VII. On the preparation of amber varnish, and the application of it to different kinds of stained wood

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this precaution, the last spirit of wine that passes over would be rendered impure by more or less water.

In common, corn spirit has an unpleasant smell and taste, the primary cause of which is careless management of the fire during the first distillation as well as during the rectification; as by these means, in the first distillation in particular, the grains readily become burnt, and consequently communicate that taste and smell to the distilled liquor. The decomposition of the gelatinous matter of the grain seems also to contribute to this defect. The addition of lixivious salts, chalk, or charcoal, during the rectification, is the best means to improve spirits which have been hurt in this manner.

I am however of opinion, that it is possible to preserve the corn spirit in a perfect state during the first distillation. The fault generally lies in the fermentation of the wash being too long continued. In general, the distillation is not begun till the fermenting liquor throws up no more bubbles, and shows itself perfectly transparent under the scum: but it has been confirmed by several experiments, that the corn spirit is obtained strongest, and in the greatest abundance, when the mixture is subjected to distillation in its highest degree of fermentation. If the fermentation be suffered to obtain its utmost term completely, a quantity of vinegar will be formed, which not only contributes a great deal to give the liquor an unpleasant taste, but actually occasions a considerable loss of the saccharine matter necessary for the production of spirit of wine.

VII. *On the Preparation of Amber Varnish, and the Application of it to different Kinds of stained Wood.* By NILS NYSTRÖM, Apothecary of Norrköping*.

AS furniture of foreign wood is in general expensive, the use of the indigenous kinds of wood ought not to be neglected, especially when they are of a compact texture, have a fine grain, and are sufficiently hard. Furniture made of these

* From the *Transactions of the Academy of Sciences at Stockholm for the Year 1797.*

kinds of wood, after it has been well polished, may be stained of different colours, and then done over with linseed oil and amber varnish.

As my principal view, however, was to try in what manner different kinds of wood could be stained so as to retain their colour longest, and in what manner mahogany could be best imitated, I applied such a composition as I thought would best answer the purpose on the twelve following kinds of wood; *viz.* elm, oak, red and white beech, maple, pear-tree, wild hawthorn, white beam-tree, ash, alder, birch, and pine. Of these, the maple, birch, alder, and white beech, when stained with a solution of iron, had the greatest resemblance to mahogany. The appearance of the other kinds was various, according to the diversity of their colour and veins, and according as they were more or less porous, and imbibed a greater or less quantity of the stain.

The amber varnish prepared in different places is not always of equal goodness. This is owing to two causes: 1st, The careless manner in which the amber is melted; 2d, Because the linseed oil, being too much or too little boiled, acquires, in a greater or less degree, a drying property. A proof of amber varnish being good, is, if, when applied on any article in an apartment of the common temperature, it becomes dry within from twelve to twenty-four hours.

By the experiments which I made, I have found that the following process for preparing it is the best:—Put pounded and sifted amber into a pan of cast iron with a flat bottom, and let the amber be spread out at most to the thickness of an inch. Place the pan in an upright position over an uniform coal fire, and let it remain till the amber fuses and becomes liquid; then pour it out on a cold plate of copper or iron. When the amber has cooled, break it into pieces; and if it has a bright blackish-brown appearance on the fracture, and weighs about one-half of what it did before being melted, you may be certain that it is proper for the intended purpose. Particular attention must be paid to this circumstance; for, if the amber is fused too little, so that part

of it remains unmelted, it will not be dissolved by the varnish; and if the operation be performed with a continued and strong heat, it will be burnt and unfit for use.

When the amber is kept over a weak fire it will not melt, but becomes a sort of blackish brown incrustation, which also may be employed for varnish provided it has not been too much or too little evaporated: it will be in the best condition when you obtain half a pound from a pound. If the amber is too little evaporated, it must be again put into the pan till it be reduced to the proper weight. The same thing is to be observed when you melt it; but the parts which are not fused must be picked out, in order to be afterwards also melted.

I have found that a pan with a flat bottom is better than one with a round bottom, because the melting or evaporation is effected sooner in the former than in the latter; for in the latter the amber lies thick in the middle, and is burnt at the bottom and sides before it can be brought to melt or evaporate.

It is not necessary, for making varnish, to pick out pure and transparent amber, but only the common yellow small fragments, which may be procured for half the price of that in lumps. The earthy part, which is found in amber not of the clearest kind, separates itself from the warm varnish when it is suffered to stand some time before it is decanted.

Method of preparing Linseed-Oil Varnish.

One pound of well pulverised and sifted litharge, four ounces of finely pounded white vitriol, and one quart of linseed oil. Put these ingredients into an iron pan of such a size that it may be only half full; mix them well together, and boil them till all the moisture is evaporated, which may be known by a pellicle being formed on the surface, or by the barrel of a quill bursting when thrust to the bottom of the boiling varnish. Then take it from the fire and pour off the clear liquid, taking care to keep back the thick part which has deposited itself at the bottom. While boiling, it must be stirred several times round, that the litharge may not fall to the bottom; but you must not stir it constantly, else superfluous
litharge

litharge would be dissolved, and the varnish become too thick.

The composition of amber varnish consists of half a pound of melted or roasted amber, one pound and a half of linseed-oil varnish, and two pounds of turpentine oil. The amber and linseed-oil varnish are to be mixed together in a deep cast-iron pan, of such a size as to be only one-third full, and to be kept over a slow fire till the amber is dissolved, which may be known by its swelling up: the operator, therefore, must have at hand a large copper or iron vessel, that the varnish may be held over it in case it should rise above the sides of the pan, and to prevent the loss that would thereby be occasioned. When the varnish is dissolved, the pan must be taken from the fire; and when the mixture has cooled, the turpentine oil is to be poured into it, continually stirring it. Then let it stand some time, that the coarse undissolved particles may deposit themselves at the bottom; after which pour off the clear varnish, and, having strained it through a piece of linen, put it into bottles for use.

In boiling the varnish, care must be taken that it may not boil over or catch fire. Should this happen to be the case, it must not be extinguished by water; for this mode would occasion such a sputtering, that the operator would be in danger of having his face bespattered with the boiling varnish. The best method, therefore, is to cover the vessel in such a manner as to exclude the air, and with any thing that may be at hand, such as a piece of wood, plate of iron, or any thing else that may cover the vessel and extinguish the flame.

1. *Iron Stain.*

Eight ounces of iron-filings and thirty-two ounces of common aquafortis. The aquafortis must first be mixed with sixteen ounces of water in a stone jar, and then a few of the filings are to be added, and well stirred round with an iron or wooden spatula. This preparation must be made in a chimney, because the solution is attended with heat, effervescence, and the disengagement of noxious vapours: it is of importance, also, that the jar should be of such a size as to prevent the matter from running over. After the greater part

of the iron has been dissolved in this manner, the solution will be of a yellowish brown colour. As soon as the mixture has cooled, pour it into a bottle placed in a pan, and let it stand a day or two, without being corked, over a warm stove; during which time shake the bottle frequently. The bottle being then suffered to cool, pour into it one pound three quarters of river water, stirring it well round, and leave it at rest for a few minutes till the undissolved part sinks to the bottom: then pour the solution into another bottle, and cork it up for use.

When this preparation has been carefully made according to the above directions, you obtain a yellowish brown solution, which may be employed for staining. In case too much water, however, has been at first employed, or too weak aquafortis, the colour becomes dark brown; and therefore the addition of the aquafortis must be increased in that proportion which the solution requires, observing the above rules.

This stain may be applied to all kinds of wood except oak, which contains too much astringent matter, and therefore on the first application becomes almost black. It communicates to the various kinds of wood different colours, according as it is applied in greater or less quantity; such as yellow, yellowish brown, and dark brown, with reddish brown stripes or spots.

As far as I have been able to ascertain by experience, this stain is one of the most durable; it withstands the air and rays of the sun without changing its colour. I have specimens of it which have been exposed four years continually to the sun and air, without their colour being altered.

2. Brazil Wood Stain.

Eight ounces of real Brazil wood, four ounces of alum, and four ounces of finely pounded redde or red ochre. Pour over this mixture a proper quantity of water; and, having suffered it to remain in that state twenty-four hours, boil it to a fourth part; then strain it through a piece of linen cloth, and preserve it in a glass bottle for use.

If one pound of the stain No. 1. be diluted with three pounds of water, immerse some pieces of wood in it, and deposit

deposit the whole in a warm place: the wood will imbibe the liquid to the depth of a quarter of an inch, and in the soft parts of the wood it will penetrate still further.

It must however be remarked, that the staining liquor must be diluted with a greater or less quantity of water, according as the wood is darker or whiter, more or less astringent. The wood must often be turned, and care must be taken that it may acquire an uniform and proper colour; after which it may be taken out and dried.

The like process must be followed when the stain No. 2. is employed, only that the same attention is not necessary in regard to obtaining an uniformity of colour. This mode, however, can be used only on a small scale.

Method of staining Articles of White Wood with the above Compounds.

Rub the stain No. 1. over the wood with a piece of sponge five or six times till it acquire a proper mahogany colour. While the liquor is applied, shake it or stir it carefully round, that the iron ochre, which has deposited itself at the bottom, may be well mixed with the ferruginous solution that stands over it; and between each application of the liquid the wood must be suffered to become thoroughly dry. After this, it must be rubbed over once or twice with linseed oil, letting it dry before the oil is applied the second time. The more the wood is soaked with linseed oil, so much the better; as in that case it does not imbibe so much of the amber varnish, which only deposits itself on the surface, and gives it a bright appearance.

When the wood has been thus rubbed over, and well dried, the amber varnish must be applied in an uniform manner with a sponge once or twice, or until it acquires a smooth shining surface. If the wood has been well done over with linseed oil, one application of the varnish only will be necessary; but on bedsteads, chests of drawers, chairs and other furniture which are exposed to more use, it must be applied several times, and each time they must be well dried.

After the application of the varnish, if any inequalities or lumps appear, they may be removed, after the article is dry,

by means of a carpenter's rush, and a fresh coating of varnish applied to the place. For applying the varnish, I have found it most convenient to use a sponge; as by these means it can be laid on in a much more uniform manner than by a painter's brush, which, for the most part, leaves stripes or loose hairs behind it. The sponge with which the varnish is laid on, must, between each application, be well shut up in a wide-mouthed bottle, that the varnish it has imbibed may not be dried by the air, which would render it hard, and unfit for use.

The same process is to be followed with the stain No. 2. When applied to knotty birch wood or alder, the wood becomes undulated, because the liquor extends itself more crosswise. The case is the same with fat and knotty pine wood or fir; for the resinous spots do not so strongly attract the stain as the other parts. This, however, makes the appearance of the wood not disagreeable.

The amber varnish may be applied also over almost all oil colours except blue, which it would change to green. It is attended with this advantage, that it never cracks; as is the case in general with lack varnishes, and those prepared with spirit of wine.

I have found, also, that this varnish is proper for being applied on real gilding, because it makes no perceptible alteration in the colour; especially when laid on thin, and in an uniform manner. This object also is obtained, that the gilding may be cleaned by means of spirit of wine, or of soap and water, without sustaining any injury. For false gilding, however, it is improper; as it attacks it, and makes it rusty and green.

I have applied this varnish, in the above manner, to bed-posts, drawers, tables, and chairs, which at the end of two years were little or nothing changed in their appearance. When this varnish has become perfectly dry and hard, it withstands boiling heat and friction; and does not lose its splendour by the course of time, unless rubbed or scoured with sand. It prevents ink, or any other coloured liquid that may be spilt on furniture, from penetrating into the wood, and causes stains to be easily removed by washing with water.

On

On this account, it is very proper for being applied on articles of mahogany. It renders the soft kinds of wood much harder at the surface.

This varnish used in this manner would not be expensive, as eight ounces of it is sufficient for a common card-table. Should the table be scratched, the injured part may be easily repaired by a new coating of varnish; and if it be new varnished every four or five years, it will always retain a beautiful and bright appearance.

Tables and other flat articles which require a great deal of polishing, when the stain and linseed oil have been applied, may be rubbed with a piece of pumice stone before they are done over with the varnish. This pumice stone must be made flat on one side, and must be free from sand, so as not to scratch the wood. As the softer kinds of wood swell up, for the most part, when the stain is applied, and lose their smoothness; rubbing them in the above manner with pumice stone is the more necessary.

VIII. *Comparative View of some dangerous Diseases, supposed to be occasioned by Insects, which prevail in Sweden, Russia, Siberia, and the adjacent Countries.*

[Concluded from Page 144.]

THE late Dr. J. J. Lerche, of Petersburg, communicated to me the following account of some pettilential diseases which manifest themselves in the marshy districts around that city and in other places during dry summers, and which appear to me to be of the same nature as the Siberian disease before mentioned. But that I may not be accused of endeavouring to pervert facts for the purpose of supporting my own opinions, I shall here give the author's own words :

“ In the year 1756, a very hot dry summer, unhealthful for men as well as cattle, took place after a very unhealthful winter. The disease which then prevailed continued till the harvest, and extended on one side to Moscow, and on the other to Livonia and through Finland. As soon as the senate were informed of it, Condoide, physician to the court, was ordered