

Brewing

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In making wines
which is called must to ferment & therefore ought
to be conveyed as speedily as possible into the casks in which
no rubbish must remain open till the fermentation
is quite finished & the wine is become clear, after
which it is suffered to remain upon its lees the
stopper'd up, for 5 or 6 months, in order that the fer-
mentation which though almost imperceptible
still exists, may go on without the inflammable
spirit.

In the spring the wine is transferred into
fresh casks which have been previously fired on the
inside, when they are bung'd up tight, & kept
constantly full, during which time an almost im-
perceptible fermentation & operation still continues.

As this fermentation is stronger in the
first than the following years, the wine ought
therefore to be shifted several times during the
first & second years, but only once in the third
till in consequence of its becoming quite clear
this transference is found to be no longer requisite.

Whenever wine is transferred into fresh casks
the cask ought to be fumigated, in the case of white
wines this is effected by setting fire to brimstone
on the inside of them but in that of red wines with
nutmeg & some other aromatic substance & also
with spirits of wine.

The sparkling wines are obtained by taking
new wines not more than one year old which have
been well roused down & rack'd off, & bottling them
off, taking care at the same time to cork them
very tightly a process of which we have in champagne
wines. Here it is the interrupted
fermentation or rather the air that is not per-
fectly developed which produces the effect that
follows.

follows upon opening the bottle again.

(2)

The red wines have not their colour from nature, but acquire it in consequence of the black grapes being bruised, & put together with their hulls into a vat to ferment. In this fermentation the juice extracts the red colouring particles contained in the hulls. After the fermentation the wine is drawn off from the vat, & is called vat must; the residuum is put into the press but the first running is only one mixed with what came out of the vat, the latter which are of an inferior quality, being kept separate.

The operation of fining or clarifying wines is applied to the purpose of making bottled wine clear, & to that of operating the fine floating lees, in order by this means to prevent the further fermentation of the liquor. This end is answered by glutinous & mucilaginous substances, such as isinglass, Rabbit skin jelly, the whites of eggs, milk, gum arabic &c.

The former of these is most commonly used, to every eighteen gallons is usually taken half an ounce of isinglass, which after being cut very small, is dissolved by boiling it in one pound of water over a moderate fire stirring it continually, & is then strained thro' a linen cloth. This jelly is immediately mixed, while it is yet hot with several quarters of the wine & beaten up till it froths, & then poured on to the rest of the wine, together with which it is shaken, or stirred for half an hour, after this may be added half an ounce of cream of tartar in powder together with a quarter of an ounce

ounce of salt of tartar. These salts may (3)
in many cases be dispensed with.

The cork is then bunged up & the wine suffered
to stand till it becomes clear, when it is drawn
off & bottled.

Red wines are fined down with the white
of eggs, which may be previously beaten up
till they froth. In these cases too fixed air
may be introduced into the cork with very good
effect. Another receipt page 36

The restoration of spirit, & the melioration
of our wines is effected in the same manner
as a poor & watery wine is changed into a
good spirituous & strong bodied liquor with
a view to the former object they must be
charged with a larger portion of a homogeneous
accharine mucilaginous substance in which
a considerable quantity of vinous spirit is
contained in a latent state (or rather which
is capable of producing a considerable quantity
of vinous spirit) & with which it must be made
to ferment afresh, in consequence of which
a different proportion of their constituent
parts is produced. This end is attained in the
following manner: Dist ten pounds of lump
sugar broken into small pieces: & fifteen of
fresh openish raisins without either stalks
or stones, one put into a clean & sweet cask
upon which the cork is filled about $\frac{3}{4}$ full
with wine; & the bung is put in very slightly.
During the first five days the cork is shaken
twice a day, & in order to promote the fermentation
of the liquor, sixty drops of spirit of
vitrol

4) vitriol, & one hundred drops of a solution of salt of tartar in water are added to it, each separately, care being taken. However, after the addition of the former to shake the cask well before the latter is poured in. If after ten, or twelve days are elapsed the wine does not begin to ferment, the fourth part of each of these ingredients may again be added & the liquor let alone for 4 or 5 days longer.

If the fermentation does not then ensue the fourth part of the same ingredients may be added, ~~but not more~~ ~~but not more~~ ~~but not more~~

~~The cask in winter ought to be kept in a tolerable warm room but in summer exposed to the open air.~~

The whole fermentation ought to last forty days in all, but if it should cease sooner it may be excited again by dropping into it alternately a small quantity of the liquors before mentioned.

When during fermentation the wine grows better it is a good sign.

Ambrosia on other side

The cause of these defects lies in the proportion of the natural constituent parts of the whole must, in consequence of which the aqueous and acid part predominate either naturally or through neglect the wines are deficient in genuine spirit. To remedy these defects of the inferior wines, & raise the liquor to the standard of the more generous wines either the part which is deficient must be restored by art or that which is redundant abstracted. with a view to an other side.

The wine having fermented for forty days the (5)
cask is carried into the cellar & suffered to
stand above and is turned till the Lees have subsided
to the bottom & the liquor is become clear. After this
it is transferred into a fresh cask that is
fumigated with sulphur, when it is treated like
other wine. Its clarification may also be
promoted by fining it down. When the wine is
wanted to resemble sack, the cask is strongly
fumigated with nutmegs. The whole process
takes up from 6 to 8 Weeks.

For imitating Burgundy one part of the pro-
ducer must of red wine must be mixed with three
of red wine itself, in like manner concentrated
by frost & the whole mixture fermented & suffered
to stand till it is two years old. If there is nei-
ther red must nor red wine to be had, white
will answer the purpose. If in the first summer
a tenth part of the juice of Black Cherries
(from which the stones have been taken before
they were pressed) be added to it, and the wine
be suffered to stand untouched for the space of
two years.

The following wine will resemble the finest
sparkling champagne. Take off the must
of wine concentrated by frost one part, & mix
it with three parts of wine the strength of
which has been increased by the same means
and as soon as it becomes clear in the cask
draw it off into bottles.

The Italian wines are imitated by letting
three parts of frozen must ferment with one part

6.) part of wine, in like manner concentrated by frost, & leaving the liquor to fine itself in the cask.

Phenish.

The following wine is a good imitation of Phenish. Take any quantity of wine tolerably new; let it freeze but once, and afterwards as often as it becomes fine rack it off into another cask & stop the cork not to drink it till it is three years old. But if the wine be very acid, a sixth part of concentrated must should be added to it, which will correct it, & render it soon fit to drink.

Spanish wines

are half fermented & clarified must of very ripe grapes. The grapes therefore must be suffered to wither, & the juice be pressed out of them in very cold weather, & suffered to freeze very in bulk, & afterwards be left to fine itself in the cask.

The following wine is an imitation of wine called Stern wine.

Mix one part of must concentrated by freezing with two parts of wine which has twice undergone this operation, & let it stand a whole year in the cask.

Hungarian wine.

is imitated by mixing together equal quantities of must & wine, both of which have been concentrated by frost, & letting them stand for several years. This liquor acquires additional strength, in case the wine which

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8/ Fruit wines differ from each other as much as the fruits do of which they are made. The most celebrated of them is Cyder, which in many countries is made of acidulous apples in great quantities other fruits also may be had in sufficient quantities to make wine such as pears, currants, straw-berries, raspberries &c.

The best use that can be made of natural wines of an inferior quality is to make artificial wines with them of various sorts by mixing them & causing them to undergo a fresh fermentation with the juices of the sweeter fruits, such as cherries, plumbs & the like at the same time adding a small quantity of spices.

Cyder

The first thing to be observed is, that the apples must be piled up together in a place exposed to the ^{open} air & sun in order that the juice of them may first be perfectly well matured, after this they are to be carried up into an airy loft, that the superfluous humidity may evaporate.

In the operation of pressing them off, care must be taken in like manner as grapes that the rinds & kernels be not marked & pressed over much by which means the cyder is apt to acquire a rough & bitter taste. A better method therefore of pressing or grinding them than at present practiced is a desideratum of the greatest consequence.

As to the management of the fermentation, every thing that has been already observed with respect to wine holds good also here.

Cleanliness, the avoiding the loss of the odorous spirit, the abatement of the superfluous recrements, & the filtering must constitute the chief objects of the operators attention in this process.

process. The must of fruit may also be (9)
divided into two equal parts; and one part of
it boiled down to half the quantity, & left to fer-
ment in conjunction with the remainder; or
some of the sweet liquors before mentioned may
be added to it, previous to the fermentation.
Both the must & the wines of made fruit may
be likewise be meliorated by concentration by means
of frost.

Mead.

Honey is dissolved by being boiled up together with
5 or 6 times its quantity of water & continually
stirred. During the boiling too a quantity (at
libitum) of hops tied up in a cloth may be put
into the liquor; which after it is transferred
into a cask, & when it is sufficiently cool
mixed with a small quantity of good yeast &
left to ferment properly.

In all the cases above mentioned, the
evaporation holds good that the more sweet
& the less water these juices have, till they are
reduced to a certain degree of fluidity, the more
they are inclined to fermentation, & the less do
they stand in need of any additions in order to
throw them into this state. but when the op-
posite circumstances take place, fresh wine
incorporated must, raisins, or sugar may serve
with the assistance of a gentle heat to promote
this process.

10)

Strong Beer or bottled.

Is made by drawing off new beer after a very brief fermentation into strong bottles well corked & keeping it for a considerable time.

The chief circumstances to be attended to in brewing beer, are to expose it as little as possible to air and heat. To this end the casks must be pitched over in the inside, & the bung stopped down close, which may also be covered with pitch; and further the casks should be kept in the deepest and coolest cellars that can be procured.

The Distillers business is different from the preceding & consists of a perfect & total evolution (by means of fermentation) of the acid-saline marilaginous compound contained in corn, fruit & other bodies, adapted to this operation, that all the ordent spirit contained in them may be burnt out from the original natural combination as effected by nature & in the subsequent separation of it by means of distillation. When the difference of the bodies used for this purpose, and their elementary composition depends the good quality of the ordent spirit which is to be obtained from them.

Genuine Spirits of wine otherwise called Brandy in those countries where there is much wine cultivated, is extracted (without using any good & drinkable wine for this purpose, & ~~the~~ ~~elementary composition~~ from the lees of wine, & the husks of grapes, of which the French & Spanish brandies may serve as instances.

I want of a sufficient quantity

of it, and on account of the high price it bears (11)
in many countries. These spirits are extracted from
Rye & hence called malt spirits. Though many other
substances are fit for this purpose, & several of them
even yields a somewhat greater quantity of spirit

Rye is notwithstanding the kind of corn most
usually employed in this intention; as it is cultivated
in the greatest quantity, & consequently both
on account of the produce it yields, & its price
it is always more advantageously sold than any
other kind of corn otherwise. Wheat barley, &c. the
may be used; of these the former is said to yield
one third more spirit than rye.

For the purpose we are speaking of, the
rye is usually ground with a sixth part of
barley malt & afterwards scalded with hot water
by which means the soluble sweetish mor-
euginous compound is extracted. This being
done the mixture is cooled with cold water
to that degree that the yeast may now be
immediately added. After this has been stirred
in amongst it; The vat that holds the ferment-
ing mixture is to be covered with a lid, in which
there is only one small aperture, besides which
cloths are laid over it in winter, in order to re-
tain the gentle heat requisite for carrying
on the fermentation; and in this manner it is
left to ferment by itself till the fermentation is
finished. The most certain sign of the ter-
mination of this process is when after forty or
perhaps forty eight hours no more bubbles
are seen to rise nor hissing noise perceived
and the mixture which before had risen

12) remarkably, has subsided again in
which case it is no matter whether
the liquor be clear or not.

Distillation

Immediately upon these appearances the operator must proceed to distillation; in this operation particular care must be taken that the mixture does not ad here to the bottom of the still; and contrait En pyreume a circumstance from which distilled spirit is apt to acquire a bad smell & taste. That which does not evaporate: in order to prevent which the fire must be regulated with caution, the vessels well luted together & the water in cooler often renewed, & thus kept continually cool, & lastly that the liquor which comes over no longer exhibits any vestige of an ardent spirit.

What comes over in this distillation is an ill tasted watery spirit which therefore must be rectified. I.E. depend of its superfluous water & its disagreeable flavor by a fresh distillation. In this operation for the sake of purifying the spirit still more, some clean wood ashes may be thrown into the rectifying still with a view the better to retain in it the rancous acid, which pass'd over in the first distillation along with the spirit and is impregnated with particular ethereal particles. At the same time too, some

aromatic additions may be put in to the (13)
still, in case the spirits are to be improved
=rated with them. A stop is put to the 2^d
distillation as soon as ever the liquor ^{that} ~~is~~
over begins to manifest a watery taste.

Six pounds of the fresh roots of twisted
grass cut in pieces & brewed, ~~smelt with~~
a mash ~~being~~ made with them of boiling
water & fermented with two ounces of
yeast after the fermentation was finished
the liquor ~~being~~ ^{was} put into an alembic
& a watery spirit drawn off from it, which
after being rectified produced four ounces
of a liquor as strong as common malt
spirit and of a much more agreeable
flavour. This weed is therefore recom-
=mended to distillers, as a decoction may
serve to cool their mash & thus increase
the quantity of their spirit. Of a decoction
=on of these roots with a little yeast a beer
may be made a tolerable palatable beer
which will keep for three months. Perhaps
treacle in the proportion of half a pound
to a gallon would be no useless addition.

A composition of this kind too might
serve for making vinegar equal in
goodness to the common malt vinegar
used in this country and 100 pence cheaper.
~~This weed contains a large quantity~~

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Vinegar

When the above mentioned fermented substances are to be converted into vinegar they must be treated in a manner quite the reverse, from what they were before, as for this purpose the escape of the odorous spirit is necessary. In order to produce wine vinegar nothing more is necessary to be done, than to put a quantity of bad wine, in casks that have not been filled on the inside, leaving an empty space equal to a hand's breadth & the bung holes open in a warm place till the wine is converted into vinegar after which it is to be transferred into clean vessels, which must be filled up quite to the top, & bunged up tight.

For the purpose of making fruit vinegar all kind of fruits are used but the rather best to pick out. The sound fruit remaining is first ground in a mill & pressed either by itself or with the addition of a quantity of water & a cask filled almost full with this juice. This after it has fermented from 12 to 6 or even 8 weeks, with the bung out, & the internal motion is no longer perceptible in it is drawn off from the lees & put into fresh casks which as in case of wine vinegar are filled with a hand's breadth only of the top, & are either left to stand in the cellar with the bungs out or else taken into a warm place to undergo the expected alteration.

Grandy vinegar is produced from Page & is made by either lading out after the which most has settled, some of the clear part of a corn-mixture fermented mixture, from which brandy

is to be distilled; or by suffering the wash that
remains in the alembic, after the brandy
has been distilled from it, to settle thoroughly
for some days & decanting the clear liquor;
or by distilling separately the phlegm that re-
mains in the rectifying still; after the
spirit has been drawn over; or finally by
adding to this latter an eighth part of the
fermented wash employed for making brandy
and then adding to either of these a good
acetous ferment, & keeping it in an open
vessel & warm place. 15

None of the refrigerating
should be well cleared with boiling water
after every distillation & once or three during
the operation to prevent the oils from coming
up the tube.

In the distillation of acid spirits their phlegm or
water passes over first: but with corrosive & acetic
spirits it comes over last.

16/

Rectification

When the crude spirit is so far from
 from accidental impurities, and the over-
 a perfect quantity of water with which it
 is mixed in the first distillation, when it
 constitutes the common brandy or melange
 of spirits of commerce, it contains half water
 rather less than more of which it must be
 deprived by several more distillations. This
 is effected by distilling common brandy again
 by itself in the same still with a moderate
 fire. till an agreeable fluid begins to come
 over. But is better to put in to the still, a
 little lime, clean sifted as hees or fixed alkali
 by which the above mentioned volatile acid
 & other ethereal parts are retained & remain
 behind in the still with the rest of the phlegm.

The spirit that is obtained in this man-
 ner, is now much purer & stronger, & is called
 rectified spirit of wine. but even this spirit
 is not entirely deprived of its phlegm, but gene-
 rally contains one eighth of water.
 To be deprived of this it must be distilled
 once more in a clean still, by a gentle heat
 either entirely by itself, or with the above men-
 tioned additions, so long as it is observed to be wa-
 ter, & in the best weak. It then bears the
 name of Alcohol or highly rectified spirits of
 wine

Spirit of wine may also be deprived of its
 water without distillation, by adding to every pound
 of it, two ounces of perfectly dry & good potash,
 and

and keeping it in a glass close stopp'd for (175)
some days. The rest as in consequence
of the stronger affinity it bears to water, quits
the spirit, unites with the fixed alkali, & sinks
with it to the bottom of the vessel: so that
the spirit may be decanted with it. In that
case it is called Rectified Spirit of wine. It must
be observed however that in this operation the
spirit of wine dissolves a little alkali, whence
it cannot be employ'd generally on all occasi-
ons unless indeed it be distilled over once more.

Strength of ardent Spirit.

As the quantity of water contained in it, may be
ascertain'd in two different ways viz by setting
it on fire & by the difference of its specific
gravity. With the former view, a small
shell or china can or glass is to be accurately
weigh'd & half an ounce or an ounce of ardent
spirit pour'd into it, the can or put into water
and the spirit set on fire. As soon as it is
consum'd the can is taken out, wiped dry
on the outside, put into a pair of scales, &
thus it is discover'd how much water is left
in it. When the can is not put into
water it is heated to such a degree during the con-
sumption of the spirit that a considerable
portion of the remaining water evaporates &
the proof turns out false. This trial is
most exact when made with rectified spirit.

The trial whether alcohol be absolute
& free from water is made by wetting some
gun powder, cotton or flax, with it & then setting
it on fire, if at the end they burn & are consum'd
along with it, this is a sign of its goodness.

18)

Purified Sp^t of vitriol.

is prepared in the following manner.

From 4 to 6 lb of the strongest alcohol are poured into a large phial with a narrow mouth & then one pound of the strongest oil of vitriol is gradually added to it, a little at a time, as soon as the phial is perceived to grow warm, the addition of more oil is put a stop to for some time, & the glass is left up, and suffered to stand till it grows cold again. Small portions of oil of vitriol are then again added, till the glass grows warm, which is set by once more to cool, & the process then continued, till the whole is poured in. The mixture now remains standing in the phial with the cork tied down fast, for 4, 6, or 8 days after which it is poured into a retort, which is set in a sand heat, & furnished with a receiver, that fits it well, & is luted to it very close fully. The next day the distillation is made by a slow fire, and conducted in such a manner that the receiver never becomes warm.

The distillation will either require one or two days according to the quantity of the ingredients. In fact it is continued till some what of a sulphureous spirit is perceived at the juncture of the vessels.

As soon as this odor is perceived, the spirit that is come over must be removed, that it may not be contaminated by this sulphureous matter. Towards the end of the operation, together with a small part of a somewhat acidulous phlegm there passes over a subtle sweet scented oil, which

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However must not be operated here, if it be
meant that the liquor shall possess the qualities
generally required in it; but the acidulous phlegm
upon which the latter product owing may be
operated & the oil poured on to the spirit that
came over first. The residuum in the
retort may be mixed with fresh alcohol
several times more with the same effect
& treated as before. When by any neglect the spirit
is contaminated with a little acid or with a
sulphureous smell it must be rectified
afresh over a few ounces of dry alkali.

Dulcified Sp. of Nitre is the same
in the main with the preceding; it is pre-
pared with alcohol & nitrous acid, for this
preparation the nitrous acid may be em-
ploy'd either in its strongest smothering state,
or else at all events in a some what more
diluted state; for the former case from ten
to twelve parts of alcohol must be taken
to one of acid; in the other from five to
six parts. In applying the smothering
acid it should be added to the alcohol with
a little greater caution & in still smaller por-
tions than the vitriolic acid, because in
this, the effects proceeding from its elasticity
are more considerable. After the mix-
ture is made the glass is in like manner
suffered to stand well secured for several days
and

20/ and then the mixture is distilled in a
retort with a gentle heat, till some phlegm
begins to come over. When by the taste
or other criterions we are led to suspect
that the spirit contains some unclean linid acid
a proportionable quantity of alcohol being
mix'd with it. it may be rectified afresh,
or a little alkali is added to it without
alcohol, & the spirit abstracted by a gentle
heat.

Stains Grease spots In the ac.

(21)

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Wax, pitch, resin, & similar hard greasy substances, with which woollen clothes may happen to be spotted, ought first to be cooked rapidly & then carefully scoured off as far as possible. after this use opt of temperature & hold the cloth over charcoal fire, that the unctuous matter may be dissolved by the oil: The solid part is then laid between 2 pieces of blotting paper, & hot ironing iron past upon it & the paper moved several times till the grease is removed. The cloth may likewise be immersed with the spot repeatedly & the spot finally removed with opt of wine & rubbed till it disappears. Grease spots of Butter & oil, heat is not requisite. The yolks of eggs too may be used last of all for this purpose, & where strong opt of wine may sometimes be along with the above mentioned materials.

Spots of grease on silk stuffs when they will bear washing may be removed with yolk of egg, & after the silk has been well rubbed with the hands washed out with water. Small stains may be taken out with turpentine only.

In black silks of gold may be used for purpose of dissolving & dissolving the grease. The wine the substance called orange shath, white bole, or clench, may be mixed up with water, which is to be laid upon the spot, & well rubbed in, then dried with a gentle heat & rubbed out again. These materials may also be applied to woollen clothes & stuffs.

There are on the contrary other substances which do not soil the stuff themselves will change & frequently destroy them. viz wine, vinegar, & urine. In stains of wine the stuff should be steeped in water & scoured with water, the stain rubbed out with a clean

22/ Clean linen cloth, & the stuff dried by a gentle heat. If after this the ulcer is injured a wet cloth dipped in deco of Salomoniac prepared with spirit of wine is to be taken & the spot rubbed with grease will cure. In many cases a draught of salt of tartar dissolved in an ounce of water will answer of same purpose. For fear of damaging the stuff a trial should be made upon a piece of it to see whether answers best. Stains made with vinegar followed in the same manner.

But on the contrary for urine, wine vinegar or the juice of limons must be used.

Iron moulds & such

Spirit of salt is used with hot water. But the cheapest & which is just as efficacious as others is aqua fortis diluted with water.

Cements for Glass & Porcelain. When they are broken are as follows.

For the former. Minium or else Litharge, quick lime & brick dust, in equal quantities, are reduced to as fine a powder as possible & made into a stiff paste with fine varnish. But it must be observed that a sufficient time after the application must be allowed it for drying till it grows as hard as stone.

For the latter let quick lime, rubbed down to as fine a powder as possible, be washed up with white of eggs or cheese curds to the consistence of dough. This ought to be applied with the utmost expedition, as otherwise it will be apt to grow hard before it is out of the oven. raters hands.

Another for broken pots or glasses.
Quick lime glaze of eggs and old thick varnish.

Luting

23

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for distilling watery liquid or oil, paste made of flour will do with paper several inches broad and wound several times round the junctures & pressed close into them. Boiled paste is better than cold.

In the distillation of ardent spirit and winers, paste may also be employed but bladder is better than paper which for the greater security should be tied well with packthread.

But in order to retain corrosive spirit, such a lute must be made as is neither eroded nor dissolved by them. Common loam mix'd with chopped flax and tempered with ox blood is cheapest; but this is better when mix'd with equal parts of clay which has no calcareous earth in its composition. but the best of all is when pure clay well kneaded to a stiff dough with linseed oil boiled down to a varnish & mix'd with chopped hair & flax.

All these ought to be dry before the operation is begun.

glaze a stone ware vessels. one part to crack unglazed all over as follows, Two parts of common loam mix'd with one of clay letting it lie in water till thoroughly softened, then add to it a little calves hair or chopped flax. mixing all well together. This is used for coating vessels exposed to the fire. If after the coating is dry, some trifling cracks are discovered it must be thinly done over again with the same materials. When the coating is

2th) required to be of a fusible nature, one part of
very clean sand ~~with salt~~ and a fourth part
of litharge may be added to the mixture.

Glass Retorts

When put in an the fire is in a sand heat & must
be always set so as to have the tube in a great measure
downwards. and the Receiver very large so as
to admit fully of the vapour expanding itself.

These glasses of a green or even a black colour, or which
have been fired with the smallest quantity of hot ash, &
by the fiercest and longest continued fire are the
most durable. For the purpose of sustaining
a fiercer fire the thinnest glass should always be
chosen. A first glass is for the most part unfit either
for sustaining an intense fire or for holding of con-
-dense and spirits.

Earthen Retorts

Have an oblong belly the bottom broad & flat the
neck bent downwards but not so much as the glass ones.

They are employed in such operations as require an
intense heat & therefore must be placed on the naked
fire.

There were a Earthen matrasses

Differ from the retorts just described merely by a neck
rising straight upwards from their belly. The Distillates
of aqua fortis & oil of vitriol are no other than these,
which they lay rather obliquely in the fire.

The thin retorts are gently water over with a small
powder made into paste. It may be

over cylindrical vessels, which are commonly made of cast iron, but sometimes of tin or copper plates. The former are preferable as being more durable and also maintaining the heat longer than the latter. Though (in the beginning at least) they require a little ~~and~~ fire to heat them. The bottom of this vessel is convex that it may present a more extensive surface to the action of the fire. It ought to have a stop projecting one inch & half from it, a rim to support it when it is put into ~~the furnace~~ a furnace, or it may probably be fixed with a grate under it. ~~If it is fixed~~ This rim must have a notch cut out on one side of it reaching to about its middle that the head of the pot may ~~be~~ conveniently be laid in a proper direction. This vessel is filled with ashes, sand, or iron filings, & into these is put the glass containing the materials designed for the operation.

Bathum Moria

When the vessel which we have just now described is made of copper plate & has no notch on the side of it, & consequently resembles a deep cylindrical copper caldron, it is called a bathum moria or water bath, and may be set in the above mentioned furnace instead of the cupel. Into this the matrass which contains the materials is put, being previously loaded with a leaden ring which is fastened to the belly of the matrass by means of strings, & adds a weight to the matrass sufficient to prevent its being ~~upset~~.

26) top'd to & fix by the motion of the water in the
pot. Upon this the pot is closed with a lid
which has a hole in the middle, through which passes
the neck of the matras. Besides this large open-
-ture, there should be another smaller hole on
one side of the lid through which fresh water
may be introduced to make up for the deficiency
occasioned by the evaporation.

This bath is employ'd in the distillation
of the most volatile matters which are capa-
-ble of being distilled by the heat of boiling
water.

Common malt spirit distilled (N.B. all very
 bottled make of same spirit). Then rectified
 with *Lapis infernalis* which is made by lime being
 added to pit ashes, pot ash, or any other vegetable
 alkaline salt dissolved in water & after they have stood
 together some time drawing off the clear fluid & evap-
 orating it till a sharp ^{flavour} remains. This pre-
 vents the ferments from rising by abstracting the
 empyreumatic oil, but unluckily it also abstracts
 that proportion of acetic acid generated in
 fermentation by which the spirit is dulcified
 to a certain degree & of course wholly deprives
 the spirit of it. This effect of the *Lapis*
 with the redistillation brings of course spirit
 to that pure state in which the noxious gases
 - lites prevail, & consequently the it was
 the intended purpose of freeing the spirit of
 ferments it causes a great depravity with re-
 spect to its wholesomeness.

The malt spirit being thus rectified
 a necessity arises that it should be dulcified by
 combination with some acid in order to convert
 it to a more & bracing by giving it the precious
 qualities that will make it resemble the true
 kind. This can only be done by means of such
 dulcification; & it is requisite that of acid em-
 -ployed should be the union with the spirit
 not only suppress the febrile action of it on the
 mouth & throat but impart to it pleasant

28
as far as may be the peculiar flavor & smell
of genuine brandy.

The acid generally used is the nitrous acid
commonly called spirit of nitre or aqua fortis
this acid when combined with the rectified spirit
raises a flavor & taste much resembling that
of brandy & suppresses the strongest effect
of the pure acerb spirit. but unhappily
this combination of the acid will not resist
the diluting action of water, but suffers the
union to be destroy'd by it & consequently the
effects which depended on that union.

In order to preserve the viscosity from quitting the
liquid the dulcified spirit of nitre (which is better
than of strong spirit) should be prepared by a pro-
per digestion continued some time with alcohol.

The longer the digestion the more intimately
will they be blended & the compound rendered
milder & softer.

After a proper digestion the dulcified
spirit should be mixed with of brandy by which
means the viscosity will be intimately blended
with the good & disposed not to fly off for a very
considerable time.

No general rule can be given for the
quantity of this mineral acid, requisite to be
employ'd; because different proportions of it
are necessary in different spirits. It shd how-
ever be carefully adverted to, that this a small
quantity of it will undoubtedly give an agreeable
viscosity, resembling that naturally found
in

in the fine subtle spirits drawn from ^{wine}
it on over large dose will not only cause
disagreeable flavours but also render the
whole design abortive by discovering the im-
= position.

But the best & only method of imitating French
brandy to perfection is by an essential oil of
= wine, but in order to use this ingredient a pro-
= curement must be procured for it is said
= unless to expect that this artificial oil should be
able to give the agreeable flavour to our fake
= some malt spirit.

Method of procuring essential oil of

wine.
Take a cask of dry wine less used by
holders dissolved in a few times than is
of water distill the liquor in a slow fire & ex-
= vate the oil by the separating glass added
to the worm. & reserve for the nearest uses.
Shod with cork covers fast.

Having procured this fine oil of wine
it may be mixed with a quantity of pure
= pure alcohol by which means it may be
preserved a long time.

Still holds 13 gallons when quite full with
distill. 7 gallons of liquor
Working copper holds 27 gallons.
Little copper that holds 15 gallons —

30. Moving the fermenting tubs (which should occasionally have close tops) no doubt this tub will have some water or a turbid solution of quick lime, which will be of use in destroying a fermenting acetous salt which is apt to generate in the vessels when of warm air has free access to them & tends to prevent the under fermentation. & vessels always well cleaned.

When fermenting casks to vessels may be placed in water in light casks but if shape is required at top of tubs the glass it will require no water.

During the operation the vessel must be kept from all external cold or considerable heat.

The operation is over when the hissing or bubbling noise can be no longer heard upon applying the ear to the vessel & also by the liquid appearing clear to the eye & having a pungent sharpness in the tongue, & that it may retain these properties & be well fixed & aged a pure & perfectly vinous spirit by distillation. It should be suffered to stand at least in a cool & quiet place if possible that in which it was fermented till it has changed by deposited & cleared itself of the grosser & become perfectly transparent & vinous & for growth in which state it should be removed to the still & the spirit then obtained will not only exceed that obtained in the common way in quantity but also in fragrance & purity.

The complete distiller, without some —

And Good Dispensing —

Wholesale medical photography

Hopson's chemistry —

Epon or spirituous liquor.

Distillation of Whisky.

First Brew made which when run from the grains is boiled instead of boiling again as is done for Ale. This is put in to be sold to wash but they generally have a large vat for the purpose where it remains till it is almost in a pure treycent state. and till it has done working it the wash (as it is called) is then put into a still and washed off. As there are no hops used

At B. Whisky goes only once over the still. but in Scotland it goes over twice —

The distillers have always a wet working cloth ready to bucken the top of still at pleasure.

The time that the wash is working depends upon the weather, At Mason says the right time to distill, is when the liquor is work is on the point of coming which will happen in time for want of boiling the wort as before mentioned.

Examine page 7 285

General rules for the distillations of the officinal 33
simple waters.

Where they are directed fresh, such only must be employed: but some are allowed to be used dry, as being easily procurable in this state at all times if you prefer rather more elegant waters might be obtained from them whilst green.

When fresh & green herbs are to be distilled, their wet state of water will be fully sufficient: but dry ones require a much larger quantity. In such cases there should be so much water that after all intended to be distilled has come over, there may be liquor enough left to prevent the matter from burning to the still.

The distillation may be performed in an alembic - ³ - with a refrigeratory, the junctures being luted.

Plants differ so much, according to the soil & season of which they are of produce, & when - ³ - we are according to their own age, that it is impossible to fix the quantity of water to be drawn from a certain wt of them to any invariable standard. The distillation may always be continued as long as the liquor runs well flavoured off of subject & no longer.

If the herbs are of prime goodness, they must be taken in the weights prescribed, but when fresh ones are substituted to dry, or when the plants themselves are the produce of unfavourable seasons & weather than ordinary the quantities are to be varied according to the direction of the artist. After the odours

~~3rd~~ above intended purpose has come over an
acidulous liquor which has sometimes
extracted so much from the copper head of the
still as to prove emetic. So this are owing the
Anthelemintic virtues attributed to certain dis-
tilled waters.

4th

In a preceding edition of the Edinburgh Phar-
macopoeia, some vegetables were ordered to be
slightly fermented with the addition of yeast,
previous to the distillation.

The principal on which this man-
agement is founded is certainly just, for the fer-
mentation somewhat opens & loosens their
texture so as to make them part with more
in the subsequent distillation than could be
drawn over from them without some assistance
of this kind. These plants however which
require this treatment, are not proper
subjects for simple waters to be drawn from
their virtues being obtainable to better advantage
by other processes.

5th

If any drops of oil swim on the surface
of the water they are to be carefully taken
off.

6th

That the waters may keep the better, about
one twentieth part their weight of proof spi-
rits may be added to each after they are distilled.

To keep a cask of wine full with
out using liquor.

(35)

Take a quantity of large pebbles or round
stones, wash quite clean; which put into the
cask as the wine evaporates which will keep
the cask full and collect all the tartar.

Curing Ale wine of Acidity
put one tea spoon full of salt of tartar
to a bottle of wine. which will restore it
in a few minutes.

The remedy worse than the disease —

Cement for Bottles
Three parts Rosin and one of Tallow.

Method of forcing wine in the pipe.
Take the ~~shell~~ white of eighteen new laid
Eggs. beat them up with a few twigs till
they become frothy in a clean earthen pan, y^e
will hold about two gallons; then from a quirk
hole in the head of the pipe draw off $1\frac{1}{2}$ gallons
of wine, stirring it with the eggs almost all
the time. Then pour it with a funnel into
the bung (which is forced out by giving a smart
stroke or two on each side with an Iron poker)
you then stir all the wine in the pipe round
with a clean broom stick. afterwards bung it
close down and in three weeks or a month the
wine

To take Tartar from Bottles or any
~~taster or~~ incrustation

Use Aqua fortis or Oil of Vitriol. with
 a feather.

To loosen glass stoppers.

Use S^t of wine but if that will not do, boil
 the bottle or put it only into hot water. &
 then shake the stopper gently & it will
 it round.

With the best alkaline salts, the mineral as well as vegetable alkali, tallow soaps are prepared in the following manner:

One part of either of these alkaline salts and about 2 parts of quick lime, so much as is requisite to render them perfectly caustic, are mixed together, and made into a strong ley with the necessary quantity of water. This ley is then made to boil with

three parts of tallow or fat over a gentle fire, & kept continually stirring, till the mixture becomes thick & ceases to adhere to the hand. When a little of it is taken out for a sample.

Towards the end, a proper quantity of common salt is added, by which the soap acquires a greater degree of hardness, because the common salt attracting a portion of the water, which is still contained in the soap, is dissolved by it & subsides to the bottom, so a strong neutral ley.

The weight of the soap here acquired is commonly double that of the tallow employed in making it. In the same manner, a wax soap may be prepared either of a yellow or white wax which is about 3 times the weight of the wax & is very hard & firm, and has an agreeable smell of almonds.

The Groenherst or Brunswick like virus prepare a soap of cocoa butter for medical uses. Spermaceti likewise may be made into a soap with a caustic ley.

For the purpose of making vegetable oil-soaps olive oil or oil of sweet almonds is treated in the same manner, till it acquires the requisite hardness of which the soaps of Alcantara, of Venice, & other of the finer kind of soaps may serve as instances. For the coarser soaps, lin-seed oil or hemp-seed oil is employed,

38

employ'd Either of these kinds of ooz to be good, must not feel greasy or unctuous in water nor exhibit any vestige of fat upon the water.

It ought further to dissolve easily in water & rather well, as likewise be easily soluble in Spirit of wine.

Harrogate water.

2 drachms of lime of sulphur

1/2 ounce of cam salt.

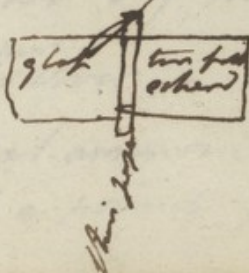
6 ounces of bitter purging salt

12 pints of water to be poured upon the ingredients & stand for six hours then strain it thro' a paper into bottles for use

NB the first pint or two ought to be hot water to dissolve the salts.

Method of silvering looking glasses. 39

Take ^{thin} tin foil as much as will cover the glass intended to be silvered; put this on paper turned up at each corner to prevent the quicksilver running off: rub the foil quite smooth on both sides with paper. Then put on a little quicksilver which will dissolve the tin foil in some measure by washing it over it with a quill top; after it is all covered with quicksilver, take a small slip of paper & place it on the edge of the tin foil. Hold it firm at each end then slip the glass upon it. When the glass is upon the foil press it down a little, & when it is taken up the quicksilver that remains will ^{run off and} do again: In a day or two if the glass is set on edge the quicksilver will entirely leave it & ^{the foil} become quite hard. At the glass must be the best sort & very well cleaned.



Method of Bending Glass

Make a ~~flat~~ model of plate Iron put the glass in a furnace till it melts a little, then it will be the form of the model.

Method of cutting Glass of any thickness by fire.

First take a file & make a small mark ^{with} where you intend to begin then take a round piece of ^{soft} wood of beech or Sycamore (the former is the best) burn it & apply the hot wood to the glass. blow it upon the glass & you may cut the glass in any direction you please & with the greatest expedition.

NB a 3 cornered file is the best & ^{marginally} a hot wire with a point better than wood.



Method of taking out ~~putty~~ ^{pieces} of glass out of a window without breaking —

Take a hot iron which apply to the putty & it will draw out all the oil & consequently leave the whitening that remains quite soft & crumbling, the glass is then taken out with the greatest ease.

Method of silvering Brass

First clean the Brass with calais sand, ^{& water} which will render it perfectly free from scratches, then use common salt & water upon the Brass, afterwards use a preparation of dissolved pure silver & it will become perfectly white like silver.

Method of preparing the Silver

Silver dissolved by heat.

Dissolve 2 Oz of ^{pure} silver in aqua fortis. precipitate in salt; add of cal-ammoniac, Sandiver, & white vitriol of each half a pound and half an ounce of Sublimate

~~sublimed~~ (42)

another.

Two ounces of fine silver dissolved in aqua forte
precipitate and add a washing 12 Oz of common
salt 6 ditto each sandover a white vitriol and
half an ounce of sublimate

This paste is to be ground very fine
upon a stone with a muller: a quantity of it is
then to be put into ^{earthen} an vessel in proportion to
the work to be silvered. The whole to be then
well stirr'd about with a large brush.

~~When the paste has attached itself to the~~
When the paste has attached itself to the
work it is placed over the fire till it appears
black, and the silver runs; it is then dipped
in spirits of salts to cleanse it and afterwards
boild in water, and then burnish'd.

To take Blackness from Brass use Spirits
of salt.

To separate Gold from Copper

Take one part borax 2 ditto of brimstone

To separate Silver from Copper.

Take Brimstone only

To prepare Gold for gilding on Copper Brass or silver

Take a small crucible & put in one part of gold and ten of quicksilver. put them upon a clear fire and let them remain there till the crucible be red afterwards put them upon an earthen plate, and when cold put them into a piece of wash leather and ring it through the leather which the quicksilver will pass thro' & the gold remain behind.

Method of gilding

Take a little quicksilver & put it into a galleypot to which add a little aqua fortis. to this apply ten times the quantity of water, and then take your copper and damp it over in the solution. Then take the gold and as much quicksilver apply them upon the copper

~~With~~ a little of the solution and a little salt
to spread on it. after it is spread apply it
over a charcoal fire until the quicksilver is
removed, then dip it in one part aqua fortis
and ten of water to soften the scurf that is
left by the quicksilver then take a scourie
with calais sand and water till it is quite
clean after which it is ready for burnishing

To colour gold Red.

To 4 Oz of melted yellow wax add in
fine powder one & half Oz of red ochre the
same quantity of verdigrease calcined till
it yields no more fumes, half an Oz of
beeswax calcined ~~through~~ to crispness

Another for the same

Vitriol and burnt allum of each 4 parts
Nitre two parts and salt one with the
addition of a little verdigrease, that is
to be kept dry or made liquid with vine-
gar.

To colour gold yellow.

45

Take Saltpetre 6 Oz green copperas 2 Oz.
white vitriol and allum each one Oz. if
you wish to make it a little redder add
10 penny wts of blue vitriol.

To colour gold green.

1 lb 10 of oil ammoniac & saltpetre
1 lb 4 Rhoman vitriol
1 lb 4 white vitriol
1 lb 18 of verdigrise

dissolve these in a little water; dip the
work which you want to colour into it, and
apply it over the fire till it is burnt off.
afterwards quench it in vinegar

To gild glass

Take shell & red lead equal quantities grind them
with linseed oil: lay it on & when almost dry, lay on
leaf gold. let it dry & then polish it.

46

Bad metal

one pound of Birmingham brass & 2 half
ounces of spelter.

White metal

two pounds of regulus of antimony eight
ounces of shrap brass 10 oz of block tin.

Castenag.

8 oz of brass 2 ~~to~~ of Reg of antimony
2 7 oz of tin—

Platina

one to of chendale or Mantosfield brass &
5 oz of spelter.

Best Hard white

one to of Bristol Brass 2 oz of spelter
1 oz of block tin.

Rich bath for plating.

one pound of shrap copper 16 oz of Bristol
brass 1/4 of oz of block tin—

Standard Silver

110 ounces 2 penny wts of fine silver 18
penny wts of alloy in 1 lb of troy.

Standard Gold

22 carats fine gold 2 carats of alloy in 1 lb of troy
wt a carat is 4 grains --

Gold solder.

12 penny wts of pure gold 200 of pure
silver 1000 of copper.

Gold coloured metal.

2 parts brass one of zinc.

Silver solder for jewellers

9 penny wts of fine silver 100 copper, 10
20 of ~~brass~~ ^{brass}. Mr Tongland & Co use
four parts of fine brass to one
of fine silver.

Solder for plating

10 penny wts of brass & 20 of fine silver

Hard solder

2 lb of copper & one of tin

Soft Solder.

2 thirds of tin & one of lead. for lead or tin work. but very fine work such as organ pipes one part bismuth and three parts pewter.

Plumbers & tinners for cheapness use pewter & lead for common solder. —

The foregoing receipts are the standard proportions but as every workman varies them according to his particular purpose it would be impossible to give all the varieties.

Boiling water dissolves ^{the best} metals

8 parts of bismuth 3 of tin & 5 of lead will form a metal.

To blue steel.

To have a fine polish at the surface
 1st spirits of wine 2nd by a hot iron 3rd wood ashes bear the preference. The work is to be covered over with them and carefully worked, when the colour is sufficiently high the work is finished

To stain a gun barrel

49

Take 1 lb of structure of steel and one quart
of an oz of sal ammoniac mixed together
apply it once over the gun barrel and put
it into a dry place after 24 hours ^{and} rub it
then rub it with a piece of woollen rag & varnish
it afterwards

Plating Powder.

1 pennyweight of virgin silver dissolved in 2 drams
of aqua fortis put into a gallipot and then
over a fire until it is dissolved. then put in
some cream of tartre in powder till it is
made into a soft paste then wash it 4 or 5
times with warm water to take of the strength
of the acid

To stop silver from copper.

Take 3 lb of vitriol 1 lb of nitre 1 lb of water
the plates metal must be put into it (so
long as it will act).

This quantity of menstruum will stop
better than 1 lb of metal.

This is to be in an earthen vessel then
precipitate in salt and wash according to the
method referees.

50 - ^{water} ~~Gold~~ - Golding picture frames

Take some parchment some and mix with some whitening so as to make a soft paste & paint over the frame three times letting it be dry between each time.

After it is dry apply the gold size, & when dry take a camels hair brush with some water and damp it over the gold size and then apply the gold and let it be dry before you use the agate stone for burnishing.

To make the glue size

Take parchment shavings put them into a saucepan & fill them up with water boiling them whilst the parchment is dissolved.

To make gold size.

Take a lb of pipe clay half an oz of black lead sweet oil and tallow of each 2 drachins grind them well together with water & keep an ounce of red chalk.

To make Gold Lash

51

Take 4 oz of spirits of wine & one oz of turpentine
3 drachms of Spanish aceto 6 oz
of gum shell lach, put altogether into a
bottle & keep it warm for 3 or 4 days & it
is made. refers to page 62—

Crowns & water will polish ^{stand} marble
Barnt Attenu & Water will polish white marble
which cleans white also

Cleaning gilt frames

Spirits of wine with a camel hair pen

Cleaning old paintings

sabber ^{over} with a little sweet oil & then
with soap & water.

Mahogany colour

1 pint of Archal & one oz of aqua
fortis ^{or oil of vitriol} together in a basin
this should be used when first mixed before
aquafortis loses its strength. it also answers after
the stuff has stood a long time & gets thick
To obtain deeper put more aquafortis

To keep Kidney beans & pease

Take them very young and boil them in hard water for 2 or 3 minutes then spread them out in a place separate to dry so as not to touch one another. When dry put them in a chest to keep them dry, and when wanted put them into some hard water to boil.

To preserve peaches and apricots

Take the fruit not quite ripe wrap them up in oiled paper, put them into a jar with a lead cover over it & cement it with a composition of 3 parts rosin and one part tallow put them in a cellar & bury them in sand.

To suggest a treat for Mahogany

$\frac{1}{2}$ oz cream of tartar

2 oz Alum

$\frac{1}{2}$ lb powdered wood

with 3 or 4 quarts of water

This is a good preparation to be done sometimes even when the wood is lastly

Mahogany 3rd coat

Alumacet root and Oil mixed harden hot.

This boiling discharges the colour of the Althornel but gives the wood if scented with a dark cast like old mahogany. In boiling Oil you judge of when it is enough by dipping in a feather or stick when it turns black when enough.

Thunder Powder.

53

Mix 3 parts salt petre. 2 parts salt of tartar, & one part of flower of brimstone well together; put the composition into a bottle & cork it well to prevent the air from spoiling it and it is ready for use.

Bait for Fish.

3 OZ of rhodium } dip your bait in it before
4 " of Ants } use.
1 " of Worms }

Stuffing of Birds.

one lb of common salt two OZ of powdered allum.
two OZ of ground pepper. mixd together.

A purple stain for wood.

Half a pound of Logwood chips. simmer over a slow fire in three quarts of rain water till it is near half consumed, or all the strength is out. Then strain off the liquor, and let it stand till near cold. Then add to it half an oz. (℥) of Dragons blood powdered very small. Let them simmer over a slow fire considerable time, then apply it boiling hot with a brush, which repeat 4 or 5 times or as often as you think necessary. rubbing it well after with a cloth or brush.

To stain ~~wood~~ Blue.

Dissolve Indigo well bruised one oz. in a pound of Oil of vitriol, set it near the fire for two or three days. Keep stirring it about with a stick. then let it down to what length you please with water.

Yellow Ditto.

Jamboge or Turmeric dissolved in Oil of vitriol.

Black for Ditto Wood

Heat a steel bar very hot take it out of fire and smear it over with Brimstone which will dissolve a part of the surface. scrape it off & repeat this operation till all the steel is quite dissolved (or at least as much as you intend to use) then heat it to a fine powder and incorporate it with strong aleger or vinegar

add thereto blue nut galls, and a little
copperas and Alum. But before you lay
the stain on, it will be proper to strike it
over with boiling hot logwood water. 55

A Green stain for Wood.
Dissolve Gamboge in water, add of the blue
stain to it as you see occasion.
NB. all the wood must be very white.

Blue Ink.

A little of the blue stain tempered with
water with the addition of a little gum arabi-
c

Inks of all colours made by using a strong
decoction of the ingredients for dyeing, mixed
with a little alum & gum arabic to give a
body and some consistence.

for example a strong decoction of Brazil
wood with as much alum as it can dissolve
and a little gum arabic forms a beautiful
Red Ink.

Sympathetic Ink.

Cobalt let down with water so as not to
burn the paper. which is to be read by
gently drying the paper at the fire, &
then disappears.

56

Dyes for Cloth—

Archil properly mixed with warm water.
makes a Pink.

Orange Scarlet

Red Saunders with a small quantity of Alum. boiled
with water. the proportions four oz of Saunders. a
two scruples of alum in three pints of water. which may be
diluted after wards according to the shade.

Scarlet

Carmineal & Alum gives a neat scarlet.

Red

Alkanet root. Brazil wood produce red with a
mineral to strike the dye.

Red bat root ind.

It is a general rule in all red colours that they are
brightened by acids & darkened by alkaline salts.

Black

Logwood ground & surraced of each one lb, nut galls
bound small two lb boil them for an hour, then
put in the cloths to be dy'd which boil one hour more
then take it out cool and air it. then put in
opercus 3 lb let it melt & put in the cloths &
boil near an hour take it out & wash it this
with dye 20 lb weight of cloth—

Black for leather.

Take common black sealing wax & digest
it in spirits of wine & put it on the
leather with a brush

Gilding with leaf gold.

57

Take leaves of gold and grind them with honey (a few drops) to which add a little gum water, and it will be excellent to write or paint with.

To gild Books & paper.

Brush the edges with dry yellow ochre. then do them over with white of eggs and water. then lay on the leaf gold.

Another.

Take Bole-armonial & penny warts sugar candy 1 ditto mixed and ground with white of eggs. smear over this composition, and let it dry well, then polish it, and with fair water wash the edges of the book and suddenly lay on the leaf. pressing it gently down with cotton. after drying let it be polished with a cloth.

Another.

A little sweet Oil mixed with white of egg a preparation for gold leaf. which when dry must be rubbed with an Iron not too wet.

To lay Gold on any thing.

Take red lead ground fine tempered with linseed oil. ^{write} with it and lay leaf gold on it. which when dry must be polished.

To lay gold on Glass.

Take chalk and red lead and use as the last.
 repeated page 45—

A composition to Silver Brass.

Take silver or gold lace half OZ. add thereto one OZ of double refined aquafortis. put them in an earthen pot over a gentle fire till all be dissolved which will happen in about 5 minutes.

Then take it off & mix it in a pint of clear water, after which pour it into another clean vessel to free it from grit or sediment; and then add a spoonful of salt, and the green water will immediately let go, the silver particles which will form themselves into a white curd. then pour off the water, and throw it away, which is of no more use. The white curd must then be mixed with two OZ of salt of tartar half OZ of whitening and a large spoonful of salt more or less as you find for strength, which when well mixed together is ready for use.

The process.

Having well cleaned the brass from all scatches (which will spoil its appearance) rub it over with a piece of old hat and rotten stone to clear it from all grease. or calais sand & water. then rub it with salt and water with your hand, and afterwards rub a little of the composition on which will adhere where the salt has taken. after which wash & steep it in plenty of clear water to kill

the aqua partes that remain in the ^{not} composition and when dried with a clean rag it is ready to be varnished — 59

White Varnish for Brass.

Take Sp. of wine (highly rectified) a pint. then mix, one part, of it with half an ounce of gum mastie in a phial by itself; one part of spirits & half an ounce of gum sandarach in another phial, one part of spirits and half an ounce of the whitest parts of gum benjamin, then mix and temper them to your mind. It would not be amiss to add a very little bit of rosin or clear Venice turpentine in the mastie bottle, which will assist in giving a gloss; If your varnish should prove strong and thick add clear spirits, if too hard pour from the mastie bottle, and if too soft a little from the sandarach or Benjamin. When you have brought it to a proper temper & ready for use, warm the silver metal (if a clock face, not too hot as to melt the wax) before the fire, or upon a heater and with a fine camel's hair brush, or clean linen rag laid up, & dipped in the varnish, stroke it gently over, until no white shades appear. and it will preserve the silver on many years. —

A Strong Cement for electrical purposes.

Melt one pound of Rosin in a pot or pan over a slow fire, add thereto as much plaister of paris in fine powder as will make it hard enough, which is soon known by trial; then add a spoonful of linseed oil stirring it all the while, and try if it be hard & tough enough for your purpose if it is not sufficiently hard add more plaister of paris, & if not tough enough a little more linseed oil.

NB I believe this to be as good a cement as can be made for fixing the necks of globes, or any thing which is wanted strongly fixed; for it is not very easy to melt again when cold.

Another softer than the former.

Take Rosin one pound; Bees wax one lb; add thereto as much red Sher as will make it of a sufficient stiffness, pour it into water and make it into rolls, and it is fit for use.

This cement is useful in cementing brass hoops on glasses or any other mounting of electrical apparatus.

Cement

Bees wax Chalk & resin equal
for cement use

Method of Gilding steel

Art. review.

61

To a solution of gold in nitro muriatic acid, add about a fourth part of ether, shake them together, & wait till the fluids separate. The upper stratum or aërial gold is then to be carefully poured off, into another vessel.

If any polished steel instrument or utensil be dipped in this solution and instantly plunged in water the surface will acquire a coat of pure gold, being a very elegant & economical mode of preserving steel from rust.

Varnish for wood & Leather

Take tincture of saffron or turmeric in a pint of spirits of wine; prepared gum Lac a sufficient quantity which is to be dissolved in the tincture.

N.B. This is a varnish of great use to lay over gold & silver or any thing which is exposed to the air.
refers to page 51

Common Varnish

Spt of wine one quart, Rosin one Oz. Gum Lac a sufficient quantity, dissolve the gums in a gentle heat (being close covered) and let them settle: then gently decant off the clear, which keep in a close glass bottle for use.

N.B. The thick which remaining may be strained through a cloth and kept for other purposes.

An universal Varnish the best of all others

Take Gum Sandarach (but Gum anime is better) dissolve it in the highest spirit of wine rectified one Oz & half more or less to a pint.

N.B. unless the Spt is highly rectified the varnish cannot be good. Some mix bold turpentine with it.

White Varnish from Chambers

Gum Sandarach & gum-mastic dissolved in Spt of wine. left to settle 9 days, then strained through a linen cloth, and after standing some time the clear poured off & bottled for use. N.B. for the best

White Varnish other gums are used viz
Venice turpentine, gum copal, elemi, benzoin,
anisee & white rosin.

63

Common Varnish

Take Mastie 2 Oz oil of turpentine one Oz. put
the mastie in powder into the oil & melt it over
the fire letting it boil little or nothing lest it be
clamping when it is enough you may know by putting
in a feather for then it will break it.

Common varnish for doors

Coopers painter

Boild Oil a little Sp^t of turpentine and a little
litharge.

Seed Rack Varnish.

A quart of sp^t of wine, put into a wide mouthed
bottle and add thereto eight ounces of seed rack
which is large graind, bright, & clear & free from
dirt and sticks: let it stand two days or longer
in a warm place often shaking it. Strain it thro
flannel into another bottle & it is fit for use.

Shell Rack Varnish.

A quart of sp^t of wine eight oz of the thinnest and
most transparent shell-lac, which if melted in the
flame of a candle will draw out in the longest & finest
hair. mix & shake them together & letting it stand 2 days
in a warm place. This varnish is softer than the
other, therefore is not so useful. but may be mixed
with it for varnishing wood.

64

House painting, Inside.

First prime over with thin glue size and water laid on warm, but leather speckles answer as well and are much cheaper.

2^d a coat of white paint and oil, with perhaps a little red lead in it.

3^d Putty up holes & cracks, and rub all over with a stone to make the wood quite smooth.

4th A coat of white paint $\frac{1}{2}$ oil $\frac{1}{2}$ turpentine.

5th For fine finishing, what is called clear tiding a mixture of oil very thin and white lead.

6th A coat of white lead $\frac{1}{4}$, Oil $\frac{3}{4}$, turpentine.

7th Turpentine & white without oil for dead finishing, which prevents paint from turning yellow.

NB each coat is laid in very even and as thin as water.

If any thing is to be coloured brown the 4th proce^s will have lamp black to give a lead colour. then 5th and 6th brown made of lamp black & Spanish brown, 2 coats if for high finishing $\frac{1}{2}$ Oil & $\frac{1}{2}$ Turpentine.

White paint has white copperas amongst it to make it dry. and dash colours little orange.

No turpentine or oil used on outside = side work. 65

Mahogany colour

After No 5 a coat of light red Sher is used for doors, amongst white lead. which when dry a thin body of burnt Sher is shaded with terradesina. A B and D brush cut on proper used for making knots of wood etc.

Common green paint very cheap for gates fences etc. yellow Sher and lamp black in such quantities as not to over power each other. Old Paint book pages 12 & 70

Glass colour. made of the best.

A fine French grey.	2 0 0
Half pound of distilled verdigrease	" 4 "
Oil - Blue verditer	" 4 "
Pint of best white hard shining Varnish	2 6
One Oz of sugar of lead	" 3
White lead 2 lb	1 8
with a very small quantity of Lamp & black.	

Dark green.

Patent Yellow & prussian blue.

Light green.

Verdigrease only with oil.

66

Oil colours continued

To paint out buildings

Use paint got very cheap at the lead mines ground with Oil.

NB Sand sifted very fine & thrown upon each coat of paint when done makes a very durable covering against weather.

In doing the finishing coat with turpentine only amongst the paints the turpentine sets immediately, therefore must be done very quick for if you miss any place or put the brush on again after it has set it will show, a very large piece would require more than one person.

Blue verditer a colour

green verditer do do -

mineral green a good colour

Silver grey

a little lamp-black or prussian Blue with white lead & Oil

Common French grey.
prussian blue & white lead

Boiled Oil.

Put in as much Linseed & red lead ground small as will lie on a shilling per 2 quarts otherwise it will never dry well. When enough it will burn & feather.

1/2 lb of Red lead & 1/2 lb of Linseed oil to a gallon of oil

Observations on Landscape painting 67
in Oil colours.

yellow Ocher with white for fore ground or
clouds: Calcined Ditto for shade to Vermilion
or red colour.

Burnt Umber with Prussian for shade &
for black.

Raw Umber on fore ground or as a shade
for both of trees.

Lake or to tinge Sky.

Terradecina for glazing trees or front ground.

Calcined ditto pretty for vermilion or tints
of a red cast with burnt umber mix'd

Prussian blue for greens or shades.

lightest green yellow Ocher & blue.

P. Blue and Terradecina fine green
for glazing.

Vermilion & white for sky & figures.

Terra vert for white a beautiful shade

Sky P. Blue & Terradecina & white with
a little lake & vermilion.

Distant hills the same, nearer hills
burnt Umber or Terradecina

Purple. blue and lake.

Flesh colour white and burnt Ocher.

Brown & Tiles calcined y. Ocher. For

68 / Bright sunny parts, use white, yellow
Ocher or terracotta.

Prussian & Vermilion for dark clouds
White lead if used to represent linen should be ground
with oil of walnuts as linseed oil will turn it yellow

Preparation for canvas laid with a knife
all scrap'd off that you can. letting it re-
main 2 or 3 days, then rub it with a pumice
stone & repeat the plaster again.

Frame must cypher off inside to prevent
being seen.

The paste.

Smooth over the canvas with the stone while
wet and a little honey. letting it dry. then do
it over with whiting and some mixed with a little
honey which keeps it from cracking, peeling or
breaking. the size is very thin & clear.

To make the whiting as above.

Take some mixed with whiting gadwood & ocher
the board or canvas (being made smooth). dry them
and use them 2 or 3 times lastly scrape them smooth
and draw over with white lead lampred with oil

To clean the grinding stone.
Grind carriers &avings upon it and then
crumbs of bread.

To clean Brushes dip them in Turpentine

Litharge of Lead per dry =
 using both colors use four ounces to
 three pounds of paint.

Durable paint for gates, painting as
 melt 12 oz of Resin in an iron pot with
 3 gallons of train oil, and three or four rolls
 of Brimstone. When the resin & brimstone
 are melted, and become thin, add as much
 ochreish brown, red or yellow ochre, or any other
 color ground fine as usual with oil, as will
 give the whole as deep a shade as you like.
 Then lay it on with a brush, as hot as possible
 & thin as you can. Some days after the first coat
 is dried put on the 2^d. NB it is well attested
 that this will preserve plank for ages, and preserve
 the weather from driving through brick work.

Transparency for moons, water
 &c. in transparent drawings.
 Spirits of Turpentine & Corada Balsam
 equal parts

White washing.

Common ceilings & walls. Whiting (or fine lime) & some made of thin glue or spatulas which are cheaper than the former. but for finished ceilings Paris white is used with a some of stretchers which are bought at the Shimmers. which is much purer than whiting & is used for colours also. a little indigo amongst white for 00 blue it—

The some is made by putting a pan full of water with the stretchers in it which will by degrees boil into a little compass. you then boil them again with fresh water for more some desiring to have the some done a day or two before using. but it will not keep very long. particularly in hot weather.

This is mixed with the colour as Paris white in a jelly state which is preferable to being hot as you can then tell the strength of the some, and your colour also. which when hot settles to bottom of tub. the jelly also was no like paste. The first time requires most some, but too much must not be used. the 2^d & 3^d time requires less & less as the wetting the preceding answers the purpose. If any broken part of walls, you dab the place over with the first coat then stave some Paris white & colour in paste. which plaster in with a wood trowel and the work keeps it in. then wash over it and proceed. Observe that the first coat is lightest the 2^d & 3^d increasing gradually in strength.

As the colour dries pretty fast you must be very careful the 2^d & 3^d time to proceed with great speed not suffering the edges to dry which would spoil the effect & show the brush marks. when one side is done. you can stop the work

scaffolding must be ready that no hin- 71
-drance may take place and when a little
of a side is done beginning at top of room
come down wards and keep the whole very even
and carry it forward without offering any to
day.

Coat prior to water colouring.
should be done over with a coat of white lead
and oil to give it a smooth body for water colour.

French Grey in water.
Indigo, ^{coldest vitriol} and Paris white observing to put a
little ruddle to take off the blue cast in some
measure in the last time over.
Prussian Blue too glaring.

Blue Black an earth colour for a French
grey but not so brilliant as Indigo. But will do
very well for servants rooms.

The Dove colour wash.
Burnt Umber. Raw Umber. Spruce Sher
Ivory black with Paris white

Dark Green.
powder Yellow & indigo blue.

Light Green. Mrs Osmond
1 lb of blue vitriol & boiled in two quarts of water
1 lb of Paris white for 4 hours closely. if it stands
some days it gets stronger. very pretty wash
better described page 2

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purple water colour.
Colcot vitriol & Indigo.

Stone colour.

Powder yellow & lamp-black

Some colours are mixed but no water.
when the stone is made it is mixed with
the colour

NB. If any paper or wall is dirty which is to
be coloured with the light washes. they should
be cleaned as follows.

Take hot lime & skimmed milk mixed &
turned when sloaking, made to the consistence & used
like whitewash. if this is to be laid on what has been
coloured it must be mixed with size.

NB When ever walls are to be done again in
water colours or ceilings with paris white all the
former colour should be washed off with water & a
brush.

Light Green wash as on other side page.

Take 4 lb of Blue vitriol & one lb paris white, boil them for
an hour in two quarts of water, which put in a pot to settle 4
or 5 days. draining the water off 2 or 3 times a day. then take
1/2 lb of glue & 1 lb of King loss, which boil in 3 pints of water
till dissolved, and then mix them with the vitriol, and strain
paris white warm. The walls must be washed with a soft
brush in the mixture, and done 3 or 4 times over.

Landscapes in water to be colored. wash with alum water which prevents the colours sinking. If some paper will require wetting 2 or 3 times but must be perfectly dry each time.

Pictures in water to be varnished, you must instead of Alum water. varnish them with one made of white starch which must be done before to prevent the varnish running through. then when the picture is posted on paper, varnish it over with the following.

Take white rosin 1 lb, Gum arabic, Venice turpentine, & linseed oil of each 2 OZ. first melt the rosin, and strain it very hot. then add the gum in olive oil (Ben Oil is better) till dissolved when strain it. to which put the turpentine and Rosin over a slow fire and mix them till well dissolved and when cold put it on hot.

Another of same
Oliberum and Gum Sandarach in powder mingled with Venice turpentine. melting and incorporating them over a gentle fire. then strain the varnish hot, and when you use it let it be hot also and it will shine well & dry immediately.

To Oil water colours

Use Isinglass very thin 3 or 4 times over a drawing that is sketched on cloth. then take nut or poppy Oil & rub it gently on with your finger & the drawing will represent an Oil painting.
mason Watson.

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Water Landscapes.

Mount the prints to look like oil painting. Varnish the print without saving glass then on the back, paint it in water colours and the varnish will make it transparent & look oily.

In varnishing any paper that is not to be transparent use fine glass.

To make Old paper.

$\frac{1}{2}$ Olive & $\frac{1}{2}$ sweet Oil rubbed on thin paper

Pencil drawing preserved by wetting the back with milk or milk & water.

Black Paper for drawing patterns

Take and smooth Lamp. black & sweet oil, with a bit of flannel, cover a sheet or two of large writing paper with this mixture. then leave the paper dry with a bit of fine linen. & keep it for use.

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Chemical transcolourations or colours produced by the mixture of colourless fluids.

Red...	Spt of wine mixed with Spt of vitriol
Orange	Solution of mercury mixed with oil of tartar.
Yellow	Solution of Sublimate & lime water.
Green	Tincture of Roses & Oil of tartar.
Purple	Solution of copper & Spt of sal ammoniac.
Blue	Tincture of Roses & Spt of wine.
White	Solution of sublimate & Spt of sal ammoniac.
Black	Solution of sugar of lead & solution of vitriol.

Colours produced by the mixture of coloured fluids.

Green	Tincture of Saffron (which is yellow) mixed with tincture of red Roses.
Blue	Tinct of R. Roses & Spt of Hart's horn, which is green.
Crimson	Tinct of violets (blue) & Spt of sulphur (brown)
Purple	Tinct violets & solution of copper (green).
Green	Tinct Camus (blue bottle flower) Spt of sal ammoniac colored blue.
Yellow	Solution Hungarian Vitriol (blue) & liquor (brown)
Black	OO - - - - - & Tincture of Red Roses.
Red	Tinct Cyamus & solution of copper.

Colours chang'd & restored.

Solution of copper (green) is made colourless by Spt of Nitre & restored again by Oil of tartar.

Turpied Sol.ⁿ of galls made black by Sol.ⁿ of vitriol & transparent again by Oil of vitriol. & then black again by Oil of tartar.

Tincture of R. Roses made black by Sol.ⁿ Vitriol & becomes red again by Oil of tartar.

A slight Tincture of red roses by Spt of vitriol

becomes a bene red: then by Spt of Sal am... 77
amoniac turns green, and then by oil of vitriol
becomes red again.

Solution of verdigrise (green) becomes colourless
by Spt of vitriol, then by Spt of sal ammoniac
purple, & then by oil of vitriol colourless again.

Receipt for tarring Veto torpau=
= lins &c from Bramby Retford

1 gallon of tar to 1 Quarts of lin seed
oil. (suppose it should be boiled a
part or warm) to be put on with a brush
mop &c. Old sails make good torpau lins &
are better for stacks than new ones

After water is boiling hot, which takes about an hour & half or two hours, put in two pails full of cold water into the copper to break it and prevent the malt from breeding; afterwards take a few pails full of the hot water into the mash tub before putting in malt. Then put in all the latter (except a large boll full) & fill it up with more hot water. stirring it up with from the bottom.

NB If you brew with hard water let it boil $\frac{1}{2}$ of an hour before you mash but if with soft water ten minutes will do. ^{mash at 173 or 174 in versatility 2 times but 4 degrees} more ^{more of 2 malt the quite best in any way you please}

When the mash tub is thus filled with water & malt and stirred all well together so that no lumps of malt remain, ^{put in the remaining malt at top to keep in the steam} (but wooden covers are better made to fit close). let this stand for three or three & half hours.

NB The straw or wicker bottle should be put into the great mash tub & the great cock in it also prior to mashing.

The copper being filled again. you will fill all the barrels as soon as the water is hot & being them up close (these barrels as well as tubs are all washed out with cold water the day before brewing which is all the washing required) when these barrels are filled up with hot water; fill copper again. and whilst it is boiling. proceed to draw off the mash. ^{it has} being stood (as before mentioned) 3 or 3 $\frac{1}{2}$ hours. let a gallon or two be drawn off as quick as it will

run, which put back again. Then turn the
 cock so as to admit only of a gentle run into
 the second Tub that is placed under the Charing
 the hops (four pound to eight Barrels) put into
 the 2^d Tub, which the liquor runs into.

While this business is going on fill the copper
 again, & shake the Barrels about as you are
 by the hot water into a wash tub, which with
 washing well the out sides with a brush & cloth
 makes them clean enough for the new liquor you
 then scrub & wash the bungs & corks in the same
 manner. setting all out to dry, if fine weather.

When the liquor with require 3 1/2 hours to run off in
 the water is again boiling in copper. ~~and~~
 all the liquor is run from the malt. turn the
 cock & put in some more water to the malt.
 so as to make liquor enough to fill the 2^d & run
 the 3^d Tub which will be just right to fill 2 half
 Hds. NB observe not to put in too much water
 this time for fear of weakening Ale, which can easily
 be filled up with liquor from the best brewing of
 any is wanted. This mash must stand an hour & half be-
 fore drawing off.

After this second mash (which is for weak
 a larger copper & mash tub) you fill up copper
 for small beer, and when the proper quantity
 of Ale liquor is run off which will be 80 gallons
 put in hot water to mash for small beer.
 so as to make half as much as ale. letting it
 stand three hours. then empty copper of the
 remaining water. and put in the it all the
 strong liquor with hops and let it boil three hours
 observe that till the liquor is nearly boiling the
 lid may remain on. but taken off at that time
 boil quick at first then

80

^{moderately boiling will do.}
 and ~~liquor~~ well stirred about. otherwise
 it would boil upon the floor. I ~~the~~ fire
 must be attended to, & managed accordingly
 At this 2 hours boiling (I suppose) is ~~the~~ the
~~liquor~~ of putting in the liquor.

Selling Ale

A little time before this boiling expires you
 draw off the small beer which may run quite
 quick. which will soon run off: y^e then take
 out the grains and clean the mash tub and
 dip the Ale liquor into it observing to stir the
 hops about that they may not remain at the
 bottom of copper but run through the coils
 with the liquor. then proceed by.

Boiling Beer liquor

Put Beer liquor into copper & boil it with
 all the hops for half an hour. after this oil it
 into 2^d tub. after it has passed over the coolers.

Put Ale in coolers to make it ready
 for boozing which will be known by pulling
 in the finger. blood warmth being about right
 only the thermometer is useful to as-
 sure a thermometer is extremely useful to as-
 sure this crisis. used always by brewers. as the
 liquor is sooner ready in winter than summer
 it must be well attended, and in summer in
 particular, as it will summer burn if put in
 too hot & will not work enough if too cold.

This being along with boiling the most diffi-
 cult part of the business, ought to be well at-
 tended to. If Boon is put to the hot it will grow quick
 for a time and cease very soon & if too cold it will not
 work at all. However if put to heat it will
 work.

Bramming is done by putting
about eight or ten lbs of yeast to a brew.
=ing of eight bushels. Observing to put the
first half to the Ale liquor. you put in
the yeast with a little of the liquor. then
put this to the general mass. NB mind &
keep some ale liquor out in the little tub
to wash the yeast with. half the liquor should be
left out to wash with.

Beating up Ale

When the Ale is thus brewed let it stand twenty four hours to work prior to beating up. which
is done by a dish with a long handle. this operation
is done three or four times after which
it is ready to turn & the yeast taken off.
NB the proper time for turning is when the yeast begins to
fall. Small beer wants no beating up.
NB the dirty black looking yeast at top must always be
thrown away otherwise the beer will be bitter.

Tunning.

The barrels having been well dried and
plaid before a fire the whole day before
tunning and the cock holes roind up. as well
as all holes except bung, and a small one at the
top of head, which latter the liquor will work
through. Then having the barrels quite
dry almost: put a handful of salt & one
=ther of flour on to a plate. mix them well
together. this you will either put into the
liquor & beat it up in the tub or else put a
little

into each barrel before the liquor is poured in. This mixture refines,

Working of the liquor

The barrels must be quite full having a small tub placed underneath, into which the liquor will work from the small vent hole at the top of the head. Which liquor is occasionally put back again and when the working quite ceases the barrel is filled quite full, the vent hole stop'd up also the bung and covered with wet sand.

It should it were be necessary to force out the Beer from a barrel, ~~force~~ ^{stroke} the sides with a strong poker repeatedly.

Eight Bushels of malt with 1 lb of hops make one hhd of Ale and one of small beer, but it is better to brew at once an equal quantity of both; by adding one bush or 6 pecks more of malt & the same hops will do or nearly so. This will save six or seven brewings of beer in a year.

The large barrels should be used for Ale and the small for Beer, and should not touch the wall when placed on the fermentry. —

It is in putting in hot water for Beer do not put the whole quantity wanted but put in some cold water to make up the remainder, which gets out of the strength of night, better than hot water. Observe also, it is better to put in all the hot water into tubs given to working. having put in 12 gallons to the tub a 39 into others of cold water to prevent working for 8 Bushels of 63 gallons.

Barrels cleaned

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The barrels should be cleaned & scrub'd once a year by taking out the head, but probably if the bung hole was made square & large enough for a man to put in his arm. it might be necessary.
This scrubbing is to prevent insects breeding

Barrels stopp'd up as soon as drawn off with the dregs in them to prevent them turning musty. which may be cur'd as follows

Musty Barrels.

Take as many walnut leaves & branches to them as can be got in at the bung of a barrel. take three or four bunches of these tied to strings hanging down in barrels & the ends out. fill them up with scalding hot water & bung them up tight, when cold rinse & empty them. NB quick lime is not only used also by taking out the must also recommended by putting Brimstone under the bung & washing with hot spirit.

Bottles washed

All bottles washed at brewing time and odd jobs done. If shot will not take off tartar or any incrustation aqua fortis or oil of Vitriol will. but care must be taken in using it to prevent burning clothes or skin.

If odd jobs are done the saving a few brassings in a year by larger vessels of copper is not making a deal and a good article. That should any misfortune happen a smaller portion of liquor is spoiled.

		Gallons
Large mash tub contains when full		300
The second Diss. w. underdeck	20	125
The third Diss.	20	60
The fourth Diss.	20	30
The fifth 2° Stronger-bull	—	20

Harden's Brewer mashes at 170 & 175. Let the liquor stand $3\frac{1}{2}$ or 4 hours & run off in $1\frac{1}{2}$. But in next mash is not particular whether the water boils & not if it is nearly so. Let it stand over one & half hour & run off in an hour & half also. 2 hours boiling is sufficient. Letting it as soon as possible to 70 degrees in own then put in yeast to it altogether & stir it round. Run it before it begins to boil without making it produce more yeast. Run up the water as soon as it falls. The third taking off also the top is it made in yeast & some but flour & salt put in that is not when brewed.

Ale Backed off when topped into 2 or more small casks. The larger one then bunged up close with y. drags in which prevents any possibility of spoiling. The small casks will then be always fresh.

N.B. The larger the quantity of liquor brewed the stronger it will be.

To preserve Beer. from ye Butter or Dregotten

When Ale is not sufficiently strong of hops draw off a gallon of the Ale and mix with it $\frac{1}{4}$ lb of hops & $\frac{1}{2}$ pint of sublimed meal into tough rolls which put into the cask and in a month or two it will refine it and taste stronger of the hops.

N.B. hops put in by themselves at the Bung will do.

Another Hardens brewer

take two Quarts of Ale water that is properly ~~cooled~~ & hold mix this with one pound of hops. All which may stand till it almost turns green with mild then put the whole into a ~~half~~ of liquor that wants ~~thinning~~ bung it down tight.

N.B. 1 lb of Hops for $\frac{1}{2}$ a Hops head. —
The wort must not be mixed with yeast or the hops hold — If the room is under 60 degrees it is not too hot for weakening liquor.

Distillation of Whisky & Gin

85

examine part 7 & 32.

The liquor for the first is made the same as for ale & small beer which when all is fermented mix the whole and you may put water a third time to the grains. That will afford some spirit to be mixed with the next brewing but the liquor must not be boiled as for ale. It is a bottle of ^{6 Bushels} malt will yield 12 gallons of whisky which must be twice distilled over a very good fire for if too much forced the liquor will be coarse, no water must be put into the 2^d distillation.

Gin is made by mixing the malted barley & rye ground as malt but not malted and the wash prepared the same, and in the 2^d distillation they put 1/2 lb of juniper berries from Holland for every gallon and a quantity of carinder seeds some fly root grown in England which I think is called calamagrostis aromatics.

Spirits in bottle never risen ^{but only} in a cask with the bung out and often stored with a stick the bung must be kept out at all times.

If new spirits in a cask are kept open so they will not mix and the oil will make the new spirit. This is the way the spirit grows smaller than liquor in a few months —

It is best running of wash to be boiled to keep from scumming and to be mixed with water for next wash a great effect in the wash may be obtained by constant stirring the grains. It is brewed in the common way makes the best liquor.

Turn over

Take currants gooseberries a black cherries. wash put whole into a certain quantity of spirits. As the stones need not be bruised as the spirits will extract the flavors by dissolving the kernels. add a sufficient quantity of sugar to sweeten it to your taste.

Garle Wine or Black currant wine. This in colour & flavor is perhaps in wholesomeness of properties more to be put than any other wine. is made by macerating the fruit in an equal quantity of cold water two or 3 days, then boiling the whole slowly, until the fruit is dissolved; when the liquor is strained off. scold the liquor gently, a short time; and add a quantity of sugar proportioned to the richness of the liquor. Presumpt and lay up agreeable to the method practiced with other fruit liquors.

Clove water of Whisky

Take half a pound of Jamaica pepper, bruise it, take a pint of boiling water and pour on it, cover it close and let it stand 2 1/2 hours, take quarter of an ounce of cochineal 3 of sugar (fine powder will do) 2 of treacle, mix them all well together and boil them half an hour, strain them and let them stand till cold, put what quantity you please in your whisky, your spirit ought to be almost the colour of claret, rummage it with a stick in the cask, and let it stand for a week to five - you will find by the addition the syrup makes that it comes little nearer than plain Whisky.

To make cherry brandy or whiskey as good
without cherries as with them.

Take ^{lb} 1 of bitter almonds and chop them small
when you make pome tarts take the stones of 2 and
bruse them, put 3 chopins of brandy or whiskey
to them, let them stand 8 days, take a quantity
of black berries or bramble and bruse them, strain out
the juice, and to every pint take ^{lb} 4 of lump sugar,
set it on the fire till all your sugar is melted
skim it and let it cool, then put it to your spirits
with what the almonds are steeped in. When your
spirits are added, let it be full as high a colour as
claret, the addition you will have to your spirits
will fully pay the expence, rummage them well
together and let them stand a week, so draw it off.

Good gin without distilling

Take ^{lb} 2 of the oil of Juniper, and drop it on ^{lb} 8 of lump
sugar, put it in to a 20 pint cask and fill it with
Whisky, rummage it back and forwards in your cask
for 4 or 5 days, then let it settle till it is fine, and draw it

Cyder

Have a tub with a cock or spigot at the bottom and put in it
the one half of your apples a little bruised, and pour on them
the juice of the other half, let it remain so 3 or 4 days, then
draw it off into another vessel, if it is not clear pour it on
the apples again till it runs fine, infuse a little Isinglass
in some of your cyder, which mixed with it in the cask will
fine it down.

To make Perry

The best fruits for this use are such as are least fit for eating, as the barberry pear, horse pear, barrel and bean shod pear, and still the redder they are the better. The method of preparing Perry is perfectly the same as that of Cyder, only that the fruit must be perfectly ripe, some mix crabs with them to mend the liquor.

Whisky Shrub.

Mrs. Mill.
Arboush

Get all the fruit you can of different sorts and put a portion of spirit to it in a cask letting it stand 2 or 3 days or longer, then strain it thro' a hair sieve and a cloth which put into the cask again with as much more whisky as you think the fruit will do for, adding for every gallon of liquor one pound of sugar or more if required sweeter letting it stand till fine.

Lemon or orange juice made into a shrub in the same way only using more sugar.

Green stones put into a bottle of Whisky brand makes a good Dram. No bitter almonds used in the same way.

Black currents with brown sugar
on excellent saving for Punch.

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To make wine from Sugar page 121 in
Chattens Book

Take two Cwt weights and a half of double refined sugar; put it in to a pipe or wine vessel of two Hhd fill the vessel within four gallons of the top with pure spring water; set it in a warm place or wine Vault, and 3 or 4 lbs of fresh Ale yeast, a rather of new wine yeast, and the liquor in a few months time will ferment into a sound, colourless, and flavourless wine, and remain susceptible of any colour or flavour at pleasure; so as with the stain called Annisee to be made of a true claret colour; and with a little essential ^{or rose} oil of any particular flavour required. And this is there delivered as an experiment that succeeds to great perfection.

Shaw's Chemical Lectures

Raisin wine from the same page 118
Mozga.

Take a quarter of a Cwt of whole or unbrined raisins, & put them to seven gallons of cold spring water in a wooden vessel or Cask, which set loosely covered in a warm place that the contents may ferment for some weeks & you will find the water soaked thro' the skins of the Raisins will dissolve their internal sweet or saccharine substance and become impregnated therewith as a menstruum, and then the fermentation is finished & the liquor will become an actual new wine and will deposit a large quantity of gross earthy sediment called lees at the bottom, Different from the husks or skins, & stones of the raisins.

It is to be particularly observed that if this wine is not bunged down when allowed at its various spirits but suffered to remain open & exposed to a warm air, it would soon turn roushy become vinegar.

Vinegar made from the husks of the
Raisins used in the foregoing — page 124

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Take the husks of the raisins and the sediment left behind after the wine is made, and pour 3 or 4 times their quantity of boiling water upon them so as to make a thin aqueous mixture. Then set the contents in a cask, covered in a warmer place than was used for the wine, and the liquor in a few weeks time will become a clear and sweet vinegar, which being drawn off from the sediment and pressed in another cask well stopp'd will continue long perfect and fit for use.

It is this experiment shows us a cheap way of making vinegar from refuse materials, such as husks of grapes, decay'd raisins, Lees of wine, Ground of the Brew &c which are frequently thrown away as useless.

The whole process whereby this change is effected deserves to be attentively considered. And first the liquor to be thus changed being kept warmer than in various fermentations in a few days begins to grow thick & turbid, and without throwing up bubbles or making any considerable tumult as happens in various fermentation deposits a copious sediment. The effect of this separation begins to appear first on the surface of the liquor, which gathers a white skin that daily increases in thickness till at length it becomes like butter, and now if it be continued longer in this state the skin turns blue or green, and would at last grow solid, and then putrify: Therefore in keeping down this skin as it grows, and throwing it gently to the bottom of the vessel, consists much of the art of vinegar making, especially from malt.

An inflammable spirit produced from various fermentation. From of ~~page~~ 131

We put three gallons of new wine procured from Raisins & water in the manner before described and committed it to the still which being worked gently we procured a considerable proportion of Brandy & a weaker spirit. This must be distilled over again and made up with wine or the weak aqueous liquor of the 2^d ~~beginning~~ running to a certain strength being a valuable proof.

Proof. Spirit page 132
are judged of by the head or crown of Bubbles rising upon the surface of the liquor when shaken in a long slender vial, and by the manner wherein these bubbles vanish. For if they are too large & vanish too soon, the spirit is deemed above proof; if too small & they go off too soon, it is said to be below proof. But this is a fallacious method of judging; because there are certain known ways of making a spirit bear this trial, when it is in reality above & below proof.

But the proper meaning of the word is that proof spirit should contain about four parts water, and the other half alcohol.

A method of curing both unfermented & fer-
mented vegetable Juices. part 191

Melt Brimstone in an Iron Paddle, and dip slips
of coarse linen cloth therein, and you will make
what the wine coopers commonly call matches.

Then take a slip of this match, and setting one
end on fire, put it into the bung-hole of a cask,
which being at first loosely stopp'd, suffer the
match to burn mostly out. Then the bung being
drawn in tight, betwixt the cask aside for an hour
or two, and you will find this operation will com-
municate a violent pungent and suffocating
smell to the Cask with a considerable degree of
acidity which is the gas, and acid spirit of
Sulphur. you will next fill the cask with a
very small wine which perhaps has scarce fin-
ish'd its fermentation, and bunging it down tight
put it in a place to clarify.

This is the common method of matching
casks for wines, but particularly for sturns, it is
an useful experiment; for poor wines could not
securely be kept potable a few months with-
out it; nor could sturns be preserv'd in large
quantities by any other method commonly known.

By sturn we mean the unfermented juice
of the grape several times rack'd and drawn
from its sediment. The cask being thus every
time purged with Brimstone, to prevent
turne from fermenting, so it would readily
do a so. become wine. it is the same of the
burning Sulphur which thus stops all tendency
to fermentation, and continues the natural
juice of the grape in a sweet state fit to be
readily mix'd with wines instead of Sugar.

which purpose it is very much used in Holland, and other Countries so also for giving a new frost or brightness to decay'd wines; so that very large quantities of this stone are annually imported to all parts along with the foreign wines: And after the same manner a Stone is prepared in England from the juice of Apples which serves the ordinary use of the wine Cooper.

Inconveniences of matching page 192

The principal inconveniences are, 1st that it communicates a nauseous sulphurous Taste & Smell to the wine; & 2^d that it is not applicable to Red Stems, or red wines, without greatly impairing, or almost destroying their colour; whence the Stems in common use are always white, the produce of white grapes. And because this method of matching does not suit with red wines, hence it is that all red wines are generally doed with Brandy in order to preserve them. And for wines in general, it might very well suffice to burn a little spirit of wine in the cask; and if they want strength or spirit, to preserve them owing to add Brandy or spirit of wine proportionally by which means they may be preserved without any nauseous smell, or Taste, which always attend the way of matching; tho match'd wines lose of their sulphurous Taste and odour by long keeping. But for Stems there is no other way, commonly known or practis'd to preserve them but by using the fumes of sulphur. The experiment

However is almost general, and may be applied to advantage in the case of all fermented liquors, and again to unfermented vegetable juices; such as those of Citrus genives oranges &c., which it prevents from running into fermentation or putrefaction. And this effect it seems to have, chiefly by stiffling the Air & weakening its natural elasticity. For as all various fermentation is found to generate Air, so the burning of Sulphur is found to stifle or destroy Air. And thence it seems to be, that the fermentation of liquors is readily checked by the fume of burning Brimstone: so that if a cask by fretting & fermenting appears ready to burst its hoops a Dish of burning Brimstone ~~readily~~ held under it, will soon quell the motion; which is one known method of checking or suppressing various fermentation.

The method of curing vegetable juices by decoction or Insipification. page 195
Make an infusion of malt in the common way of wort for Beer or Ale; then letting it stand to clarify, decant the clear liquor and boil it over a soft fire to the consistence of Treacle: in which state it will keep long sound, or fit for making Beer, vinegar or inflammable spirit. This experiment shows a general way of securing fermentable subjects to a small supply and of securing them against external injuries. Thus a kind of treacle from malt might be

procured in cheap years, for the service of the Vinegar maker, the brewer & distiller. The method is likewise applicable to any other sweet or saccharine juice; as that of grapes, the top-
-ping of trees, the fermentable juices of some-
-mer fruits, and of certain sweet roots as juncos-
-nips &c. These juices, if not boiled too high
or scorched in the operation, are easily brought
back to a due degree of thinness with water, &
fermented in the same manner, and, for all
same purposes, as they might have been be-
fore they were boiled: so that Beer Vinegar
& spirits may be thus commodiously procured
at any time & even in hot climates; and it should
seem that brewers, & distillers might also reap
some advantage from a prudent use of this ex-
-pedient.

This process seems also applicable to Apples,
which in cheap years, may be thus made into
a kind of extract without any loss of their va-
-luable parts;

Shells of green peas by being barely boiled
in water, communicates a saccharine sweet-
-ness thereto; so that the liquor thus been
made into tolerable drink and a good spirit

^{page 195}
A method of curing ^{the} ~~the~~ flower of
wine, & also Wine-~~lees~~ for the service of Distilling,
wine-making, vinegar making &c. &c.

Take a quantity of common Ale yeast, and
put it into a close canvas bag, gently squeezing out
the moisture in a screw press till the remaining
matter is left as hard as clay; and in this state
having packed it close in a tight cask and secured
it well from the Air, it will keep fresh &
sound for several months as has been often ex-
periened.

Artificial must prepare. ^{page 201}

Take 3 ^{lb} of white lump sugar well cleansed of
its treacle, melt it in 3 quarts of fair water, to
which add in the boiling half an oz of finely pulverized
Rhenish Tartar; which will dissolve with a remark-
able solution. and give a grateful Acidity to the
liquor. Then taking the vessel from the fire
suffer it to cool, and you will thus procure a must
which in all respects ~~well~~ resembles the natural
sweet juice of a white flowerless grape, that has
been well purified, and often washed from its sediment
in order to make Stems. and if this artificial must
be stored and that is matched, & well fumigated with
burning brimstone, after the manner shown in the
last of fermentations it will become a perfect Stems.
which may be made of any flavor at the discretion
of the artist.

Poor sugar added to any poor wine will ferment
therewith, improve it, and bring it to a proper degree of
strength & vinosity. and is much better than Rhenish Treacle

Stems Cyder &c. were with the wine coopers
 che out or amend their wares. If the wine to be
 thus amended is lost of itself, no Tartar should be added to
 the sugar; but if it be superior or too sweet then the
 addition of Tartar is proper.

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The present experiment add no less Improvement
 to the Art of Stems which may perhaps be hence
 brought to ^{its} perfection. For whenever Sugar, go, there go in
 a solid form Stems, Wines, Vinegars, and Brandies;
 that is the actual matter out of which by the bare
 addition of water, these several commodities may be
 readily prepared. For it is by no means necessary that
 Sugars should be imported in a liquid form for the
 making of Stems Wines as when Tartar & water can be
 so easily added.

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Our experiment also points out the way of perfecting the
 Art of Wines by reducing the impudent matter thereof to a
 small bulk, and occasionally in any climate bringing it back
 with water into a muck which may be tinged of any colour
 or impregnated with any flavour, so as to be fermented
 into a wine of any species. Thus if a few drops of the
 essential oil of Nutmeg or Cinamon, were to be rubbed
 with a little Sugar into a kind of Mucouscharum, and then
 mixed with the artificial must or stem, the wine made
 of it would have a very grateful odour & flavour. &
 so if an essential oil was made from the Lees of any
 particular wine, and introduced into our artificial stem;
 the artificial wine would thus have the odour & flavour
 of the natural wine which afforded the Lees, having for
 the roughness, thickness & dryness given by the Lees
 and stone; for our artificial must has no flavour or colour
 of its own, but readily receives a becoming impregnation with
 either by art.

page 217

Take an oz of fine Ising-Glass beat with a Hammer into shreds, and dissolve it by boiling in a pint of water, so that it become a stiff jelly when cold. Which pour of this into a foeth with a little of the wine to be fined; then stirring it well amongst the rest in the cask, being it down tight; and by this means the wine will usually become bright eight or ten days.

This method is best suited to white wines; but for red wines whites of Eggs are commonly used beat up to a foeth and mixed in the same manner with the wine.

This business is effected in a week or a fortnight as the weather proves favourable or not. cloudy or clear, windy or calm; which appears to be matter of constant observation.

Let it be here observed that all wines, Mallickins & Vinagers which are well made & perfect in their kind, will grow fine of themselves barely by standing, so that if they do not thus grow fine in a reasonable time, it is a sign they labour under some disease, viz too green, too acid, too Alcoholic, tend to putrefaction or the like. In all these cases, suitable remedies are required before the wines will grow fine.

Diseases of wines thus cured

The most general Remedy for all the diseases of wines is a prudent use of tartarized spirit of wine, which not only enriches, but dispenses all ordinary wines to good fine. But wines well prepared from artificial must in the method above mentioned, are subject to no diseases, and even those obtained in the common way may be effectually secured against all diseases by congelation which takes away their superfluous water without prejudice to their other parts.

The Use of Mith in wines.

Thin? mith Whewie is a proper forcing for all white wines. It weakens and small spirits; but in proper

for red wines, because it discharges their colour. Thus if a few quarts of well sherrard milk be put to a Hhd of red wine, it will soon precipitate the greatest part of the red colour, and leave the liquor much paler or almost white. Hence this experiment sometimes becomes of use in turning pink'd red wines into whites, when a small degree of acidity is not so much perceived. And on this property of milk depends that others of being throats, whereby it whitens wines that have acquired a brown colour from the Cask, or by hasty boiling before they were fermented: For in these cases the addition of a little sherrard milk will also precipitate the Brown colour, and leave the wines almost limpid, as of what is call'd a water whitening, which is much valued abroad in white wines as well as in Brandy.

White wines colour'd Red page 210

Put 4 Oz of Shat is commonly call'd Iron sol Rays into an earthen Vessel, and pour thereon a pint of boiling water, then cover the vessel close and suffer it to cool: then strain off the liquor as you will find it a very deep red colour, inclining to purple; so that a small portion thereof would give a beautiful bright red to a large one of white wine mix'd therewith.

(For keeping) this Tinct might be mix'd with Brandy as used into a Syrup with sugar; but the usual way with the wine coopers is to infuse the rays cold in wine for a night or more, and then using them with their hands. The inconvenience of this method is, that it gives the wine a disagreeable taste as what is vulgarly call'd the taste of y-rag. Hence the wines (thus colour'd) usually pass, among the judges for pressed wines, that have got the taste from the unvers bags in which the berries were pressed.

The way of infusing the Rays in boiling water is not attended with this inconvenience; but then

It loads the tincture with water, which may prove prejudicial to the urine; or if made into a syrup or mixed with Brandy, the colour is thus diluted or watered, so that a large quantity of these additional ingredients comes to be put with a small one of the colour that alone is the thing required.

^{The dry give a necessary colour}
 I was heretofore as Sassafras is sometimes used, the colour above alluded to is not properly a port colour but the Boardman's Red which does not so well suit with Port wine.

Shall Liqueur boiled in water is recommended as an extract which gives a rich red that comes to be exactly Cheaps, and is perhaps the perfect red port colour. but if this proves unobtainable let a method be tried of making a liqueur of the skins of the lying grapes. Cochineal might also answer the purpose though it loses its colour by mixing with all acid wines.

Page 212

The produce of the present experiment might answer well, if the colour could be had pure, as made up into cakes without being inhibited by sugar; for it is very easy to secure its too great brightness or vivid purple brightness, by the addition of a little burnt sugar. Rub of Blues, Ochre, wine or any other colour bordering on the tawny, so as to make a true Port Colour.

Wines and potable liquors improved by freezing.

Page 212.

Take a quart of ordinary red port wine included in a Florence Glass which place in a mixture, one part common salt and two parts snow or beaten Ice, and you will find the more aqueous part of the wine soon turned to ice, from which by a bare inclination of the glass, the thick Rich or more viscous part of the wine will be easily drawn.

This experiment is here performed too quick, so that some of the thick and valuable parts of the wine are catch'd & detain'd in the Ice. To perform it in perfection, the natural freezing cold should be employ'd; by which means, Wines, Vinegars & Malt liquors may be reduced to a fourth of their ordinary Bulk, without any considerable loss of their essential parts: little more than the useless or detrimental water being thus separated, so as to have all the essential parts of the wine admirably cond & capable of remaining perfect for several years.

Prick'd wines recovered, page 214.

To a bottle of prick'd red port wine, add about half an oz of tartariz'd sp of wine, then shaking the liquor well together set it by for a few days, and you will find it remarkably altered for the better.

The same method is likewise applicable to hard malt liquors, or such as are but just turn'd sour, and not near becoming Vinegar.

Brewing for distillation. page 215

Take 10 tr of malt reduced to a fine flour and 3 tr of common wheat meal; to these add first two Gallons of cold water, stirring them very well together, then five Gallons of water boiling hot which stir very briskly again. Letting them now stand for two hours repeat the stirring again, and when the whole is grown cold add to it two oz of solid yeast and set it by in a warmish place loosely covered to ferment.

This is the Dutch method of preparing the

work as it is called for malt spirit, whereby 105
they save much trouble, and procure a large
yield of spirit; thus commodiously reducing the
two businesses of Brewing and Fermenting to a
single operation. In England the method is to brew
and mash for spirit just as they do for Beer, only
instead of boiling the Malt they pump it into large
coolers, and run it into fermenting Buckets to be then
fermented with yeast; thus hastening twice the
labor in the work and losing considerably of their
quantity of Sp. by leaving the gross bottoms out of
the still for fear of burning.

In the manner of our present experiment
where the malt is ground fine we have all its
fermentable parts set loose, so as at once to mix
with the water; and we can thus put all the bottom
into the still with out danger of burning because
being rendered so fine at first they entirely lose
their clamminess in the fermentation, so as to
become light & buoyant, and thus increase the
yield of the spirit.

The meal of unamalted corn is found ne-
cessary to be mixed along with the malt to pre-
vent its over fermenting, and throwing off the
matter of the spirit. But as dispatch is here
particularly required to avoid expense and a large
operation of vessels, a considerable quantity of
yeast is added to quicken the fermentation,
so that it may be finished in 2 or 3 days.

More yeast sh^d be added if the weather be
cold and less if it be hot; The converse is to be
understood of meal, more whereof is required in
hot weather to check and less in cold to hasten
operations. which in the present case is design-
to be violent, contrary to what ought to be
observed in the fermentation for wines, where

the slower the operation the better the liquor will prove. Much more may likewise obtain here in a less degree; for it is possible to ferment the wort so violently that it will soon end in putrefaction.

Proper Heat of Fermentation page 231

The regulation of this operation includes (1)st the manner of putting the subject to work; & (2^d) the external regimen during the operation. The subject may be set to work either with or without addition, and with or without heating; and this according to the climate or season of the year.

The recent expressed juice of grapes seldom requires either: but falls immediately to ferment of itself and finishes the work in a few days. But in cold countries all fermentable juices require to be quickened by artificial heat and the addition of a proper ferment. The heat should be kept tepid, and the quantity of ferment moderate so as to begin the operation speedily, before the liquor receives any damage from the external air, or change of the weather. The ferment employed must be of the same nature with the liquor or yielded by a fermenting substance of the same nature with the liquor, otherwise it will introduce and impart its own foreign nature upon the subject.

^{page 232} Ferments consist of the most subtle moveable parts of the fermenting liquor, already separated from

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The groper or more sluggish; and are therefore
thrown up to the top of a fermenting liquor:
Whence being taken in their state of fermenting
motion, and added to a fresh parcel of prepared liquor,
no wonder if they soon set it also in a fermenting
motion. But care must be had not to use an over
proportion, lest instead of quickening the operation, it
should be prevented by too great a disorder, which if it
should happen, cannot easily be stopp'd nor its incon-
-veniences be easily remedied.

The external regimen during the operation
regards the admission or exclusion of the Air, and
the warmth of the place. The free admission of
the Air greatly promotes & quickens the operation
but carries away some of the finer volatile, un-
-ctuous parts of the subject and consequently in-
-purifies the liquor: Whence the most
perfect way is to exclude the Air, and to per-
-form the operation in a close vessel, if expec-
-tation be not required. In this case a little
space should be left unstop'd by the li-
-quor at the top of the vessel, and then
there will be no danger of bursting it, but
this might otherwise be easily prevented by
the use of a Valve to let out the foul Air
which is consequently generated in fermenta-
-tion, and if too long detain'd in the vessel, is
apt to be imbib'd again by the liquor so as to
give it a nauseous taste & odour. & if the climate
or season be cold, the place of the operation
sh'd be kept moderately warm by fire or some
proper contrivance, other wise the fermentation
may languish, or be check'd before the full effect is pro-
cured.

These cautions being duly observed, the operation will be duly performed to great advantage. When it is fully ended, or rather a little before, the vessel must be close stopp'd up, and kept well secured from the external air, that the liquor of itself, may grow perfectly bright & fine, as it will do if no error has been committed in the management. And this is the most perfect way of fermenting wines, where the fermentable liquor is prepared by art, but other cautions & rules are required, when nature affords the juice imperfect or unduly mixed as in bad vintages.

But this method of fermenting clare is somewhat slow, and greater expedition is often required in practice, in some cases as some times to be come: the primary consideration. We shall therefore next take a view of the several artificial means to be used for shortening the operation, without any considerable prejudice to the liquor.

The things that have a principal tendency to hasten the business of fermentation are (1st) mixing the liquor sufficiently dilute (2^d) the addition of a large portion of fermentation (3^d) keeping the whole in a due degree of warmth, & (4th) the free admission of the external air.

It is a common observation, that thin wines finish their fermentation sooner than such as are rich, as if for the sake of dispatch, they should be made a little thinner than usual. The defect may be afterwards supplied with spirits of wine, & is the wine according to the practice in wine countries when the vintages prove poor & watery.

A large proportion of ferment has a great power to forward the operation, and becomes necessary in making all the artificial wines, where the vegetable juice is not recent, or where it has lost the power of its force, unless the wine be purposely designed to ferment imperfectly, that it may retain its sweetness, and openness, which is always with a loss of strength, or spirits, which however may be readily supplied by the help of Brandy. Where the utmost expedition

is required, a due temperature or sized degree of 109
external warmth, must by all means be kept up
by art, if the climate, or country, does not naturally
afford it: For heat has a peculiar power of lignifying
and thinning all fermentable juices so as to make them
work, without lessening their strength or diluting does;
which indeed it rather increases if it be not too violent,
or too long continued.

It has been already observed that too free an ad-
mission of the external air, tho' it greatly forwards
the operation, yet considerably prejudices the liquor,
by carrying off its finer and most spirituous parts. The
Pure Air therefore to be admitted prudently, and principally
at first in order to excite the fermentative matter,
and this spirituous part may be afterwards detained and
kept from flying off towards the end of the operation
by covering the vessel close or giving it but little vent.
And when these several means are gradually used
together the operation may be performed with considera-
ble expedition & advantage; provided the original
fermentable matter be rightly disposed or duly mixed
of saline & acid, only a terrestrial part.

Sometimes fermentation gives manifest signs
as by frothing, heaving, & pluming &c. and again some-
times no signs at all.

When any fermentable matter is sufficiently diluted
with water it has an immediate tendency to ferment
and hath often actually fermented & produced a wine,
tho' a spectator with neither see nor well suspect any
fermenting matter in the liquor. In this case when
no ferment has been used and the operation proceed
in its own natural slow and silent manner, there
may be commonly seen on the surface a thin skin
which instead of a large frothy head in the strong
or fermentation, keeps in the fine parts, and prevents
their escape. Sometimes also a degree of heaviness

as Montaigne will appear on the top, without mixing itself with the body of the liquor as with our communicating any ill taste thereto. And in this manner a slow and silent fermentation has been carried on for several months without any bubbles or other common signs of the operation: And it has at last finished its course to greater perfection.

And something like this silent fermentation remains for a long time in the liquor, after the common tumultuary fermentation is finished, which indeed leaves but its work imperfect; so that the liquor afterwards requires a considerable time to grow finer, ripen, & become fit for drinking: Whereas in the silent method, these ends are all at once effected in at the time of the operation. And hence lies a great part of the advantage, which the slow way of fermenting does have over the common one.

It is observable that though a small quantity of liquor finishes its fermentation sooner, than a large one, yet the larger proves the better; as a great body of liquor is not so liable to receive pernicious alterations, from heat, cold, the air, or other accidental things. And even where nothing remarkable of this kind has happened it is surprising to note the difference betwixt a small quantity and a large one, of the very same liquor, fermented in the very same manner.

Small wines may be brought to undergo a 2^d fermentation, by being mixed with a proper fermentable materials, and thus may be renewed strong and richer: so as to be fit for operation as other worse wines which finish their fermentation in eight or ten days, will not ordinarily endure the 2^d one.

It is a necessary precaution in all fermentation 111
to prevent the great external heat, for fear of
changing it to putrefaction. And to remove the
wines to a cooler place when the violence of the
operation is over; that they may purge & fine
themselves by degrees, without danger of turning acid
as they are apt to do in a hot place. Or if they
cannot be kept cool, they ought to be early bottled
from their lees; which tends to preserve them sound
and prevents them from turning acrid & very foul.
Of all liquors prepared by fermentation
page 237 The interposition of water keeps not only the
saline, oily and spirituous parts in their due com-
-ment but also the mucilaginous and earthy ones;
from which if they are again disturbed, those pro-
-pens such a change, as cannot well be prevented
from proving pernicious, but the liquor will one-
-ce fully and hastily proceed to Corruption. Thus if
a fermented liquor be agitated by a great boiling
heat, its proper arrangement is thereby dissolved
and the liquor not only becomes thick & turbid, but
more saline and austere, thro' the separation of
of the spirituous & oily particles from the saline ones,
whence with being before in some measure connected,
their arrangement was shattered & lost.

Such liquors tend so much the faster to alter-
-ation & putrefaction if they are not carefully bottled
after & preserved; but especially if thro' any great
corruption by heat, the more intimate connection
of the spirituous parts with the saline & mucila-
-ginous, or even with the remaining aqueous ones
be disturbed & broken: Whence either the whole
may turn to vinegar, or to a very acrid & bitter
But if such fermented liquors are carefully pre-
pared.

at rest, and kept from injuries, they will long remain in a sound state, as we commonly see in wines and small liquors.

And farther all these fermented liquors will be fitted to resist the alterations of the weather or seasons of year with respect to heat, cold & a fermenting humidity in air, (which is by some esteemed the cause of rotting in wines) if their superfluous water be artificially separated from them, so as that the liquor itself may be concentrated, in which state it will remain many years unchangeable, thro' the summer heat & winter cold.

When a chemical analysis is made of these liquors, the 1st part that rises is inflammable spirit, the next phlegm, mixed with an acid, and an essential oil, leaving a thick matter or rob of wine at bottom, which when freed from its superfluous moisture is observed to be very durable & full of tartar. But the mere mixing of these parts together will not make the original liquor again, which shows that they were all before concentrated in a certain particular manner, which was dissolved and destroyed in the act of separation, and that each of these productions received a particular new kind of alteration from that act of separation, which will not suffer them to reunite as before, without some proper intermediate substance or a new fermentation.

Hence pure wine consists of much water a moderate quantity of inflammable spirit, a little essential oil, a proportion of acid salt, and a certain mixed substance or Rob. And whilst these several parts remain firmly united together

their due proportion, the wine is in its perfect state: but as their connection proves loose, or any one of them becomes deficient, or abounds in an over-proportion, then the wine is faulty and exposed to injuries and alterations for the worse; and this shows us the true foundation of what may be called the health or diseases of wine. 113

page 239.

Although a large proportion of water enters the composition of wine, and is requisite in the fermentation, serving to carry it on the better; yet it is not afterwards essential to the wine, but rather foreign and detrimental, exposing it to shyness, which it would not otherwise undergo. Hence the sovereign remedy for all wines, is to deprive them of their superfluous water, in order to render them perfect and unchangeable. and indeed this remedy is so effectual as to make all others unnecessary: in so much that the poorest and thinnest wines may, by its means, be rendered perfectly durable and full bodied.

But as there may be some difficulty in the particular use of this grand remedy (in the large way of business) the next expedient is to use strongly rectified and pure spirit of wine in such proportion as to prevent all change for the worse, and preserve the essential parts of the wine, as it were by a Balsam. But when the case is very bad, this remedy of itself will scarce prove sufficient, unless assisted by some other thing to give a body or that gives strength. whence it is highly convenient to have at hand a quantity of wine made as rich as ever it will ferment, a suitable proportion whereof being added along with the

Spirit will have a very good effect, especially if the whole be quickened with a little spirit of oil of wine, which in the case of over aqueous wines is generally deficient. And this being a capital disease in wines, or to which most of the rest are originally owing, it may be proper here to give a form of a remedy which has been found effectual for the purpose.

per 240

Take an ounce of pure essential oil of wine mix & grind it with a lb of dry loaf sugar into an *elle* or *alchebrum*; dissolve this in two gallons of the richest wine; and add to it two gallons of the finest spirit of wine, so that they be well incorporated together. The dose of this mixture must be proportioned to the Exigence, but in ordinary cases one half will suffice for a cure of wine.

There is a disease of Wines opposite to the former, viz when too much of their aqueous moisture is drawn from them, whence they become dry & parched as it were, for want of it. This case indeed cannot well happen; except by the method of condensation; whereby wines may have their essential parts brought so close together, as to become unfit for drinking till, yet more ascended & diluted. but this must not be attempted with water alone for fear of introducing a flatness. The best way is to have a dilute or thin tartaric wine ready at hand for the purpose; whereby any degree of ascension may be given at pleasure.

But the artificial way of preparing wine renders all remedies unnecessary, as it entirely prevents their diseases; so that they need not be made either too aqueous or too dry, but constantly of a perfect bulk body, and therefore not subject either to

requiring, or perhaps, when one well chafed of them
gives less, in the ordinary way of drinking.

115

But in case the wine should not soon grow
fine of itself the addition of a little tart wine of
vine will hasten its effect. Or to make at once a gene-
ral remedy for ulcers that are ^{too} raw and aguerre, or
will not throw off fine themselves; let a pint be
-leaved, and totally inflammable of the made from sugar
digest the liquor in tenth part of pure & dry salt of
tartar for 3 days, decant the liquor, and put it to ten
times its quantity of a wine made as rich as it would
possibly ferment: of this preparation six or eight
quarts will at any time mend and fine down a pipe
of ordinary wine.

Boil by o'er together the malt-wort, and there-
with fill two thirds of a still, first made hot & dewy
on the inside with boiling water keep the whole stirring
till it almost begins to cool, then immediately close
on the head & let it down.

The cautions required to render the experiment suc-
cessful, and the production perfect, are (1st) that
the fermentation be well performed, and the liquor be-
come truly vinous, and of an acid pungency. (2^d) that it
be gently distilled, by means of a soft well regulated fire
(3^d) that the gross oil apt to rise along with the spirit
be kept back by a proper strainer. & that double flo-
wered brand under the nose of the worm. If these cau-
tions be duly observed, the low wines will prove con-
siderably pure & vinous.

When all the spirit is thus obtained there remains
behind in the still what is commonly called bottoms
which is generally used for the feeding of hogs.

Proof Spirit. page 246.

Take the low wines and distill them over again in
Bafnes Maria or bath by the heat of boiling water.
and thus you will obtain a pure and higher rectified
spirit than before, which being let down with fair
water to a certain size or stand and called proof is called
rectified malt spirit. usually consisting of one half
Alcohol and the other half water.

The common method is to rectify spirits in a smaller
still set in a Bafnes Maria so that the spirit is not
so clear as that of the proof.

Rectification of Spirits.

117

To two gallons of the common proof spirit of the malt stiller, add 3 oz of the black flux, or a mixture of Oxter & Nitre calcined to blackness and draw over all this will run in an uninterrupted stream from the nose of the worm by means of the Balneum Marie.

The spirit which thus comes over when made proof with fair water is the common saleable proof good of the rectifying stiller when the works to a truth.

This spirit is suitable for making cordial ^{or any good} waters, being freed considerably of its fat oil and rancous & blaggy.

If it be desired still clearer, one of the best methods is to dilute the strongest part that comes over first with a large proportion of fair water, draw off the best gently again by the B. Marie, and then make it up proof with fair soft water.

The Art of the rectifier might be entirely set aside or use less, if the original Malt stiller could make his spirit perfect at a second operation we would therefore recommend (1st) the Pressing in perfection; (2^d) the keeping of them work after the manner of state brand till it has entirely lost its malt flavor, and acquired a pungent acid voracity; and then (3^d) leaving out the best to distill with a well regulated fire. Those who have not tried would scarce believe what an agreeable spirit may by this method be procured at the very first distillation.

Take 8 lb of Juniper berries, and bruise them in a stone mortar, which put directly into a Still together with 12 Gallons of river water: then washing with a brish pan you will draw off a gallon of water and obtain along with it a considerable proportion of a fragrant essential oil which separates by a separating glass from the water. page 268

This method can be followed in distilling essential oils from flowers leaves Berbs Thusto woods gums & Balsams with a slight alteration of circumstances as by longer digestion brisher distillation &c according to the tenacity and hardness the subject the pendency of its oil &c. If the liquor remaining in the still be strained & evaporated to the consistency of honey it makes the rob of Juniper berries, which is esteemed a valuable medicine as a strengthen of the stomach & intestines, as a preservative from the stone & dropsy, and as a cure for the disorder of the urinary passages.

Essential oils classed.

Essential oils may be divided into two classes, according to their different specific gravities, some floating upon water and others readily sinking to the bottom thereof. Thus the essential oils of Olives, Anisemon, & Sassafras readily sink, but the oils of Rose, Marjoram, Mint, &c. remain on water. The lightest of these essential oils is perhaps the oil of Citron-leaf, which floats even on spirits of wine; & the heaviest seems to be the oil of Sassafras. But the specific gravities of the intermediate essential oils are not hitherto adjusted & settled as for the service of chemistry they ought to be.

Take as much dried mint, cut small, as fills two thirds of your still; then add a sufficient quantity of rain water, sufficient to make the plant float abundantly, not leaving a fourth of the still empty. Digest a while with a gentle heat, then work the still drawing off only so long as the water appears thick & milky, and tastes sweet and grateful; whereby you will obtain a simple mint water in tolerable perfection.

Cautions

page 326

It is a principal caution in this operation to remove the receiver, before the more pellucid, acid, faint, and dead water comes over, as it soon will do; and if suffered to mix among the rest, it is apt to spoil the whole, by giving it a ragg'd or pungent taste, and sometimes a degree of acidity, or vitriolic stipticity, and an emetic quality; for part of the essential salt of the plant, which now begins to rise, usually corrodes the upper head of the still, and carries over with it some particles of the metal. Hence these waters should be distilled either with a glass head, or one of pewter or well tin'd copper, or else the operation should be well watch'd, that the receiver be not mix'd with the first. The greater care should be taken because some patients, more particularly children and those of a tender habit, have suffer'd thro' a neglect therein; and been vomited, purg'd and grip'd by the use of a simple water, contrary to the intention.

Regulations

The simple waters distilled after the manner of our present experiments may in many cases prove too strong to be used alone, but then it is easy to fix them down to the proper strength with common distilled water, and this is beyond comparison better than to mix such waters with their own faints or begin of the 2^d running. Improvements.

Two improvements might be made in this method of obtaining simple waters: The first by means of Chastity, and digestion. The other by means of a previous fermentation of the plant. With regard to the first, if the liquor remaining in the still be express'd from the heel, and returned along with all the water that came over upon a fourth

quantity of the same subject, and they be digested together in a gentle heat for two days, and then distilled as before the water thus obtained will be much richer and more efficacious than the former; And if the same process be repeated 2 or 3 times, those who have not tried, would scarce imagine how rich a simple water may be thus procured. This method we would particularly recommend for making simple water of Borage, Bar flowers, Thymes, Camomile, and such subjects are but sparingly furnished with essential oils; for otherwise they would be lost in different waters.

The other means of improving simple waters is by using a previous, imperfect fermentation: This is performed by adding to the plant & water, put together as in our present experiment, a tenth or twelfth part of sugar or honey, or about a fourth part of yeast; then setting the whole in a warm place to ferment for two or three days only, so that the herb may not fall to the bottom, nor the fermentation be above half finished: The whole being afterwards committed to the still, a water may at one operation be obtained extremely rich & impregnated with the full virtue of the plant. And thus many simple waters be made fit for long keeping, without spoiling; the small proportion of distilled spirit generally added in the fermentation serving excellently to preserve them. And these two methods seem applicable to the improvement of all those simple waters commonly found in the shops.

Take 4 Oz of Amber, and just melt it with a small degree of heat in a crucible; then pour the fluid mass upon an iron plate. When the melted matter grows cold, reduce it to powder; and adding thereto 2 Oz of drying oil, (or linseed oil prepared or thickened by boiling it with a little litharge) and one pint of oil of turpentine dissolve the whole into a varnish.

This method of making the Amber varnish is kept a secret in few hands; but deserves to be made public as a leading experiment, to direct the artists of perfecting the Art of varnishing a japanning, or the way of dissolving Ambers; whereon the perfection of various arts may depend. Thus in particular the Art of Embalming would be highly improved if we could preserve the human corpse in a transparent case of Amber; as we see the bodies of this spiders be one to great perfection.

The silvering Amalgam page 456.

Take $\frac{1}{2}$ Oz of clean lead, and melt it with an equal weight of pure tin; then immediately add half an Oz of Bismuth carefully skimming off the dross. Now remove the ladle from the fire, and add before the mixture grows cold five Oz of pure quicksilver stirring the whole well together, then put the fluid amalgam into a clean glass.

When the Amalgam is used for fastening, or silvering, let it first be strained through a linen rag; then gently pour some ounces thereof into the glass intended to be coated. The mixture should be poured into the glass by means of a paper funnel, reaching almost to the bottom to prevent its flying to the sides; then dexterously inclining the glass every way, endeavour thus to fasten the foil. When this is unnecessary let the glass rest for some hours; then repeat the operation, till at length the fluid mass is evenly spread and laid over the whole internal surface; as it may be known to be by viewing the glass against the light the superfluous Amalgam being now poured out, the outside of the

glass may be polished with pumice, Chalk, or Tripoli, spread upon a cloth: And thus the operation is completed.

In this manner are made those shining spherical globes (appearing like globes filled with quick silver) which we sometimes see hanging up in parlours, near the Ceiling to imitate the light in summer from the windows.

A curious and useful glue. page 457.

Take an oz. of Venice-glass beat to shreds, and put it into a pint of Brandy, where by means of a little heat applied over a candle flame it gradually dissolves. Then strain the solution through a piece of fine muslin and keep it in a glass close stopp'd.

This glue with a very gentle heat, dispels the humidity and almost evaporates. When used in the manner of common glue, it joins the parts of wood together, stronger than wood is joined to itself. It is also remarkable that if one dusts powdered wood, he makes into a ball with this glue, it will grow solid and elastic; so as to be turned and used as a bow without breaking.

The glue being thus made with Brandy will keep long without corrupting, and is therefore a proper form to preserve Venice-glass ready dissolved for the lining of wine or other uses.

A rather curious use of our glue is, that it serves excellently for taking off the impressions of Medals or coins.

Take of a little of this melted glue, he pours thin upon a quinc, or upon a coin to cover the whole surface of the piece, and the glue is suffered to remain thereon for a day or two, till it becomes thoroughly dry, it will appear hard and transparent like a piece of Mercury-glass with the impression of a coin joined in Entaglie, as they call it, on one side and in relief on the other.

This glue therefore dries into a very strong, tough, and transparent substance, not easily to be hurt or damaged by any thing but aqueous moisture, which would soon dissolve it, so that it is not best to be used in any work that must be

appears to wet or weather. But for a glue to stand
the weather let chine be made of the common
glue dissolved with linseed oil.

123

Coloursing for Gates Balls etc.

Melt 12 Oz of Resin in an iron pot. add 3 gallons of
Linen oil, and 3 or 4 rolls of Borax stone; when this
is melted & become thin, add as much Spanish Brown
as red or yellow then (as any other colour wanted), first ground
fine with some of the oil, as will give the colour as desired.
Lay it on with a brush as thick or
thin as is fit. Some Days after the first coat is dried
give it a second. It will preserve paint for ages, and keep
the weather from driving this brick wash.

Bath paper vol 2 page 113

To cleaning plate

Take 1 lb of prepared harts horn 1 lb quicksilver 1 lb filings
of pewter 2 lb Potash stone made fine 1 lb of cream tartar
put the quicksilver and filings into a small bottle & let
them stand for 2 or 3 days, then beat them very small
well in a mortar till the quicksilver is killed add the other
ingredients by degrees.

To clean back tops neatly.

1 lb opt of vitriol 1/2 lb red lavender 15 grains of powder
- - - 1 lb powdered gum arabic the whites of 3
Eggs & milk.

A good blacking for shoes.

1/2 lb Ivory black 1/4 lb sugar candy, first of orange
1/2 pint of wine 1 lb gum arabic -

Another

1 lb Bear waxy melted 1/2 lb soft soap 12 lb Ivory
black well stirred whilst on the fire, and made up
into balls.

124

Waterproof Boots & Shoes.

One pint of drying oil —
 Two Oz yellow Wax —
 Two Oz Sp^t Turpentine
 One Oz Burgundy pitch.

melted together carefully over a slow fire:
 with this composition, new boots & shoes are to be
 rubbed in the oven or at a distance from the
 fire with a sponge as often as they become dry.
 until they are fully saturated. The leather
 then is impervious to wet: The shoes & boots last
 much longer, acquire softness and pliability,
 and thus prepared, are the most effectual, pre-
 -vention against cold and chilblains —

From Britain Oct 1800

Another

gash —

Tallow 1 lb well melted, Boas lard 4 Oz.
 Turpentine 2 Oz. new bees wax 2 Oz. Olive Oil 2 Oz.
 melt the whole together, in an earthen pipkin &
 stir it well. The night before going out deprive
 the shoes of dampness then wear them gradu-
 -ally, and when well heated rub them well, so
 that the hand can scarce bear it. and so much
 as the leather will catch up. they will in the morn-
 be rather stiff till used a little if 13 new shoes,
 should be used once or twice to take off the old
 dampness —

George Lindseys Receipt for cleaning
Boot tops

125

One lb Oil of Vitriol. The juice of two
Lemons, half an oz of Salt to a
quart of milk. AB when stand near the fire in
bath brick & a good brush

Blackening for shoes

Half a pound of Ivory Black. an ounce of
oil of Vitriol. a quart of milk & a quarter
of a pound of treacle. AB boil the milk
& treacle together then mix the rest

Miss Whinfields Blackening. ^{by the} milking.

1 lb Ivory Black. 3 gills of best vinegar
1 lb Treacle. 2 lb Florence oil.
1 lb Oil of Vitriol. & the juice of 2
Lemons.

The Recipe intended to be used to dip corks in should
be mixed with brick dust as the former substance is
solvent both in acids & spirits.

Method of purifying meat ^{fat} or sheep
tallow oil for Clothes & Locks or machinery
NB this oil never grows stiff like other
oil.

Take sheet lead (or sheet will do) and
cut it into small pieces and put it in a
bottle of oil or narrow jar in summer
time or in a kitchen but not near the
fire. it will not do in a cold place in
winter. it will probably be fine
in 2 or 3 months.
For jacks it will be fine enough in
a fortnight, and for throating machines
and common machinery it will do
with out purifying. The white oil
is the best and when bought of
people that prepare the fat for eating
the oil will be better than what
is got of skimmers. NB the longer
it is kept the ~~finer~~ the oil
will be

Paint for fenders
mix $\frac{1}{4}$ lb white lead
 $\frac{1}{4}$ lb green paint
with the varnish.

Glue
which resists all alternate heat & damp &c
Take 1 lb of best Irish glue & 2 lb of Isinglass
dissolve the same over a slow fire in the bottom
of mild ale or $\frac{1}{2}$ lb ale (itself will do) made to the
consistency of strong glue, after the above is completely
dissolved then add the same & a half of well boiled
linseed oil.

If applied to unite leather, it must not be laid
on so very hot, and the parts must be well pressed
together allowing sufficient time to set.

When used as paint to prevent the rot, or
decay of wood, iron &c, then add more of the
linseed oil, and also of the ale, making it to
the consistency your work may require. The
above to be made in a common glue bottle, &
used as common glue. Each time you use it,
after being cold, it will require thinning with
a little mild ale.

Lacken for Tin or Brass
1 pint or one quarter of an English pint of oil of wine
 $\frac{1}{2}$ lb of Turmeric, 1 penny worth of saffron.
the core of a pear & of oporish & small
 $\frac{1}{2}$ lb of oard or shell lack.
all strained through a flannel after being
digested 2 or 3 days. Lay it on very thin with a flat
brush & give 2 or 3 coats. When laid back the metal
which will dry before the fire in 10 minutes.

Green Paint for fences
Cottages

Take 1 lb of flanders yellow and grind it very fine with linseed oil, with about an ounce of prussian blue, mix them together and grind them again and if too dark add more yellow. and if you want a very good green use part of patent yellow.

Coffee

Mocha coffee is the best which is of a white colour, but from prejudice the blue is thought the best in England.

The most proper mode of roasting it, is in a frying pan, not a close lid on a spit, because you cannot examine it often, and the steam is injurious. A metal pot is equally good, put in a little butter in the pan to prevent burning & stir the coffee all the while with a wooden spoon to prevent it burning.

When the coffee appears a little brown like a mahogany tea. ble it is enough. if it is burnt it is spoiled.

It should never be roasted above 3 days. Coffee if kept dry is better every day if kept dry for 50 years. All which coffee, whether Mocha or not is preferable

to blue or what in the West Indies
they call green.

129

How to prove Limestone

M^r Leyburn
Holyfield

Take any quantity of dry lime powder
ashed with water, and weigh it, then
put the powder in a tea cup, to which
add a few drops of aqua fortis, 6 or 7 drops
to an ounce, which makes it effervesce.
then when it is settled, the real lime
will be separated from the sand, which
pure lime you will then weigh, to ascer-
tain how much alloy of sand is in it.

Method of dyeing foot rugs.

Put the skins first into Boock liquor for a fortnight then mix up one lb of Alum and one lb of salt for each skin in as much warm water as will cover them, in which the skin must remain and be stirred in it for a quarter of an hour, and then left in the mixture one night. Then put it in strong lime water for two hours stirring it well & keeping it constantly moving. Then nail the skins tight and even on a door or board to dry.

White foot rugs.

Steep the skin in clear water for two days to clean it of blood. then add the Alum and salt & then dry it.

For Rats

To 10 drops of Oil of Rhodium rub amongst it one grain of Musk. & 20 or 30 drops of Oil of Origani.
Oil of Rats is excellent which is prepared by boiling in an old dish a rat skin & skimming off the fat to keep it in a bottle for use.

In setting a box trap put a drop or two on the underside of the lid.

tying the traps up to let them run through for some days then set it without any bait & you may catch 15 or 20 together. do not let the rats remain long in but watch it well when set and then leave it open again. be sure to mind & not put any of the scent on the outside of the trap or the rats will go there & set off the trap.

I'm laying poison for rats first feed them for some days with oatmeal having a few drops of this mixture then when you poison which is always done at night the sublimate of mercury or red vermillion mixed with oatmeal with a little sugar.

Method of distilling Mint


Put in the mint, stalks & leaves, & fill the still with them & water above six inches from the surface of the still before the top is put on. Then paste brown paper round the junctions of still & worm. Be sure to damp the fire before the water runs off, & let it come, portion by portion at first, drop by drop.

Put a bottle under mouth & let it drop into it, oil & distilled water, but be sure you do not let the bottle fill up to the cork or you will lose the oil.

Set bottle corked up away, & place another, & even three bottles may be run off good to keep: run off perhaps four, and if the last or two last are too weak put them into the still again with the next mint; by which means you will use no more bottles than what one full of good mint water, and of course no oil will be wasted.

If the mint water is very strong so as to be certain of having oil enough incorporated to keep it, you may pour off the oil upon each bottle into a narrow chrysal bottle for use; five

or six drops of which oil upon a lump ¹³³
of sugar & put into a glass of clear water
is a sufficient dose at once.

If you want to collect oil, and fewer
bottles of mint water, Use the bitter
bottle  as it is call'd from the spout of
which the water will run into a common
bottle perhaps one of which, with the
oil caught in the bitter bottle, will afford
good keeping mint water, or perhaps
two bottles: collect all the remaining
weak water in large stone bottles, &
when you have done, distill it over again
and let the oil ^{then} run into the black
bottle, which proceed with as before,
always returning into the still until
will not keep.

NB When you want to try a
bottle of water shake it well up
& pour the bitter bottle full then
pour a small glass full out of the
spout of the bitter bottle and you
will taste the true mixture of the bottle
whereas if you pour the water out
at top, you are sure to find it stronger
than the water below the surface of
the oil. NB always have one copper
with hot water ready by the time each still
full is run off & it will hasten matters.

134

Furniture Oil.

from Durham.

Take a goblet glass of linseed oil to about a table spoon full of spirits of wine with which rub the furniture: then put some Balsamo powder in a piece of gauze, and dust the tables over, after which take a wet piece of flannel & sprinkle the table, then fold the flannel together, and rub the furniture well with it. NB the powder fills up the pores of the wood, and produces the fine surface for polishing. After this is obtained the tables may be rubbed in the common way.

Red InkProportions

One pound of Brazil wood,
One gallon of Vinegar
Three Quarts of Water
Three ounces and an half of Roach Alum

Process

Boil the Brazil wood in the Vinegar and Water to five quarts. Then add the Alum and boil a few minutes.

Economical use of coal Tar

— Take a quantity of lime from the kiln, and having added to it a sufficient supply of water to make it fall into powder, pass it through a sieve, to take from it any stones or unburnt pieces; then take a quantity of the coal tar, and mix it well with some of the powdered lime, and apply the mixture in the same manner as common paint, taking care that it be well stirred during the time of its application, to prevent the lime from settling to the bottom of the vessel. — The quantity of lime may be varied, to produce a proper body, and to suit the time in which it is required to set: any increased quantity will cause it to become hard sooner, and of course, improve its substance, but in general, a pint of the powdered lime will be found sufficient for a gallon of Tar. It ought, perhaps here to be observed, that too great a quantity should not be mixed at once as in a few hours it is apt to become

become thick, and there is not so
 good to work - ~~where it is~~ where it
 is wanted, for ornamental purposes
 as well as utility, several colors may be
 formed in a very simple and cheap
 manner. - For instance, an invisible
 green may be produced, by mixing
 powdered yellow ochre with the lime and
 Tar - and a chocolate color, by Spanish
 brown. For out houses, and other small
 buildings, a cheap and durable mode of
 roofing is made, by dipping sheets of strong
 brown paper in boiling coal Tar, and
 nailing them on ~~the~~ boards or
 laths, in the same manner as slates
 - The whole is then to be painted over
 with the mixture of Tar and lime,
 and then sanded - As the roof will
 not need to rise more than about
 two inches in a foot, the quantity of
 timber required, is much smaller
 than for any other description of roof

A most excellent Roof for country Cottages may be made by applying two or three coats of the tar and lime on common thatch, and then throwing upon the last coat, whilst wet, dry sand, which forms a compact hard mass, impervious to water.

It is employed in the most simple manner, and the composition, in which it forms the principal ingredient, is not only the cheapest pigment that can be used but is found to dry and set in the most rapid manner. The coal tar may be obtained at any Gas Manufactory for a mere trifle. It is preferable in many instances to oil paint, for the preservation of gates, doors, hurdles, or any other description of wood or iron work that has to be exposed to the action of the weather. Timber properly coated with this substance has also been found most effectually to resist the depredations of all descriptions of insects, which often cause its rapid destruction.

8 1/2 11. 32

46 48

160W

164

150

7
44

sh

35-39
45

sh

12

sh

21 to 26

rees

39-
46

53
53

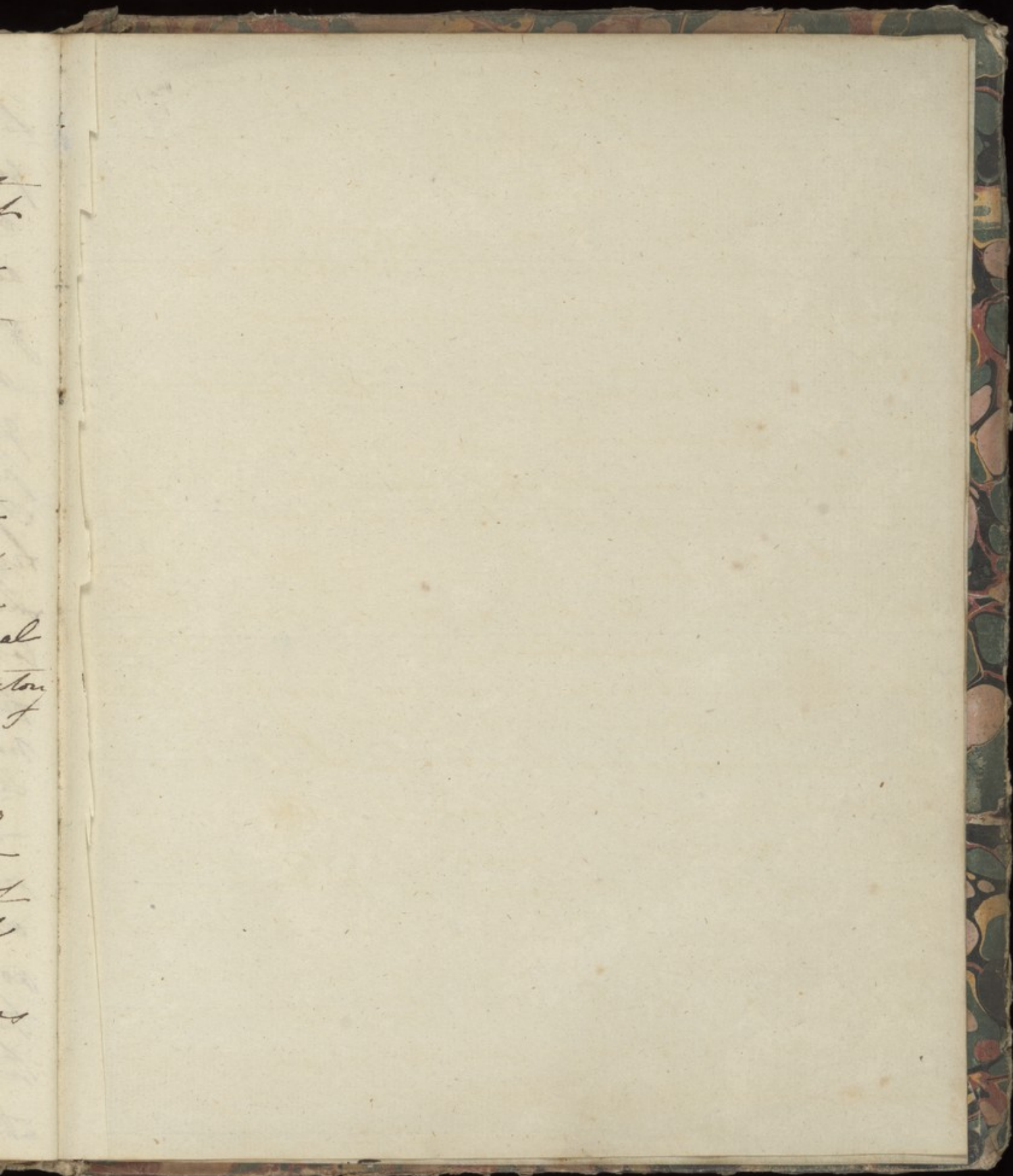
Es. Puddings Puffs Luman 58 Puddings 55 56 58 61

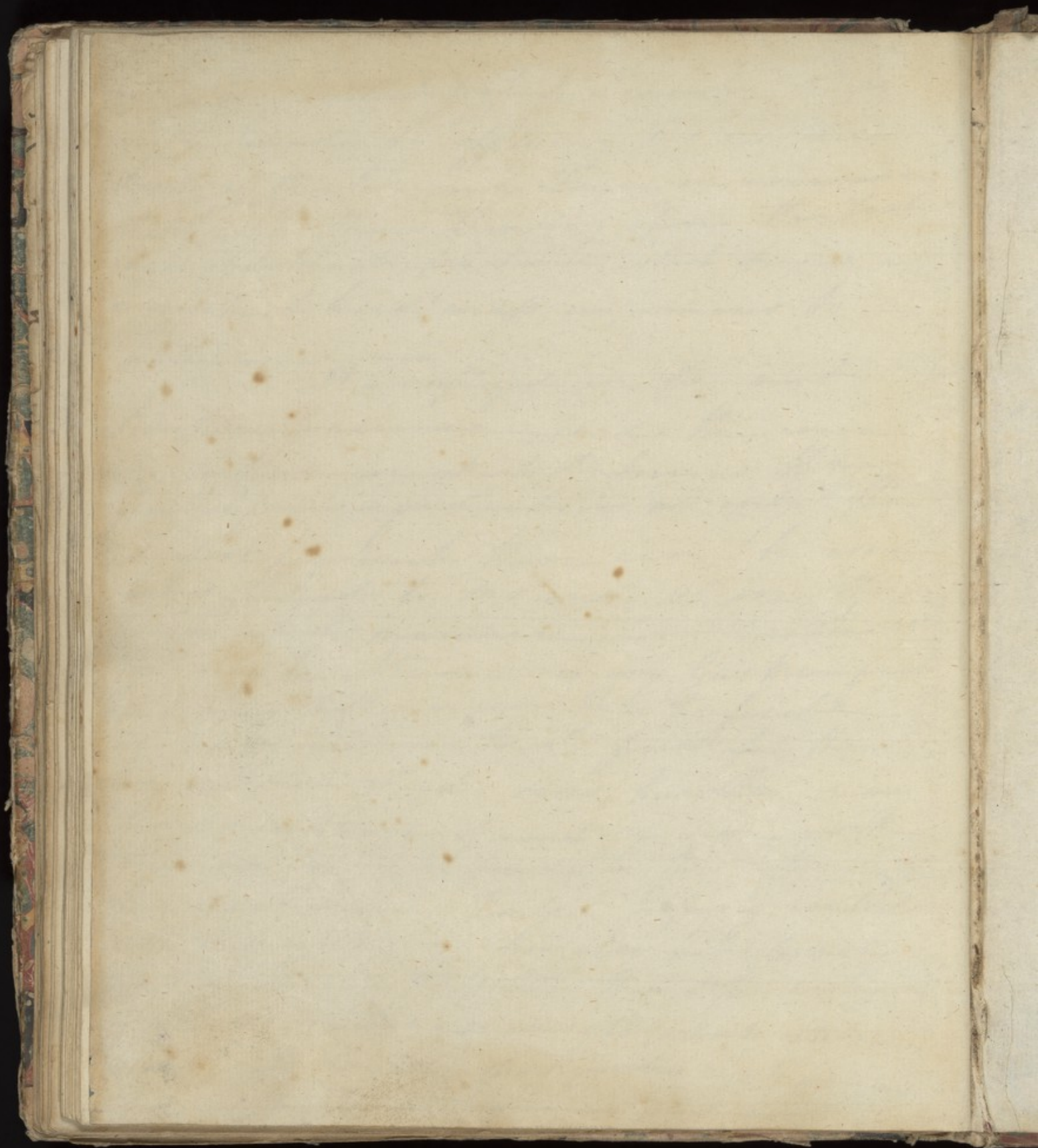
Pudding Puffs / Pudding Citrus 63.

59

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B571
pa/-











In Distilling Pepper mint water
The mint being dry. ^{& filled to 6 in deep}
Use the bitter bottle with a tin funnel
at top of it on the top of the stage
the black bottle having the lead
funnel on the top being put into
the hole with a dish below it.
The bitter bottle will catch the
oil and the mint will afford
3 bottles of tolerable water if there
is more put the remainder into
the next still.

When all is run off put the
whole into the still again having
washed it into 38 Bottles put
in the 2^d time (Used no bitter
bottle this time but run off into
the black bottle with the tin funnel
not on it) run off 12 bottles of
good mint water.

M. G. emmells distilled by J. L. took 2 days
run off with 2 stills full 12 bottles for
only distilled once —

Oaks — 2000
Larches — 3000
White Birch — 2000
Buckies — 2000
Ash — 4000
Sycamore — 2000
Hmo — 1000

order given by
Mr. G. L. Jones
Sir J. Smith Bart.

a cheap paint Dr

Hunter for gates

Skimmed milk 2 Qt
fresh ~~Frank~~ Milk lime 8 oz
Boiled Linseed Oil 6 oz
White Burgandy putch 2 oz
Spanish white 3 lb

lime & fresh mops mixed
and Pulverised made good
~~potatoes~~ potatoes put into the
drills as dung

Black the lumber by dipping it in
water and then expose it to the air
till it falls to powder then mix it with
1/2 part of the milk adding the oil a
little at a time stirring it well with a
wood spatula adding the remainder of
the milk. lastly add the Spanish white
the pitch must be previously dissolved
in the oil by a ~~little~~ gentle heat
to be when used laid on - two coats
with a painters brush the expense
1/2 a penny 4 or 5 ad

try this paint on gates

Heat first brown 160°
 2° ————— 168
 3° ————— 140 or 150

At 75° degrees when
 turned

Heat of first Mash
 Liquor 160° degrees
 2° ————— 168
 3° ————— 140 or 150

When turned 75° degrees

E	Cakes Deal - Cakes - Cheese Cakes Apple	27 - 28 to 34 - 35
	Cream Whip - Calves Head hash - Carp stew -	35 30 39
	Charlotte Rousee - Cheese Cakes (Bread)	43 48 -
	Cramp As Lunc Cake 69 . Cheek & hot rice	31 - 51 59.
	cream stew / cream salad	63. 63

E	Eels to stew - To collar -	30 41
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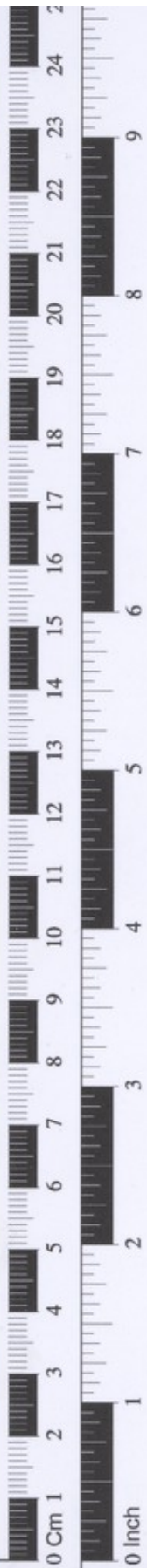
F	Falconsbury / Friedlings / fowls to fricasee	101 41 42
	Fish & second time / Forth for cream	52 62
	Stew for Puddings	63

G	Gooseberry fool - Ginger bread - - - - -	21 201 29. 31
	Galeau de Pommes / Glaze for Ham	55 63 64

H	Ham Mutton - Hare to jug - Ham	39 41 42
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J	Jams & Jellies - Jcing for Tarts -	8 1/2	11	32
	Jam Green Gage Singlass for Invalids	46		48
	Jelly V. Invalids 38.	50		
TL	Fletcher's Mushroom -	44		
L	Lemonade - Lemon Brandy - Lemon peel	5	6	7
	Lemon Sweetmeat - Lemon Sponge & Pickle	12	13	44
	Lemon Sauce	00		
M	Mince Meat - Macaroni - Macaroons -	22	25	35 36
	Mutton Harico - Mutton Lare - Mushrooms	30	42	45
	Marmalade Mince Macaroni	46		
N	Noyeau	5	56	
O	Orange Marmalade - Orange whole & Conserve	11	11	12
	Orange Sweetmeat - Orange peel to Candy.	12	34	
P	Plumbs preserved - Pears to stew - Puddings	20	20	21 to 26
	Pain perdu - Pudding Rice - Pigeons stew'd.	34	35	39
	Pudding - Pears Pudding - Pickle Cabbage -	43	25	45
	Pickle Walnuts Pickled Herrings.	45	46	
	Pudding Smother'd Plum pudding Pickled Tongue	52	32	53
	Preserved Mints. Preserved Rhubarb Pudding Lops	53	53	53
	Pie. Puddings Puffs German 38. Puddings	55	56	58 61
	Pie. Pudding whole Pudding Citron 63.	59		





The Wellcome Library

Brewing continued.

	Gallons
marsh tub contains when full	300
and 500. w. underneath	125
and 200. w. underneath	60
and 100. w. underneath	30
and 50. w. underneath	20

was marked at 170 & 175. Let the liquor stand $3\frac{1}{2}$ hours off in $1\frac{1}{2}$ but in next month is not particular into both & it is nearly 200. Let it stand over a screen off in an hour & half also. 2 hours both next. Letting it as soon as it is to go degrees in own heat to it altogether & stir it round. Run it before it is to be used. Run up the water in the top of the tubs in which it is to be used.

Put into 2 or more small casks up close with y^e possibility of spilling. Always fresh. Quantity of liquor brewed

From y^e Butcher at Dargston

any of hops draw off a gallon of hops & $\frac{1}{2}$ pint of water into the tub and in a month draught of the hops at the Bung will do.

was brewed

that is proved by ~~exactly~~

that with one pound of hops. At which I tell it about being green with mild the whole into a ~~half~~ of liquor that being it done tight.

of hops for $\frac{1}{2}$ a hop head.

must not be water with heat nor the hops if the same is under 60 degrees it is not too hot for watering liquor.