A TREATISE
ON THE
MANUFACTURE, IMITATION, ADULTERATION, AND REDUCTION
OF
FOREIGN WINES,
BRANDIES, GINS, RUMS,
ETC. ETC.

INCLUDING
"OLD RYE" WHISKEY, "OLD RYE MONONGAHELA," "WHEAT," AND "BOURBON" WHISKEYS,
FANCY BRANDIES, CORDIALS, AND DOMESTIC LIQUORS.

BASED UPON THE "FRENCH SYSTEM."

BY A PRACTICAL CHEMIST,
AND
EXPERIENCED LIQUOR DEALER.

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PREFACE.

In presenting this volume to those who are in any manner engaged in the manufacture or sale of spirituous or vinous liquors, the author is confident that he has produced a practical treatise on the subject of which it treats that will prove useful to those for whom it is designed. It has been his study to combine with his own experience all the information which it was possible for him to obtain from men of practical experience and from widely-scattered sources; and to condense into a volume of small size and convenient arrangement, information which will render to every person who is pecuniarily interested in the business of which this work treats, a large equivalent for so small an outlay. Every well-informed person is aware that the adulteration of brandies, wines, etc., have been effected by the use of poisonous and deleterious compounds, to an enormous extent. This system is still in use, and will so continue until the "French system," which is almost unknown in this country, will
PREFACE.

fortunately take its place,—the French system of manufacturing, *imitating*, and reducing liquors being based on scientific principles; which cause us to unite with the "pure spirit" forming the "basis" of all liquors, those constituents, and those only, which are found by chemical analysis to exist in the foreign liquor which we seek to imitate. The object of this work is to do away with the use of noxious and poisonous adulterations, and to instruct the purchaser how to produce brandies, wines, cordials, and other liquors, equal in every respect to any foreign importation.

Nearly all the spirits shipped to European countries from the United States undergo the same operations which are taught in this work, and are returned to this country in the form of brandies, wines, cordials, gins, etc., and are here sold at high prices.

This work, in the hands of every one engaged in any manner in the manufacture or sale of spirituous or vinous liquors, will prove exceedingly valuable; not only as a guide to instruct them in the "arts and mysteries" of *imitating and reducing* pure foreign brandies, wines, etc., but likewise pecuniarily beneficial, comprising as it does a larger amount of practical information and valuable formulæ, than any work of the kind ever published in the United States.

THE AUTHOR.
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WINE.

Vin, French; Wein, Germ.; Vino, It., Span. WINE is the fermented juice of the grape. The strongest wines come from the Southern States of Europe. The grapes of those countries, containing a larger quantity of sugar, afford a more abundant production of alcohol; consequently, the best Sherry, Port, and Madeira are furnished from that portion of the continent. Burgundy, and other temperate climes, produce the finest-flavored wines, which cannot be done in countries farther north, in consequence of the difference of the degrees of temperature.

Wines derive their names from the different
countries in which they are made: for instance, Portugal produces Port and Lisbon; France, Champagne, Burgundy, Hermitage, Vin de Grave, Sauturne, and Claret; Spain, Sherry, Saint-lucar, Malaga, and Tent; Germany, Hock and Moselle; Hungary, Tokay; Sicily, Marsala or Sicily Madeira, and Lissa; The Cape of Good Hope, Constantia; Madeira and the Canaries, Madeira and Teneriffe. The wines used in the United States come almost entirely from Europe, the most extensive importations being Port, Teneriffe, Madeira, Sherry, and Claret wines of France. The art of making wines is regulated by general rules, which should not be deviated from: the grapes are gathered, placed in wooden vessels with perforated bottoms, and pressed or trodden under foot, (unless the wine-press is used,) generally in the evening, and the resulting must or juice is received in separate vats; at the end of from six to ten hours, the temperature of the air being about 60°, the fermentation gradually takes place in the must,
as shown by the froth or scum which forms on the surface, and increases in thickness, caused by the more solid parts being thrown to the surface, by effervescence created by the escape of carbonic acid gas. This scum is called the head. After the lapse of some time this scum is removed with a skimmer, and the thin liquor returned to the vat; sometimes two or three coats are removed in this manner. When the regular vinous fermentation has begun, all the remaining froth is taken off; the liquor having acquired a strong vinous taste, and become perfectly clear, is considered formed, and is transferred into barrels. The fermentation, however, still progresses for several months longer. The precipitates form a deposit, which constitutes the wine-lees.

Grape juice does not ferment in the grape itself; this is owing to the exclusion of atmospheric oxygen, the contact of which is necessary to effect some change in the gluten, to enable it to set up the fermentating process.
The expressed juice of the grape, called must, (mustum,) is composed of the following:

By Proust.

Extractive.
Sugar.
Gum.
Glutinous matter.
Malic acid.
Citric acid.
Bitartrate of potash.

By Berard.

Odorous matter.
Sugar.
Gum.
Glutinous matter.
Malic acid.
Malate of lime.
Supertartrate of lime.
Bitartrate of potash.

Must undergoes the vinous fermentation, as before stated, when placed in a temperature of between 60° and 80° Fahr., this fermentation being the metamorphosis of sugar into alcohol and carbonic acid, and this process continues until all the sugar is completely decomposed. The elements of the ferment, however, take no part in the transformation, or rather do not enter into a chemical combination with the
elements of the sugar, for which reason some difficulty has been experienced in accounting for its agency in exciting fermentation. It has been ascertained, however, that the substance which possesses the power of exciting or inducing fermentation, in a new solution of sugar, and which has received the name of ferment, is a yellowish or gray insoluble body, containing a large proportion of nitrogen, produced by the fermentation of the grape juice, in addition to the alcohol and carbonic acid already mentioned. The alcohol and carbonic acid are produced from the elements of the sugar and the nitrogenized substance above mentioned, from the azotized constituents of the grape juice—vegetable albumen. "The manner in which this vegetable albumen or gluten is converted into a ferment is by the oxygen of the water, or of that of the sugar, combining with the gluten, hydrogen being set free, and entering into new combinations, or new compounds,
containing a large proportion of hydrogen and a small quantity of oxygen, together with the carbon of the sugar, must be formed." (Liebig.) The oenanthic ether and oenanthic acid are other products of the deoxydation of the substances dissolved in the fermenting liquids; and although oenanthic ether and other volatile substances are formed from the deoxydation or interchange of the elements of vegetable albumen and sugar, there are other causes which influence their production and peculiarities. The wines grown in France, owing to the large quantity of tartaric and other acids which they contain, possess, in a marked degree, the peculiar taste and odor, or Boquet; whereas the wines of warmer climates possess little or none, owing to the absence of those acids. In the wines from the Rhine the perfume is powerful; the grapes, ripening late, and containing the largest proportion of acids: showing conclusively that the characteristic perfumes, and the acids of wines, have a certain connection—the acids seeming to
exercise a certain influence on the formation of the perfumes.

Wines are divided into the Red and White wines. Red wines are derived from the must of black grapes, fermented with their husks. White wines are derived from white grapes, or from the must of black grapes fermented apart from their husks. White wines which, from a deficient supply of tannin, might be disposed to become stringy, can be preserved by adding the foot-stalks of ripe grapes.

The white wines should be racked off as soon as cleared by the first frosts, and at the latest by the middle of February; in this manner the fermentation, which would take place on the return of spring, is prevented; otherwise the sweetness of the wine would be destroyed by the remaining portion of the sugar being decomposed.

The modes in which the fermentation of wines is conducted, and the relative proportion of the constituents of the must, regulate or
form the other qualities of the red and white wines.

*Water, sugar, and a ferment* are the essential ingredients of the *must*, as a fermentable liquid. If the juice contains a large portion of sugar, and sufficient ferment to sustain the fermentation, the conversion of the saccharine matter into alcohol will proceed until checked by the production of a certain amount of the latter, and a *spiritoous* or *generous* wine will be formed. If the ferment be deficient in quantity, while a large portion of sugar is contained in the juice, less alcohol will be formed, and a *sweet* wine will be generated. When both the sugar and ferment are in considerable amount, and in the proper relative proportions for mutual decomposition, a *dry* wine will be formed.

Grapes which contain a small amount of sugar, will produce what are called *light* wines, which, should acetous fermentation take place to excess, become sour. In case the bottling of the wine takes place before the fermentation is
fully completed, the carbonic acid that is generated will impregnate the wine, and render it effervescing, and form the sparkling wines, (Vin Mousseux.)

The astringent wines owe their flavor to the tannic acid derived from the husks of the grape, and the acidulous wines to the presence of carbonic acid, or a large proportion of tartar.

Sparkling wines are manufactured from black grapes of the first quality, the juice being extracted as gently as possible, so as to prevent the coloring matter of the skin from entering into the wine. Inferior wines are formed from the after-pressings, on account of the tint acquired from the husks. Casks are then three-fourths filled with the colorless must, fermentation soon begins, and is allowed to continue under the control of M. Sebille Auger's elastic bung for from twelve to eighteen days, and then three-fourths of the casks are filled up with wine from the rest. The bung is then well secured.
The clear wine should be racked off in the month of January, and fined by isinglass dissolved in old wine of the same kind. From thirty-five to forty-five days after, a second fining takes place, and, if the lees are considerable, a third may be found necessary. The clear wine is drawn off in the month of May into bottles, adding to each a small measure of liquor, which is merely three per cent. of a sirup made by dissolving sugar candy in white wine. When the bottles are filled, and the corks secured by pack-thread and wire, they are laid on their sides, with their mouths sloping downward at an angle of twenty or twenty-five degrees, so that any sediment contained in them may fall into the neck. At the end of from six to twelve days the slope is increased, when they are slightly tapped, and placed in a vertical position; then, in the course of some days, the cork is partially removed, to allow the sediment to be forced out by the pressure of the gas. An additional quantity of liquor
and fining should be added to each, in case the wine be still muddy, and the bottles again placed in the inverted position. In several months the process must be repeated if the wine be still deficient in transparency.

The wine prepared as above is generally fit for use at the end of about twenty or twenty-five months, depending on the seasons.

*Weak* wines ought to be consumed within sixteen months after being made, and meantime kept in cool cellars. Casks containing white wines should be kept constantly full, and carefully excluded from contact with the air, and racked, before the whole quantity of sugar has become decomposed, too much fermentation injuring them.

*Strong* wines may remain from twelve to eighteen months upon the lees, so as to promote their insensible fermentation, before being racked off; for which purpose a siphon should be preferred.

Wines, though consisting mainly of water and
alcohol, contain besides, blue coloring matter of the husk in red wines, yeast, acetic, tannic, malic, tartaric, and carbonic acids; sugar, extractive matter, gum, tartar, tartrate of lime, volatile oils, and oenanthic ether. The characteristic odor and aroma possessed by all wines is, in a greater or less degree, produced by the essential oil.

The oenanthic ether is obtained toward the end of the operation of distillation, and is from about 1-15,000th to 1-40,000th part of the wine. It is an oily, colorless liquid, having a peculiar smell, almost intoxicating when inhaled, and is analogous to the fatty acids, the ether being liquid, but insoluble in water. Its specific gravity is 0.862, and boiling point 0.435.

The other ingredients mentioned are not all present in every wine. Sugar is present in sweet wine; carbonic acid in sparkling wines; tannic acid and tartar in rough wines. Malic acid, in small portions, is present in some wine, and absent in others. The alcohol contained
in wines is intimately united with the other ingredients of the liquor, and constitutes the intoxicating principle; hence their strength depends on the quantity of alcohol which they contain. This has been the subject of careful investigation by a great number of chemists; but as the results must vary with different seasons, they can only be received as merely approximative.

An abstract of the results of three of the most distinguished chemists—M. Jules Fontenelle, Dr. Christison, and M. Brandt—is given in the following table, the proof-spirit taken at the standard of 0.825:—

Table of the Proportion, by measure, of Alcohol contained in 100 parts of different Wines, sp. gr. of Alcohol 0.825.

Lissa (mean average)..........................25.41
Raisin wine (mean)..........................25.12
Marsala, Sicily Madeira (mean).........25.09
Port (strongest)..........................25.83
<table>
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<tr>
<td>Port (weakest)</td>
<td>19.00</td>
</tr>
<tr>
<td>Port (strongest, C.)</td>
<td>20.49</td>
</tr>
<tr>
<td>Port (mean, C.)</td>
<td>18.68</td>
</tr>
<tr>
<td>Port (weakest, C.)</td>
<td>16.80</td>
</tr>
<tr>
<td>White Port (C.)</td>
<td>17.22</td>
</tr>
<tr>
<td>Sherry (strongest)</td>
<td>19.81</td>
</tr>
<tr>
<td>Sherry (mean)</td>
<td>19.17</td>
</tr>
<tr>
<td>Sherry (weakest)</td>
<td>18.25</td>
</tr>
<tr>
<td>Sherry (strongest, C.)</td>
<td>19.31</td>
</tr>
<tr>
<td>Sherry (mean, C.)</td>
<td>18.47</td>
</tr>
<tr>
<td>Sherry (weakest, C.)</td>
<td>16.96</td>
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<td>Sherry, Amontillado, (C.)</td>
<td>15.18</td>
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<tr>
<td>Malmsey Madeira</td>
<td>16.40</td>
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WINE.

Red Armitage.................................12·32
Vin de Grave (mean)......................13·37
Frontinac (Rives Altes)...............12·79
Frontinac (J. F.)..........................21·80
Frontinac (C.).............................12·29
Côte Rôtie..................................12·32
Tokay.........................................9·88
Rudesheimer (C. first quality).........10·14
Rudesheimer (C. inferior)...............8·35
Hambacher (C. first quality).........8·88
Cider (average)............................7·51
Perry.........................................7·26
Mead..........................................7·32
Burton ale.................................8·88
Edinburgh ale.............................6·20
London porter..............................4·20

Though the intoxicating power of any liquid is generally in proportion to the quantity of alcohol it contains, wines are an exception; the other constituents of the wine having the power of modifying the strength of the alcohol,
rendering it less intoxicating than the same quantity of alcohol, separated by distillation and diluted with water: for a brandied wine—that is, a wine to which brandy has been added—is much more intoxicating than wine equally strong in alcohol to which no brandy has been added. "Dealers" endeavor to remedy this by the operation of "fretting in," thereby effecting the chemical union of the foreign spirit with the constituents of the wine, by a renewed fermentation. Dr. Christison considers it a mistake to suppose that wines become stronger by being kept a long time in a cask, his experiments proving the reverse. The flavor of wine is improved by being kept a long time, and its body, or apparent strength, increased. Authorities, however, do not agree in regard to the latter.

As before remarked, Teneriffe, Madeira, Sherry, Port, and the Claret wines of France are most extensively imported, and therefore require a passing notice. Claret, (vinum Rubellam,) known
in France as the *Vin de Bordeaux*, is a slightly acidulous, astringent wine, of a deep purple color, delicate taste, and is ranked as a light wine. The most esteemed Clarets are the produce of *Lafite, Latour, Château Margaux*, and *Haut-Brion*. It is made in large quantities around *Bordeaux*, from which port it is shipped. It contains, on an average, fifteen per cent. of alcohol. The Clarets are the least injurious of all wines.

*Port* is an astringent, rough, sweetish wine. When long kept it loses its astringency, sweetness, and coloring matter. It is one of the *strong* wines. Its color is of a deep purple, and it contains about twenty-three per cent. of alcohol.

*Teneriffe* is a wine of good quality, and fine aromatic flavor. It contains about 19·79 per cent. of alcohol. It is a *white* wine, slightly acidulous.

*Madeira* is more stimulating than *Sherry*, slightly acidulous, is esteemed the strongest of
the white wines in general use, and is more adulterated than any of the other commercial wines. When in good condition, it has a fine aromatic flavor, containing 22.27 per cent. of alcohol.

*Sherry* is a *Spanish* wine, prepared near Xeres, in Spain; hence, in English, it is called Sherry. It is a *dry* wine, of a deep amber color, and, when pure, possesses a dry aromatic flavor, without any acidity. It is one of the strongest of the white wines.

*Champagne* is a *white* wine, brisk, frothing, sparkling, effervescing, and much used.

The reader must, by this time, have perceived the necessity of observing certain rules, without which the manufacture of wine becomes impossible:—

1st. The grapes should be plucked in dry weather, at the interval of a few days after they are ripe, and transported to the vats in dorsels sufficiently tight to prevent the juice from running out.
2d. Whenever a layer of fourteen or fifteen inches thick has been spread on the bottom of the vat, the treading operation begins, (unless the wine-press is used,) which is usually repeated after macerating the grapes for some time. When an incipient fermentation has softened the texture of the skin and the internal cells, the grapes should be well and equally bruised and trodden, for the first juice contains little mucoso-saccharine matter, and consequently does not ferment freely, that substance being chiefly contained in the insoluble organized parts, and the skin, which also contains the greatest part of the acid, resinous, extractive, and coloring matter.

3d. The temperature at which fermentation takes place must be conducted at about 60° to 75° Fahr., below which it languishes, and above which it proceeds too violently. When it proceeds too slowly, add a little boiling must.

4th. The contact of air is necessary in the commencement, affording another reason for
the perfect bruising of the fruit, as much air is absorbed in that process. But after the fermentation is well begun, the air must be excluded; the French chemist, Chaptal, recommending the vats to be covered with boards and linen cloths, for the purpose of preserving the aroma, which would otherwise escape.

5th. The greater the bulk the more perfect the wine.

6th. When the wine is ready to be racked off, it ought to be subjected to the operation of sulphuring,—that is, exposed to sulphurous acid, either by burning sulphur matches in the cask, or by the addition of wine impregnated with the acid, to render the glutinous matter incapable of re-exciting fermentation.

After having obtained good wine, the preservation of it depends on its future management, every wine containing within itself the sources both of improvement and decline. Guard against sudden transition from cold to heat, or the reverse, as wines are very liable to become
sour by being exposed to the vicissitudes of temperature and the contact of air. Neglect in properly fining likewise favors aescency. Fining too often repeated also impairs the flavor and body of the liquor.

On racking wines, if the burning sulphur be extinguished in plunging it into the cask, it is a proof that the cask is unsound, and unfit to receive the wine, in which case it should be well cleansed, first with lime-water, then with very dilute sulphuric acid, and lastly with boiling water.

Sometimes a violent fermentating movement takes place after the wine has been run into casks, and if tightly closed may burst the hoops or open the seams of the staves. This must be prevented by adding about 1-1,000th part of sulphite of lime; or, better still, to introduce half a pound of mustard-seed into each barrel, and as soon as the movements are allayed, the floating ferment, which has been the cause, should be removed by fining.
When a wine contains too little alcohol, or has been exposed too largely to the air, or to vibrations, or to too high a temperature in the cellar, it becomes sour. Mix it immediately with its bulk of stronger wine in a less advanced state, fine it, bottle it, and consume it, for it will never prove a good-keeping wine. This distemper in wines gave rise to the practice of adding litharge as a sweetener; the oxide of lead formed, with the acetic acid, acetate of lead, which, being sweet, corrected the sourness of the wine, but at the same time was productive of the most serious consequences to those who drank it. This gross abuse has been entirely abandoned.

Ropiness or viscosity renders wine unfit for drinking, and is owing, as was ascertained by M. Francois, to an azotized matter analogous to gliadine, (gluten;) the white wines, which contain the least tannin, being most subject to this malady. This can be prevented by pure tannic acid, or powdered nut-galls. The tannin may
be added under a more agreeable form—namely, the bruised berries of the mountain ash, (Sor-
bier,) in a somewhat unripe state, of which one pound, well stirred in, is sufficient for a barrel. After agitation the wine is to remain quiet two days, then racked off. The ropiness will, by this time, be removed, and the wine is then to be fined and bottled.

When wine is put into casks that have remained long empty it sometimes tastes of the cask. This is best remedied by agitating the wine for some time with a spoonful of olive oil. An essential oil, the cause of the bad taste, combines with the fixed oil, and rises with it to the surface.

Wines, before being bottled, must, as before stated, go through the process of fining, and may be fined with isinglass, in the proportion of two ounces of the purest isinglass dissolved in two pints of water, and mixed with two quarts of the wine—this being sufficient for a hogshead.

Red wines are fined by beating the white of
eggs into a froth, and mixing them with three times their bulk of water, then adding two gallons of the wine, in the proportion of twenty-eight eggs to the hogshead. Bullock's blood, which was at one time much in vogue, is now seldom used. Other articles are frequently used, but possess no advantages over the eggs and isinglass, which answer every indication, and are easily obtained.

In bottling, care should be taken that the bottles have been properly cleansed, being clear and dry and free from odor. Prepare the corks by placing them in a bucket, and covering them with a solution made by dissolving two ounces of bicarbonate of soda in one gallon of boiling water, then standing twelve hours. Then place them in a bucket of boiling water containing half a pound of loaf sugar. After standing another twelve hours, soak them in clear cold water, and they are fit for use. After bottling put the bottled wine in the place where it is to remain, which should be, as before stated, a
cool, dry wine-cellar, paved or graveled, with openings toward the north, and of such depth as to insure the proper temperature, which can only be ascertained and regulated by having one or more thermometers suspended on the walls.

The fining of the wine can be done to the greatest perfection by bottling or racking off during the clearest and coldest weather in winter, at which time it will, of course, deposit most of its soluble matter. "This was an important secret kept and practiced with much success by a celebrated Philadelphia wine-merchant."

Coloring matters are very generally employed to deepen or change the tint of wine. In Spain boiled must, of the consistency of molasses, and having a similar flavor, but with a strong empyreumatic taste, is employed to deepen the color of Sherry. Caramel or burnt sugar is used for the same purpose, and may be used to color from a light amber to a dark brown. In Portugal the juice of the elder-
berry has been employed to augment the color of Port wine. The extracts of logwood and rhatany are used for the same purpose. For other coloring material the reader is referred to the different formulæ, and to the "Appendix."

Flavoring substances are also frequently added to wines. For instance, in Spain a dry kind of Sherry, called Montellado, is added to Sherries that are deficient in the nutty flavor; and, being very light in color, it is also used to reduce the color of Sherries that are too high. In this country American wines are flavored and colored so as to make them resemble imported wines. The alcoholic solution of the essential oil of bitter almonds is, perhaps, more used than any other flavoring material for the purpose of giving a nutty flavor to many weak-flavored wines.

Tincture of kino, rhatany, and oak bark, or a solution of their extracts, is used when astringents are required, and a large number of articles possessing the proper fragrance, for the
purpose of imparting the peculiar *aroma* or Boquet of the French wines.

We have now given a sketch of the constituents, production, division, varieties, proportion, and management of foreign wines; and we can only express our regret, when we are compelled to acknowledge that a pure foreign wine is seldom—we had almost said never—seen in this country, the large proportion of wines being diluted and adulterated before leaving foreign ports. Our object in the next article, "On the Imitation of Foreign Wines," will be to show you the methods made use of, and instruct you in all the arts and mysteries of that "secret of the trade" which has, and will continue to enrich, all those who are so fortunate as to acquire, and practice upon, the information spread out upon these pages. Be careful to use the different ingredients precisely as laid down in the formulæ, the smallest excess oftentimes injuring the whole.
IMITATION OF FOREIGN WINES

CIDER.—CIDRE, Fr.; ZIDER, Ger.; CIDRO, Ital. Cider is a vinous beverage, made by fermenting the juice of apples; and as it is the most important substance required for the proper imitation of foreign wines, it is necessary to become acquainted with its properties, the best method of manufacturing it, and with the peculiar mode of preparing it for the purpose here spoken of.

The juice of the apple consists of water, malic acid, and sugar. As in the fermentation of the grape juice, the sugar, or saccharine principle, is partly changed to alcohol. When this principle is in small quantity, its deficiency must be made up, or we have a liquor without body, watery and weak, which renders it difficult to preserve. Should the saccharine element
not have been added before fermentation had taken place, it can still be remedied by adding alcohol after the liquor is formed; or, more properly speaking, after fermentation. The most saccharine apples furnish about thirty ounces of sugar to a gallon of juice. Good cider apples should be both saccharine and astringent. The best fruit should always be selected for making cider. The fruit should be gathered by the hand, when thoroughly ripe; or, if shaken, the ground should be covered with mats, to prevent them from being bruised, thereby causing rottenness before the grinding process commences, care being taken to keep each kind separate, so that only those ripening at the same time be ground together.

Apples not perfectly ripe should be placed in large heaps and covered, thus to sweat, and then bring them in ripe at the proper time for making cider. Rotten apples must be excluded.

Care must be taken in grinding to reduce the whole fruit—skin and seed—to a fine, uniform
pulp, consequently the best machinery only should be used. The *pumice* should then remain from two to eight days, (depending upon the weather,) agitating the mass daily till put to the press. This proceeding has a tendency to cause the saccharine principle to be developed; to cause the pumice, which at first was sourish, to become sweet, sugar being produced by the union of pulp and juice, which, if sooner separated, could not have been formed in such quantity. Joseph Cooper, of New Jersey, one of the best authorities, says "the longer a cheese lies after being ground, before pressing, the better for the cider, provided it escapes fermentation until the pressing is completed."

After the pressing, strain the juice through a fine sieve, and allow it to ferment for three or four days, taking off the scum as it rises; then rack into casks that are strong, tight, and sweet, and place it in a cool situation, so that fermentation may progress slowly, the alcohol
escaping with carbonic acid should the fermentation go on too rapidly. Various methods are in use to prevent too rapid fermentation. One pound of black oxide of manganese, powdered, restrains fermentation. A handful of powdered clay to a barrel answers the same purpose. Sulphuring the barrel has also the same effect.

After racking, confine the liquor by driving the bung close, and by sealing. A vent must be left, and the spile carefully drawn at times, but only when necessary, to prevent the casks from bursting. When the sediment has subsided, rack in clean, sweet casks, and add to every barrel of forty gallons two and a half gallons of spirit 15 O. P.,

2 pints simple sirup.
10 ounces crude tartar.
2 pounds of raisins.
2 ounces orange-flower water.

Then agitate the casks (they being well filled
and not closed) for a few minutes. The second fermentation soon begins, the scum to be removed if necessary, and the liquor occasionally agitated. At the expiration of eight days to a fortnight it must again be racked off, filled, and the liquor closely confined by driving the bung tight, and sealing. In from three to five weeks fill up the casks, and in a fortnight further examine it. If fine and clear, rack it once more, taking especial care that you select a fine, clear, tight, sweet barrel; but should it not be clear, it must then undergo the process of fining, and be afterwards racked in the manner above mentioned. This cider is entirely distinct from the other sweet cider, and is prepared in this manner to serve as the "basis" for the imitation of foreign wines. This prepared cider will keep for years if placed in a low temperature.

We will again repeat the following general rules agreed upon by the best authorities for the making of cider:

1st. Gather the fruit when fully ripe—pick-
ing with the hand is to be preferred; if shaken, protect them from bruising by thick mats, or other suitable material.

2d. In grinding, reduce the whole fruit—skin and seeds—to a uniform pulp.

3d. Allow the pumice, or bruised mass, to remain from two to eight days, according to the state of the weather,—if warm for a shorter period, if cold for a longer period,—agitating the mass every day until put to the press.

4th. If there is a deficiency of the saccharine principle, add sugar before fermentation, or alcohol after fermentation.

5th. Let the liquor remain a few days after being strained through a sieve, taking off the scum as it rises, then racked in casks, and placed in a cool cellar; or let it be a few hours after the pressing, placed in a cool cellar in strong, tight, sweet casks, and, after the pulp has all overflowed, drive the bung close, and seal, leaving a vent, the spile only to be drawn when necessary to prevent bursting.
6th. To finish the process for making the prepared cider, by carefully observing the instructions to the very letter, on the principle that "what is worth doing is worth doing well."

7th. Do not neglect to place and keep the "prepared cider" (as well as all other ciders) in a cool temperature, so as to prevent it from taking on the acetic fermentation, which it is apt to do when the temperature is too high.

8th. Sweet apples are always to be preferred for making the "prepared cider," which is to be used for imitating foreign wines; the object being to have the saccharine principle in quantity and quality, thereby securing, at a low temperature, a strong vinous liquor.

Our object, thus far, has been to give the reader a proper insight into the practice and principles which govern the manufacture and fermentation of vinous liquors, and of instructing him in preparing the basis for the imita-
tion of foreign wines, or, in other words, of initiating them in the "art and mysteries" of making precisely the same article of wines which they have for years been purchasing, the only difference, if any, being that the wines made according to the formulæ hereafter given are generally superior to those commonly obtained. The wines made in accordance with the rules laid down in this work are made on scientific principles, the same ingredients being added and supplied which really exist in "pure foreign wines," and therefore are superior to the drugged imitations that are generally sold to the trade.

We will now proceed to instruct the reader how to manufacture the different varieties of wines, premising that he will, in preparing the wines, fulfill our instructions to the very letter; care and attention being all that are required to insure success.
No. 1.—PORT.

To 20 gallons prepared cider add:—
5 gallons good Port wine.
3 pounds bruised raisins.
4 quarts cluster grapes.
3 ounces tincture rhatany.
1 ounce tincture kino.
1½ pints simple sirup.
2 gallons pure proof-spirits.

Color, if too light, with rhatany; let it stand two weeks, rack it and fine it, and repeat the racking and fining process, if necessary, until the wine is perfectly clear and transparent; keep in a cool place.

No. 2.—PORT.

To 20 gallons prepared cider add:—
4 gallons Port wine.
1 gallon good brandy.
2 pints simple sirup.
WINE.

2 pounds bruised raisins.
2 ounces tincture kino.
1 ounce extract rhatany.
1½ gallons pure proof-spirits.

Let them stand ten days, and proceed as in No. 1.

No. 3.—PORT.

To 20 gallons prepared cider add:—
3 gallons good Port.
2 pounds bruised raisins.
1 ounce tincture kino.
1½ pints simple sirup.
2 gallons proof-spirits.
½ gallon good brandy.

Let them stand eight days, and proceed as in No. 1.

No. 4.—PORT.

To 15 gallons prepared cider add:—
3 gallons best Port wine.
2 gallons red native wine.
1 gallon proof-spirits.
3 ounces tincture kino.
2 ounces tincture rhatany.
3 pounds loaf sugar.
2 quarts wild grapes.
Let them stand ten days, and proceed as in No. 1.

No. 5.—MADEIRA.

To 20 gallons prepared cider add:—
5 gallons Madeira wine.
1½ gallons pure proof-spirits.
2 ounces tartaric acid.
½ drachm essential oil of bitteralmonds,
cut in ½ pint alcohol 94 per cent.
1 gallon good brandy.
2 pounds raisins.
Let them stand ten days, and proceed as in No. 1.

No. 6.—MADEIRA.

To 20 gallons prepared cider add:—
3 gallons Madeira wine.
WINE.

1 gallon proof-spirits.
2 ounces tartaric acid.
\(\frac{1}{2}\) drachm essential oil of bitter almonds, cut in \(\frac{1}{2}\) pint alcohol.
1 gallon brandy.
4 pounds raisins.

Let them stand ten days, and proceed as in No. 1.

No. 7.—MADEIRA.

To 20 gallons prepared cider add:—
2 gallons Madeira wine.
1½ gallons pure proof-spirits.
\(\frac{1}{2}\) gallon brandy.
1½ ounces tartaric acid.
\(\frac{1}{2}\) drachm oil of bitter almonds, cut it 1 pint alcohol.
3 pounds loaf sugar.

Let them stand five days, and proceed as in No. 1.
No. 8.—MADEIRA.

To 15 gallons prepared cider add:—
5 gallons native wine.
1 gallon good brandy.
1 gallon proof-spirits.
½ drachm oil of bitter almonds, cut in 1 pint alcohol.
1 ounce cream of tartar.
2 pounds loaf sugar.
3 pounds bruised raisins.

Let them stand ten days, and proceed as in No. 1.

No. 9.—SHERRY.

To 20 gallons prepared cider add:—
5 gallons Sherry wine.
1 gallon pure proof-spirits.
½ drachm essential oil of bitter almonds,
cut in 1 pint alcohol.
1 pint simple sirup.
3 pounds bruised raisins.
WINE.

1 quart good brandy.
3 ounces tincture saffron.
Let them stand ten days, rack and fine as in No. 1.

No. 10.—SHERRY.

To 16 gallons prepared cider add:—
3 gallons Sherry.
2 gallons native wine.
½ drachm oil of bitter almonds, cut in alcohol.
1½ gallons proof-spirits.
2 pounds loaf sugar.
2 ounces tincture saffron.
Manage as No 9.

No. 11.—SHERRY.

To 15 gallons prepared cider add:—
5 gallons Teneriffe wine.
½ drachm oil of bitter almonds, cut in alcohol.
1 gallon proof-spirits.
2 quarts good brandy.
2 ounces tincture saffron.

Manage as No. 9.

No. 12.—SHERRY.

To 15 gallons prepared cider add:—
  2 gallons Sherry.
  2 gallons Teneriffe.
  1 gallon proof-spirits.
  1 pound loaf sugar.
  ½ drachm oil of bitter almonds, cut in alcohol.
  2 pounds bruised raisins.
  2 ounces tincture saffron.

Manage as No. 1.

No. 13.—TENERIFFE.

To 20 gallons prepared cider add:—
  5 gallons Teneriffe.
  1½ gallons pure proof-spirits.
  4 drachms citric acid.
  1 pint sirup.
WINE.

Let them stand six days, and manage as in No. 1.

No. 14.—TENERIFFE.

To 20 gallons prepared cider add:—

4 gallons Teneriffe.
2 gallons pure proof-spirits.
3 drachms citric acid.
3 pounds raisins.
2 pounds loaf sugar.

Let them stand ten days, and manage as in No. 1.

No. 15.—TENERIFFE.

To 20 gallons prepared cider add:—

3 gallons Teneriffe.
3 drachms citric acid.
2 pounds raisins.
1 pint simple sirup.
2 gallons pure proof-spirits.

Let them stand ten days, and manage as in No. 1.
No. 16.—TENERIFFE.

To 15 gallons prepared cider add:—
5 gallons native white wine.
3 drachms citric acid.
1 pint honey.
½ drachm oil of bitter almonds, cut in alcohol.
1½ gallons pure proof-spirits.
Let them stand ten days, and manage as in No. 1.

No. 17.—CLARET.

To 20 gallons prepared cider add:—
3 gallons Claret.
½ pound cream of tartar.
½ pint honey.
2 drachms citric acid.
2 pounds raisins.
2 ounces tincture red sanders.
1 gallon water.
Let them stand ten days, rack and fine as in No. 1.
No. 18.—CLARET.

To 20 gallons prepared cider add:—
4 gallons good Port wine.
1 gallon water.
1 pound tartar.
1 pint sirup.
1½ drachms citric acid.
2 pounds raisins.

Color, if required, with red sanders, or red beet-juice; let them stand ten days, rack and fine as in No. 1.

No. 19.—CLARET.

To 15 gallons prepared cider add:—
2 gallons Port wine.
½ pound cream of tartar.
1 drachm citric acid.
2 pounds loaf sugar.
1 gallon water.

Color as before, and manage as in No. 1.
No. 20.—CLARET.

To 15 gallons prepared cider add:—

5 gallons red native wine.

½ pound cream of tartar.

1½ gallons water.

½ pint honey.

10 lemons, (juice of.)

2 pounds bruised raisins.

Color as before, and proceed as in No. 1.

No. 21.—MALAGA.

To 20 gallons prepared cider add:—

4 gallons good Malaga wine.

2 ounces cream of tartar.

4 pounds bruised raisins.

2 pints simple sirup.

1 ounce tincture kino.

1 quart best brandy.

Color with caramel, or burnt sugar, and manage as in No. 1—standing ten days.
WINE. 61

No. 22.—MALAGA.

To 20 gallons prepared cider add:—

3 gallons good Malaga wine.
1½ ounces tincture kino.
1 ounce cream of tartar.
2 pounds New Orleans sugar.
½ ounce tincture of rhatany.

Color as before, and manage as in No. 1, after standing six days.

No. 23.—MALAGA.

To 20 gallons prepared cider add:—

3 gallons good Malaga wine.
3 gallons native red wine.
2 ounces tartar.
1 ounce tincture kino.
1 ounce tincture rhatany.
1 pint honey.

Color as before, after standing six days; then manage them the same way as laid down in No. 1.
No. 24.—MALAGA.

To 15 gallons prepared cider add:—
5 gallons red native wine.
2 ounces tincture kino.
4 pounds New Orleans sugar.
4 pounds bruised raisins.

Color, and let them stand for ten days; then manage according to the directions mentioned in No. 1.

No. 25.—LISBON.

To 20 gallons prepared cider add:—
5 gallons good Lisbon wine.
5 pounds grapes, in clusters.
1 ounce tincture rhatany.
1 ounce tincture kino.
3 pounds loaf sugar.
2 gallons proof-spirits.

Color, if it is necessary, after they have stood for ten days. Then manage the same as in No. 1.
WINE.

No. 26.—LISBON.

To 20 gallons prepared cider add:—
4 gallons Lisbon wine.
4 pounds raisins.
2 ounces tincture rhatany.
1 pint sirup.
1½ gallons spirits.
1 quart brandy.
1 ounce tartar.

Color, and manage as in No. 1, after standing ten days.

No. 27.—LISBON.

To 20 gallons prepared cider add:—
3 gallons Lisbon wine.
2 gallons red native wine.
1 pint honey.
4 pounds bruised raisins.
1 ounce tincture kino.
1½ gallons proof-spirits.

Color; let them stand eight days, and proceed as in No. 1.
WINE.

No. 28.—LISBON.

To 15 gallons prepared cider add:—

5 gallons native red wine.
1 pint simple sirup.
2 ounces tincture kino.
1½ gallons proof-spirits.
½ gallon good brandy.

Color; let it stand ten days, and manage as in No. 1.

No. 29.—CHAMPAGNE.

To 20 gallons prepared cider add:—

2 pints simple sirup.
1½ ounces tartaric acid.
2 ounces yeast.
2 gallons water.
2 gallons spirits, 10 under proof.

Proceed as in note to formula No. 32.

No. 30.—CHAMPAGNE.

To 20 gallons prepared cider add:—

4 drachms citric acid.
WINE.

1 pint simple sirup.
1 gallon water.
2 gallons spirits, 10 under proof.
1 ounce tartaric acid.

Manage according to note to formula No. 32.

No. 31.—CHAMPAGNE.

To 20 gallons prepared cider add:
2 gallons water.
1 gallon proof-spirits.
10 ounces yeast.
1 pint honey.
4 drachms citric acid.

Manage as in note to formula No. 32.

No. 32.—CHAMPAGNE.

To 15 gallons prepared cider add:
5 gallons native white wine.
2 pints simple sirup.
2 drachms citric acid.
1 ounce tartaric acid.
1 gallon spirits, 10 under proof.
Let the Champagne stand twelve days in a cool cellar, then fine and bottle it if brisk, frothing, and sparkling; if not, add more acid, and fine it again, repeating the process, if necessary, until suitable for bottling. Add, when bottling, to each about two thimblefuls of a sirup made by dissolving half a pound of rock candy in one pint of white wine; then cork, wire, and place in position and temperature according to previous instructions.
DOMESTIC WINES.

No. 33.—BLACKBERRY WINE.

To 20 gallons pure proof-spirits add:—
10 gallons water.
12 pounds sugar.
25 quarts blackberries.
½ pint orange-flower water.
2½ ounces tincture kino.
1 ounce tartaric acid.
½ pint yeast.

Mix thoroughly, and stand in a medium warm temperature until fermentation takes place; then rack it off and fine it, ready for use. Keep in a cool place.

No. 34.—BLACKBERRY WINE.

To 20 gallons pure proof-spirits add:—
6 gallons water.

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WINE.

10 pounds loaf sugar.
2 pine-apples, sliced.
20 quarts blackberries.
2 ounces tincture catechu.
2 ounces tartaric acid.
1 pint yeast.
Mix thoroughly, and proceed as in No 33.

No. 35.—RASPBERRY WINE.

To 20 gallons pure proof-spirits add:—
8 gallons water.
12 pounds loaf sugar.
½ pint orange-flower water.
1 pint yeast.
1½ ounces tincture kino.
25 quarts raspberries.
1 ounce tartaric acid.
Mix thoroughly, and proceed as in formula No. 33.

No. 36.—RASPBERRY WINE.

To 20 gallons pure proof-spirits add:—
6 gallons water.
10 pounds loaf sugar.
1 pine-apple, sliced.
½ pint yeast.
1½ ounces tartaric acid.
2 ounces tincture kino.

Mix thoroughly, and proceed as in formula No. 33.

No. 37.—CURRANT WINE.

To 20 gallons pure proof-spirits add:—
6 gallons water.
10 pounds loaf sugar.
20 quarts currants, (the juice.)
½ pint orange-flower water.
1½ gallons good Port wine.

Let it stand ten days, and draw it off ready for use.

No. 38.—CURRANT WINE.

To 20 gallons pure proof-spirits add:—
8 gallons water.
12 pounds loaf sugar.
WINE.

16 quarts currants, (the juice.)
2 gallons Madeira wine.
Let it stand eight days, and draw it off ready for use.

No. 39.—CURRANT WINE.

To 40 pounds of currants (the juice) add:—
20 gallons water.
30 pounds loaf sugar.
\( \frac{1}{2} \) pound cream of tartar.
5 gallons brandy.
\( \frac{1}{2} \) pint orange-flower water.
Color; fine and decant when necessary.

No. 40.—STRAWBERRY WINE.

To 40 pounds ripe strawberries add:—
16 gallons soft water.
30 pounds loaf sugar.
\( \frac{1}{2} \) pound cream of tartar, dissolved in hot water.
3\( \frac{1}{4} \) gallons good brandy.
2 quarts Madeira wine.