agreeably the sides of leaves according to nature; then bretelling with another instrument, called the *veining-crook*, (in French *fermoir-a-nezrond*), all the ornaments, you thereby render the work much neater, and more delicate than the carver had first made it. That you may cut the white more neat, observe only to wet it a little with a brush.

7. When works are not of great consequence, you may easily save yourself all that trouble; principally if the carving is pretty neatly finished, by giving two or three

three coats only of white very clear. But, as it is very true the white is the principal and only support of gold, this operation is never so perfect, nor stands so long; and the carving seems a great deal more rough than when it has received ten or twelve coats of white, and been afterwards re-cut, carved, veined, and repaired over again, as I said before.

8. After every thing has been performed about the white, which could be required to completely finish that preparatory part, you must dilute some yellow ochre, and grind it with sized water, weaker by half than that which you used for the whitening. And, having made it a little fluid and warm, you lay one coat of it over all the work, principally in such deep places of the carving as you cannot come at to lay the gold leaf, that this colour may supply its want.

9. When the yellow is dry, you must lay over it (in all the raised places, but not in the bottom grounds) three different coats of another sort of composition, called in French *assiette*, and here, *burnish-gold size*, made and prepared in the following manner.—Bol armenian, about the bigness of a nut, and grinded by itself; blood stone, or red chalk, the bulk of a horse bean, and black lead pulverised as big as a pea, grinded both together; and at last one drop or two of tallow, which you grind afterwards with all the other drugs and water, taking them little at a time, to grind and incorporate them the better.—Put this composition in a cup, and pour over it some of your afore-mentioned size, boiling hot, and strained through a cloth. Stir and mix all well, while you pour that size, that the whole may be well diluted. The size you make use of in this case must, to be right, be of the consistence of the jelly you eat, and no more, when cold.—There are those who mix again besides, with this composition, a little soap, or olive oil, with a little of calcined lamp-black. Others add burnt bread, bistre, antimony, tincture, butter, sugarcandy, &c. every one according to his own way. All these sorts of grease serve to facilitate the burnishing of the gold, and help to give it more brightness. Be, however, this composition made how
it

it will, observe to keep it warm over hot ashes in a chaffing-dish, whenever and while you use it. The brush you lay it on with ought to be soft, and the first coat you lay pretty thin: but, as for the two others, they must be so thick that the stuff should run with difficulty from the brush. Each coat must be well dried before giving the next. And, when the last is also perfectly dry, take a stiffer brush with which you dry-rub the work all over, to smoothen all the grains and little risings of the gold size, and thereby facilitate the burnishing of the gold.

10. The gilding is now performed as follows. Have first a pipkin very clean, in which you put some very clean and filtered water, and a few wetting pencils, which ought to be made in the form of those ermine tails which hang in the ermine skins.—Get next a cushion, which is to be made with a light and flat square board covered with a calf leather, fixed all round with nails, and stuffed underneath with cotton. Let this cushion be also surrounded by the back part, and two thirds of each of the two sides, with a band of parchment of five or six inches high, to prevent the air, which is always fluctuating about you, and still more so if any body should happen to pass and repass in the place where you sit, from blowing the gold leaf which is laid upon it.

11. To apply the gold, you proceed thus. Hold your cushion in your left hand along with the gilding pencils, which are to be of different sizes. On this cushion put what quantity of gold leaves you think proper. With the gilding knife spread these leaves very smooth, in doing of which you will assist yourself very much if you breath over them while you pass the knife under. Then cut it in as many parts and sizes as you want, or, if there be occasion for it whole, take it with your tip, and lay it.—A tip, (in French, *palette*), is an instrument made with the point of a squirel's tail placed upon a round stick flattened, and about half an inch wide by one end, with a slit, to set and spread the better the squirel's tail.—This tip therefore you pass along your cheek, and with it take off the gold leaf, or what part
of

of it you have divided, and thus lay it on the work. Previously, however, to this, you must have passed on the place one of your pencils immediately before the laying of the gold, otherwise the gold would be incessantly flitting and cracking.—As soon as the gold leaf is laid on the work, take your water pencil quite wet, and passing it above it on the work, let the water run from it under the leaf just applied; this will immediately make it spread and ketch. But if it should pass over the gold leaf, it would immediately spot and spoil it; and as it is impossible to lay gold on gold, especially when wet, you would not be able to repair it unless you take the gold leaf entirely off, and put another in the stead. On the contrary, by the water slipping under the gold leaf just laid, you will find that this spreads infinitely more easy, and almost of itself; it sticks faster on the gold size, never scratches, is more easily dusted for burnishing, or matting with size; in short the work looks infinitely better in every respect.—As it is impossible with all possible care one can take, but there may happen some little accident now and then, principally in carved works, you must, in such a case, cut some small bits of gold, which, with a pencil, you take and put on the defective places when you look your work over; and this is called faulting the work, in French *ramender*.

12. When the work is perfectly dry, burnish it where you think proper, in order to detach certain parts from the other, to make them set off and shew to better advantage. To that effect you use an instrument called a *burnisher*, made either of a real Wolf's tooth, or rather, as they now use it, an agate, made in the same form, and finely polished, or else a pebble called *blood stone*.—Before burnishing, you must, with the crooked point of your burnisher, push down all the parts of gold in the hollow parts which you forgot to do with the pencil then dust it with a large one. When the work is burnished where you want it to be so, you matt and raps, with a very soft pencil and burnish gold size, what has not been burnished; or, you may again put some vermilion, to raise the gold, and make it look

look brighter; which is called, in term of art, *repassing*.

13. There is again another repassing you must not forget, which is to lay, in all the hollow places of a carved work, a coat of a composition of vermilion, as I am going to prescribe, and which will give an incomparable fire to the gold, and make it look as gold-smith's work. This composition is such.—Grind together, on marble, some vermilion, gamboge, and red brown, which you mix with a little Venetian turpentine, and oil of turpentine. There are who make it otherwise, and use only fine lake, and others, dragon's blood; but the first receipt is the best.—If, after having burnished, matted, and repassed your work, you find again some defective places, you may mend them with gold in shell, which, as you know, is diluted with a little gum arabic, and applied with a pencil. This sort of faulting, which is no small addition to the beauty and richness of the work, the French call *buckling with gold in shell*.

II. *To gild without gold.*

Put in a crucible one ounce of ammoniac salt, and half that quantity of common mercury. Cover and lute well the crucible for fear the mercury should exhale. Give this a small fire for the space of half an hour. Increase the fire afterwards till the crucible is quite red hot. Then throw the composition into a pan of cold water. As soon as this matter is cold, it will be as hard as a stone. Break and grind it, and dissolve it in gum water. Wherever you lay a coat of this, it will look like gilt.

III. *Another to the same purpose.*

To gild frames, and other common things, pulverise and incorporate well together the yolk of an egg with two ounces of mercury, and one of ammoniac salt. Put this into a matras, stop it well, and set it, for four and twenty days, in hot horse dung.

IV. *A gold without gold.*

Grind some purpurine with water; then put it to soak with chamber-lye in a pan; stir and skim it. When it has done throwing any scum, decant the chamber-lye, and supply it by gum water. Whatever you write

or

or draw with this composition will look as gold itself; and it admits even of being burnished with the burnisher.

V. *The preparations of the gum-water.*

In half a pint of common water put two ounces of gum arabic, bruised in small bits. When dissolved, it makes the right degree of gum-water to be used for the above purpose.

VI. *To write in gold or silver.*

Draw the juice of juniper leaves. In this juice throw some gold or silver filings, which you set there to infuse for three whole days: then make the trial.

VII. *To gild on glasses, earthen, or china wares.*

Take a glass, or a china cup; wet it, and lay your gold where and how you like, then let it dry. Dissolve some borax in water, and of this liquor lay a coat on your gold. Set it in the fire till your glass powder in melting makes a varnish on the gilded parts, which will then appear very beautiful.

VIII. *To write, or paint, in gold colour.*

Pulverise some purpurine into subtile powder; then water it over, gently, and by little at a time, with chamber-lye, turning incessantly, while you pour, with a stick. Let it settle, and wash it in common water, so many times till you see the water comes out at last quite clear. Each time you change the water take particular care to allow a sufficient time for the settling. Then mix after the last water is poured away, some powder of saffron and gum-water with your ground, and either write or paint, which you like. This secret is by no means an indifferent one; and you will find it very agreeable if you try.

IX. *To write, or paint, in silver, especially with a pencil.*

Pound well, in a bell-metal mortar, some tin-glass; then grind, and dilute it, on porphyry, with common water. Let it settle, and throw off the water, which will be black and dirty. Reiterate this lotion so many times till the water remains clear. Then dilute it in gum-water, and either write or paint with it. It will appear

appear very handsome, and no ways inferior to the finest virgin silver.

X. *To whiten and silver copper medals.*

1. Take filings from Cornwall pewter and make a bed of them at the bottom of a pipkin. On this bed lay one of your medals, taking care however they should not touch each other. Make another bed of filings over these medals, and one of medals again on these filings. Continue this alternate stratification of medals and filings, till you have laid all the medals you wanted to whiten.

2. When this is done, fill up your pan with water, and put on it a powder composed of rock-alum and tartar from Montpellier, well grinded and mixed together. Boil the whole till the whitening of the medals is complete.

N. B. They must have previously been cleaned with soft sand, or strong lye, to purge them from any grease.

XI. *A water to gild iron.*

In three pounds of river-water, boil rock-alum, one ounce, Roman vitriol as much, verdigrise half an ounce, gem salt three, and orpine one. Then add tartar half an ounce, and the same quantity of common salt. Boil it again with this addition. Now heat your iron, and when warm, rub it over with this stuff quite hot, then dry it by the fire, and burnish.

XII. *To whiten exteriorly copper statues.*

Take silver-crystals, ammoniac, gem, common and alkali, salts; of each of all these two drachms. Make all into a paste with common water. Lay your figures over with it, and set them on red-hot charcoals till they smok no more.

XIII. *To write in gold letters on pots, or boxes.*

Dissolve isinglass in water. When reduced into a size, or glue, dilute some red tartar with it, after having made it into a very subtil powder. With this mixture, and a pen, or a pencil, write on your pots or boxes; then put a thick gold leaf on it of the same sort as metal gilders use. And, when this is dry, burnish as usual.

XIV. *To*

XIV. *To gild silver in water-gilding without the assistance of mercury.*

1. Take first the finest gold, forge it weakish, then cut it in bits and Neal it, on an iron plate, or in a crucible.

2. Have next a glass matrass, put your gold in, and to every drachm of gold, put half a pound of ammoniac salt, and two ounces of good *aquafortis*. Cover the matrass with a sheet of paper, turned conically by one of its corners upon one of the long sides, so as to form a sort of funnel or grenadier's cap figure, with the smallest and not quite close, but terminated in a small orifice, to give a free passage to the fumes of the *aquafortis*. Set this matrass on a very slow fire, that the gold may have time to dissolve gently and gradually, and shake often the matrass to help the dissolution. Be very careful not to make the fire too strong; but, on the contrary, let it be very mild, for the gold would infallibly sublime and waste itself all into vapours.

3. When the gold is entirely dissolved, pour this liquor into a glass, or china bowl; wet some old coarse linen rags on them, which you set to drain on small sticks on another bowl, doing the same with what drains from them till you have used all your liquor; then dry them before a gentle fire.

4. When dry, lay them on a marble stone, and set them on fire. And as soon as they are consumed, grind them into a fine powder, which you put afterwards into a crucible on a little fire. When this powder is lighted like sparkles of fire, put it on the marble again, and stir it with an iron rod till you see no more fire. Grind it then again as before, as much as you possibly can, and it is fit for gilding any sort of silver work you please.

XV. *The liquor, called the sauce, which is to be used for colouring silver plates, gilt with the above described powder.*

1. Grind well together, into a subtile powder, sulphur and pearl ashes, of each one ounce, and two of common salt.

2. Then, when you want to colour your gilt plates, have

have a quart of water, and half a pint of chamber-lye, in which you mix a large spoonful of the above powder. Set this to boil in a red copper pot, very clean. When this sauce does boil, you must tie your plate with a silver wire, by which you hold it, and then plunge it in; there leave it for about a minute, or two at most; then take it out again by the same wire without touching it with your hands, and plunge it in the same manner in cold clean water. Should it then not look high coloured to your satisfaction, you have but to put it again in the sauce, as before, till you find it sufficiently coloured.

3. The next step is to give the piece thus coloured to the burnisher, with a strict charge not to use any vinegar in his burnish. This receipt is a very good and particular secret.

XVI. *A water which gilds copper and bronze. A secret very useful for watch and pin makers.*

Dissolve equal parts of green vitriol and ammoniac salt in good double distilled vinegar; then vaporate the vinegar, and put it in the retort to distil. If in the product of the distillation you steep your metal after being polished and made hot, it will come out perfectly well gilt.

XVII. *Another.*

Take burnt copper and ammoniac salt, equal parts; *alumen plumeum*, four ounces; common salt decrepitated, as much. Dissolve the whole in double distilled vinegar, then vaporate this vinegar. Distil from the rest an *aqua fortis* in which, if you extinguish, five or six times, brass, copper, iron, or silver, made hot, these metals will assume the colour of gold.

XVIII. *A water to gild steel or iron, after being well polished.*

Take seven ounces of orpine; *terra-merita*, one and a half; socotrine aloes, four and a half; gamboge three and a half. Put all into powder, and put it in a retort, with so much of pickle water as will cover these powders by two fingers. Stir well, and mix all together; let it infuse four and twenty hours and distil. With the liquor

which shall come from the distillation, and which you may keep by for use, rub the steel, iron, or copper, and set it to dry in the shade.

XIX. *To silver copper figures.*

1. Cleanse well first the figures with a strong lye, made with either pearl or brill ashes, or common salt or alum, no matter which. Wipe them well when done, and rub them with a composition of tartar and ammoniac salt mixed (by means of *aquafortis*) with a little dissolution of silver.

2. Now with a piece of leather, wetted in your spittle, take of these powders, and rub the copper figures till they are sufficiently silvered.

XX. *To silver, or gild, pewter.*

1. Take one of the finest and most delicate goldsmith's wire-brush; rub your pewter with it so as to mark it with the strokes of the brush. When done, lay a double gold or silver leaf on that place of the pewter; then put over it a piece of skin or leather, and over that skin some putty. With a burnisher rub, for a good while, on that putty; then with a piece of pewter on the naked gold without either skin or putty.

2. Have a care that the pewter which you are thus a gilding should be very clean, and that your breath should not go over it. Therefore, to do that operation, you must put your handkerchief before your mouth, and manage it so in tying it, that there should be a passage preserved on each side of your face which should drive your breath along your cheeks, round your head, and quite up behind your ears.

XXI. *A composition to lay on lead, tin, or any other metal, in order to hold fast the ready gilt leaves of pewter which are applied on it; useful for gilding on high steeples, domes, &c.*

1. Melt together, on a slow fire, black pitch, two pounds; oil of turpentine, four ounces; and a little rosin. When the whole is dissolved and mixed well into a kind of varnish, lay a coat of it on your work.

2. Now, as upon steeples, the common method of gilding cannot, on account of the wind, be practised; have only the exact measures and dimensions of the place

place intended to be gilt, then, at home, and at leisure, cut to them some fine leaves of pewter, and gild them as usual. When done, you have no more to do but to carry up these pewter leaves, rolled, in a basket; and, having burnished the place on which they are to be applied with the above composition, lay the gilt pewter leaves on it, and they will stand fast enough.

XXII. *To clean and whiten silver.*

1. Rasp four ounces of dry white soap in a dish. Pour a pint of warm water on it.—In another dish put a penny-worth of wine lye dried in cakes, and the same quantity of the same water.—In a third dish put also another penny-worth of pearl ashes, with another similar quantity of the same water.

2. Then, with a hair brush steeped first in the wine lye, then in the pearl ash, and lastly in the soap liquors, rub your silver plate, and wash it afterwards with warm water, and wipe it with a dry cloth kept on a horse before the fire for that purpose.

XXIII. *The preparation of gold in shell.*

Take ammoniac salt, and gold leaves, equal quantities. Bruise this in a mortar for two or three hours; and towards the end add a discretionable quantity of honey.

XXIV. *To bronze in gold colour.*

Rub the figure first with *aquafortis*, in order to cleanse and ungrease it well. Then grind, on porphyry, into a subtil powder, and mix with lintseed oil, equal quantities of *terra merita* and gold litharage. With this composition paint the figure over.

XXV. *Another to the same purpose.*

Take gum elemy, twelve drachms, and melt it. Add one ounce of crude mercury, and two of ammoniac salt. Put all in a glass phial, and set it in a pot full of ashes; lute well the phial, and melt the contents. When perfectly dissolved, add a discretionable quantity of orpine and brass filings; mix all well, and with a pencil paint what you will over with it.

XXVI. *How to matt burnished gold.*

Grind together, blood-stone and vermilion with the white of an egg. Then, with a pencil, lay it in the bottom grounds.

XXVII. *How*

XXVII. *How to do the same to burnish silver.*

Grind ceruse-white with plain water first, then with a very weak isinglass water, and make the same use of this as of the other.

XXVIII. *The method of applying gold, or silver, in shell, or the wood.*

Black wood, or that which is dyed so, is the fittest to admit of this operation. The method of applying it is this.

1. Take a little gum adragant, which you dilute in a good deal of water, to make it weak. With this weak gum water dilute your gold or silver; and, with a pencil, lay it on such places of your work as receive and shew the light, without touching on those which are the shades. To express these, touch the parts with indigo diluted in a very weak gum-arabic water.

2. When this is done, lay one coat of drying varnish, made of oil of spike and sandarack. If the varnish be too thick, thin it with a little oil; and, in mixing it, take care not to boil it so hard but you may bear some on your hand without scalding the place.

N. B. Have attention to make your gum-waters for this sort of work always very weak; otherwise they would tarnish and spoil all the gold or silver.

XXIX. *To gild sandy gold.*

Take any colour, and grind it either with oil, or with gum. Lay a few coats of it on your work, according as you think there may be need of it. When dry, lay one coat of size, and while it is still fresh, sift some brass filings on it; let it dry so, and varnish it afterwards.

XXX. *The varnish fit to be laid on gilding and silvering.*

Grind verdigrise, on marble, with common water, in which you shall have infused saffron for eight hours.

XXXI. *The method of bronzing.*

Take three pennyworth of spal, one of litharage, a gill of lintseed oil, and boil the whole to the consistence of an unguent. Before you apply it, dilute the quantity you intend to make use of with turpentine oil, and lay a coat of vermilion on the work before bronzing.

XXXII. *A water to gild iron with.*

1. Put in a glass bottle, with a pint of river-water, one ounce of white copperas, and as much of white-alum; two drachms of verdigrise, and the same quantity of common salt. Boil all together to the reduction of one half. Then stop the bottle well for fear the contents should lose their strength.

2. To gild the iron with it, make it red hot in the fire, and plunge it in this liquor.

XXXIII. *To make the fine writing-gold.*

1. Take gold in shell, and sulphur, in the proportion of ten drachms of this, well grinded on porphyry and amalgamated, to every sequin-worth of the other. Put this mixture into a proportionable leather bag, in which you shall work it continually for the space of two days. Then pour all into a crucible, and burn it on a slow fire. This done, wash what remains with filtered lime water, and, by filtration also, get your water out again from the composition. If, after this operation, you do not find it high enough yet in hue, wash it again and again in the same manner, till it looks fine.

2. To apply it, dilute some bol armenian with isinglass, and write what you please, and let it dry; then apply your gold, and when dry burnish it.

XXXIV. *How to get the gold, or silver, out of gilt plates.*

1. Mix together one ounce of aquafortis, and one of spring water, with half an ounce of common, and one drachm of ammoniac, salts. Put all on the fire, and boil it; then put in to soak the plate from which you want to get the gold or silver out. A little while after, take your plate out, and scrape it over the liquor.

2. The gold will remain suspended in this regal water; and to make a separation of them, pour in it double the quantity of common water; or again, throw a halfpenny in it, and boil it, and all the gold will fix itself to it.

XXXV. *To gild paper on the edge.*

1. Beat the white of an egg in three times its quantity of common water, and beat it till it is all come into a froth. Let it settle into water again, and lay a coat of it on the edge of your paper.

2. Next,

2. Next, lay another of bol armenian and ammoniac salt, grinded with soap suds. Then put the gold, and let it dry, before burnishing it.

XXXVI. *To gild on vellum.*

Mix some saffron in powder with garlick juice. Put two or three coats of this on the vellum, and let it dry a little, but not quite. Then breathing on the coat, apply the gold leaf with cotton; and, when dry, burnish it.

XXXVII. *Another way.*

Lay first a coat of lime and burnt ivory, grinded together with a weak isinglass water. Apply the gold on it; and, when dry, burnish it.

XXXVIII. *Another way.*

Grind and mix together four ounces of bol armenian, one of aloes, and two of starch; dilute it in water, and lay a coat of it on the vellum, then the gold immediately. When all is dry, burnish it.

XXXIX. *A gilt without gold.*

Take the juice from saffron flowers, in the season, or dry saffron in powder, with an equal quantity of yellow orpine well purified from its earthly particles. Grind all well together, and put it a-digesting in hot horse dung for the space of three weeks. At the end of that term you may use it to gild whatever you like.

XL. *To gild without gold.*

Open a hen's egg by one end, and get all out from the inside. Re-fill it again with chalidonia's juice and mercury; then stop it well with mastich, and put it under a hen which just begins to set. When the time of hatching is come, the composition will be done, and fit for gilding.

XLI. *To gild on calf and sheepskin.*

Wet the leather with whites of eggs. When dry, rub it with your hand, and a little olive oil; then put the gold leaf, and apply the hot iron on it. Whatever the hot iron shall not have touched will go off by brushing.

XLII. *Gold and silver in shell.*

1. Take saltpetre, gum arabic, and gold leaves, and wash

wash them all together in common water. The gold will sink to the bottom, whence pouring the water off you may then put it in the shell.

2 The silver is worked in the same manner, except the saltpetre, instead of which you put white salt.

XLIII. *To gild marble.*

Grind the finest bol armenian you can find with lintseed or nut oil. Of this you lay a coat on the marble, as a kind of gold size. When this is neither too fresh, nor too dry, apply the gold; and, when thoroughly dry, burnish it.

XLIV. *To apply gold on glazed wares, chrystal, glass, china, &c.*

Take a penny-worth of lintseed oil, and as much of gold litharage; a halfpenny worth of umber, and as much of ceruse. Grind all together on marble; and, with a little hair pencil, dipped into the said colour, draw whatever you will on the above-mentioned wares. As soon as dry, lay your gold on it with cotton, which you pass along your cheek before taking the gold with it. And as soon as this is perfectly dry, burnish it.

XLV. *Matt gold in oil.*

Take yellow ocher, a little umber, white and black lead, which grind all together with greasy oil, and use it when necessary.

XLVI. *To dye any metal, or stone, gold colour, without gold.*

Grind together into a subtile powder ammoniac salt, white vitriol, saltpetre, and verdigrise. Cover the metal, or stone you want to dye, all over with this powder. Set it, thus covered, on the fire, and let it be there a full hour; then, taking it out, plunge it in chamber lye.

XLVII. *To whiten copper.*

Take one ounce of zinc, one drachm and a third part of it of sublimed mercury. Grind all into powder, then rub with it what you want to whiten.

XLVIII. *To whiten silver without the assistance of fire.*

Take *Mons-martirum's* talo, which you calcine well in an oven till it can be pulverised. Sift it very fine. Then dipping a piece of cloth or stuff in it, rub the silver with it.

XLIX. *To*

XLIX. *To whiten iron like silver.*

Mix ammoniac salt's powder, and quick lime, in cold water. Then make your iron red-hot several times, and, each time, plunge it in that dissolution. It will turn as white as silver.



C H A P. VII.

SECRETS relative to the art of DYING WOODS,
BONES, &c.

I. *The composition for red.*

I. **C**HOP Brasil wood very fine, and boil it in common water, till it has acquired an agreeable colour; then strain it through a cloth.

2. Give your wood first a coat of yellow, made of saffron, diluted in water. Then, the wood being thus previously tinged with a pale yellow, and dried, give afterwards several coats of the Brasil wood-water, till the hue pleases you.

3. When the last coat is dry, burnish it with the burnisher, and lay another coat of drying varnish with the palm of your hand; and you will have a red orange very agreeable.

4. If you want a deeper red, or rather a darker, boil the Brasil wood in a water impregnated with a dissolution of alum, or quick lime.

II. *Another red.*

Soak the chopped Brasil wood in oil of tartar; and, with it rub your wood, proceeding for the rest as above directed.

III. *Another way.*

Pound orchanetta into powder; mix it with oil of nut; make it luke-warm, and rub your wood with it. The rest as above.

IV. *To die wood in a purplish colour.*

Soak Dutch turnsol in water; add a tincture of Brasil wood made in lime water, and you will obtain a
purple,

purple, with which you may dye your wood, and then burnish and varnish as usual.

V. *A blue purple.*

Take that sort of German turnsol which painters use to paint with size. Dissolve it in water, and strain it through a linen cloth. Give a coat of this dye to the wood; and, if the hue seems to you to be too strong, give it another coat of a paler dye, which is done by adding clear water to a part of the other. When dry, burnish it as usual.

VI. *Another.*

Four ounces of Brasil, and half a pound of India woods, boiled together in two quarts of water, with one ounce of common alum.

VII. *A blue for wood.*

Slack lime in water, and decant it out of the ground. In three pints of this water dissolve four ounces of turnsol, and boil it one hour. Then give several coats of it to your wood.

VIII. *A green.*

Grind Spanish verdigrise into a subtil powder with strong vinegar. Add, and mix well with this, two ounces of green vitriol. Boil all of it a quarter of an hour in two quarts of water, and put your wood a soaking in it so long as you find the colour to your liking. For the rest, proceed as above.

IX. *A yellow.*

Dissolve turnsol in two quarts of water. Then grind some indigo on marble with that water, and set it in a vessel on the fire with weak size to dilute it. When done, give a coat of this dye to your wood with a brush, and when dry, polish it with the burnisher.

X. *Another yellow.*

Boil in water some grinded *terra merita*, and soak your wood in it afterwards.

XI. *Another finer yellow.*

Four ounces of French berries, boiled for about a quarter of an hour in a quart of water, with about the bulk of a fibert of roch-alum. Then soak the wood in it.

XII. *To dye wood in a fine polished white.*

Take the finest English white chalk, and grind it in subtile powder on marble, then let it dry. Now take what quantity you please of it, and set it in a pipkin on the fire with a weak sized water, having great care not to let it turn brown. When it is tolerably hot, give first a coat of size to your wood, and let it dry: then give one or two coats of the aforesaid white over it, These being dry also, polish with the rushes, and burnish with the burnisher.

XIII. *To dye in polished black.*

Grind lamp-black on marble with gum water. Put it next in a pipkin, and give a coat of this, with a brush, to your wood; then polish it when dry.

XIV. *Another way.*

Soak bits of old rusty iron, such as nails, for example, in the best black ink. A few days after rub your wood with it, and when you shall see it well penetrated with this black, and dry, polish it with the burnisher.

XV. *To imitate ebony.*

Infuse gall-nuts in vinegar, wherein you shall have soaked rusty nails; then rub your wood with this; let it dry, polish and burnish.

XVI. *Another way.*

Chuse a good hard wood, and not veiny, such as pear, apple, or hawthorn trees, and blacken them. When black, rub them with a bit of cloth; then, with a reed brush, made on purpose, dipped in melted wax, mixed in a pot with common black, rub your wood till it shines like ebony.

N. B. Before you perform this on your wood, it is proper to rub it smooth with the rushes, for then you succeed better in the imitation of the ebony.

XVII. *Another way.*

The holly is again a very fit sort of wood to take the dye of ebony. The method of dying it is this. Form it first into the shape you intend to give it, then put it in a hatter's copper to boil, where you leave it till it has acquired a perfect degree of blackness, and is pene-

penetrated sufficiently deep with it, which you know by leaving a little bit in a corner of the copper to cut and make the trial. If the black has got in as deep as a copper halfpenny is thick, take it out and dry it in the shade. Then take off the filth of the dye, and polish it as you would ebony, with rushes, charcoal dust, and oil of olive.

XVIII. *Another ebony black.*

1. Take India wood cut in small bits, and a little alum; put them in water, and boil till the water looks purple. Give several coats of this colour on the wood, till it looks purple likewise.

2. Next to this, boil verdigrise in vinegar to the diminution of a third, and give new coats of this over the others on the wood till it looks black.

XIX. *Another way.*

Take mulberry-tree wood, work and shape it as it is to stay. Then soak it for three days in alum water, exposed to the sun, or before the fire. Boil it after this in olive water, in which you may put the bulk of a nut of Roman vitriol, and the same quantity of brimstone. When the wood looks of a fine black, take it out, and lay it again in alum-water. When it shall have remained there a discretionary time, take it out, let it dry, and polish as usual.

XX. *A fine black, easily made.*

Take of good ink whatever quantity you like; put it in a stone pan, new, and well nealed, then set it in the sun to exsiccate it into a cake. When dry, take and scrape it out from the pan with a knife, and grind it into an impalpable powder on marble. This powder, diluted with varnish, will produce a fine black.

XXI. *To dye wood silver fashion.*

Pound tinglafs, in a mortar, and reduce it into powder. Add water to it by degrees, with which you continue to pound it, till it comes into a liquid, like colour for painting. Put it in a clean pipkin, with as big as a nutmeg of size, and set it on the fire to warm. Brush your wood with this liquor; and, when it is dry, burnish it.

XXII. *To dye in gold, silver, or copper.*

Pound very fine, in a mortar, some rock-crystal with clear water. Set it to warm in a new pipkin with a little size, and give a coat of it on your wood with a brush. When dry, rub a piece of gold, silver, or copper, on the wood thus prepared, and it will assume the colour of such of these metals as you will have rubbed it with. After this is done, burnish it as usual.

XXIII. *To give a piece of nut, or pear tree, what undulations one likes.*

Slack some quick lime in chamber-lye. Then with a brush dipped in it form your undulations on the wood according to your fancy. And, when dry, rub it well with a rind of pork.

XXIV. *To immitate the root of nut-tree.*

Give seven or eight coats of size to your wood, till it remains shiny. Then, before your size is quite dry, strike here and there a confused quantity of spots with bistre grinded with common water. When dry, varnish it with the Chinese varnish.

XXV. *To give a fine colour to the cherry-tree wood.*

Take one ounce of orchanetta; cut it in two or three bits, and put it to soak for forty-eight hours in three ounces of good oil of olive. Then, with this oil anoint your cherry-tree wood after it is worked and shaped as you intend it: it will give it a fine lustre.

XXVI. *To marble wood.*

1. Give it a coat of black diluted in varnish. Repeat it one, two, three, or as many times as you think proper; then polish it as usual.

2. Dilute next, some white in a white varnish made with white gum, or shell-lack, and white sandarac. Lay this white on the black ground tracing with it what strokes and oddities you like. When dry, give a light rub with rushes, then wipe it, and give a last coat of fine transparent white varnish, in order to preserve the brightness of the white. Let this dry at leisure, then polish it,

XXVII. *To*

XXVII. *To immitate white marble.*

Have the finest white marble you can find ; break and calcine it in the fire. Grind it as fine as you possibly can, on a white marble stone, and dilute it with size. Lay two coats of this on your wood, which, when dry, you polish as usual, and varnish as before directed.

XXVIII. *To imitate black marble.*

Burn some lamp-black in a shovel, red hot, then grind it with brandy. For the bigness of an egg of black, put the size of a pea of lead in drops, as much of tallow, and the same quantity of soap. Grind and mix well all this together ; then dilute it with a very weak size water. Give four coats of this ; and, when dry, polish as usual.

XXIX. *To marble, and jasper.*

The wood being previously whitened with two coats of whitening, diluted in leather size, then polished as directed Chap. v. art. 1. n. 2: put on with a pencil what other colours you like, then burnish it with the burnishing tooth, which, in doing it, you rub now and then on a piece of white soap.

You must only take notice, that if you have employed lake, cinabar, orpine, and some other colours, they will easily receive the burnishing ; but as for the verdigrise and azure powder, you will find more difficulty to succeed in doing it.

As for the jasper, you must only give two or three coats of different colours fancifully drawn and intermixed, chusing always a green or a yellow for the ground as the most proper. And, when with a brush of hog's bristles, you shall have laid and variegated all your colours, let the whole dry ; polish it with rushes, and give the last coat of white varnish.

XXX. *For the aventurine.*

Prepare a brown ground colour, with a mixture of vermilion, umber, and lamp-black, and give a first coat of this on your wood. According as you should want this ground darker or redder, you may add or diminish the quantity of some of these colours. When these coats are dry, polish them, then heat them, and give another

of a fine and clear varnish, in which you have mixed the aventurine powder sifted through a silk sieve. And after the proper time for drying, you may polish as usual.

XXXI. *A counter-faction of coral.*

1. Reduce goat's horns into a subtile powder. Put it in a clear lye made of lime and pearl ashes. Let it there rest for a fortnight. When reduced into a palp, add ciannabar in powder, or dragon's blood in tears, pulverised very fine, in what quantity you may judge necessary to give the quantity of matter you have got a fine and perfect coral hue.

2. Next boil this composition till it comes very thick; then take it off from the fire and mould it in moulds shaped in forms of coral. Or else cast it again in what other sorts of moulds you like, to make figures of it, and other sorts of work, which will produce a fine effect.

Observation. This secret has been worth immense sums of money to him who found it out. The Turks, to whom these sorts of works were carried, paid them magnificently. But this branch of trade was soon put to an end by the cheats which were practised with the merchants of Tunis and Algiers, who used to buy those curiosities.

XXXII. *To soften amber, otherwise karabe.*

Melt fine white and pure wax in a glass vessel. When melted, put your amber in it, and leave it there till you find it soft to your satisfaction. Then take it out, and give it what form and shape you like. If afterwards you put it in a dry place in the shade, it will become as hard as you can wish to have it.

XXXIII. *To take the impression of any seal.*

1. Take half a pound of Mercury; the same quantity of chrystalline vitriol; as much verdigrise. Pulverise well these two last ingredients, and put them along with the first in a new iron pan, with smith's forge water. Stir all well with a wooden spatula, till the mercury is perfectly incorporated with the powders. Then wash that paste with cold water, and change it till it remains quite clear as when you put it in. Put the Lump in the air, it will harden, and you may keep it for use.

2. When

2. When you want to take the impressiion of a seal with it, take it and place it over the fire on an iron plate. When there appears on it some drops like pearls, then it is hot enough ; take it off and knead it in your hands with your fingers, it will become pliable like wax ; smoothen one side of it with the flat side of a knife blade, and apply it on the seal, pressing it all round and in the middle to make it take the impressiion. When done, lift it up, and set it in the air, where it will come again as hard as metal, and will serve you to seal the same letter, after having opened it, with its own coat of arms or cypher, &c. as the original seal itself, without any probability of discovering it, should even the real one be laid on it.

XXXIV. *Another way.*

Heat some mercury in a crucible, and silver filings in another, in the proportion of two parts of mercury to one of silver. As soon as the mercury begins to move, pour it on the silver filings. Let this cool, and then put it in a glass mortar. Pound it well with a pestle of the same, and add a little water in which you shall have dissolved some verdigrise. Stir this, for three days, five or six times a day. At the end of the term decant out the verdigrise water, and replace it with good vinegar, with which you pound it again in the same mortar, as before, a couple of hours, changing vinegar as soon as it blackens. Pound it again, two other hours, with chamber lye instead of vinegar, changing it the same, during that time, as you did the vinegar.—Then take that matter, lay it on a wash-leather skin, which you bring up all round it, and tie it above with a string. Press the lump well in that skin, so as to separate and squeeze out all the superfluous mercury which passes through the leather. And, when none comes out any longer, open the skin, take the lump in your hand, and knead it with your fingers, and smoothen one side of it to take the impressiion you like, proceeding, for the rest, as above directed. It hardens in the air, and softens with the heat of the hand, assisted with the working of the fingers, as you would do a piece of wax.

XXXV. *To get birds with white feathers.*

Make a mixture of *semper-vivum-majus's* juice, and olive oil, and rub with it the eggs on which the hen is setting. All the birds which shall come from those eggs will be white feathered.

XXXVI. *To soften ivory.*

In three ounces of spirit of nitre, and fifteen of white wine, or even of mere spring-water, mixed together, put your ivory a-soaking. And, in three or four days, it will be so soft as to obey under the fingers.

XXXVII. *To dye ivory, thus softened.*

1. Dissolve, in spirit of wine, such colours as you want to dye your ivory with. And when the spirit of wine shall be sufficiently tinged with the colour you have put in, plunge your ivory in it, and leave it there till it is sufficiently penetrated with it, and dyed inwardly. Then give that ivory what form you will.

2. To harden it afterwards, wrap it up in a sheet of white paper, and cover it with decrepitated common salt, and the driest you can make it to be; in which situation you shall leave it only twenty-four hours.

XXXVIII. *Another way to soften ivory.*

Cut a large root of *mandrake* into small bits, and infuse first, then boil it in water. Put your ivory in this boiling liquor, and boil it too, till it is as soft as wax.

XXXIX. *Another way.*

1. Take one pound of black alicant kaly, and three quarters of a pound of quick lime, which you put into boiling water, and let it rest for three days. If, after that term, the liquor is reddish, it is strong enough; if not, you must add again of the above ingredients, till it acquires that degree.

2. Then putting a soaking in this lye any bone, or ivory, for a fortnight, they will become as soft as wax.

3. To harden them afterwards, dissolve an equal quantity of alum and scuttle fish-bones powder, in water, which you boil to a pellicula; soak your bones or ivory in this for about one hour only; then take them out, and put them in a cellar for a few days.

XL. *To whiten ivory, which has been spoiled.*

Take roch-alum, which you dissolve in water, in a sufficient quantity, to render the water all milky with it. Boil this liquor into a bubble, and soak your ivory in it for about one hour, then rub it over with a little hair brush. When done, wrap it in a wet piece of linen to dry it leisurely and gradually, otherwise it would certainly split.

XLI. *Another way.*

Take a little black soap, and lay it on the piece of ivory. Present it to the fire, and when it has bubbled a little while, wipe it off.

XLII. *To whiten green ivory; and whiten again that which has turned of a brown yellow.*

1. Slack some lime into water, put your ivory in that water, after decanted from the ground, and boil it till it looks quite white.

2. To polish it afterwards, set it on the turner's wheel, and after having worked it, take rushes and pumice-stones subtile powder with water, and rub it till it looks all over perfectly smooth. Next to that, heat it, by turning it against a piece of linen, or sheep's-skin leather, and, when hot, rub it over with a little whitening diluted in oil of olive, continuing turning as before; then with a little dry whitening alone, and finally with a piece of soft white rag. When all this is performed as directed, the ivory will look as white as snow.

XLIII. *To whiten bones.*

Put a handful of bran and quick-lime together, in a new pipkin, with a sufficient quantity of water, and boil it. In this put the bones, and boil them also till perfectly freed from greasy particles.

XLIV. *To petrify wood, &c.*

Take equal quantities of gem-salt, roch-alum, white vinegar, calx, and pebbles powder. Mix all these ingredients together, there will happen an ebullition. If, after it is over, you throw in this liquor any porous matter, and leave it there a soaking for three, four, or five days, they will positively turn into petrifications.

XLV. *To*

XLV. *To immitate tortois-shell with horn.*

Take one ounce of gold litharage, and half an ounce of quicklime. Grind well all together, and mix it to the consistence of pap, with a sufficient quantity of chamber-lye. Put of this on the horn; and, three or four hours afterwards it will be perfectly marked.

XLVI. *A preparation for the tortois-shell.*

Make a mixture, as above, of quick lime, orpine, pearl ashes, and *aquafortis*. Mix well all together, and put your horn, or tortois-shell, a-soaking in it.

XLVII. *To dye bones in green.*

Grind well a discretionable quantity of verdigrise, which you put with vinegar in a copper vessel, and the bones in it. Cover this, and lute it so well that no air can come at the contents. Put it in hot horse dung, and leave it there for a fortnight, after which time take your bones out; they will be coloured of a fine green, which will never rub off.

XLVIII. *Another way.*

1. Put some verdigrise, well grinded, in goat's milk, and leave it till the milk becomes very green. Then put all together in a copper vessel along with the bones; cover and lute it well, then place it in hot horse dung for ten days, after which time you may take the bones out perfectly well coloured.

2. If you will have them more so, boil them in oil of nut; and the longer they boil in it, the more they will heighten in colour.

3. To polish them, you must use elder's marrow: and justre them with oil of nut.

XLIX. *To dye bones, and mould them in all manner of shapes.*

1. Boil together twelve pounds of quick lime, and one of calcined roch-alum, in water, to the reduction of one third of the water you shall have put in. Add, then, two more pounds of quick lime, and boil it again till it can carry an egg, without its sinking to the bottom. Now let it cool and rest, then filter it.

2. Take twelve pounds of that liquor; put in half a pound of rasped Brasil wood, and four ounces of scarlet flocks;

flocks; boil all about five minutes on a slow fire, then decant the clearest part of it, and put it by. Put on the *faeces* of brasil and scarle about four pounds of the first water; boil it the same length of time as the other, and decant likewise the clearest part of it on the other. Repeat this operation, till the new added water draws no more colour from the *faeces*.

3. Now rasp any quantity of bones, and boil them, when rasped, a reasonable time in clear lime water. Then take them out. Put them in a matrafs; and, over them, pour some of the tinged water, so as to soak them only with it. Place the matrafs on a mild sand bath, and evaporate the liquor. Add some more liquor, and evaporate it again the same, continuing to add and evaporate the tinged liquor, till the rasped bones are all turned into a soft paste.

4. Take this paste, and mould it as you like, in tin or other moulds, to make whatever thing or figure you want. Set it in the mould for a day or two, till it has acquired the shape you would have it; then, to harden it, boil it in a water of alum and salpêtre first, and afterwards in oil of nut. Nothing more surprising, and at the same time more agreeable, than these figures, which look incontestibly to be made of bones, without conceiving how they can be made such, out of that matter, and in one solid piece.

L. *To dye bones in black.*

Take six ounces of litharage, and the same quantity of quick lime. Boil all in common water, along with the bones. Keep always stirring, till the water begins to boil. Then take it out, and never cease stirring till the water is cold again; by that time the bones will be dyed black.

LI. *To soften bones.*

Take equal parts of Roman vitriol and common salt. Distil the spirits out of this by the alembic, or rather, by the retort. If in the water you get from the distillation, you put the bones a-soaking, they will become as soft as wax.

LII. *To dye bones in green.*

Pound well together, in a quart of strong vinegar, three

three ounces of verdigrise, as much of brass filings, and a handful of rue. When done, put all in a glass vessel, along with the bones you want to dye, and stop it well. Carry this into a cold cellar, wherein leaving it for a fortnight, or even more, the bones shall be dyed green.

LIII. *A salt for hardening soft bones.*

Take equal quantities of ammoniac, common decrepitated and gem salts, as well as of *plumeum saccharinum*, rock and shell alums. Pulverise, and mix all together; then put it in a glass vessel well stopped, which bury in hot horse dung, that the matter should melt into water. Congeal it on warm embers. Then make it return into a *delequium* again, by means of the horse dung, as before. When thus liquified for the second time, it is fit for use. Keep it and when you want to harden and consolidate any thing, smear it over with it.

LIV. *To make figures, or vases, with egg-shells.*

1. Put in a crucible any quantity of egg shells, and place it in a potters furnace, for two days, that they may there be perfectly calcined; then grind them dry into a subtile powder.

2. Next, with gum arabick-water, and whites of eggs beaten together, make a liquor, with which you are to knead that powder, and make a paste or dough of it.

3. With that dough, to which you give the consistence of potters clay, make and form whatever figure or vase you like, and set them in the sun to dry.

LV. *To dye bones and ivory of a fine red.*

1. Boil scarlet flocks in clear water, assisted with a certain quantity of pearl ashes, to draw the colour the better; then clarify it with a little rock-alum, and strain this tincture through a piece of linen.

2. To dye, afterwards, any bones or ivory in red, you must rub them first with *aquafortis*, and then immediately with this tincture.

LVI. *To make a paste in imitation of black marble.*

Dissolve two ounces of spalt, on a gentle fire, in a glazed pipkin. When in perfect fusion, add a third part

part of karabe, which you must keep there ready melted for it, and stir all well together. When both shall be well mixed and united, take the pipkin off from the fire, and throw the contents, boiling hot as they are, into a mould of a fine polish in the inside. Then, when cold and dry, take the piece off from the mould, and you will find that nothing can imitate so well black marble as this deceptive composition, except black marble itself.

LVII. A receipt to dye marble, or alabaster, in blue or purple.

Pound together, in a marble mortar, parsnips and purple lilies, with a sufficient quantity of white-wine vinegar. Proportion the quantity of parsnips and lilies to each other, according to the hue you wish to give the liquor. If you cannot get one of these two juices, make use of that you can get; and to every one pound of liquor, mixed and prepared, put one ounce of alum.

2. In this dye, put now your pieces of marble, or alabaster, and boil them, supposing that they are not too considerable to go into the vessel with the liquor. And if they be, you must heat one part of it as much as you possibly can, then dye it with the liquor quite boiling hot, and thus proceed from place to place, till you have dyed it all over.

LVIII. To bronze wooden, plaster, ivory, or other figures, so that the bronze may stand water for ever.

1. Grind English brown red, as fine as possible with nut oil. With this, paint all over the figure intended to be bronzed, and let it dry.

2. Have next some powder of German gold in a shell; and, in another, some of the varnish described in the following article. Dip a pencil in the varnish, and then in the gold, and give as smooth and equal a coat of this to your figure as you can.

3. For saving expence, you may instead of the German gold, take some fine bronze, which is a good deal cheaper.

LIX. The varnish fit for bronzing.

Pound, into subtile powder, one ounce of the finest shell-lac. Put it in a glass matrass of three half pints size. Pour upon it half-a-pint of the best French spirit

of wine. Stop it well, and place it in the cool for four days, that the lac may have time to dissolve at leisure. During that time, neglect not to shake the matras, as if you were washing it, four or five times a-day, for fear the lac should make a glutinous lump, and stick to the bottom of the matras. Should your lac, at the end of those four days, be yet undissolved, set it on a gentle sand-bath, to help finishing it; and, when dissolved to perfection, the varnish it done.

Note. When you pour the spirit of wine on the lac in the matras, observe to do it gently, and little at a time, in order it may penetrate the powder the better. Observe also to stop pouring by intervals, at different times, and take the matras and shake it as it were for rinsing, in order to mix all well, thus continuing to do till you have introduced all the spirit of wine into the lac.

LX. *A water to dye bones and wood.*

1. Put the strongest white-wine vinegar in an earthen pan, in which set to infuse, for seven days, copper filings, Roman vitriol, roch-alum, and verdigrise.

2. In this liquor, put a-boiling what you want to dye, and it will take the colour perfectly.

3. If you want a red dye instead of verdigrise, put some red; if yellow, put yellow, and so forth, according to the various colour you may require, with a discretionable quantity of roch-alum for either.

LXI. *To dye bones and ivory an emerald green.*

Put in *aquafortis* as much *flos ænei* as it can dissolve; and in that water put a-soaking, for twelve hours only, whatever you want to dye, and they will take the colour to perfection in that space of time.

LXII. *To dye bones any colour.*

Boil the bones first for a good while; then in a lye of quick lime mixed with chamber lye, put either verdigrise or red or blue chalk, or any other ingredient fit to procure the colour, you want to give to the bones. Lay the bones in this liquor, and boil them, they will be perfectly dyed.

LXIII. *To whiten alabaster and white marble.*

Infuse, for twelve hours, some subtile pumice stone's powder in verjuice; then, with a cloth, or a sponge, wet

wet your marble with the liquor, and it will become perfectly white.

LXIV. *To blacken bones.*

Mix charcoal dust with wood-ashes and water; rub the bone with this wash, then with ink; and, when dry, polish it.

LXV. *Another way to dye woods and bones red.*

Infuse for twenty-four hours your wood in red-wine vinegar. Then add to this vinegar a sufficient quantity of Brasil wood and roch-alum, both in powder, and boil all altogether, till you see the wood, or bones, have acquired the degree of colour you wish to have them.

LXVI. *The same in black.*

After the twenty-four hours infusion as above, add to the vinegar a sufficient quantity of vitriol, orpine, pomegranates' rinds, and gall-nuts, all in powder, and boil as before directed.

LXVII. *For the green.*

Supply for the above ingredients, two parts of roch-alum, and one of *alumen plumeum*, with which you boil the wood or bones to the reduction of two thirds, or thereabouts; then put them a-soaking in a lye of soap and verdigrise, in a sufficient quantity, till they are perfectly green.

LXVIII. *To dye wood vermilion colour.*

Smoothen and rub well the wood first; then give it four or five coats of vermilion subtilely pulverised, and diluted with lime and curd-cheese water.—When dry, polish it over again with rushes and oil of spike; then for the last, give it four or five coats of varnish, made with karabe and oil of spike, and let it dry.

LXIX. *To soften horn, so that you may cast it in a mould as melted lead.*

Make a strong lye with equal quantities of pearl ashes and quick lime. Rasp your horns, and put these raspings in that lye. They will soon turn into a pap. Then put in this pap whatever colour you like, and cast it in whatever mould you chuse.—To dry and harden these figures afterwards follow the directions prescribed in Art. xliix. at the bottom, and in liii.

C H A P. VIII.

SECRETS relative to the ART of CASTING in
MOULDS.I. *To cast a figure in bronze.*

1. **T**O cast a figure, or any other piece in bronze, you must, first, make a pattern with a proper clay. That clay ought to be mixed with sand, to prevent its cracking, when it comes to dry.

2. When the pattern is completed and the sculptor is pleased with his work, you mould it with plaister while it is still damp, because in drying, the parts of the pattern shrink, and lose their fullness. To that effect you begin by the bottom part of the figure, which you cover with several pieces, and by rows; as for example, let us suppose the first row from the feet to the knees; the second from the knees to the beginning of the belly; the third from the beginning of the belly up to the pit of the stomach, from thence to the shoulders, on which you lay the last row, which is to contain the head—Observe, however, that those divisions of rows admit of no particular rule, and ought to be intirely determined by, and adapted to, the size of the figure. For when the pieces are made too considerable, the plaister works too much, and fatigues itself, which is detrimental to its taking a true and precise impresson of all the turns and shapés of the figure. So that at any rate, it is always preferable to make the pieces of the mould smaller than larger.

3. You must observe, that if the figure you are moulding have got any draperies, or other sorts of ornaments about it, which require a good deal of trouble and nicety, you cannot help making a great many small parts and subdivisions in your mould, in order to enable you to strip them off the figure afterwards with more facility. In which circumstance, when all these small parts are made, and garnished with little rings to assist in pulling them off more easily, you cover them all
over:

over with larger pieces, which containing several of the little ones, are called *cafes*, and in French *chapes*.

4. When the mould is thus made and completed, you let it rest till it is perfectly dry. Then, before using it, they who are curious in their work, do not content themselves with imbibing it inwardly with oil, but they even make it drink as much wax as it can soak, by warming those separate pieces, and putting wax in them to melt. —The motive, in doing this, is to render the wax-work, which is to be cast in it finer and more perfect. For if you imbibe the mould with oil only, the wax figure cast in such a mould always comes out a little rough and like flour, because the wax draws always the superficies of the plaister, and in reverse, the plaister draws also the superficies of the wax, which produces a great defect in the figure, and is a great obstacle to its coming out from the mould with that neatness it otherwise should.

5. The mould being therefore thus imbibed with wax, if you want it for a bronze figure, you assemble all the small parts of it each in their *cafes*, and with a brush give them a coat of oil. Then, with another brush, give them another coat also of wax, prepared as follows.—Six pounds of wax, half-a-pound of hog's lard, and one pound of Burgundy pitch.—This preparation of the wax, however, must be regulated according to the country and the season. For in the heat of summer, or hot climes, such as Spain, Italy, and France, wax may be used alone, as it keeps naturally soft, and the other drugs above-mentioned, are added to it only to render it more tractable. Of this wax, therefore, whether prepared or natural, you lay another coat, as we said, in the hollow of the mould, to the thickness of a sixpenny piece. Then, with wax made in flat cakes, of the thickness of a quarter of an inch, more or less, according to that you are willing to give your metal, you fill all the hollow parts of the mould in pressing hard this sort of wax in them with your fingers. When thus filled, you have an iron grate, larger by three or four inches every way than the plinth or basis of the figure. On the middle of that grate you erect one or more iron

bars, contoured agreeable to the latitude and situation of the figure, and bored, from space to space, with holes to pass other iron rods of the size and length necessary to support the *core* (in French *ame* or *noyau*) of what you want to cast.

6. Formerly they used to make their *cores* with potter's clay mixed with hair and horse-dung well beaten together. With this compost, they formed a figure like the pattern; and, when they had well supported it with iron bars, length and cross-ways, according to its position and attitude, they scraped it, that is to say, they diminished, and took off from its bigness as much as they wanted to give to their metal. When that *core* was dry, they took the wax with which they had filled the hollow parts of their mould, and covered it with them.—This method is even practised now by some founders, especially for great bronze figures, because earth resists better the power of that red-hot melted metal, than plaister can; and this they reserve only for small figures, and those which are cast in gold or silver. However, when plaister is well beaten and mixed with brick dust also well beaten and sifted fine, it stands pretty well too. We shall therefore proceed on the method of casting on plaister cores.

7. You take then the first, or bottom rows, of the mould, filled by the last wax in cakes, as mentioned before, and assemble them on the iron grate round the principal iron bar, which is to support the *core* when made. When they are joined together, you give them a tye round very hard with cords, lest they should vary from their position when you form the *core*.

8. To form this, as soon as the first set which completes the bottom row of the separate pieces of the mould is fixed, you pour plaister, diluted very clear, and mixed, as we said, with brick-dust, with which you fill up that bottom part of the hollow. Then, on this first bottom row of the mould, you place the second in the same manner as the first; then fill it likewise with your prepared plaister. Thus you continue to erect your mould from row to row, till you come to the last, and fill it as you go, with plaister, which is called *forming*

ing the core. If the figure require it, you pass across the core some iron rods through the holes perforated for that purpose in the perpendicular bars, in order to support the *core* the better, and give it more strength and power to resist the effort of the metal when it comes in fusion upon it.

9. When all the pieces of the mould have been thus erected one upon another, and filled with plaister, you must stop a certain time to let it take a consistence, then proceed to take off the cases and all the smaller parts of the mould contained in each of them, row by row, and one by one, in the same manner as you proceeded to erect them, with this difference, that in erecting them you begin at the bottom, and that in taking them off, you begun at the top; which, when done, leaves the figure to appear all in wax, covering the *core*, which is contained in the inside of it.

10. You are then to proceed to the repairing of the figure and finish it after the original. The sculptor, in that case, has even an opportunity of perfecting much some of the parts, in adding or taking off according as he thinks proper, to give more grace and expression to certain strokes, muscles, or features only; as for the disposition of the limbs, and their attitude, he can no longer mend or alter them.

11. The figure thus well prepared, you are to place what is called the *pouring* and the *vent holes*. The *pouring holes* are wax-pipes of the bigness of an inch diameter for such figures as are of a natural size; for they are to be proportioned not only to the size of the figure, but even to that of the parts of that figure whereon they are placed. The *vent-holes* are wax-pipes likewise, but of much lesser size. Those pipes are cast in plaister moulds of what length you please, then cut to that of four or five inches, or thereabouts. They are cast hollow, to the intent of rendering them lighter, otherwise they might as well be cast solid. Those which serve for pouring, are placed in a straight perpendicular line, one above another, at six inches asunder, and sometimes nearer, when there are draperies, and much matter is used.

12. When the various pipes are placed and soldered against the figure, with wax, so that the end which is free should be upwards, and as much perpendicular to the figure as possible, you place another pipe of the same size quite perpendicular, which is to be fixed against every one of the ends of the others. All these pipes, both large and small, serve for the pouring of the matter, and casting of the figure. You are to place three or four of them generally round the figure, which is determined by its size, bulk, and disposition.

13. But at the same time you are placing the pouring-holes, you must not neglect placing also those which are to serve for the vent. These last are to be placed in the same line as and with the others, at the distance of four inches only from them, and fixed likewise by one end to the figure, and by the other to another long and perpendicular pipe, like those for pouring. Now, as it is necessary that all the wax, when you come to melt it, should, as we shall mention in its place, come out entirely from the mould, you must not fail to place those sorts of vent-pipes on all the rising and distant parts from the mean bulk of the figure, such as the arms, fingers, draperies, &c. &c. from which the wax must be got out with facility, either by means of particular vent-holes, so formed as to descend to the bottom of the figure, or by means of those large ones placed perpendicularly along-side of it.—Observe, always, to make the pouring-holes which come to the face and hands the smallest of any, that they may not affect too much the features and likeness, if any be intended, of those parts; and that you may the more easily repair those places with the chisel, when they are finished.

14. After these various pipes have been thus carefully fixed all about the figure, you must so place them that two of the main perpendicular ones should join together at five or six inches higher, and above the upper part of it, and be terminated by a wax cup of four inches deep, and as much diameter, under, and at the bottom part of which you solder them. This cup serves as a funnel to receive the metal, and introduces it into the pouring-holes, by means of its communication
with

with them, to convey it afterwards into all the parts of the figure at once, and form it. Therefore, if there be four perpendicular ascending pipes, you make two such cups, to communicate the metal to these pipes.

15. As for the vent-holes, you let them free above the top of the figure, and higher than the pouring ones, because they want no cups.

16. When the wax figure is thus completely repaired and garnished, with all its pouring and vent-holes, you prepare a composition of putty, and crucibles' powder, well grinded, and sifted very fine, which you dilute clear in a pan, like a colour for painting. With a brush take this composition, and cover all the figure, as well as the vent and pouring-pipes. This operation you repeat several times, observing carefully to fill up all the cracks and crevices which may happen in drying. When the wax is thus perfectly covered every where, you put with the same brush, another composition thicker than the first, and of a stronger sort.

17. This composition is made of the same materials as the other, but with this addition, that you mix some free earth along with it, and horse-dung, quite clear from any straw. After having given six or seven coats of this, you give another coat again, much thicker still, of a stuff composed of nothing but free earth and horse-dung, and this being dry, you give half-a-dozen more of the same, allowing time between each to dry. At last, you put with your hand, and no more with the brush, two other coats of this same last composition, of free earth and horse-dung, mixed in form of mortar, observing always that the one should be perfectly dry, before laying on the other; and that there should be no part of the figure, whether naked or draperies, but what is equally covered with every one of the different coats we have mentioned.

18. Next to this, you must have flat iron bars turned and bent according to the disposition of the figure, which being fixed by means of hooks at the sides of the grate on which it stands, rise up as high as the pipes, and joining close to the mould, unite at top by means of a circle of iron which runs through all the hooks,

hooks, by which these bars are terminated. Then you surround again the figure with other iron bars, made in form of hoops, to prevent the others which go from top to bottom, and to which they are fixed by means of wires, from giving way: and, between every one of these bars, both perpendicular and horizontal, there must be no more than seven or eight inches distance allowed.

19. When all these bars are well fixed together, and enabled thereby to support and contain the mould, you take a compost of free earth, horse-dung and hair mixed together, in consistence of mortar, and with this you cover the mould and the bars all over, without attending any more to the shape of the figure, so that there appears no more but a shapeless lump of clay, which ought to be of about four or five inches thick.

20. When the mould is thus completed, you are to dig a square pit sufficiently deep for the top of the mould to be somewhat lower than the surface of the ground where the pit is dug, and sufficiently wide also to allow room of a foot and a half, free all round the mould, when descended into it.—At the bottom of that pit, you construct a furnace, on the top of which there is to be a strong iron grate supported by the arches and wall of the furnace, which is to be made of stone or bricks, as well as the four sides of the pit from top to bottom.

21. After the grate is placed on the furnace, you descend the mould on it by means of engines. Then, under the pipes which are to serve for pouring, as well as vent, you place pans to receive the wax which is to run off. This done, you light a middling fire to heat the figure, and all the place where it stands, with so moderate a heat, that the wax may melt without boiling, and come entirely out from the mould, without there remaining any part of it; which would not be the case if the heat be so great as to make it boil, for then it would stick to the mould, and cause defects in the figure, when you come to run the metal.—When, therefore, you judge that all the wax is out, which you may know by weighing that you employed; and weigh-
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ing it again after it is in the pans, you take these off, and stop the pipes, through which it came out, with clay. Then fill all the empty parts of the pit round the figure with bricks, which you throw in gently, but without order; and, when it is come up to the top, make a good brisk fire in the furnace. As the flame is interrupted by these bricks, it cannot ascend with violence, nor hurt the mould, and they only communicate their heat in going through all those bricks, which become so hot, that they and the mould are at last both red hot.

22. Twenty-four hours after the fire has been lighted, when you see that the bricks and the mould are equally red hot from top to bottom, you let the fire go out, and the mould cool, by taking all the bricks off. When there is no more any heat at all, you throw some earth in the pit, to fill the place which had been occupied with the bricks; and, in proportion as you throw it in you tread it with your feet, and press it against the mould.

23. In order to melt the metal, you construct, just by the pit where the mould is, a furnace, the lower part of which ought to be higher by two or three inches than the top of the said pit, in order to obtain a sufficient declivity from it to the pit for the running of the metal. Its construction must be after the form of an oven, with good bricks and free earth, and supported by good and strong iron hoops. There is a border raised all round, so as to make it capable to contain all the metal which is intended to be melted in it. On the side which looks towards the pit, there is an opening, which is stopped during the melting of the metal, and from that opening comes an earthen funnel practised, which goes to a basin of good free earth placed over the mould, and the middle of which corresponds and communicates to those cups we have mentioned before (No. 14). This basin is called by the workmen *escheno*. And in order to prevent the metal from running into these cups before the whole which is in the furnace is run into the *escheno*, there are men on purpose who hold a long iron rod terminated

minated by one end in the form of these cups, and stop them.

24. When the metal is melted, you unstop the opening of the furnace in which it is contained; this runs into the *escheno*, and as soon as it is arrived, the men take off the rod with which they stopped the cups, and the mould being instantly filled all over, the figure is formed in one moment.

25. After the mould is thus filled with the metal, you let it stay in that situation for three or four days, then, at leisure, you take off the earth which had been thrown all round it, which helps the mould to become entirely cold. As soon as you are sure there is no more heat, you break the mould, and the metal figure appears surrounded with rods of the same metal, starting out from it, occasioned by the vent and pouring-holes, or pipes, through which the metal was introduced, and which remained filled with it. These you must saw off, in order to unburden the figure of so much, and get it out of the pit more easily. Then you clean and scower with water and grinding-stone in powder, and pieces of deal or other sort of soft wood, and you search in all the hollow places of the draperies and other parts.

26. When the figures are small, they are generally washed with *aquafortis*; and, when it has operated, you may wash them again with common water. When they are thus well cleansed, you repair, finish, and fault those which require to be treated more highly than others; for the large ones are seldom searched so minutely.

27. After they have been as much finished as they are intended to be, you may give them, if you like, a colour, as some do, with oil and blood-stone. Or, as some others practise it, you may make them turn green by means of vinegar. But without all that trouble, the bronze will in time take a natural varnish of itself, and becomes of a blackish hue.

II. *How to gild such sorts of figures.*

1. They may be gilt two different ways; either with gold in shells, or with gold in leaves. The first method is the handsomest, and at the same time the most lasting, it being always used for small sized works. To apply it,

it, you make a mixture of one part of the best gold, and seven of mercury, which founders call silver in that sort of process. When these are incorporated together, you then heat the figure, and rub it with the composition, which whitens it, and heating it again over the fire the mercury exhales, and the figure remains gilt.

2. As for the other method it is only for large sized works, and them on which one is not willing to make a great expence; you scrape the figure with small files, and other proper tools, to make it quick and clean, then you heat and lay on a gold leaf, repeating this four times.

III. *Of the choice and composition of metals.*

Any metal whatever may be used for the casting of figures, though the general composition runs as follows.

1. For the fine bronze figures, the alloy is half brass, half copper. The Egyptians who are said to be the inventors of that art used to employ two thirds of brass against one of copper.

2. Brass is made with copper and calamine. One hundred weight calamine renders one hundred *per cent.* Calamine is a stone from which a yellow dye is drawn. It is to be found in France and at Liege.

3. Good copper ought to be beaten, not molten, when intended for statues. You must guard also against using putty, when in alloy with lead.

4. Copper may be forged either hot or cold. But brass breaks when cold, and suffers the hammer only when hot.

5. There is a sort of metallic stone called Zinc, which comes from Egypt: it renders the copper of a much finer yellow than the calamine; but, as it is both dearer and scarcer, they are not so ready to use it.

6. As for the composition for making of bells, it is twenty pounds weight pewter for each hundred of copper. And the artillery pieces take but ten pounds only of pewter to one hundred of the other. This last composition is not good for the casting of figures, as it is both too hard and too brittle.



C H A P. IX.

S E C R E T S relative to W I N E.

I. *To make a wine to have the taste and flavour of French muscat.*

YOU have only to put in the cask a little bag of elder flowers when the wine is just done pressing, and while it boils still. Then, a fortnight after, take out the bag.

II. *To make the vin-doux.*

When you cask the wine put in at the bottom of the cask half a pound of mustard seed, or a pound, if the cask be double the common size.

III. *To make vin-bourru, of an excellent taste.*

Take two quarts of wheat, which boil in two quarts of water till it is perfectly bursted. Stir it well, then strain it through a fine cloth, squeezing a little the whole to get the creamy part out. Put two quarts of this liquor in a hogshcad of white wine, while it is still a-boiling or in fermentation, with the addition of a little bag of dried elder-flowers.

IV. *To imitate a malvoisie.*

Take of the best galangal cloves and ginger, each one drachm. Bruise them coarsely, and infuse for twenty-four hours, with brandy, in a well closed vessel. Then take these drugs out, and having tied them in a linen bag, let them hang in the cask by the bung-hole. Three or four days after, your wine will taste as good and as strong as natural *malvoisie*.

V. *To change red wine into white, and white into red.*

If you want to make red your white-wine, throw into the cask a bag of black vine-wood ashes: and to whiten the red wine, you must put a bag of white vine-wood ashes. Forty days after, take out the bag, shake the cask, and let it settle again; then you will see the effect.

VI. *To*

VI. *To prevent wine from fusting, otherwise tasting of the cask, and to give it both a taste and flavour quite agreeable.*

Stick a lemon with cloves as thick as it can hold ; hang it by the bung-hole in a bag over the wine in the cask for three or four days, and stop it very carefully for fear of its turning dead, if it should get air.

VII. *To make a wine produce a sweet wine.*

One month before gathering the grapes, you must twist such branches as are loaded with them, so as to interrupt the circulation of the sap : then strip the leaves off intirely, that the sun may act with all its power on the grains, and, by dissipating their superfluous moisture, procure a sweetness to the liquor contained in them when they come to be pressed.

VIII. *To make a sweet wine of a very agreeable flavour, and besides very wholesome.*

Gather the grapes, and expose them for three whole days in the sun. On the fourth day at noon put them under the press, and receive the first drop which runs of itself before pressing: When this virgin-drop shall have boiled, or fermented, put to every fifty quarts of it one ounce of Florentine-orrice in subtile powder. A few days after take it out clear from its lye, and then bottle it.

IX. *To clarify in two days new wine when muddy.*

Take a discretionable quantity of fine and thin beech shavings, which put into a bag, and hang by the bung hole, in the cask. Two days after, take out the bag ; and if from red you want to make it white, you may do it by putting in the cask a quart of very clear whey.

X. *To make the wine keep mout or unfermented for twelve months;*

Take the first, or virgin wine, which runs of itself from the grapes before pressing ; cask and stop it well, then smear the cask all over with tar, so that the water could not penetrate through any part of the wood into the wine. Plunge these casks into a pond deep enough to cover them intirely with water, and leave them there for forty days. After which term you may take them
out,

out, and the wine contained in them will keep new for twelve months.

XI. *To make a wine turn black.*

Place in the cellar, wherein the wine is a-fermenting, two pewter pots, and it will turn black.

XII. *To clarify a wine which is turned.*

Take clean roch-alum in powder, half a pound : sugar of roses, as much ; honey whether skimmed or not eight pounds, and a quart of good wine. Mix all well, and put it in a cask of wine, stirring all as you pour it in. Take the bung off till the next day, then put it on again. Two or three days after this, it will be quite clear.

XIII. *To correct a bad flavour in wine.*

Put in a bag a handful of garden parsley and let it hang by the bung hole in the cask, for one week at least. Then take it out.

XIV. *To prevent wine from spoiling and turning.*

Mix in the cask a tenth part of brandy, or half an ounce of oil of sulphur.

XV. *To prevent thunder and lightning from hurting wine.*

Put on the bung a handful of steel filings and another of salt, tied up in a bag.

XVI. *To prevent wine from corrupting.*

Put to infuse in the cask a handful of gentian root tied in a bag.

XVII. *To restore a wine turned sour or sharp.*

Fill a bag with leek's seed, or of leaves and twisters of vine, and put either of them to infuse in the cask.

XVIII. *To restore a wine corrupted and glairy.*

Put in the wine cow's milk a little saltish ; or else the rinds and shells of almonds tied up in a bag : or again pine kernels.

XIX. *To prevent wine from growing sour, and turning into vinegar.*

Hang by the bung hole, in the cask, a piece of bacon, of about one pound and a half, and replace the bung. Or else throw into the wine a little bagful of ashes of virgin vine.

XX. *To make a new wine taste as an old wine.*

Take one ounce of melilot, and three of each of the following drugs, *viz.* liquorish, and celtick-nard, with two of hepatick aloes; grind, and mix all well altogether, put it in a bag, and hang it in the wine.

XXI. *To restore a wine turned.*

Draw a pail full of it; or, take the same quantity of another good sort, which you boil, and throw quite boiling hot over that which is spoiled and stinking; then stop the cask quickly with its bung. A fortnight after taste it, and you will find it as good as ever it was, or can be.

XXII. *To restore a wine fusted, or tasting of the cask.*

Draw that wine intirely out of its own lye, and put it in another cask over a good lye. Then, through the bung hole, hang up a bag with four ounces of laurel berries in powder, and a sufficient quantity of steel filings, at the bottom of the bag, to prevent it's swimming on the top of the wine. And, in proportion as you draw a certain quantity of liquor, let down the bag.

XXIII. *To prevent wine from pricking.*

Put in the cask half a pound of spirit of tartar. Or, else, when the wine is still new and *mout*, throw in two ounces of common alum for every hoghead.

XXIV. *To make wine keep.*

Extract the salt from the best vine branches; and of this put three ounces in every hoghead at Martinmas when the casks are bunged up.

XXV. *To clarify wine easily.*

Put in the cask two quarts of boiling milk after having well skimmed it.

XXVI. *To prevent wine from turning.*

Put in the cask one pound of hare's-shot.

XXVII. *To correct a musty taste in wine.*

Knead a dough of the best wheat-flour, and make it in the form of a rolling pin, or a short thick stick. Half bake it in the oven, and stick it all over with cloves. Replace it in the oven to finish baking it quite. Suspend it in the cask over the wine without touching it,

and let it remain there: Or else let it plunge in the wine for a few days, and take it quite out afterwards. It will correct any bad flavour the wine might have acquired.

XXVIII. *Another method.*

Take very ripe medlars, and open them in four quarters, without parting them asunder. Then ty^e them with a thread, and fix them to the bung, so that by putting it in again they may hang and soak in the wine. One month afterwards take them out, and they will carry off all the bad taste of the wine.

XXIX. *To correct a sour, or bitter taste in wine.*

Boil a quarter of barley in four quarts of water to the reduction of two. Strain what remains through a cloth, and pour it in the cask, stirring all together with a stick without touching the lye.

XXX. *To restore a spoiled wine.*

Change the wine from its own lye, upon that of good wine. Pulverise three or four nutmegs, and as many dry orange peels, and throw them in. Stop well the bung, and let it ferment one fortnight. After that term is over you will find it better than ever. This method has gone through many experiments.

XXXI. *To sweeten a tart wine.*

Put in a hoghead of such a wine, a quarter of a pint of good wine vinegar saturated with litherage; and it will soon lose its tartness.

XXXII. *Another way.*

Boil a quantity of honey in order to get all the waxy part out of it, and strain it through a double cloth. Of such a honey thus prepared put two quarts to half a hoghead of tart wine, and it will render it perfectly agreeable. If in the summer, and there be any danger of its turning, throw in a stone of quick lime.

XXXIII. *To prevent tartness in wine.*

Take, in the month of March, two basonsfuls of river sand; and, after having dried it in the sun, or in the oven, throw it in the cask.

XXXIV. *To*

XXXIV. *To heighten a wine in liquor, and give it an agreeable flavour.*

Take two dozen or thereabouts of myrtle berries, very ripe. Bruise them coarsely, after having dried them perfectly, and put them in a bag, which suspend in the middle of the cask. Then stop this well with its bung. A fortnight afterwards take off the bag, and you will have a very agreeable wine.

XXXV. *To give wine a most agreeable flavour.*

Take a pailful of *mout*, which boil and evaporate to the consistence of honey. Then mix with it one ounce of Florentine orrice, cut in small bits, and one drachm of *costus*. Put all into a bag, and let it down in the cask by the bung-hole, after having previously drawn out a sufficient quantity of wine to prevent the bag from coming at it. This bag being thus suspended by a string which will hang out of the bung-hole, stop it well, and there will drop from the bag into the wine a liquor which will give it a most agreeable taste.

XXXVI. *How to find out whether or not there be water mixed in a cask of wine.*

Throw in the cask one wild pear, or apple. If either of these two fruits swim, it is a proof there is no water in the wine: for, if there be any, it will sink.

XXXVII. *To separate the water from wine.*

Put into the cask a wick of cotton, which should stick in the wine by one end, and come out of the cask at the bung-hole by the other: and every drop of water which may happen to be mixed with the wine, will fill out by that wick or filter.

You may again put some of this wine into a cup made of ivy-wood: and, then the water will perspire through the pores of the cup, and the wine remain.

XXXVIII. *To ungrease wine in less than twenty four hours.*

Take common salt, gum-arabic, and vine-brush ashes, of each half an ounce. Tie all in a bag, and fix it to a hazel-tree stick; then by the bung-hole stir well the wine for one quarter of an hour, after which take it out, and stop the cask: The next day the wine will be as found as ever.

XXXIX. *To*

XXXIX. *To restore a wine.*

Put in the cask one pound of Paris plaister. Then make a piece of steel red-hot in the fire; and, by means of a wire fixed to one of its ends, introduce it by the bung-hole into the wine. Repeat this operation for five or six days running, as many times each day. Then, finally, throw into the wine a stick of brimstone tied in a bag, which you take off two days after; and the wine will be perfectly well restored.

XL. *To correct a bad taste and sourness in wine.*

Put in a bag a root of wild horse-radish cut in bits. Let it down in the wine, and leave it there two days: take this out, and put another, repeating the same till the wine is perfectly restored.

XLI. *Another way.*

Fill a bag with wheat, and let it down in the wine; it will have the same effect.

XLII. *Another way.*

Put a-drying in the oven, as soon as it is heated, one dozen of old walnuts; and, having taken them out along with the bread, thread them with a string, and hang them in the wine, till it is restored to its good taste; then take them out again.

XLIII. *To cure those who are too much addicted to drink wine.*

Put, in a sufficient quantity of wine, three or four large eels, which leave there till quite dead. Give that wine to drink to the person you want to reform, and he or she will be so much disgusted of wine, that tho' they formerly made much use of it, they will now have quite an aversion to it.

XLIV. *Another method, no less certain.*

Cut, in the spring, a branch of vine, in the time when the sap ascends most strongly: and receive in a cup the liquor which runs from that branch. If you mix some of this liquor with wine, and give it to a man already drunk, he will never relish wine afterwards.

XLV. *To prevent one from getting intoxicated with drinking.*

Take white cabbage's, and four pomegranate's juices,
two

two ounces of each, with one of vinegar. Boil all together for some time to the consistence of a syrup. Take one ounce of this before you are going to drink, and drink afterwards as much, and as long, as you please.

XLVI. *Another way.*

Eat five or six bitter almonds fasting: this will have the same effect.

XLVII. *Another way.*

It is affirmed, that if you eat mutton or goat's lungs roasted; cabbage, or any seed; or worm-wood, it will absolutely prevent the bad effects which result from the excess of drinking.

XLVIII. *Another way.*

You may undoubtedly prevent the accidents resulting from hard drinking, if before dinner you eat, in salad, four or five tops of raw cabbages.

XLIX. *Another method.*

Take some swallows' beaks, and burn them in a crucible. When perfectly calcined grind them on a stone, and put some of that powder in a glass of wine, and drink it. Whatever wine you may drink to excess afterwards, it will have no effect upon you.

The whole body of the swallow, prepared in the same manner, will have the same effect.

L. *Another way.*

Pound in a mortar the leaves of a peach-tree, and squeeze the juice of them in a basin. Then, fasting, drink a full glass of that liquor, and take whatever excess of wine you will on that day, you will not be intoxicated.

LI. *A method of making people drunk, without endangering their health.*

Infuse some aloe-wood, which comes from India, in a glass of wine, and give it to drink. The person who drinks it will soon give signs of his intoxication.

LII. *Another way.*

Boil in water some mandrake's bark, to a perfect redness of the water in which it is a-boiling. Of that liquor, if you put in the wine, whoever drinks it will soon be drunk.

LIII. *To recover a person from intoxication.*

Make such a person drink a glass of vinegar, or some cabbage-juice, otherwise give him some honey. You may likewise meet with success by giving the patient a glass of wine quite warm to drink, or a dish of strong coffee, without milk or sugar, adding to it a large teaspoonful of salt.

LIV. *To prevent the breath from smelling of wine.*

Chew a root of *iris troglotida*, and no one can discover, by your breath, whether you have been drinking wine or not.

LV. *To preserve wine good to the last.*

Take a pint of the best spirit of wine, and put in it the bulk of your two fists of the second peel of the elder-tree, which is green. After it has infused three days, or thereabouts, strain the liquor through a cloth, and pour it into a hoghead of wine. That wine will keep good for ten years, if you want it.



C H A P. X.

Concerning the composition of VINEGARS.

I. *To make good wine vinegar in a short time.*

THROW some *Taxus* wood, or yew-tree, in any wine, and it will not be long before it turns into vinegar.

II. *To change wine into strong vinegar.*

Take tartar, ginger, and long pepper, of each equal doses. Infuse all for one week in good strong vinegar, then take it out, and let it dry. And whenever you want to make vinegar, put a bag full of these drugs in wine; it will soon turn into vinegar.

III. *To make very good and strong vinegar with the worst of wines.*

Grind into subtile powder five pounds of crude tartar.

tar. Pour on it one pound of oil of vitriol. Wrap up the whole in a bag, tye it, and hang it by the bung-hole, in a cask of bad and totally spoiled wine. Move and stir now and then that bag in the wine, and it will turn into very good vinegar.

IV. *To turn wine into vinegar in less than three hours.*
Put in the wine a red beet, and it will be quite sour, and turn vinegar, in less than three hours.

V. *To restore such a wine to its first taste.*

Take off the red beet, and in its stead put a cabbage root into that wine, and it will return to its primary taste, in the same space of time.

VI. *An excellent preparation of vinegar.*

1. Take white cinnamon, long pepper, and *cyperus*, of each one ounce: round pepper half an ounce, and two nutmegs. Puiverise each drug separately, and put them in so many distinct bags. Put them in six different and separate quarts of the best vinegar, and boil them two or three minutes.

2. Then boil separately six quarts of good wine.

3. Season a cask, which is done by pouring a quart of the best vinegar into it, with which you rinse it. Then pour in your boiled wine and vinegars, and fill half-way the cask, with the worst and most spoiled wine. Stop the cask, and keep it till the vinegar is done. You may then draw from it, and refill the cask with the same quantity of bad wine, as you take off of vinegar.

VII. *To render vinegar alkali.*

Saturate any quantity of vinegar with salt of tartar.

VIII. *To make, in one hour, good rose vinegar.*

Put a drachm of hare's marrow in a point of wine, and you will see the consequence.

IX. *Another method to make such vinegar in an instant.*

1. Take common roses, and unripe black berries which grow in hedges, of each four ounces, and of barberry fruits one. Dry them all in the shade, and reduce them into subtile powder.

2. Mix two drachms only of this powder into a glass of white or red wine, then let it settle to the bottom, and strain through a cloth. It will be a very fine vinegar.

X. *To*

X. *To operate the same in one hour's time, on a larger quantity of wine.*

1. Take the best rye-flour, which dilute in the strongest vinegar, and make a thin round cake with it. Bake it quite dry in the oven; then pound it into a fine powder, with which and vinegar you make again another cake as before, and bake it also like the first. Reiterate this operation three or four times.

2. If you hang the last made cake in a cask of wine quite hot, you will turn the whole into vinegar in less than one hour.

XI. *The receipt of the vinegar called the Grand Constable's Vinegar.*

Take one pound of damask raisins, and cure them of their stones. Put these raisins in a glazed jar, with two quarts of good rose vinegar. Let all infuse for one night over hot ashes; then boil it the next morning four or five minutes only. Take it off the fire and let it cool. Strain it through a cloth, and bottle it to keep for use, afterwards cork the bottle.

XII. *A secret to increase the strength and sharpness of the vinegar.*

Boil two quarts of good vinegar to the evaporation of one; then put it in a vessel, and set it in the sun for a week. Now if you mix this vinegar among six times as large a quantity of bad vinegar in a small cask, it will not only mend it, but make it both very strong and very agreeable.

XIII. *Another way to do the same:*

The root of *rubus idæus*; the leaves of wild pear-tree; acorns roasted in the fire; the liquor in which vetches (peas) have been boiled; horse chesnut's powder put in a bag, &c. &c. add greatly to the sharpness of vinegar.

XIV. *The secret for making good vinegar, given by a vinegar-man at Paris.*

1. Pound coarsely, or rather bruise only, one ounce of long pepper, as much ginger, and the same quantity of *pyrethra*. Put these in a pan over the fire with six quarts of wine. Heat this only to whiteness, then put it in a small cask, and set it in the sun, or over a baker's oven, or any other warm place.

2. Now

2. Now and then add new wine in your cask after having previously heated it as before, and let that quantity be no more than two or three quarts at a time, till the cask is quite full.—If you add a few quarts of real vinegar, it will be the stronger.—Before casking the wine, you must let it rest in the pan in which it has boiled for two or three days.—A glazed earthen pan is therefore preferable to a copper one for boiling the wine in; for during the three days infusion, the copper might communicate a dangerous quality of verdigrise to the vinegar.—When you put some vinegar, as before mentioned, to meliorate this composition, instead of wine, you must take care to heat it likewise over the fire, but not so much as the wine.—Let the cask be well rinsed and perfectly clean, before putting the vinegar in.

3. The wild black-berries which grow among hedges are also very good to make vinegar, but they must be used while red, before they are ripe; then put them in the wine, and heat this to whiteness, and proceed in the same manner as you do with *pyrethra*, ginger, and long pepper.—The dose of black-berries is not determined; you may take any discretionable quantity of them, and the vinegar which results from these is very good.

XV. *To make vinegar with water.*

Put thirty or forty pounds of wild pears in a large tub, where you leave them three days to ferment. Then pour some water over them, and repeat this every day for a month: At the end of which it will make very good vinegar.

XVI. *To make good vinegar with spoiled wine.*

Put a large kettle-full of spoiled wine on the fire; boil and skim it. When wasted of a third, put it in a cask wherein there is already some very good vinegar. Add a few handfuls of chervil over it in the cask, and stop the vessel perfectly close. You will have very good vinegar in a very short time.

XVII. *A dry portable vinegar, or the vinaigre en poudre.*

Wash well half a pound of white tartar with warm water, then dry it, and pulverise it as fine as possible. Soak that powder with good sharp vinegar, and dry it before the fire, or in the sun. Resoak it again as before

fore with vinegar, and dry it as above, repeating this operation a dozen of times. By these means you shall have a very good and sharp powder, which turns water itself instantly into vinegar. It is very convenient to carry in the pocket, especially when travelling.



C H A P. XI.

SECRETS relative to LIQUORS and ESSENTIAL OILS.

I. *To make as good wine as Spanish wine.*

1. **T**AKE one hundred pounds weight of dry raisins, from which pick off the stems, and open the fruit with a knife. Put these in a large wooden tub, very clean. Boil fifteen gallons of rain-water, purified by straining through the filtering paper. Pour it over the raisins, and cover it, to preserve the heat of the water. Twenty-four hours after take off the raisins, which will be swelled, and pound them in a large marble mortar, then put them again in the tub. Heat fifteen gallons more of water, which pour over the other with the raisins, and throw in twenty-five pounds of coarse sugar. Stir all well, and cover the tub over with two blankets. Three days after, by a cock placed at the bottom of the tub, draw out all the liquor, and cask it, adding six quarts of brandy to it. Press the ground with an apothecary's press, and put the juice in the cask with two pounds of white tartar pounded into a subtile powder, in order to promote the fermentation, and five or six ounces of polychrest salt, and a knot of garden cress-seed, of about sixteen or eighteen ounces weight, and another knot of seven pugils of elder flowers. These knots are to be suspended by a thread in the cask.

2. If the wine look too yellow, you must strain it through a jelly-bag, in which you shall put one pound of sweet almonds pounded with milk. The older the wine, so much the better it is.

3. To

3. To make it red, dissolve some cochineal pounded in a certain quantity of brandy, along with a little alum powder, in order to draw the better the dye of the cochineal, which put to digest on a sand bath. Till the brandy has assumed a proper degree of colour, give it to your wine in a sufficient degree.

4. It is preferable to clarify the sugar well, and to put it in the cask instead of the tub.

II. *Another way to imitate Spanish wine.*

Take six quarts of white wine; Narbonne honey, one pound; Spanish raisins as much; coriander bruised, one drachm; coarse sugar, one pound. Put all in a kettle on a slow fire, and leave it there, well covered, for three hours. Strain this through a jelly-bag, then bottle and stop it well. Eight or ten days after it is fit for drinking.

III. *To make the Roffolis.*

1. Boil first some water, and let it cool till it is no more than lukewarm. Take next all the sorts of fragrant flowers the season can afford, and well picked, keeping none but the petals of each flower. Infuse these, each separately, in some of that lukewarm water, to extract their odorous smell, or fragrancy. Then take them off, and drain them.—Pour all these different waters in one pitcher; and to every three quarts of this mixture put a quart or three pints of spirit of wine, three pounds of clarified sugar, one quarter of a pint of essential oil of anise-feed, and an equal quantity of essential oil of cinnamon.

2. Should your *Roffolis* prove too sweet and slimy in the mouth, add half a pint, or more, of spirit of wine.

3. If you think the essential oil of anise-feed should whiten too much the *Roffolis*, mix it with the spirit of wine, before putting it in the mixed waters.

4. If you want to increase the fragrancy, add a few spoonfuls of essential oils of different flowers, with one pugil or two of musk, prepared amber, and lump sugar pulverised. Then strain the *Roffolis* through a jelly-bag to clarify it, bottle and stop it well. Thus it may keep for ten years, and upwards.

IV. *To make a Rossolis which may serve as a foundation to other liquors.*

Put three quarts of brandy, and one of water, in a glazed earthen pot. Place this pot on a charcoal fire, adding a crust of bread and one ounce of anise-seed, and cover it till it boils. Then uncover it, and let it boil five minutes, and put in one pound of sugar, or more if you chuse. Now beat the white of an egg with a little of your liquor, take the pot off from the fire, and throw in the white of an egg. Let this rest thus for three days.

V. *To make Ambrorsy.*

In the above prescribed *Rossolis* water add three or four grains of paradise; as much cochineal pulverised; one clove; a little cinnamon and mace; six grains of coriander, and the quarter part of a lemon.

VI. *For the nectar.*

Add to the above *Rossolis* one quarter of an orange pounded; some orange flowers, and the upper pellicula of an orange pounded in a mortar with lump sugar in powder, and diluted with the fundamental *Rossolis* water above described.

VII. *A common Rossolis.*

Instead of one pound of sugar, put only half-a-pound, and as much of honey.—To musk it, put about fifteen grains of musk, and as much of ambergrise in powder, and pounded with sugar, and mix it in the liquor.

VIII. *Another Rossolis.*

1. Take one pound and a half of the finest white bread, quite hot at coming out of the oven, and put it in a retort, with half an ounce of cloves bruised; green anise-seed and coriander, one ounce of each; a quart of good red wine, as much cow-milk; then lute well the receiver, and all the joints, with starched paper. Let it dry for twenty-four hours, then distil the liquor by the heat of a *balneum mariae*, and keep it.

2. Make next a syrup, with brandy or spirit of wine, which burn over lump sugar pulverised in an earthen dish or pan, stirring always with a spoon, till the flame has subsided. Then mix one drachm of ambergrise with an equal quantity of sugar; and, having pulverised

ised the whole, put it in a small matrass; pour over it one ounce of spirit of wine, and put all to digest for twenty-four hours on a *balneum marie*. There will then result a dissolution which will congeal again in the cold.

3. To form your *Rossolis*, mix with your first composition, the above-mentioned syrup of brandy, and the essence of amber.—If you want the *Rossolis* to be stronger, add some more spirit of wine to it, till it is as you desire to have it.

IX. *Another way.*

Boil your syrup to consistence after the common method. When done, add as much spirit of wine as you think proper, as well as of the above-mentioned essence of amber, or any other sort you please to prefer; and you will have as good *Rossolis* as that which comes from Turin.

X. *To make Eau de Franchipane.*

Put half a pound of sugar in one quart of water; add a quarter of a pound of jessamine flowers, which infuse for some time. When you find the liquor has acquired a sufficient degree of fragrancy, strain it through a jelly-bag, and add a few drops of essential oil of ambergrise.

XI. *Orange-flower water made instantly.*

Put one handful of orange flowers in a quart of water, with a quarter of a pound of sugar. Then beat the liquor by pouring it from one vessel into another, till the water has acquired what degree of fragrancy you want it to have.

XII. *Muscadine rose-water.*

Put two handfuls of muscadine roses in one quart of water, with one quarter of a pound of sugar. For the rest proceed as above.

XIII. *To make raspberry, strawberry, cherry, or other such waters.*

1. Take the ripest raspberries, strain them through a linen cloth to express all the juice out of them. Put this in a glass bottle uncorked, and set it in the sun, in a stove, or before the fire, till cleared down. Then

decant it gently into another bottle, without disturbing the *faeces* which are at the bottom.

2. To half a pint of this juice, put a quart of common water, and a quarter of a pound of sugar. Beat all together, by pouring backwards and forwards from one vessel into another, strain it through a linen cloth, and set it to cool in a pail of ice. It is a fine cooling draught in the summer.

3. Strawberries, cherries, &c. are done in the same manner.

XIV. *Lemonade water at a cheap rate.*

Dissolve half a pound of sugar in a quart of water; rasp over it the yellow part of one, two, or three lemons, as you like, and mix a few drops of essential oil of sulphur in the liquor. Then cut three or four slices of lemon in the bowl, when you put the liquor in it.

XV. *Apricot water.*

Take a dozen of apricots very ripe. Peel and stone them. Boil a quart of water, then take it off from the fire and throw in your apricots. Half an hour after put in a quarter of a pound of lump sugar, which being dissolved, strain all through a cloth, and put it to cool in ice as the others.

XVI. *To make exceeding good lemonade.*

On a quart of water put the juice of three lemons, or two only if they be very juicy. Add seven or eight zests of them besides with one quarter of a pound of sugar. When the sugar is dissolved, strain the liquor, and cool it in ice as before mentioned.

XVII. *To make orangeade the same way.*

You proceed with your oranges as with the lemons. If these be good, but little juicy, you must squeeze three or four oranges, with the addition of eight or ten zests. If you love odour, you may add some musk and prepared amber.

XVIII. *To make Eau de Verjus*.*

Put on a quart of water three quarters of a pound of *Verjus* in grapes picked out from the stalks. Squeeze it

* A sort of sour grape used in France as a fine acid in sauces.

it first in a marble or wooden mortar, without pounding it, for fear the stones should give it a bitter taste. After having put fruit, juice, and all in the water, handle it in the water, then strain it to purge it from the coarsest grounds; add about five ounces of sugar to the strained liquor, or more if wanted, according to the sourness of the fruit. As soon as the sugar is dissolved, pass and repass it through the jelly-bag to clarify it: then cool it in ice, as usual, for drinking.

XIX. *To make orgeat-water.*

Take one ounce of melon seed, with three sweet and three bitter almonds. Pound all together in a marble mortar, adding a few drops of water to it while you pound, to prevent its turning into oil. Make all into a paste with the pestle in the mortar, then add a quarter of a pound of fine white lump sugar in powder, which mix with the paste. Dilute this in a quart of water, and after having mixed it well, strain it through a flannel. Squeeze well the grounds in it till quite dry, and in the liquor add seven or eight drops of essential oil of orange; and, if you like it, a quarter of a pint of milk pure as from the cow. Put this to cool in ice, and shake the phial when you serve it in a glass to drink.

XX. *Other waters.*

The pigeon, the pistachio, and the Spanish nut waters, are made in the very same manner; the milk and almonds of either sorts, being only excepted.

XXI. *To make a cooling cinnamon water.*

Boil one quart of water in a glass vessel before the fire. Then take it off and put in two or three cloves, and about half an ounce of whole cinnamon. Stop well the bottle; and, when the water is cold, put half a pint only of it in two quarts of water with sugar to your palate, a quarter of a pound is generally the proper quantity. When done, cool it, as usual, in ice before serving.

XXII. *To make coriander water.*

Take a handful of coriander, which shell, and put in a quart of water half cooled again, after having boiled. Add one quarter of a pound of sugar, and, when the water

water has acquired a sufficient degree of taste, strain, cool, and serve it as usual.

XXIII. *Anise-feed water.*

The anise-feed water is made in the very same manner as the coriander water.

XXIV. *Citron water.*

Take a citron, which strip of its peel, and cut in slices cross-way. Put these slices in a quart of water, with a quarter of a pound of sugar. Beat well this water by pouring it backwards and forwards from one vessel into another, and when it has a sufficient taste of the citron, strain it, &c.

XXV. *Cinnamon water.*

Bruise one pound of the finest cinnamon, and put it to infuse for twenty-four-hours in four pounds of distilled rose-water, with half a pound or a pint of white wine, which put all together during that time in a glass matras on warm ashes, and stop well the vessel, so that it should breath no air. At the end of twenty-four hours increase the fire so as to procure a distillation, by putting the matras in the *balneum mariae*, and keep this liquor in bottles well stopped.

XXVI. *To make cedrat water.*

Have a dozen of fine lemons, which split into two parts. Take out all the kernels, and keep nothing but the pulp wherein the juice is contained. Put them in a new glazed earthen pan. Boil one pound of sugar to the *plume* degree, then pour it in the pot over the lemons. Set this on a good charcoal fire, and boil it again till the sugar comes to the *pearl* degree, and then bottle it.

XXVII. *To make cedrat another way.*

1. Squeeze the juice out of thirteen lemons, which strain through a cloth, and put them aside.—Then put two quarts and a half of water in a pan. In a piece of linen put three other lemons parted into quarters which tie and suspend in the water, then boil them till the water has entirely extracted the taste of the lemons, and take them out.

2. In this water, thus prepared, put four pounds of sugar, and make a syrup, which clarify according to art, with

with the white of an egg. When done, put in this syrup the juice of your thirteen lemons, and boil all together again to the consistence of a syrup to the *pearl* degree, then bottle it.

3. When you want to use it, put four or five ounces of sugar in a quart of water and strain it through a jelly bag, then put in a table spoonful or more of your syrup, beat, cool, and drink it.

XXVIII. *Juniper-water.*

Put two pounds of juniper-berries with two quarts of brandy in a stone bottle, which stop well, and place on hot ashes to infuse for twenty-four hours. Strain the liquor, and add one pound of sugar, half an ounce of cinnamon, as much cloves, a preserved half-peel of a whole lemon, and two pugils of anise-feed. These being put in the bottle, stop it well, and place it at two or three different times in a baker's oven, after the bread is out, and when you may bear your hand flat in it without burning.

XXIX. *To make good hydromel; otherwise, metheglin.*

Take honey and water equal quantities in weight. Boil them together and skim the honey. When done sufficiently you may know by putting an egg in, which must swim on the top. Pour then the liquor in a cask wherein there has been spirit of wine or good brandy well soaked with either, and still wet with the spirit, and add two or three grains of ambergrise. Stop well the cask, and set it in the sun during the dog-days. When it begins to ferment, unstop the cask to let the scum out, which arises like that of new wine. Observe, during all that time not to stir the cask. When the first fire of the fermentation has subsided, stop the cask again, and the hydromel is fit for keeping.

Note. Instead of the sun, you may, in other seasons, make use of the top of a baker's oven, a stove, or a hot house.

XXX. *To make Eau d'Ange.*

1. Take half a pound of the best cinnamon, and fifteen cloves, which pound into powder and put into a quart of water, with a nut-shell full of anise-feed and infuse for twenty-four hours, then boil on a charcoal fire, and strain.

2. If

2. If you want to make it stronger, you may, after it is cold, put what quantity you like of brandy, with a proportionable quantity of sugar.

XXXI. *Another Eau d'Ange.*

Put a quart of rose-water in a glass bottle with three ounces of benjamin, and half an ounce of storax in powder, which incorporate all together for four or five hours on a slow fire. Decant the liquor by inclination, and add to this *colatura* six grains of musk, and as many of grey amber.

XXXII. *Another Eau d'Ange.*

1. Take three pounds of Rose water, three of orange, and two of melilot-flowers; four ounces of benjamin, and two of storax; aloes, and *santalum-citrinum*, one drachm of each; cinnamon and cloves, of each one; the bulk of a bean of *calamus aromatica*, with four grains of musk. Bruise coarsely what may be susceptible of the mortar, and then put all the drugs together in a varnished earthen pan, which set on a gentle fire to boil moderately to the evaporation of one third. Then strain it clear.

2. With the grounds you may make lozenges, with a little gum adragant to compact them.—This ground is used also in making musk vinegar.

XXXIII. *A light and delicate Rossolis, known under the denomination of Populo.*

1. Boil three quarts of water, then let them cool again. Add one quart of spirit of wine, one of clarified sugar, half a glass of essential oil of cinnamon, and a very little of musk and ambergrise.

2. Observe the sugar should not be boiled too much in clarifying, for fear it should crystalize when in the *Rossolis*, and cause clouds in it. Observe also to boil the water first, as prescribed before using it, to prevent the corrupting of the liquor; which would infallibly be the case were you to employ it unboiled.

XXXIV. *Angelic water.*

1. Take half an ounce of Angelica, as much cinnamon, a quarter part of cloves, the same quantity of mace, of coriander, and of green anise-seed, with half

an ounce of cedar wood. Bruise all these ingredients in a mortar, and set them to infuse for twelve hours, with two quarts of genuine brandy, in a matrafs or retort. Then distill the liquor by the *balneum marie*.

2. Two or three ounces only of this essential spirit in two quarts of brandy, with the addition of a very small quantity of musk and ambergrise, will make a very agreeable liquor.

XXXV. *The preparation of musk and amber, to have it ready when wanted to put in cordials.*

Put in a mortar and pulverise four grains of amber, two of musk, and two ounces of sugar. Wrap this powder up in a paper, and cover it over with several others.—With this powder you may perfume such cordials as require it.—The dose is a pugil, which taken with the point of a knife, you shake lightly in it. You may however increase or diminish this dose, according to your liking.

XXXVI. *To make Eau-de-Cete.*

To three quarts of boiled water, cooled again, put a gill of essential spirit of anise-seed mixed into three pints of spirit of wine. Add one pint, or thereabouts, of clarified sugar.—If you want your liquor to be stronger, you need only to increase, at will, the quantity of the spirit of wine.

XXXVII. *To make the compounded Eau-clairette.*

Take six pounds of the best and finest Kentish cherries very ripe, sound and without spots; two of raspberry; and the same quantity of red currants, also very ripe and sound, and without stalks. Mash the whole in a sieve over a pan. To every one quart of that juice put one of brandy, with three quarters of a pound of sugar, seven or eight cloves, as many grains of white pepper, a few leaves of mace, and a pugil of coriander, the whole coarsly bruise in a mortar.—Infuse all these together, well stopped, for two or three days, shaking it now and then, to accelerate the dissolution of the sugar. Then strain the liquor, first through the jelly-bag, next filter it through the paper, and bottle it to keep for use.

XXXIX. *The*

XXXVIII. *The cinnamon water.*

In three quarts of once boiled, and then cooled again, water, put half a pint of essential spirit of cinnamon, distilled like that of anise-seed. Add three pints of spirit of wine, and one of clarified sugar. Strain all through the jelly-bag, &c. &c.

XXXIX. *To make a strong anise seed water, or animated brandy.*

Put half a pint of essential spirit of anise seed, into three quarts of the best genuine brandy, with one of boiled water.—If you want it sweet, add one pint of clarified sugar. Strain all through the jelly-bag, etc. etc.

XL. *To make white ratafia, called otherwise Eau-de-Noiau, or kernel water.*

Pound three quarters of a pound of cherry, or half a pound of apricot, stones, or both together if you will; which put altogether, wood and kernals, or almonds, in a stone pitcher, with twelve quarts of brandy. Add one drachm of cinnamon, a dozen of cloves, two pugils of coriander, and three pounds and a half of sugar. Let all these infuse together a reasonable time. When sufficiently tasty, and ready to strain, add four quarts of water that has been boiled and is cool again. Then run it through the jelly-bag, and next through the filtering paper; bottle and stop it to keep for use.

XLI. *To make good Hypocras, both the red and white sort.*

1. Take two quarts, more or less, as you like, of the best wine, whether red or white. Put in one pound of the best double refined lump sugar, two juicy lemons, seven or eight zests of Seville orange, with the juice squeezed out of another of the same sort. Add half a drachm of cinnamon bruised in a mortar, four cloves broken into two parts, one or two leaves of mace. five or six grains of white pepper bruised half of a *capsicum's* pod, and one ounce of coriander bruised, half a pint of genuine cow milk, half a golden pippin, or a whole one, peeled and cut in slices.

2. Stir well these ingredients together in your wine, and let it rest a reasonable time, no less at least than twenty-four

twenty-four hours. Then obtain the liquor through the flannel bag, repeating the same till it comes clear.

3. If you want to perfume that *Hypocras*, you must put in the bag when you run it, a little pugil of musk and amber powder prepared, as mentioned in this chapter, Art. xxxv. This *Hypocras* may keep for a twelve-month without spoiling.

XLII. *To make good Roffolis.*

Dissolve one pound and a quarter of sugar, in half a pint of spirit of wine. Boil it one bubble or two only, to give an opportunity of skimming it. When done, put it in a large glass bottle, with three pints of good white wine, and a gill of orange-flower water. Musk and amber it as usual, and at your liking.

XLIII. *An essence of Hypocras, to make this liquor instantly, and at will.*

1. Put in a pint bottle one ounce of cinnamon; a little more than half an ounce of cloves; and, on the point of a knife, a little musk and amber, prepared as in Art. xxxv. Fill it half-way with spirit of wine, or the best brandy; then stop it so that nothing can evaporate. Set all to infuse for seven or eight days on warm ashes. And, when it shall have wasted two thirds, or thereabouts, preserve carefully what shall remain.

2. When you want to make *Hypocras* instantly, melt half-a-pound of lump sugar in a quart of good wine; and, when perfectly dissolved, let fall one drop or two of the above prepared essence, in a clean glass decanter, in which pour directly the wine with the sugar dissolved in it, then run it through the flannel bag. Bottle it again, or drink it; the *Hypocras* will be found good.

XLIV. *An exceeding good Ratafia.*

On a quart of good brandy, put half a pint of cherry juice, as much of currants, and the same of raspberries. Add a few cloves, a pugil of white pepper in grain, two of green coriander, and a stick or two of cinnamon. Then pound the stones of the cherries, and put them in, wood and all together. Add a few kernels of apricots, thirty or forty are sufficient. Stop well the pitcher,

which must be a new one, after all these ingredients are in, and let the whole infuse a couple of months in the shade, shaking twice or thrice during that space of time, at the end of which you run the liquor through the flannel-bag, and next through the filtering paper, then bottle and stop it well for use.

Note. In increasing in due proportion the quantity of the brandy, and the doses of each of the ingredients prescribed, you may make what quantity you like of this *Ratafia*.

XLV. An essence of ambergrise.

Pound one drachm of ambergrise, and put it on a pint of good spirit of wine, in a thick and green glass bottle. Add to it half a drachm of musk in bladder, cut very small. Set this bottle in the full South sun, on gravel, during the dog-days, taking it off every night, and during rainy weather. Stir and shake well the bottle, and its contents, two or three times a-day, when the sun strikes on the bottle, that the amber may diffuse in the liquor. One month after, take off the bottle from its exposition, and the essence is made.—Decant, bottle, and stop it for use.

XLVI. Another, and shorter way of making the same.

Put two grains of ambergrise, and three of musk, in a matrafs with one gill and a half of good brandy. Stop the matrafs well, and put it in digestion in a *balneo marie*, for two or three days. Strain it through a piece of flannel, and bottle it to keep for use.

XLVII. A smelling water.

1. Put in any quantity of brandy, benjamin, and storax calamite, equal parts; a little cloves and mace, coarsely bruised. Set this a-digesting for five or six days on warm ashes. When the liquor is tinged of a fine red, decant it gently from the residue in a glass bottle, and throw in a few grains of musk, before stopping it.

2. Three drops of this smelling water in a common glass tumbler of water, give it a very agreeable fragrance.

3. With the ground, or residue, you may make lozenges, in adding a little gum-adragant to bind them.

XLVIII. *A receipt to compose one pint of Rossolis, with which you can make forty.*

1. Take two ounces of galanga; half a one of cinnamon; as much cloves; one of coriander; a penny-worth of green anise-seed; half an ounce of ginger; two drachms of mace, and two of Florentine orrice. Bruise all, and put it to infuse with three pints of the best brandy, in a matras with a long neck. Adapt it to the receiver, and lute well all the joints, both of the receiver, and the bolt-head, with paper and starch.

2. Twelve hours after it has been a-digesting, distil the liquor by the heat of a very gentle *balneum marie*, till you have got about one quart of distilled spirit.— Then unlute the receiver and keep the liquor.

3. You may adapt another receiver, or the same again, after being emptied, lute it, and continue to distil as before. But what will come will be infinitely weaker, though perhaps not altogether very indifferent.

XLIX. *To make a Rossolis after that of Turin.*

Take six quarts of water, which boil alone, one minute or two; then put in four pounds of fine lump sugar, which skim and clarify with the white of an egg beaten up with a little cold water. Boil afterwards that syrup to the wasting of a third, then strain through the flannel bag; and, when cold, put in one gill only of the above *Rossolis*, prescribed in Art. xlix. and of the first distillation. Add to it besides a pint of spirit of wine, or, for want of it, of the best genuine French brandy, in which you shall have put a crust of bread burnt, to take off a certain bitter taste. After all this, perfume the liquor with a few drops of essence of musk and amber.

Note. A pint of the second distillation is no more than half a pint of the first.

L. *How to make Sharbat, a Persian species of punch.*

There are various ways of making Sharbat.—Some make punch here with rum only, others with brandy; others again with arrack, and others with shrub. Some will have it mixed with two of these spirits, and others will make it with white wine. There are some who put acids, others do not; and, among the acids, some
chuse

chuse tartar only, others lemons, and others *Seville* oranges; some again squeeze a little of each of these two last tart fruits together in the same bowl of punch.

It is the same with respect to sharbat, the famous *Persian* drink. They make it with the various syrups extracted from all the odoriferous flowers: and the dose is, one part of such a syrup to ten parts of any spirituous liquor.—Or again, they make a weak *Rossolis*, with the zests of oranges and lemons boiled together in water with sugar.—Some, in short, will make it with the essential spirit of musk and amber only, put in boiling water with sugar, just as we do our punch.

LI. *An exceeding fine essence of Hypocras.*

1. Take six ounces of cinnamon; two of *santalum-citrinum*; one of galanga; one of cloves; two drachms of white pepper; one ounce of grains of paradise. Or, if you would not have it so strong, put with the cinnamon and *santalum* one ounce only of white *diétamum*, and four whole grains of long-pepper. Pound well all together, and set it to infuse for five or six days in a matrafs, along with half a pint of spirit of wine, on warm ashes. Decant it next gently without disturbing the grounds, which put in linen and squeeze it, to get out all the liquor, which put again in the matrafs, with twenty grains of ambergrise, and six of musk. Stop well the vessel, and set it in a cool place for five or six days more; then mix both liquors together, and filter them.

2. When you want to make *Hypocras*, dissolve half a-pound of fine lump sugar, in a quart of white *Lisbon*, or red claret, and let fall fifteen or sixteen drops of the above essence in it, then shake all well together, and you will have a most admirable liquor. To render it still more agreeable, you may strain it through a flannel bag, at the bottom of which you shall have put some pounded almonds.

LII. *To make Vin-des-Dieux.*

Peel two large lemons, and cut them in slices; do the same with two large golden pippins. Put all a-soaking in a pan with a pint of good *Burgundy*, three quarters of a pound of lump sugar in powder, six cloves, and

and half a gill of orange-flower water. Cover the pan, and keep it thus for two or three hours, then strain the liquor through the flannel bag. You may musk and amber it, like the *Hypocras*, if you will.

LIII. *Burnt wine.*

Put a quart of good *Burgundy* in an open pan, with one pound of sugar, two leaves of mace, a little long-pepper, a dozen of cloves, two or three tops of rosemary branches, and two bay-leaves. Place that in the middle of a wheel-fire of blasting charcoal. When the wine begins to be hot, set the fire to it with a bit of paper, and thus let it kindle and blaze till it goes out of itself. This wine is drank quite hot, and it is an admirable drink, especially when the weather is very cold.

LIV. *To imitate muscat wine.*

In a cask of new white-wine, (that is to say, before it has worked) introduce, by the bung-hole, five or six tops of elder-flowers dried up. Let these flowers hang by a string, and eight or ten days after take them out again. You will obtain a wine which will not differ from muscat.

LV. *Eau-clairette simple.*

Infuse for twenty-four hours three ounces of cinnamon bruised in three pints of brandy. Strain it afterwards through a clean cloth, and add two ounces of good lump sugar, with a pint of rose water. Stop well the bottle and keep it for use.

LVI. *A violet water.*

Infuse some violets in cold brandy. When these have lost their colour, take them out, and put in new ones. Repeat this till you are satisfied with your tincture. When you take the violets out, you must press them gently; then sweeten that brandy according to discretion; and, if you chuse you may add again a little orange-flowers for the sake of the odour.

LVII. *To make a clear and white Hypocras.*

To every one pint of claret, add eight ounces of sugar, and nine, if it be white wine; half a lemon, four cloves, a little cinnamon, which should be double the quantity of cloves; three grains of pepper; four of co-

riander; a little bit of ginger; and eight almonds cut in bits.—Let the whole be bruised and put into a pan, with the wine poured over it; stir, infuse one hour, and strain through the flannel bag.

LVIII. *For the white Hypocras.*

To make the white *Hypocras*, three pints of white wine; one pound and a half of sugar; one ounce of cinnamon; twenty-three leaves of mace; two grains of whole pepper; with two lemons cut in slices. Then, when you strain the liquor through the flannel bag, fix a grain of musk in the pucked end of it.

LIX. *To make the true Eau-de-Noiau.*

Pound one pound of apricots' kernels, without reducing them into oil. Then bruise another pound of cherry-stones, wood and kernels all together. Put all in a pitcher of five or six gallons, in which you put only three and a half, or four gallons of the best brandy, and two of water; five pounds of sugar; and to every one quart of liquor add two grains of white pepper, and eight drachms of cinnamon both bruised. Let all infuse forty-eight hours, and then strain the liquor through the flannel bag.

LX. *To make Eau-de-Fenouillette, such as it comes from the Isle of Retz.*

Take one pound of *Florence* fennel, the greenest and the newest you can find. Put it in an alembick with one ounce of good liquorice-root, three quarts of brandy, and two of white wine. Distil by the sand-bath, two quarts of good essence, which you must take away as soon as the white fumes begin to rise, because they would undoubtedly hurt the liquor by whitening it.

2. To every *one* quart of this essence, perfectly clear and transparent, add *six* of genuine brandy, and one of spirit of wine; with one of boiled water that has been cooled again, in which last, just before mixing it with the other liquors, you must introduce one quart also of clarified sugar, or syrup.

3: Make this mixture in a large and wide glazed pan; and, when the doses are thus introduced together,

ther, taste the liquor, that you may judge whether or not all are right, and be in time to add either some more essence of fennel, or syrup of sugar, or brandy, &c.—If it taste bitter or rather tart, you may correct that defect by the addition of a little more cold water which had boiled.

4. After this, bruise half-a-pound of sweet almonds, which put in another pan, with five or six quarts of crude water, and boil well with it, then strain through a flannel bag, in order to season it as it were, by preparing and greasing it. When, therefore, the bag begins to run clear, and all which was in it is almost gone, so that it only drops, change the pan under it, put another clean one, and pour your preparation, such as mentioned in the above n. 3. in the bag, over the ground of almonds which was left in.—Should this process seem too troublesome to you, you may at once mix the half pound of bruised almonds in your liquor, and then throw it in the flannel bag, straining, and re-straining it over and over again in that same bag, till at last it runs clear; to assist it even in which, you may add half a pint of pure and genuine cow milk. But in observing the first prescription, there result less lye at the bottom of the vessel in which you keep it for use.

5. When you run it for the last time, which cannot be before it runs quite clear, observe to put a funnel on the mouth of the pitcher or bottle which receives it and over it a crape in order to retain the spirits which might evaporate.

6. You may amber afterwards the liquor, with a little powder of musk and amber, prepared as mentioned in Art. xxxvi. of this chapter. This liquor is of a superior delicacy.

LXI. *To make an hypocras with water.*

Take half a pint of white wine, and six times as much water which had boiled; add the juice of two lemons, and five or six quarters; the juice of a Sevil orange, twenty-four grains of cinnamon; two or three cloves, one leaf of mace; one pugil, or two, of bruised coriander; four grains of whole pepper bruised; one
quarter

quarter of a pound of golden pippins cut in slices; half a pound of sugar; half of a Portugal orange with a few zests, and a quarter of a pint of milk. Mix all well; and, two hours after the infusion, strain it through a flannel bag, and perfume it with a little prepared powder of musk and amber. Some, however, who do not like amber, content themselves with increasing only the dose of cinnamon.

LXII. *Of the various liquors with which Hypocras may be made.*

You can make hypocras with either of the following liquors; viz. Spanish wine; Muscat, Rhyne-wine, Hermitage, Champaign, &c. adding to any of these wines the same proportion of ingredients as above prescribed; and clarifying well afterwards by means of filtration.

LXIII. *A rossolis, Turin fashion.*

In three quarters of a pint of orange-flower-water put to infuse a little storax, a little musk, a little amber. Twenty-four hours after these ingredients have been put together, set them a-boiling for half a quarter of an hour on the fire, then strain it through a cloth. Add next a pint of genuine French brandy. Should any tartness be prevailing, add some honey or sugar according to discretion. But, if you chuse to have it stronger, then you may add spirit of wine till the taste is come to the degree of strength you would have it.

LXIV. *An admirable oil of sugar.*

Rinse a matras with vinegar, then put in it some dry powder sugar, or lump sugar pulverised. Keep that matras on hot ashes, turning and whirling it round and flat ways, by means of the neck of the matras which you hold in your hands with a cloth, and stop it not. The effect is such: the heat occasions the vapours to rise about the matras; which by turning and whirling it as afore-mentioned, makes the sugar which is in it re-soak and imbibe them again. This operation dissolves the sugar, and reduces it into a sort of oil.

LXV. *Another oil of sugar, without the assistance of fire.*

Take a lemon, which hollow and carve out inwardly, taking

taking out all the pulp as skilfully as possible. Then fill it up with sugar-candy in powder, and suspend it in a very damp cellar, with a basin under it. There will drop an exceeding good oil, which is endowed with the most admirable qualities for consumptive people, or them who are affected with a difficulty of breathing.

Note. A little of that oil in liquors gives to any one of them, to which it is added, a very fine flavour.

LXVI. *An admirable essence of red sugar.*

1. Pulverise five pounds of the best double-refined, or royal, sugar; which, when done, put along with eight ounces of brandy in a large matrafs, over a sand bath. Distil some part of this first, on a slow fire to avoid burning the sugar. Re-put the distilled liquor over the sugar again in the matrafs. Continue to distil and pour the liquor again in the matrafs over the sugar till the sugar becomes red, which will happen at the seventh or eighth iteration of distillation.

2. Now distil out all the brandy, and on the remaining sugar pour common water, which distil also, then add some more, continuing so to do, till you have drawn out all the tincture of the red sugar.

3. Take next all these red waters, and run them through the filtering paper, then distil the phlegm on a gentle fire to ficcidity (or dryness). Put again this distilled phlegm on the residue, which place all together in a cold cellar. You will find some red crystals which pick up, and when dry pulverise; then pour brandy over to dissolve that powder. Thus you will have an admirable quintessence of sugar, which has the virtue of preserving the radical moistness of the inside, and our health.

Note. If you mix a little quantity of this precious quintessence in any liquor or cordial, it is a very fine addition to it.

LXVII. *Another oil of sugar, excessively good.*

Cut off the end of a large lemon, of which squeeze out the juice; then fill it with fine sugar, and apply to it again the cut-off piece. Put it in a clean glazed pipkin, which place over a fire of charcoal. The sugar having

having thus boiled one quarter of an hour only, put it in a bottle; it never will congeal, and that oil is good for the stomach, colds, catarrhs, &c. The odour and taste, are both excessively agreeable. The dose is one table spoonful at a time.

LXVIII. *How to extract the essential oil from any flower.*

Take any flowers you like, which stratify with common sea salt in a clean earthen glazed pot. When thus filled to the top, cover it well; and carry it to the cellar. Forty days afterwards put a crape over a pan, and empty all on it to strain the essence from the flowers by pressure. Bottle that essence and expose it for four or five weeks in the sun, and dew of the evening, to purify. One single drop of that essence is enough to scent a whole quart of liquor.

LXIX. *Essence of jessamine, roses and other flowers.*

1. Take roses of a good colour and fresh gathered. Pick all the leaves, which expand in the shade on paper. For two or three days, during which you are to leave them there, asperse them once or twice a day, morning and evening, with rose-water stirring them each time, that the rose-water may imbibe and penetrate the better the leaves of these flowers.

2. When this has been performed, put them in a glass, or varnished vessel, which stop as perfectly as you can, and place in the corner of a stable plunged in the hottest horse-dung, which renew three times, that is, every five days. A fortnight after this, place the vessel in a *balneo mariæ* adapting a bolt-head to it and a receiver, and lute all well. Distil the water, on which you will observe the essence swimming. This you must divide by means of a wick, or filtering paper. Put the essence in a glass phial well stopped.

LXX. *To draw an oil from jessamine, or any other flowers.*

Soak some sweet almonds in cold water, which renew ten times in the space of two days; at the end of which, peel them and make one bed at the bottom of a vessel; next to this bed, make another of flowers, and thus continue to make *strata super strata* with your almonds

almonds and flowers, till the pot is full. Renew and change the flowers till you can judge that the almonds are perfectly impregnated with the odour and fragrancy of the flowers, then extract the oil by the press.

LXXI. *To draw the essential oil of roses.*

Pound in a mortar thirty pounds of leaves of roses with three pounds of common decrepitated salt; then put all in a pot well luted, which set in a cool place. Fifteen or eighteen days after, moisten well this matter with common water, stirring it with a stick till reduced into a pap. Then put it in an alembick with its refrigerator. Make a pretty smart fire which will send first the water, but next will come the oil susceptible of congealing by cold and liquifying again by heat. One or two drops of that oil gives more smell a hundred times than the distilled water from the same roses.

LXXII. *The oil of cinnamon.*

Bruise first the cinnamon coarsely in a mortar, and put it a-soaking in water, in which add a little pounded tartar, with a table spoonful, or two, of honey. Eight or ten days after, place the vessel on a sand bath, and you will obtain by distillation, an excellent oil of cinnamon.

LXXIII. *An essence of jessamine.*

Dissolve, over the fire, one quarter of a pound of sugar in a quarter of a pint of common water. After having skimmed it, boil it to perfect evaporation of all the water; then take it off from the fire, and sling two good handfuls of jessamine flowers in it. Cover the vessel, and one or two hours after, strain the essence, and bottle it. It is of an excessive agreeable odour. The dose is one drop only, or two per pint of liquors.

LXXIV. *Essence of Ambergrise.*

Set to infuse, half a dozen of lemon peels in three half pints of spirit of wine, and set them thus in a cold place for two days, in a vessel well stopped. After that time take off the peels, which squeeze through a linen, and put as many fresh ones in their stead, which reiterate three different times. When you take off the last peels, grind three grains of ambergrise and

one of musk, which put with the spirit of wine in a matrafs over a gentle fire till the amber is perfectly dissolved. There will fall some ground at the bottom of the matrafs, decant the clear part from it in a bottle; and keep it for use.

Note. This essence might be made with the burning spirit of roses.

LXXV. *Essence of capon and other fowls.*

Cure the inside of any fowl by taking away all the entrails. Fill it with lump-sugar pulverised and mixed with four ounces of damask raisins perfectly stoned. Sew the fowl up again, and put it in a pipkin, which cover carefully with its lid and lute all round with paste. Place this pot in an oven, when the bread goes in and take it out along with it. Then uncover it, and strain the liquor through a cloth, with expression of the animal. This essence is the greatest restorative for old or enervated people; likewise to hasten the recovery of health after long illness. The dose is two large table spoonfuls early in the morning fasting, and as much at night three or four hours after supper.

LXXVI. *Virginal milk.*

1. Take one ounce and a half of benjamin; storax as much, and one of eastern white balm. Put all in a thick glass-phial, with three half pints of spirit of wine which pour over. Put this in digestion over hot ashes till the spirit of wine appears of a fine red colour, then it is done.

2. To use it, put only two or three drops of it in half a glass tumbler of water, and it instantly turns as white as milk.

3. Exteriously used, it whitens the skin if you wash yourself with it, it has likewise the same effect upon teeth by rinsing the mouth and rubbing them with it. Interiorly taken, it cures the heats and burning of the extinction of voice.

LXXVII. *How to make the Hipoteque.*

To every quart of water you want to employ, put one quarter of a pound of sugar, which boil and skim carefully. Then add a few cloves, a little cinnamon, and some

some lemon zests, which boil all together four or five minutes longer, and strain it through a cloth. To colour it, you may put half a pint of good red wine to each quart of water you have employed; and, to give it a certain *piquant*, you may again add a little brandy if you like.

LXXVIII. *An exceeding good ptisan.*

Boil well, in six quarts of water, one pound of liquorice root; to which you may add one handful or two of coriander seed, and a few cloves. Two or three hours after this infusion, strain the liquor through a cloth, and keep it to make ptisan, when you want it, by putting a discretionable quantity of it into some common water with a few lemon peels to give a *pointe*. The liquorice may serve twice.

LXXIX. *How to colour any sort of liquor.*

Bruise into a coarse powder some *santalum rubrum*, which put into a bottle with a discretionable quantity of spirit of wine poured over it. In five or six hours time the tincture will be very high; therefore it will be fit to give a colour to any liquor you chuse, by pouring some of it into the liquor, and shaking it till you find it is coloured to your liking.

LXXX. *A ladies fine rouge, not at all hurtful to their skin like other rouges, wherein there always enters a mixture of lead or quick silver.*

The above preparation of *santalum rubrum*, modified with common water to take off the strength of the spirit of wine, and an addition of one clove, a little civet, a little cinnamon, and the bulk of a filbert of alum, *per quarter* of a pint of liquor, may be used with safety by ladies to heighten the bloom of their face.

LXXXI. *An exceeding fine smelling water, made at a very small expense.*

Take two pounds, or two quarts, of rose water drawn by distillation in *balneo marie*, which put in a large bottle filled with fresh rose leaves. Stop this bottle well with a cork, wax it and cover it with parchment, then expose it to the sun for a month, or six weeks; afterwards decant the liquor into another bottle in

which, for every one quart of liquor, add two grains weight of oriental musk, and cork it well. This water is of a charming fragrancy, and lasts a great while whatever part of your body you may rub with it. It even communicates the odour to them you touch after having rubbed your hands with it.

LXXXII. *The receipt of the Eau-imperial, or Imperial water.*

1. Set a-drying in the sun for a fortnight, the rinds of twenty-four oranges. Then pound a quarter of a pound of nutmegs, the same quantity of cinnamon and as much cloves. Put all together a-soaking in a large bottle with rose water, and expose it for seventeen days in the sun.

2. At the end of that term pound one pound of rose leaves which has been gathered two days before, with two handfuls of sweet marjoram, two pounds of lavender, two handfuls of rosemary, two pounds of cyprus, two handfuls of hyssop, as much wild roses and as much betony. Put all these together by themselves in a bottle well stopped, and place it in the sun for two days; then having poured some rose water over them, set them again three days longer in the sun.

3. When all this is done, have an alembic ready in which make a bed of one pound of roses, and over it another bed of one half of your *aromates*; next, another bed of one pound of violets of march, and over it a bed of the other half part of your *aromates* with a scruple of musk, and as much of ambergrise. Adopt the receiver to the bolt head, and distil the liquor by the gentle heat of a sand bath.

4. When the water is entirely distilled, let the vessels cool, and having unluted them, put on the *faces* a pint of rose water. Lute the vessels again, and distil this water as you did the first, it will be far superior to it. Unlute again and put vinegar in the Alembic over the same *faces*, and distil it likewise as you did the preceding waters. That vinegar will have great virtues, and especially that of preserving you against an air infected by contagious and pestilential disorders.

LXXXIII. *The receipt of the syrup of orgeat of Montpellier.*

1. Take a pound of barley which you soak in water; and, having peeled it grain by grain, make a knot of it in a bit of linen. Put this knot in a pot over the fire with about a quart of water. After having boiled it gently three or four hours, put into the water one pound of sweet almonds, which mix and dilute well in it. Then take off the knot of barley, which you pound like the almonds and mix like them in the water. Strain all together through a piece of linen; then pound the grounds well and pour all the water over it again, which stir all together and strain again. This water will look very thick. Put one pound of lump sugar in powder, to that liquor, and boil it into a syrup over a moderate fire. You will know that the syrup is done to its right degree if, letting one drop fall on the back of your hand, it remains in the form of a pearl. Then take it off from the fire, and when cold, give it what flavour you chuse whether amber, musk or other odour. Such is the syrup of orgeat, which you bottle and keep for use.

2. To make the draught which, in coffee houses or other places of refreshment, is called *orgeat*, put at the bottom of a decanter half an ounce, or one ounce, of that syrup and pour common water over it, then shake the decanter well to mix the water and the syrup together. It is fit for drinking directly. In the summer you may cool it, if you chuse, in a pailful of ice and water, and you may add syrup, or water, to the first mixture, according as it wants to make it agreeable to the palate.

LXXXIV. *A receipt to make an imitation of coffee.*

1. Take any quantity of such beans as they give to horses among their oats, which put into a pan to roast over the fire till they begin to blacken. Then take a little honey with the point of a knife and put it among the beans turning them well with it, till soaked in the beans, repeating the same process seven or eight times, or till in short they are quite black, or of a very deep brown like chesnut colour. Now take them off from
the

the fire, and while they are quite burning hot put for every large handful of such beans, half an ounce of *casia-mundata*, with which imbibe them well in stirring and shaking them in the pan as much as you can, and they are done.

2. These if you grind in the mill and make coffee of, as you would of the other, it will have the same taste and flavour as the true Moca-coffee, so as not to be distinguished from it by the greatest connoisseurs.

Note. This coffee may be drank either thick or clear, with sugar as usual.

LXXXV. *Another way.*

Take a quart of rye, which clean and roast as the beans in a pan till of a fine brown, then grind it. To use it, mix it half and half with the true coffee and make it as usual, by putting it in boiling water and letting it boil five minutes.

Note. This coffee is much used among the people of quality who prefer it to the pure and real coffee to strengthen the stomach, especially when taken at night before going to bed.

LXXXVI. *Directions for preparing the true coffee.*

1. True coffee must be torrified (vulgarly roasted) in an iron pan, or in a glazed earthen pan, over a clear charcoal fire without flames. Turn it with a wooden stick while it is on the fire, to make each grain take the roast more regularly and equally; and shake it now and then by tossing it up from the pan into the air, and in the pan again. It is well and sufficiently roasted when it is all of a dark brown, or the colour of tan.

2. There is a much better method of roasting it which is infinitely less troublesome and more handy, by which coffee is excessively well and regularly roasted. It is by means of a certain iron drum made in the form of a lady's muff-box, with a handle at one end, an iron pegg at the other, and a latch-door in the middle. By this door you introduce the coffee, which you fasten in by means of the latch. Then propping it on the top of a chaffendish made on purpose, in which there is a charcoal fire, you roast the coffee by turning the drum over

it with the above-mentioned handle ; and thus the coffee roasts in the most regular manner.

3. When the coffee is roasted, you grind it, in small mills which are made purposely for it, and the powder you keep closely confined in a leather bag, or better still, in those leaden boxes of Germany with a screwing lid. However it is still much preferable to grind no more at a time than what one wants to use at once.

4. The liquor of coffee is made by putting one ounce of that powder to three quarters of a pint of boiling water to make three full dishes, or four small ones of coffee. And, after an infusion of five or ten minutes, during which it is kept boiling, the coffee is fit for drinking.

5. Observe that the strength of the powder occasions an effervescence in the water when you put it in boiling ; therefore to avoid that inconveniency which would procure the loss of the most spirituous part of the coffee, you must take the water from off the fire and pour some into a cup first, before putting the powder into it, then stir with a long handled box spoon, the powder in the water, avoiding to touch the bottom of the coffee pot, which would immediately make it rise and run over. If however, it should mangle all your cares, you then stop it by pouring on it the water which you spared on purpose for it in the cup from the beginning. Then, bringing it to the fire again, you let it boil gently, as we said before, the value of five or ten minutes.

6. There are nice people who, not content with this plain way of preparing the liquor of coffee, make the following additions to it. First, they pour it clear from its ground into a silver, or other coffee pot ; and, taking red-hot tongs from the fire, melt between them, over the liquor of coffee, two or three large nobs of sugar, which drop from the tongs into it ; then they extinguish the tongs themselves in it afterwards. This ceremony gives it, it must be confessed, an admirable flavour and most agreeable taste. Some put superadditionally to it again one spoonful of the most perfect distilled rose-water. This last is excessively good for

head-akes, if, while boiling hot, filling a cup with it and putting a tea-spoonful of rose-water, you set yourself a-breathing the fumes: and, in order to breathe them more perfectly, throwing an handkerchief over your head; and letting drop over the cup, bring it round again to you, while you keep your nose over it. Thus you prevent the evaporation of the fumes, and gather them all yourself. There is not so strong a head-ake which can resist this operation.

LXXXVII. *Directions for the preparing of tea.*

We should not have offered to speak here of the method of preparing the liquor of tea in a nation where in the ladies make it one of their chief talents and most delightful past-time and amusement; and where it is so generally used, and become in some measure, so necessary an evil, that such people might be found amongst the lower class as would rather renounce one meal than go without their tea even in the afternoon. But we have to mention two different methods of preparing that liquor, after the Japanese fashion, whence the best tea comes, which, to say but little of them, seem not unworthy of our notice, and, to do full justice to them, may be said to have right to claim preference over the English method; the one for its superiority in point of flavour; the other for its advantage in point of œconomy.

1. The first method is to put in a basin whatever quantity of tea you like: then, pour boiling water over it: and, after having covered it a reasonable time, drink it out of that very same basin, without ever adding any fresh water to the tea which remains at the bottom.

2. The second is practised by the œconomists, who, in order to spare the quantity without losing any of the flavour, reduce the tea into an impalpable powder. This powder being put in the boiling water, incorporates with it in such a manner that it seems as if it tinged it only, since nothing subsides at the bottom. By this means it is evident that a much smaller quantity is required of this impalpable powder than of the leaves themselves: therefore that one pound must go infinitely farther, which must be of some advantage in a country

country where duties are so immense on that commodity.

3. The French, who have no notion of making tea one of their amusing entertainments and periodical object of visiting, have a very bad method of making it. As they never use it but on physick days, and as a physick itself, they indeed make it as they would any preparation of that kind. In a coffee-pot they boil first their water; when this does-boil, they put in their intended quantity of tea, and let it throw one or two bubbles, then take it aside from the fire to let it infuse about half a quarter of an hour, after which they drink it by basons full, as here we do water gruel, to assist the physick and promote its effect.

Note. Those who are not used to the regular and daily drinking of tea, have not a finer and more powerful remedy against indigestions caused by repletion of the stomach, or excess of eating. One bason, or two, of very strong tea, drank hot, will, in less than half an hour, unstop all the conducts, and free all the passages.

LXXXVIII. *A receipt for making of chocolate.*

1. Dissolve in a copper pan some pulverised royal-lump-sugar, with a little orange water. When the sugar is turned into a syrup throw in the cocoa, the vanilloe, the cinnamon, Mexican-pepper, and cloves, all, and every one of which, ought to have been first reduced into an impalpable powder. Stir all well while it boils; and when you judge it to be sufficiently done, pour the paste on a very smooth and polished table, that you may roll it and give it whatever form and shape you like.

2. To drink it you prepare it with either milk or water, in which, when boiling-hot, you first dissolve it, then, with a box-mill, made on purpose, with a long handle, you mill it to froth in the pot in which it is a-making, and pour it afterwards in cups to drink.

C H A P. XII.

SECRETS relative to the CONFECTIONARY BUSINESS.

I. *Preserved nuts.*

1. **G**ATHER the nuts at Midsummer, or thereabouts, that is to say, before the woody shell begins to harden under the green rind. Cut open and throw off that green rind : and throw immediately, as you do it, the nut into a pail of cold water, to prevent its blackening. When all are ready, boil them four or five minutes, and throw the first water away because it is bitter. Put fresh water which boil again and throw away as the first, and repeat this operation, a third and fourth time, if required, to take off all the bitterness of the nuts.

2. After they have boiled in their last water, take them out and throw them into cold water for fear they should turn black still. From this water change them again into another, cold likewise, in which you are to put them one by one, as you take them from the first, and pressing them between your fingers to purge them from all the bitter water they might still contain.

3. Now make a syrup, as usual, in which boil some lemons peels for the sake of fragrancy only, taking them all out after a few minutes of their being in, then put the nuts in their stead which leave to boil in the syrup as long as you think proper.

Note. Some add a few cloves in the syrup ; but they should be very sparing in doing it as this ingredient might tinge the nuts in black.

II. *Orange-flower paste.*

1. Boil in four quarts of water one pound of the bare leaves of orange-flowers well picked. When these are deadened and softened by this boiling, take them out with a skimmer, and set them to drain.

Then

Then pound them in a mortar with the juice squeezed out of two lemons, more or less according to your taste.

2. In the juice, which shall come from these flowers by pounding, dissolve one pound of sugar, and put the paste in. Stir it a little, then let it cool, and shape it afterwards to your liking.

III. *Paste of Jessamine.*

Have one quarter of a pound of jessamine flowers, and pick them. Boil them next in water till softened, and they have given their odour to it. Then take the flowers out, which drain, and pound afterwards in a marble mortar. Put sugar in the water, and boil it to a fyrup; put the paste and spirit in, while it boils for two or three minutes. Now take it out and shape it as you would like to have it.

IV. *Apricot paste.*

Boil one pound and a half of sugar into a syrurp. Put in three pounds of apricots, deterged of their skin, and pounded in a marble mortar, *etc.* Then proceed as above for the rest, observing only to chuse the ripest apricots you can find.

V. *Currant Paste.*

1. Weigh ten pounds of currants, which put into a pan with one of clarified sugar. Skim them while on the fire, and after they shall have boiled a while, drain them on a sieve, then strain them.

2. Now put this liquor again in the pan and boil it, adding more sugar in powder, till consumed and wasted to the consistence of a paste. Then form the paste in the shape you like.

VI. * *A verjus-paste.*

Chuse *verjus* half ripe; cure it from all stones, and put it in a pan on the fire with a pint of water to every three pounds of fruit. After five minutes boiling take it out and drain it. Squeeze it through a sieve, then
waste

* See p. 174. Art. xviii.

waste it to thickness for a paste. Now boil as many pounds of pulverised lump sugar, to a syrup as there are of fruit. When done, abate the fire, and add the fruit paste to the syrup, continuing to concoct all together on that mild fire for a while. Then give the paste, as soon as it is come to a proper consistence, what shape and form you like.

VII. *How to make syrups with all sorts of flowers, which shall be possessed of all their taste, flavour and fragrancy.*

1. Heat in a pan about half a pint of water, then put in it sugar in the proportion to the quantity of flowers you may have; boil, skim and thicken it to a proper consistence. When done put your flowers in a glazed vessel, and cover it over with a linen, thro' which pouring the syrup, you strain this upon the flowers. These being thereby quite deadened, put all together again in the same piece of linen, and strain it again in another vessel squeezing well the flowers. Then bottle this syrup, and keep it for use well stopp'd.—Whenever you want to give the flavour of those flowers to any liquor, you sweeten it with this syrup.—To every four ounces of flowers, the quantity of sugar requisite to make that syrup is generally one pound and a half.—Observe that all flowers whatever must be well picked of all their cups, staminas, &c. and nothing but their leaves ought to be made use of.

VIII. *Raspberry syrup.*

Mash the raspberries, and dilute them with a moderate addition of water, then strain them to divide the thick from the clear part. To every quart of this clear liquor put one pound of lump sugar pulverised, and boil all together on the fire in the preserving pan. Skim and clarify carefully the sugar, according to art with the white of an egg beaten in water. When the syrup is come to its right degree, (which you may know if, by throwing a drop of it in a glass of water, the drop sinks whole to the bottom, and fixes itself there, without running out along with the water, when you throw this away); take it off from the fire, and let it cool till fit for bottling.

IX. *Apricot-*

IX. *Apricot-syrup.*

Cut in small bits six pounds of very ripe apricots, which boil afterwards in a gallon of water till they are all reduced almost to a pulp. Let them cool, then squeeze them through a sieve. Now strain again this liquor through the jelly-bag, and put it in the preserving pan on the fire, with four pounds of sugar. Skim, clarify, and boil the whole to a syrup, which try as above-directed in a glass of water; and, when done, let it cool, and bottle it to keep for use.

X. *The verjus syrup.*

Have *verjus* in grapes, which pick out of its stalks, and pound in a marble mortar. Strain it through a sieve first, then through a jelly-bag to get it finer. To two quarts of this juice, which put into a preserving pan, add four pounds of sugar, and boil it according to art to a syrup.

XI. *A general manner of making syrups, applicable to almost all sorts of fruits, especially currants.*

Pick a quantity of red currants of all their stalks, and squeeze them through a sieve in a commodious vessel. Carry this vessel to the cellar placing it on a stool, or any suspended shelf from the ground; and, after that juice shall have worked three or four days, strain it through a sieve in another vessel, then through the flannel bag to get it as clear as possible.

2. Now for every two quarts of such liquor, have four pounds of sugar, which put in a preserving pan, and melt over the fire, with a little common water to help the dissolution of it. Boil it thus to the consistence of caramel, without however burning it; and, when at that degree, pour through the holes of the skimmer, the measured liquor which you must boil also to a perfect syrup according to the afore-prescribed trials.—All this being well executed, take it off, let it cool, and bottle it for use.

Note. All sorts of syrups, such as cherries, raspberries, and others, may be made in the same manner, with this difference only, that they are not to be put to work

work in the cellar, but employed directly as soon as the juice is squeezed out of the fruits.

XII. *To make liquid currants-jam.*

Pick four pounds of currants, and clear them of their stalks. Put aside two pounds and a half of them in a dish, and squeeze the other one pound and a half remaining. Now, in a preserving pan, dissolve four pounds of sugar; and, when come to a syrup, put in the two pounds and a half of whole currants along with one pound and a half of juice of the same, which boil all together to perfection.

XIII. *To make the same with cherries.*

Have two pounds of the finest cherries, from which take off both tail and stones. Press out the juice of them, and put it in a preserving pan with a pint of water, and four pounds of sugar. Boil all together to thickness, then add six other pounds of the finest cherries, from which the tails only, and not the stones, have been picked. Boil all to a syrup, and when this stands the trial of the glass of water, as mentioned above, all is done, and fit for potting.

XIV. *Another way to preserve cherries, with or without stones.*

Put eight pounds of cherries, either with or without their stones, in an earthen pan over a very moderate charcoal fire, to evaporate their superfluous moistness; which to obtain, you keep incessantly stirring, taking care to avoid mashing them. Then add four pounds of lump sugar pulverised, in which continue to stir the cherries, and boil all so that the bubbles should cover the fruit, and that the syrup might hereby be skimmed till done to perfection, which you know when a drop of it put on a plate runs with difficulty, being cold; then the cherries are fit to pot.

XV. *To make the liquid raspberry jam.*

Boil, to a strong syrup, four pounds of sugar. When done, take the pan out of the fire, and put in four pounds of raspberries well picked, and not mashed in the least.

Put

Put them in gently at first, and with a very particular care, for fear of squeezing them; for, when the heat of the syrup has once seized them, they are not so apt afterwards to break. Stir them therefore a little in the sugar, and when they have thrown in their juice, put them again on the fire, to compleat and perfect the making of the syrup, according to rules and proper trials.

XVI. *The verjus jam.*

1. Open four pounds of *verjus* in grapes, with a penknife: and, with the same, pick out all the stones. Throw these grains, as you do them, into a bowl of clean and fresh water. When all is done, take them out again with a skimmer, and put them a-draining in a sieve, whence throw them next into a pan of boiling water.

2. While this is in the water, let it not boil but only simmer; and, when the *verjus* begins to swim on the top of the water, take it off directly from the fire, and cover it with a cloth to cool gently, while you dissolve, boil, and clarify four pounds of sugar to a syrup.

3. A little while before the syrup is ready, set your *verjus* a-draining in a sieve, then throw it in the sugar, when this is done to the proper degree. Continue to keep up a gentle and regular fire, till you see the *verjus* taking a good green: and, when that is the case, give it a good brisk fire, and finish it quickly, else it would first turn black, and then yellow.—Take care also not to do the syrup too much, for it would be apt to candy.

XVII. *The same with powder sugar.*

1. If you want to do the same with powder sugar, after the *verjus* is picked, and the stones taken out as before, it must not be thrown in the cold water, but in a dry preserving pan only, not to lose the juice which comes out of it when cut.

2. Then to every one pound of *verjus*, add another of sugar, such as we mentioned, you powder this over the *verjus* which is in the pan, and set all on a gentle fire, on which it can only simmer and not boil. This

will make it come very fine and green, when you must, as in the preceding receipt, be very expeditious in finishing it, for the same reasons therein mentioned already.

XVIII. *Peeled verjus.*

Peeled verjus is made as follows. Chuse some fine ripe *verjus*, which peel carefully with the point of a penknife and stone, then throw into a dry bowl, to preserve the juice.—Then dissolve, boil and clarify, according to art, as many pounds of sugar as you have of fruit, in which, when done to the consistence of a syrup, throw in the *verjus* from the bowl. Stir and boil it gently, till it turns green, and finish it with speed. Let it cool, and put it in very dry pots.

XIX. *To preserve March, double or single, violets.*

Have one pound of violets, gathered on the same day, before the rising of the sun; and pick them well of all their tails and green which is about them. Then make a syrup with two pounds and a half of sugar clarified, &c. In this syrup, while boiling, throw the violets and plunge them all well under the rising bubbles of the sugar. Let them not boil more however than five or six minutes, for fear they should lose their colour. And by this method they are done to perfection for them who want a liquid preserve. But whoever wants a dry preserve of the same, must attend to the following prescription.

XX. *To make a dry preserve of the same violets.*

When you want to make a dry preserve of *March-violets*, whether double or single, you must, as soon as they are come to the degree we just now mentioned to make them liquid, take them out immediately from the fire, and, while the sugar is still boiling, take the violets out of it with a skimmer, and put them a-draining in a sieve, calendar, or table cloth, till they are cold. Then put them in another pan over a very slow charcoal fire, stirring them incessantly with your hand, for the space of two hours, or thereabouts, and powdering over them, at distances of times, some of the
finest

finest royal loaf sugar, in small quantities at a time, in order to dry and candy them.

XXI. *Another way to make them liquid.*

If you want to make the best use of the same clarified sugar, which served to make dry preserved violets, you may do it by putting half a pound, or thereabouts, of these flowers in the same syrup then boiling on the fire, and there let them soak and lye for five or six minutes, they will then be liquid as in Art. xix.

XXII. *To preserve apricots, when neither too ripe nor too green.*

Chuse a quantity of apricots, just turned, but not ripe, and the fruit of which has still all its hardness and greenness. Take out the stones, by means of a small-bladed-knife, or stick, which introduce at the point of the apricot, till you feel the stone, and then push to make it come out at the tail. When you have thus prepared four pounds of them, (weighed after stoning) have a large and wide pan of boiling water on the fire, in which throw them in order to blanch them, taking great care that they should not spot in the water. When blanched, take them out with a skimmer, and set them a-draining on a sieve. Then boil and clarify four pounds of sugar, and make it into a syrup. When done, take it out, and put in your apricots softly, one by one. Then set them again on the fire, and give them two or three bubbles. As soon as after which, take the pan from the fire, and let them cool. By this means they throw off their superfluous moistness and take the sugar. A certain while after, that is, when cold, take them from the sugar with a skimmer, and set them a-draining, while you put the syrup on the fire to boil. When drained, put them again into the boiling syrup, and give them five or six bubbles more, after which let them rest two or three hours in the syrup as they are, or even till the next day if you like it, at the end of which term you must put them again on the fire, and finish them. They will be what is called Liquid, and you may put them in that state.

XXIII. *How*

XXIII. *How to make a dry preserve of them.*

When you want to make them in dry preserve, or what is called *mi-sucree*, you must always proceed from beginning to end as above-directed, till the time they are fit for being potted in liquid, instead of which you take them again once more out of the syrup, and set them a-draining, then range them on slates at regular distances, so that they may not touch one another. When thus prepared, powder on them, through a silk sieve, some of the finest loaf sugar pulverised, and put them in the stove to dry. When dry on that side, take them out from the slates, and turning them the other side upwards on a sieve, or some sorts of small light willow grates made on purpose; powder them again with sugar as before, and when equally dried and cooled, you may put them in boxes with white brown paper.

Note. Some like to have them done in halves, otherwise called, in genteel term of art, *en-oreilles* (in ears), which changes nothing in the process of the operation, but that of opening them in two from the beginning. — All sorts of plumbs, and the peach, admit of the same mode of operation, to make them into dry or liquid preserves, either whole, or in ears.

XXIV. *To preserve green apricots.*

1. Gather yourself your apricots when green, that you may be sure they are all very fresh, and have not had time to wither. Then pound some salt in a mortar and make it as fine as you possibly can, and putting a handful of this salt in a napkin, with as many apricots as you think you can well manage; fold the napkin lengthways, bringing the long sides of it over the apricots, and taking the ends of it gathered one in each hand, shake and roll them backwards and forwards with the salt in the napkin, adding one spoonful or two if requisite, of vinegar, which pour over them when thus agitated. This process is with intention of curing them of their down, and when that is obtained, throw them in cold water to wash them well, and continue so to do with the rest, till they are all done.

2. After having thus well washed them in that first water,

water, put them into new cold water, to wash them well in it over again, after which put them a-draining on a sieve. Then boil some water, and throw them in, wherein they are to be kept boiling till they become soft, and which you take care to try now and then, by taking one or two with the skimmer, and thrusting in a wooden toothpick, or very fine skewer; if this get an easy admittance in the apricots, they are sufficiently done. Now take the pan from the fire without delay, and, with the skimmer, take the apricots from that boiling water into some cold.

3. When your apricots are in this situation, make a syrup, by dissolving, boiling, and clarifying, according to art, as many pounds of sugar as you have got fruit, and, having put in your apricots, let them boil very gently. They will immediately turn of a very fine green. You must not press on the finishing of them: on the contrary, take them off from the fire, and give them a couple of hours rest, during which they soak in the syrup, throw off their moistness, and take the sugar. After they have thus rested a while, set them again on the fire, and finish them as fast as you can, that they may preserve their greenness.

Note. There are some people who get the down off the apricots by means of a lye made with greenwood, or pearl, ashes, in which they wash them once first, and then twice afterwards, in other pure and clean cold water. But the first method we have recommended with salt, is the best, the most expeditious, and that which procures them the finest green.—When you want your preserve to keep, you cannot do your syrup with less than pound for pound of sugar with fruit; but if they be not to keep, a little less may do.

XXV. *To make the Cotignac liquid.*

Suppose you to have fifteen pounds weight of quinces, you must have three pounds of sugar, and a gallon of water, all of which you manage as follows.

1. Pare the quinces and cut them small, after having taken away the cores and kernels. Put your gallon of water a-boiling, then put them in, and let them boil there, till reduced almost to a pulp. Strain all through

through a cloth; and squeeze it well into a bowl. When done, set it on the fire in the preserving pan, with four pounds of sugar, and boil it gently, till taking some with the skimmer, and letting it fall on a plate, it shall rise up like a jelly. Then push on the fire, and in five minutes afterwards the *cognac* is done.

Note. If you put the peel and kernels into a knot, and boil them in that manner in the water, the jam will sooner be red.

XXVI. *Another way.*

Pare four pounds of quinces, which cut into bits, and put in the preserving pan, with a sufficient quantity of water to soften them by boiling gently. Then add four pounds of lump sugar, and continue boiling the whole till it is half done. When this is the case, strain all through a calendar, and put it again in the same pan over the fire to boil it to perfection, which you know, when by stirring the jam hard, you may see the bottom of the pan quite plain, and entirely uncovered. Then it is time to take the pan from the fire, to let it cool and pot the *marmalade*.

XXVII. *How to make the caramel.*

Boil some sugar, till it be almost in powder; then, for every half-pound of sugar, throw in one ounce of syrup of capillaire, and immediately throw the whole into cold water.

XXVIII. *To make Raisinet.*

Take any quantity of black grapes, the best and the ripest. Pick the grains from the stalks, throw away these, and squeeze the others between your hands, and put both the hudds and the juice in the preserving pan, to boil on a clear and smart fire. Neglect not to stir well this liquor, all the while it is a-boiling, with a wooden spatula, for fear it should burn at bottom. When you perceive it may have wasted a third, or thereabouts, strain it through a sieer-cloth, to express well all the juice out of the hudds, which last throw away. Put your juice again into the pan to boil, and skim it stirring as before with the spatula, especially towards the end when it begins to thicken. To know when it is done,
put

put some on a plate, and if, by cooling it becomes solid, it is a sign it is quite sufficiently done. Then is the time to take it off from the fire, and let it cool, after which you put it into stone jars.

XXIX. *To preserve quinces in red.*

1. Chuse the most even quinces not stoney, and vulgarly called female quinces. Cut them into four, or eight quarters as you like best, then pare and core them. If you meet any stones in the quarters cut them off too. In proportion as you prepare them thus, throw them into cold water. Save the peels and cores; and, mixing among them, when all your fruits are prepared, such of them as are small, crooked, and otherwise ill formed, and unfit to go along with the others, boil all in a sufficient quantity of water to make a strong decoction, which pass when done, and strain through a strong cloth into a pan.

2. In this decoction, put your other quarters, and boil them in the preserving pan. When sufficiently done, put as many pounds of sugar as you had fruit, or three quarters of a pound at least. Boil this gently, and in a short time the quinces will become most beautifully red. When you see they are come to perfection, take them off the fire, and put them; but do not cover them for a day, or two, after.

XXX. *To do the same in white.*

1. To do the same preserve in white, you must not make the decoction of the parings. On the contrary when the fruit is pared and prepared as before mentioned, you must throw it into boiling water, and there let it continue to boil on the fire, till sufficiently done: then, take it out with the skimmer, and put it a-draining on the sieve.

2. While they are thus a-draining, make a syrup; and, when this is skimmed & clarified properly, put your fruit in it boiling. Ten minutes after, or thereabouts, take the pan from the fire, and let all rest a while, then squeeze on it the juice of a lemon to whiten the quinces: and, setting them again on the fire, finish them quickly.

XXXI. *To*

XXXI. *To preserve Rouffelet, Muscadine, and other sorts of pears.*

1. Chuse *Rouffelet*-pears, which should be neither too ripe nor too green; which pare very neatly, and boil in water till properly done. Before boiling them, observe to strike them to the heart from the head, with the point of a knife. When properly done in the boiling water, take them out with the skimmer, and throw them into fresh water.

2. Make next a syrup, with as many pounds of sugar as you have pears, in which you put these and boil them five or six minutes at first, then take them from the fire, and let them rest a while to throw out their superfluous moistness, and take the sugar. When that is done, set them again on the fire, to compleat them quickly.

Note. By doing as above, you will have a liquid preserve of pears; but if you want to have them dry, follow the directions given in Art. xxiii. with respect to apricots.

XXXII. *A preserve of green almonds.*

1. Prepare a lye of pearl ashes, in which wash your almonds to rub their down off. Wash them next in another common clean water, whence throw them into boiling water, in which they are to boil till softened, so as however, not to open themselves, and which you try now and then, by thrusting a pin or a fine skewer in some of them. When done enough, skim them out from this water, and throw them into cold, then set them a-draining in a sieve.

2. Now make a syrup, and throw your almonds in while boiling. They will immediately recover their green; then finish them as expeditiously as you can, for fear they should turn black.—If you want to keep them, you must put pound for pound of fruit and sugar.

XXXIII. *To make the same into a compote.*

To make a *compote* of almonds, you must, after having softened them by boiling in water, put no more than five or six ounces of sugar to every pound of fruit. Then boil the syrup into a pretty strong consistence, because

because it liquifies sufficiently afterwards by the moistness which the fruit returns.

XXXIV. *To make dry portable cherries.*

Prepare four pounds of fine *Kentish* cherries, by depriving them both of their stones and tails. Then have one pound, or one pound and a quarter at most, of sugar, which put a-dissolving on the fire in a pint of water. When this begins to boil, throw your cherries quickly in, and make them boil thus in the sugar about one quarter of an hour, or till the syrup begins to thicken. When they are sufficiently done, take all off from the fire, and let cool, after which put them a-draining in a sieve; then, putting three or four of them one in another, range them on slates, and powder, through a sieve, some sugar all over them, and place them in the stove, or, for want of this conveniency, in a baker's oven, after the bread has been taken out. No sooner they are dry on this side, but you must turn them all on the other, and powder them over with sugar as you did before; dry them also in the same manner, and box them when cold, to keep for use.

Note. Plumbs may be done in the same manner. This sort of preserve is very agreeable, and may be carried any where. Few persons are acquainted with the method of making it.

XXXV. *The preserve of orange-flowers, whether in loose leaves, or in buds, or even in grapes or bunches.*

Have four or five pounds of orange-flowers; and that you may lose nothing, but on the contrary, make the best you can of them, put them in alembic with two gallons of water. Lute well the vessels, and distil about two quarts of good water. Stop then the distillation, let the vessel cool; and, unluting them, put the orange-flowers a-draining on a sieve. When done, throw them afterwards in cold water, squeezing over them the juice of a small lemon to whiten them. Now take them out again from this water, and put them in a very light and thin syrup, not much more than lukewarm, for them to take the sugar. When all shall have become quite cold, skim the flowers out of this syrup, and set them a-draining in a sieve placed over it.

After

After they are well drained, boil that syrup for five or six minutes, then let it cool again, till only lukewarm, and then put your flowers a-soaking again for twenty-four hours in it. On the next day skim them off again and repeat the same operation over again exactly as you did the day before. At last skim them out once more from the sugar, and put them a-draining for the last time, after which scatter them on tin sheets, flates, or small boards, and having powdered them over with sugar, put them a-drying in an oven; when dry on this side, turn them on the other, and repeat the same again; till all is done, and fit to put in boxes.

XXXVI. *A marmalade of orange flowers.*

1. To make a marmalade, or jam, with the same sorts of flowers, take one pound of them, which wash and dry in a cloth, and having put them in a mortar, give them a few strokes of the pestle only to bruise them a little, not to mash them quite, and to whiten them squeeze the juice of a lemon over them.

2. Now clarify three pounds of royal sugar; and, when come to a proper syrup, throw in your pound of orange-flowers, which boil in five or six minutes, and let cool. When cold, stir all well with a spatula, in order to mix well, and equally, the flowers along with the syrup, then put the jam into pots; and, having left them twenty-four hours uncovered, paper them over as usual.

Note. They who have no alembic, being deprived of the opportunity of having orange-flower water, must boil their flowers in a large quantity of water in the preserving pan, and when done, change these flowers immediately into cold, or some other boiling water. These flowers will assume a greater whiteness if you squeeze the juice of a lemon into this second water. Then drain it, and proceed for the rest as directed in the preceding article.

XXXVII. *To make an apricot, or peach, jam.*

1. Chuse the ripest apricots, which clean of all hard knobs, spots, and rotten parts. Cut them in small bits in a preserving pan, which you have previously weighed. If you have put four pounds of apricots in it,

it, reduce them by boiling over a gentle fire to two pounds only, which you must find out by weighing pan and fruit together, now and then till you find your right weight. When this is the case, put among your apricots thus reduced to one half, two pounds of lump sugar pulverised, and mix all well for the space of five minutes over the fire, then take all off, let it cool, and pot.

2. This same composition, you may, if you will, put into paste on slates, or in tin moulds. There is not more exquisite eating. You may also, with two or three roasted, or baked, apples, mix a couple of spoonfuls of this marmalade, and make excessive nice tarts with it, or again with pears baked under ashes, nothing can be more delicate.

XXXVIII. *An apricot jam, after the French way.*

1. Chuse such ripe apricots as are fit to eat. Peel their skin off very neatly, and give them a bubble or two in boiling water, so as not to have them dissolve however in the water, and put them a-draining. When done, mash them through a sieve, and let them rest a certain time to evaporate their superfluous moistness.

2. While this is doing, make a syrup with as many pounds of sugar as you have fruit, and take it off from the fire; when the syrup is cooled, put your fruit in, which stir well with a spatula, then put all again on the fire for ten minutes in order to make the fruit take well the sugar. When the jam is well done, fine and transparent, you pot it.

XXXIX. *To make raspberry, currants, and cherry jam.*

All these fruits must be squeezed through a sieve, then clarify the sugar, and throw in the juice, which you bring to perfection afterwards as directed in the last receipt.

These jams may also be made into paste; and, if you require to have them clearer, more pellucidous, and susceptible of drying quicker, you may put a quarter of a pound more sugar, than the prescription, to every one pound of fruit: but it must be confessed that the paste will so much less have the flavour of the fruit.

XL. *To make a good currant jelly.*

Have four pounds of currants after picking. Then, dissolve in water four pounds of loaf sugar, which make into a pretty strong syrup. Now, put the currants in, and boil so hard as to have them all over covered with the bubbles. Six minutes after such beiling, take the pan off from the fire, and pour the contents in a sieve to strain off all the liquid. Put this liquor again in the pan and boil it, till taking a drop with the skimmer, and pouring it on a plate, it congeals as it cools. Then it is fit to pot.

They who want to spare the sugar, and have a great deal of jelly at a smaller expence, may employ four pounds only of sugar to six of currants, after picking, and proceed as above. They must however observe to do the jelly rather more than in the preceding case, when the fruit and the sugar are put pound for pound.

XLI. *To make a verjus jelly.*

Take ripe *verjus* which pick from its stalk. Put it in a pan with a couple of glasses of water. Let it boil for two or three minutes, and when deadened, throw it in the sieve to drain. Then put the juice on the fire with the sugar, and boil it into a jelly, to pot it afterwards.

XLII. *To make an apple jelly.*

1. Cut in small bits a dozen of gold rennets, and put them in the preserving pan, with three or four quarts of water, which boil to the reduction of one half. Throw all in a cloth to strain it through, and draw all the juice from the apples. Then, to this, put four pounds of sugar which boil to a jelly.

2. To give a *pointe* to that jelly, you may add the juice of one lemon, and even the rasping of one half of its rind.

XLIII. *To make the conserve of orange-flowers.*

Take one quarter of a pound of orange flower-leaves well picked, which chop as small as you can, and wet over by squeezing the juice of a lemon. In the mean while clarify, and make into a strong syrup, two pounds of sugar, then take it off the fire and let it rest a while. Some time after, stir it all round, and in the middle,
with

with a spoon; and having thrown in your orange flower, prepared as before directed, mix all well with the same spoon and put part of this composition into paper moulds, or cases, and form the rest into drops, or lozenges, on sheets of paper.

XLIV. *A conserve of violets.*

Pound in a mortar one quarter of a pound of violets well cleansed and picked, which, while you are a pounding, you must wet with a quarter of a pint of boiling water. When it is thus wetted and pounded strain it through a flannel cloth; then having melted and clarified two pounds of sugar into a strong syrup, take it off the fire, let it rest and pour in afterwards what you have expressed from the pounded violets, stirring all well together with the spoon, and proceed, in every other respect for the rest as directed in the precedent article.

XLV. *A conserve with raspings of Portugal oranges and lemons, conjointly or separately.*

Put your raspings to dry in a plate whether silver or china, it does not signify. Prepare some sugar into a syrup not quite so strong as recommended in the two last receipts. Take this from the fire, and stir it with a spoon, both round the pan and in the middle; then throw in your raspings of lemon or orange, or even both together; and, having stirred all well, put it in the moulds and make your drops.

XLVI. *To make almonds a-la-praline.*

Make a strong syrup with one pound, or one pound and a quarter of sugar. Then throw in two pounds of almonds, which stir well with a spatula, for fear they should stick to the pan. Therefore stir them well till they have consumed all the sugar; then place them over a small fire to dissolve all the little knobs of congealed syrup which remain about the pan, and stir it till there is none left, and all should absolutely stick to the almonds. Have a great care that they should not turn into oil, and take notice when they pop, because it is a sign they are done. Take the pan from the fire,

and cover them with a cloth; and, when cold, put them in boxes.

XLVII. *To whiten cherries, currants, raspberries, grapes, strawberries and other such like fruits.*

Beat one, or two, whites of eggs with orange flower-water, then steep your fruit in, and roll it afterwards in a dish wherein there is lump sugar pulverised and sifted very fine. When it is well covered over with sugar, put it on a sheet of paper and set it in the sun, or before a clear fire, and at a certain distance of it, only to dry it. You may thus ice all sorts of fruits susceptible of icing.

XLVIII. *To make iced maroons.*

Slit the bottom skin of every one of your chestnuts, and loosen it at that part without peeling them yet, then throw them into boiling water. When you think they have boiled sufficiently take a few of them and try whether or not a pin gets easily into them by the slit you have made. If it do, take the maroons from the fire, then peel them one after another as expeditiously as you can while still burning hot, and put them in a dry sieve. In the mean while, boil some new water, and when all are peeled, put them all into it, to make them throw all their reddish liquor without putting them any more over the fire, but only and merely into the boiling water which you just took out, when they have well cleansed themselves in this water, take them off with a skimmer and put them in a light thin syrup, in which boil them gently for ten minutes, then take them off the fire, let them rest so that they may take the sugar, then skim them out of it and put them in a sieve to drain. Now add some more clarified sugar to your thin syrup, which boil together to a stronger one: then put your maroons in, one by one, set them on the fire again and boil all till the syrup comes to be what confectioners call *a-la-plume*. Then take them off the fire, and let them rest. Some time after, take a spoon and cause a certain agitation with it in the syrup by stirring it on one side of the pan so as to cause a thick and muddy look in the syrup no farther than the width of your hand. While the syrup looks

looks thus, take your maroons gently one by one between two forks, and sauce them well in that thick part of the syrup, then put them on a sieve over a dish.

XLIX. To make the Royal-massepins.

1. Take one pound of sweet almonds which throw in a bowl filled with boiling hot-water, to help the peeling of them. In proportion as you peel them, throw them into another bowl filled with cold water. Then drain them, and pound them in a mortar, watering them at the same time so as to make them into a kind of paste. Now put in the preserving pan one pound of sugar with a sufficient quantity of water to dissolve it. Boil it to *a-la-plume*, and then take it from the fire to dilute your paste into it. Set the pan again on the fire, and turn your paste over and over till it quits the pan freely without any adhesion at all. When, passing your hand on the paste, you see it smoothening without sticking to your fingers, it is a proof that it is done. Now take it from the fire, and dress it with your spatula on small boards covered with sugar, in the form of small oblong cakes of what size you like.

2. When the paste is all employed and dressed in that form let it grow quite cold. Then take every one cake one after another singly, and give each of them by itself half a dozen of strokes of the pestle in a mortar to render that paste more delicate, adding also as you pound it thus, half the white of an egg or a whole one if requisite, *per pound* or pound, and a half, of paste. You may likewise, if you chuse, introduce in the paste, while you pound it, a little orange or lemon peel preserved. Then you roll it again in the pulverised sugar, and dress it again on the same boards as before either in oblong cakes, or in round rings. When done take and steep it in whites of eggs beaten with orange flower-water; and, draining it well when you take it out, roll it again next in pulverised sugar, then put it on a sheet of paper. When every one has thus been worked all through this process, put the sheet of paper, thus loaded with these

massepins,

massépins, in an oven, so moderately hot as not to affect them too much, and give them only a very faint colouring.

3. They who want their *massépins* to taste of the bitter almonds, may introduce one quarter of a pound, or even half a pound of bitter almonds among the pound of sweet ones, from the very beginning and for the rest, proceed as directed from the time of peeling.

L. *To make Savoy biscuits.*

1. Separate the whites of four eggs from their yolks. Beat them by themselves to a very hard froth, at which time, you then put the yolks previously well diluted, and continue beating all well together. Now introduce half a pound of sugar pulverised, and beat them all together again.

2. When you are ready to dress your biscuits, have a quarter of a pound of superfine flour, which incorporate by beating well, then dress it on a sheet of paper in the form you like best, either round or oblong, and ice them over with sugar in powder to prevent their running. Put them in an oven, no hotter than for *massépins*; and, after a reasonable time they will be done.

LI. *To make bitter almond-biscuits.*

Pound in a mortar three quarters of a pound of bitter, and one quarter of sweet, almonds. When thus pounded, have eight or nine yolks of eggs which beat up and mix with your paste of almonds, and two pounds of pulverised lump sugar. This paste must be a good deal harder than that of the Savoy biscuits. Then, with the end of a knife taking some of that paste, you place it in rows on a sheet of paper, in what form or shape you like, and ice it with pulverised sugar; then put it in the oven as you do the Savoy-biscuits or *massépins*.

LII. *To make meringues.*

Beat well into a hard froth, four whites of eggs: then introduce in them four large table spoonfuls of sugar
into

into a subtil powder, and a tea-spoonful of orange flower-water, with a little musk and amber prepared. Put this paste on a table, and roll it with the rolling pin to the thickness of a crown piece, or double that thickness at most. Cut it in the form and size you like, bake it half way, or little more, and take it out. Make a strong icing with the white of an egg, sugar pulverised, and the juice of a lemon, in order to whiten that ice which you thicken as a strong pap by means of the sugar in powder, steep your pieces of cut paste one by one, and set them to dry under the lid of the stove covered with fire, on the top of it.

LIII. *The same with cinnamon, or chocolate.*

The *meringues*, with chocolate, or cinnamon, are made as follows. Pound and sift into subtil powder and distinctly each by itself the cinnamon, and a quantity of the above described paste, after a thorough drying. Then mix these two powders and a discretion-able quantity of sugar together in the same mortar, by means of whites of eggs beaten, continuing to pound the whole till the paste be firm and however flexible. Now spread it with the rolling pin to the thickness you like, and cut it in the shape and form you please, then bake and ice it as usual. If you will not have your *meringues* too hard, bake them on one side only, and ice them on the other with orange flower-water and sugar. When you dry them let it be with the lid of the stove, and take care not to make the fire too strong, lest it should blow the ice. When properly dried, the ice is as clear and transparent as real glass.

Note. With the chocolate the same process is to be observed as with the cinnamon.

LIV. *Another way of icing, contrived for the sake of certain scrupulous persons.*

For the sake of them who, in time of Lent have some scruple to eat messes wherein their enters any thing belonging to eggs, you may contrive the following method of icing. Take some gum adragant, which put into a glass tumbler with a little common water and orange-flower ditto. When perfectly dissolved, strain it through

a cloth, and use it instead of whites of eggs for pounding your paste in the mortar as above directed. Then for the last icing, use orange flower-water and sugar, pulverised as above.

LV. *To make gimblettes.*

Suppose you take one quarter of a pound of flour, then one ounce and a half of sugar in powder, or two ounces at most, will be quite sufficient with two or three yolks of eggs and one white only, then a little orange flower-water, with a very little quantity of musk and amber prepared. Knead all together, so as to make a stiff dough with it; to obtain which you discretionally increase the quantity of flour if necessary. But should it become so stiff that you could not manage it to put in rings; then you must put it in the mortar, and soften it with a few strokes of the pestle and a little orange flower; or even mere pump water. Then you spin it in rings; which, when made, you throw into boiling water and give a bubble or two; and afterwards, dress it on sheets of paper, and bake it till it is dry and brittle.

LVI. *To make biscotins.*

Boil one pound of sugar to a syrup *a-la-plume*; then throw in half, or three quarters of a pound of flour. Stir quickly all together to make a dough, after having previously taken the pan off from the fire, then take this paste out of the pan and dress it on a board, or table, covered with pulverised sugar. Knead it quickly, and pound it next in a mortar with the white of an egg, a little musk and amber prepared, and orange flower-water. When it is thus knead and pounded pretty stiff, make it into small balls of the size of a small apricot-stone, then throw them into a pan filled with boiling water. First they fall to the bottom: but, as soon as they rise on the top you must skim them out of this water, and put them a-draining in a sieve. Then range them on a sheet of paper, or tin, and place them in the oven to bake and make them take a fine colour.

Note. If, when baked, you find any difficulty in taking

king them out of the paper; wet a napkin and wring it, then set the sheet of paper on it, soon after they will easily come off.

LVII. *To make lemon lozenges.*

Take one, or two, whites of eggs, which beat with some orange flower-water. Then add as much pulverised sugar as they will soak up, to make a pretty stiff paste of it. Introduce also the raspings of lemon peels. All being well incorporated, roll it all into small balls of the bigness of your thumb, which range on a sheet of paper and flatten afterwards a little, then put them in the oven to bake.

LVIII. *How to preserve orange-peels all the year round, but especially in the month of May.*

Cut some oranges in four quarters and peel those quarters. Then put the peels to soak in water for about ten or twelve days; after which term, dry them between two cloths, and put them in a caldron with a sufficient quantity of honey to half cover them. Boil them thus one minute or two, stirring them incessantly. Then take them off the fire, and let them rest till the next day, when you put them on again, and let boil ten minutes or a quarter of an hour. For six or seven days repeat the same operation, taking great care incessantly to stir, turn and re-turn them all the while they are on the fire. On the eighth day change the honey, and in the fresh honey boil them as long as it would take you to repeat your creed, then put them with that new honey in which they boiled last, and keep them for use after having added some cinnamon, cloves and white ginger, mixed and both reduced into subtile powder.

LIX. *To make a paste with whatever fruit it may be.*

Take whatever quantity you please of any fruit, which peel and boil well in water, then strain the juice through a sieve, or a flannel. Now weigh ten pounds of that paste of fruit, and ten more of sugar pulverised. Mix first five pounds of sugar with ten pounds of fruit, and put it a-doing on the fire; then mix four
more

more pounds of your sugar. When done, put with a spoon (on iron plates previously powdered with some of the pounds of sugar which were left) some of that paste from distance to distance. Set these to dry on a chaffendish, in the sun, or in the open air, turning and re-turning them often, and powdering them morning and evening with sugar. When these little cakes are perfectly dry, put them in Dutch deal boxes and in white papers, that they may not touch each other.

Note. In the same manner you may make the conserve of roses, buglos, burrage, &c. even red currants.

LX. *The Genoa paste.*

Take equal quantities of quinces and odoring apple's pulp. The pulp is prepared thus: peel these fruits, and clear them of their kernels. Then pound them in a mortar with rose water, and strain them through a sieve. Put the paste on the fire to dry by degrees, stirring it all the while with a wooden spatula. Then add as much sugar in powder as you have pulp, and go on in doing it, till it has acquired the consistence of a paste.

LXI. *Quinces-jam. and other fruits.*

Boil, in a sufficient quantity of water, both the flesh and the peelings of your fruits to perfect softness. Then let the decoction clarify in the sun, before the fire, or by residence. When settled, decant it and adding to the liquor the proper quantity of sugar, boil it to a jelly.

LXII. *Genoa Biscuits.*

Take four ounces of sugar in powder, one pound of flour, a little coriander and aniseeds in powder, which mix with four eggs and as much luke-warm water as needs to make a dough of the whole. Bake it in the oven; and, when baked, cut it in five or six slices which you bake again.

LXIII. *The Queen's cakes. or biscuits.*

Take twelve ounces of flour, one pound of fine sugar in powder, and twelve eggs, from which take out three yolks,

yolks, with a discretionable quantity of coriander and aniseeds. Beat, and mix well all together, till it comes to a thick but running paste. Some add yeast to make it lighter and rise higher. Divide this paste into several paper cases, or tin ones, of the width of two fingers and twice as long, which put in an oven to bake: but take care that it be not too warm.

LXIV. *Macaroons.*

Pound well one pound of sweet almonds, moistening them with rose-water. Introduce one pound of sugar and beat all well in a soft paste, which you put round a dish and half bake in a luke-warm oven. When the paste is half done, cut it in small round pieces, and having ranged them on a sheet of paper, finish baking them.

LXV. *A method of making cakes exceeding fine.*

Take two whites of eggs, which beat well to a froth after having taken away their germen. Add one quarter of a pound of the finest flour, and as much sugar in powder. Beat all well and add a little brandy to it and coriander-seed in powder. All being well mixed spread the paste in a sheet of paper, glaze it over with sugar in powder, and put it to bake.

LXVI. *Another particular method of making cakes.*

Wash and clean well a dozen of eggs and wipe them thoroughly dry. Then break them and take their whites only, which beat in a mortar along with their shells till these latter be perfectly dissolved. Now add sugar and flour, though not so much flour as sugar. When all is well mixed, spread the paste, which ought to be a little firm, on a sheet of paper; and, after having glazed it, bake it in a slow oven.

LXVII. *A cream made without fire.*

Take one quart of double cream, in which, put four ounces of sugar pulverised fine, and the quantity of one thimbleful, or two, of runnet. Stir all round together to mix it more equally and make it take the better. If the runnet be good the cream will take in one hour.

When

When you are ready to serve it on the table, rasp some sugar over it, and spill on it a dozen drops of orange-flower-water.

LXVIII. *A cream which cuts as a rice-pudding.*

Beat in a dish two whites of eggs and one yolk, in which, while you beat, introduce by degrees one quarter of a pound of sugar in proportion as it melts, and a pap-spoonful of rose water. When that is completed, pour in the dish, and stir, a quart of milk and cream mixed half and half, then set it gently on warm cinders to take without boiling nor disturbing it any more. In one hours-time it generally is sufficiently taken. Then you colour it in passing a red-hot shovel over it. It is to be served cold, after having rasped some sugar on it.

LXIX. *To make an exceeding good boiled cream.*

Take cream or good new milk from the cow which boil with a crum of stale bread rasped very fine, and a little fresh butter. As soon as it begins to quake, stir it continually with a spoon; and, having diluted some yolks of eggs, strain them through a cloth. Put as much salt and sugar in your cream as you think it may require. And, when it boils and begins to rise pour the yolks of eggs in, never ceasing to stir it in order to prevent its rising so far as to run over. As soon as you see it begins to render the butter take it out of the fire; and, to serve it, glaze it over with sugar in powder.

LXX. *To make whipped cream.*

Take one quart of good sweet cream, in which add one, or two, spoonfuls of orange flower-water and a quarter of a pound of sugar pulverised very fine. Wipe it with a handful of fine white and dry willow twigs tied together on purpose. In proportion as it comes to a froth take it and put it in a bowl, or dishes, to serve it on the table.

LXXI. *Another*

LXXI. *Another sort of a cream.*

Peel and pound as much as possible, a dozen and a half of bitter almonds, wetting and diluting them at the same time with a little milk: then strain them through a flannel and put the product of that squeezing among three half-pints of good new milk from the cow, with one quarter of a pound of sugar, and a few spoonfuls of orange flower-water. Stir all well together; and, having made it luke warm on the fire, put a little runnet in it, and mix all well. Then fill as many soap plates with it as you have guests, and put them on warm ashes only, covered with another plate, which you now and then use to take up in order to sup the moistness which rises. When the cream is congealed, take it from off the fire and serve it.

This cream is that which is called by the name of *cream blanc-manger*, or custard, like. It may keep very well for two days, after it is done.

§. II. Of Summer Compottes, or stewed fruits.

LXXII. *The raspberries compotte.*

Boil half a pound of sugar into a syrup to a *la plume* degree, in which throw one pound of raspberries well picked, clean and whole. Take the pan off from the fire, and let all rest. A little while after, shake the pan gently in which the fruit is, and stir it a little, then set it again on the fire to boil five minutes; after which, take it off again and let it cool before serving. Forget not to skim the fruit well when in the pan. Currants admit of the very same preparation, and by the same process.

LXXIII. *The apricots-compotte.*

Make a lye with pearl ashes; and, when that lye shall have boiled five, or six, minutes, put in about a quart of green apricots, which you stir in gently with the skimmer; then take them out and throw them into cold water. Clean them well one by one of all their down, and throw them, as you go on, into another cold water. Then boil some water in a pre-
serving

-serving pan, and put them in to blanch, till you can thrust a pin into them easily. When this is the case pour them all in a sieve and let them strain. Then clarify a pint of syrurp; and, when it boils, put in the apricots and boil them gently in that sugar for ten minutes or thereabouts. Then take them out, stir and skim them; let cool and serve.

LXXIV. *Another way of doing the same.*

Put what quantity you like of apricots in a napkin with a handful of salt, and shake them backwards and forwards length ways, moistening them now and then with a drop or two of vinegar. By these means you take off the down much sooner from them. Then wash them in cold water: boil them afterwards to softness, then skim them out from that water into cold. When they have been there a little while, pour them all into a sieve to drain; then put them in sugar in which they are to boil till they turn green. When they are such, finish them quickly, take them out, and serve.

LXXV. *To do the same fruit, as well as peaches, when ripe.*

You may peel them if you like, though they taste more of the fruit when they are not peeled. Stone them, and having splitted them, take the kernels away from the stones. Now, boil into a syrurp half a pound of sugar, more or less, according to the quantity of fruit you have to stew. When the syrurp is ready, throw in the fruit and the kernels all together; boil all about one quarter of an hour, then take the pan from off the fire, shaking it gently to gather the skum together. Take this out with a card and let your fruits rest a while to throw off their water. When you judge they may have done it, set them again on the fire to boil eight or ten minutes longer; and, if there be any more skum, take it off again, and the *compotte* is done.

LXXVI. *To make a compotte of the same fruits as above, and even plums, broiled.*

Take any quantity of either peaches, plums, or apricots:

apricots: broil them on all sides over a chaffing-dish of bright and live coals. Peel them next as fast as you can, and put them on a silver plate with one handful or two of sugar pulverised, and sufficient water only to help melting the sugar. Set them next on the fire and boil them one minute or two, then take them out and let cool. When you are ready to serve them, squeeze the juice of a lemon, or orange, over them.

LXXVII. *To make a compotte of perdrigon-plums.*

Take off the skin of about two pounds of *perdrigon* plums, which throw in the mean while into cold water, then strain it out and put into boiling one for about two or three minutes only after which having taken them out of this water and drained, you range them in three quarters of a pound of sugar boiled into a pretty strong syrup. When they shall have boiled eight or ten minutes in it, skim them, let them cool and serve.

Note. The *lit-de-verd*-plums are made in the same way. Whenever a plum is not ripe enough you may let it do a little longer in the water in which they are boiled previous to the syrup, taking care however they should not come to mash in it.

LXXVIII. *The same for mirabelles, purple and black damask, Sainte-Catherine and other plums.*

Take any quantity of the above-mentioned plums, we suppose two pounds. Pass them in the boiling water without peeling them, especially the *mirabelles*, then put them in a syrup of half a pound of sugar, and finish them like the *perdrigons*.

LXXIX. *Compottes of verjus in grain.*

Take a pound or two of *verjus* in grain and the finest you can find; stone it carefully with the point of a tooth-pick, and throw it in the mean while into cold water. When all is done, take it out with a skimmer, and put it into boiling water. Then take it out from the fire, and let it cool. Skim it out again and put it in a syrup of one pound of sugar, in which boil it gently over a slow fire; and when the *verjus*

begins to turn green, finish it quickly like the other *compottes*, but take great care not to do the syrup too much.

LXXX. *Compottes of peeled verjus.*

Take the skin and the stones out of two pounds of *verjus*, and put it in a bowl, in proportion as you do it. Then clarify one pound of sugar, which boil into a syrup to *a-la-plume* degree, and put in the peeled *verjus* which you boil also till you find it sufficiently done. Take care not to do it too much in syrup for fear it should turn black.

Note. *Muscadine* grapes may be done just in the same manner.

LXXXI. *The compottes of pears called muscat, the first and most early.*

Peel two pounds of those pears, scrape their tails, and cut off the end of them. In proportion as you prepare them, throw them into cold water. When done, take them out and drain them. Then put them in boiling water, and, when they are softened and almost done, take them out of that water to put them into cold again. When they have been there a while, take them out to drain, and put them afterwards in one pound of sugar boiling, wherein leave them till the syrup be almost compleated: then remove the pan from the fire, stir and skim them. Add the juice of half a lemon; then let cool and serve them.

You prepare in the same manner the sorts of pears called *Rouffelet*, *Martin-sec*, *Fargonelle*, and *Blanquettes*. But as they are larger than the *muscat*, you may blanch them, that is to say, boil them in water, before peeling.

As for the rest, there is no sort of difference in the process of making *compottes* of them.

LXXXII. *The compotte of the largest sorts of pears, such as* Beurre, Messire-jean, Bergamotte, Vertelougue, Bzidery, Mouille-bouche, Amadotte, Doublefleur, Bon-chretien-d'hyver, Franc-real, &c. &c.

Boil in water any quantity of the above-mentioned pears, till they are done. Then peel them, core them, and throw them into cold water. Now melt a quantity of sugar proportionable to that of your pears, in which you put them and boil to a syrup, as for the other sorts of compottes. When done, take them from the fire, and skim them well. Squeeze over the juice of half a lemon, and serve them either warm or cold, as you like.

LXXXIII. *A compotte of pears a-la-braise.*

You may put *a-la-braise* all sorts of pears, especially of the large size above-mentioned. To do this you proceed as follows. Broil your pears over a chaffing-dish of bright and live coals: and, when sufficiently done, place them a moment on the naked coals, that you may peel them the more easy and to colour them. Then peel and core them, and put them in a weak syrup, in which boil them a little while but not too much.

LXXXIV. *A compotte of quinces.*

The quinces are prepared in the same manner when *a-la-braise*. The white quinces are best boiled in water first, before being put into the syrup, which is made with the same quantity of sugar as for pears.

LXXXV. *Compotte of apples. Portuguese fashion.*

Cut a few apples by the middle into two halves, and core them. Then put them on a silver plate with sugar under and over them. Set this plate on the stove with fire underneath, (and cover it with such a lid as can admit, by means of a rim raised round it at the top.) of some lighted charcoals put on it. Let the apples do thus between these two fires till the sugar turns all brown and in caramel, without however being burnt. Such compottes are served hot.

LXXXVI. *A*

LXXXVI. *A jelly-compotte of apples.*

Cut into quarters, pare and core, a few golden pippins, and throw them into cold water. In the mean while chop five or six more apples to pieces, and boil them with the parings of the others in two quarts of water. Then strain all through a flannel; and, in that liquor put one pound and a quarter of sugar, then set it on the fire with the quarters of pippins which you first prepared. Boil them thus gently for fear they should mash. When done, take the pan from off the fire, and take the quarters out of the syrup, one by one, and range them in order on a dish. Then set your syrup again on the fire and boil it till it comes into a jelly, when cold you take it and lay it on your apples which you thus cover with it. This compotte may keep for five or six days.

LXXXVII. *A compotte of apples a-la-bouillonne.*

Cut a few apples into two halves and core them. Range them in the pan, and for the quantity of six or eight apples, put one pint of water and a quarter of a pound of sugar. Cover them over and set them on the fire to boil; then when the liquor is almost all wasted, dress them on a dish and serve them.

The compottes of *calvil* apples are made in the same way.



C H A P. XIII.

SECRETS relative to the art of taking out
SPOTS and STAINS.

I. *To take off iron-molds from linen.*

PUT boiling water into a bowl and spread the stained part, or parts, of your linen over it, so as to let it be well penetrated with the steam of the water. Then rub the places with sorrel's juice and salt till they are perfectly and thoroughly soaked with it. Such linen washed afterwards in the lye of wood-ashes, will be found to return intirely free from the iron mold spots it had before.

II. *To take off carriage-wheel's grease from clothes.*

Rub the place with butter. Then with blotting paper and a hot iron, or a bit of red hot charcoals in a silver spoon, you may take all off as you would a drop of wax or tallow on a cloth.

III. *Against piss-spots.*

Boil some chamberlye and wash the place with it. Then rinse it with clear water.

IV. *To take off all sorts of spots from cloth of whatever colour it may be.*

Take half a pound of crude honey, the yolk of a new laid egg, and the bulk of a nut of ammoniac salt. Mix all well together, and put some on the spots which happen to be on either silk or cloth. After having left it there a while, wash the place with clean water, and the spot will disappear.

V. *A general receipt against all sorts of spots, upon every sort of stuff.*

A water impregnated with alkaline salt, black soap and bullock's gall, takes off extremely well the greasy spots from any cloth or silk stuff.

VI. *Against*

VI. *Against oil-spots.*

Take a piece of white soap which you shave very fine and put in a quart bottle with a wide mouth and neck, half filled with lye. Add to this the bulk of a nut of ammoniac salt, two yolks of eggs, cabbage-juice and bullock's gall a discretionable quantity, and in short, one ounce of salt of tartar in subtile powder sifted. Stop the bottle well, shake it and expose it to a south sun for four days. After that time, if you pour off that liquor on any oil spot and rub it well with it in and outside, then let it dry, and wash it again with clear water, or again with the following composition of soap, that spot will intirely disappear.

VII. *A washing ball to take off spots.*

Take fuller's earth, or soft soap which mix and incorporate with vine brush ashes, white chalk, alum and tartar pounded all together in a mortar and sifted through a very fine silk sieve. When all is made into a paste, form your balls with it and let them dry in the shade. To use them, rub any spotted place with it and wash it afterwards with clear water.

VIII. *To take out pitch and turpentine spots.*

Rub well the spot with oil of olive, which set to dry for one day and one night. Then, with warm water and the above washing ball, you will intirely ungrease the place.

IX. *Against ink-spots, whether on cloth or linen.*

Wet immediately the place with lemon's, or sorrel's juice, or with white soap diluted in vinegar.

X. *Another more simple remedy against ink when just spilled.*

Prejudice always did, and always will, prove fatal from the minutest to the most interesting circumstance in life. The time which is spent in lamenting over an accident, just happened before our own eyes, is but too often the only one which could have saved and prevented

prevented the dire consequences of it, nay perhaps repaired it intirely without leaving the least scar behind, had we ran instantly to the remedy. Ink never does nor can spoil the cloth, stuff, silk, lace or linen on which it is spilled, unless it lies there to driness. And it is well known, on the other hand, that if you put as much water in your ink-horn, as there is ink, you make it too pale: if twice, still more so: if three, four, five, six, if twenty if fifty times; then it will be such indeed that it will be no more ink at all. What could a pint of ink do in a quart of milk? a great deal of mischief without doubt. But, in 50 or a 100 gallons nothing at all. By parity of reasoning it must be obvious that if on the finest silk, cloth or velvet, muslin or lace ruffles, &c. a whole phial of ink should be spilled, an undeterminate greater quantity of water than there was ink, poured instantly on the place, by degrees and not all at once, must weaken it to such a degree as to wash it off at last intirely. What reasoning thus once dictated naturally, reiterated experience since proved: therefore, here it is recommended. Sense only and judgment must be consulted in the execution. As for example, if the ink be spilled on a ruffle or apron, &c. while you have it on, let one hold the affected part between his two hands over a bason and rub it while another is pouring gradually water from a decanter; and let a whole pitcherful be used if necessary. If the ruffle, apron, &c. be at liberty and not actually worn on, the place dipped into a bason filled with water, and there squeezed and dipped in again, may do; provided you change the water in abundance, every two or three squeezes. If the ink be spilled on a green carpet table, it may immediately be taken out with a tea spoon so dexterously that any water at all shall hardly be wanted afterwards, provided it has not laid any time on it, and was only that instant spilled; as the down of the cloth prevents the immediate soaking of the ink or any liquor indeed (except oil) through and through. But if it have laid some time, let the time be ever so long, provided it is still wet, by pouring a little fresh clean

water

water at a time on the place, and gathering it up each time with a spoon, and pressing hard to squeeze it out of the cloth into the spoon again, you will at last bring it to its natural colour as if no such accident had ever happened. These few circumstances explained, are sufficient to guide any one, who has a common share of good sense and understanding, how to act on this principle in others.

XI. *Against oil spots on satin, and other silk-stuffs, even on paper.*

If the spot is fresh and just done, heat on the shovel some ashes from calcined sheep's trotters, and put some under and upon the place. Then, laying something heavy upon it, let it remain so for one night; the next morning the spot ought to be gone: but, if not quite, renew the precept.

XII. *A preparation of balls against spots.*

Take half a pound of soap, four ounces of clay, and one of quick lime. Dilute all with a little water, and make it into pills or small balls. With these rub the spots, and wash the place afterwards.

XIII. *For silks.*

If you rub the spots which are upon a silk with spirit of turpentine, they will disappear: because the volatility of that spirit exhaling into vapour, carries along with it the oil of the spot to which, on account of its homogeneous quality, it communicates its volatility, by penetrating and subdividing it infinitely.

XIV. *To restore gold and silver laces to their former beauty.*

Mix equal quantities of water, bullock's and jack's gall. With this composition rub your gold or silver and you will see it changing colour directly.

XV. *To restore Turkey carpets to their first bloom.*

Beat the carpet well first with a rod, till perfectly free from dust. Then, if there be any spot of ink, take them out with a lemon, or with sorrel; and wash the
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the place afterwards with clear water. Shake the rest of the water off, and let it dry where you rubbed it with any. When dry, rub the carpet very hard all over with the smoaking hot crum of a white loaf: and, when you find in the evening, the skies clear and a likelihood of being a fine night, let the carpet be put out for two or three such nights.

XVI. *To make tapestries resume their first brightness, when their colours have been tarnished and spoiled:*

Shake and clean well the tapestry by rubbing it all over with white chalk which you leave on it for about one day. Next, with a rough hair brush, get all that chalk out again, and put on fresh, which leave as before. Then with the same rough hair brush get this out also, and beat it soundly with a rod. and brush it afterwards with the soft cloth-brush. This operation will restore a tapestry to its pristine state.

XVII. *To take off all the spots of wax from velvet of any colour, except the crimson.*

Take the crum of a stale loaf, and cut a thick slice out of it, which toast, and apply, while burning hot, on the spot of wax; when cooled, renew it till all the wax is soaked out of the velvet.

XVIII. *To take the same off from silks and camblet.*

Put on each wax spot, some soft soap, and set in the sun till grown warm; then, by washing the place with clean water, the spot will disappear.

XIX. *To wash a gold or silver, or silk embroidery, on either linen, or any stuff whatever, and render it like new.*

Take bullock's gall, one pound; soap and honey, three ounces of each; and Florentine orrice, about the same quantity in subtil powder. Put all in a glass vessel, in which mix it well, into a paste, and let it be exposed for ten days in the sun. When you are ready to use it make an infusion of bran, which boil in water and strain through a cloth. Then smear the work over with the above-described paste, in such places as you want to clean, and wash them afterwards with the said bran

bran water, renewing this till it receives no more alteration in its colour. Wipe then well the places with a white cloth; and wrap the work in a clean napkin to set it in the sun to dry, after which pass it through the polishing and lustring press, and the work will be as fine and bright as when new.

XX. To take the spots off from silk and woollen stuffs.

Take French starch, without any mixture of indigo or blue whatever, which dilute in a cup with good brandy, like a thick pap. Of this paste, put on each spot, and, when dry, rub it off and brush it. If the spot is not quite gone at the first time, renew the operation, and it certainly will at the second.

XXI. To colour velvet in red.

Take four ounces of adragant, and one of Arabick gums, both of which pulverise. Put this powder in clean water, wherein let it dissolve for two or three days. After which time, steep a sponge in the liquor, and rub the wrong side of the velvet. If, after being dry, you find it not high-coloured enough, renew it and the effect will surprise you.

XXII. To revive the colour of a cloth.

Pour one quart of water on one pound of burnt potashes. Twelve hours after decant the water off in another vessel, and put in a handful of dry moth-mullein's leaves, with two bullocks galls. Boil all together till the leaves go to the bottom. Then set this water for a few days in the sun. Then putting in it whatever colour you want, boil it along with the cloth in that lye, and let it thus soak afterwards for fourteen or fifteen days, then the cloth will have resumed its primary colour.

XXIII. To take the spots off from a white cloth.

Boil two ounces of alum for half an hour, in a pint or a pint and a-half of water; then put in a piece of white soap, with another pound of alum; and, having soaked thus three days in the cold, you may with it, wash all the spots of any white cloth whatever.

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