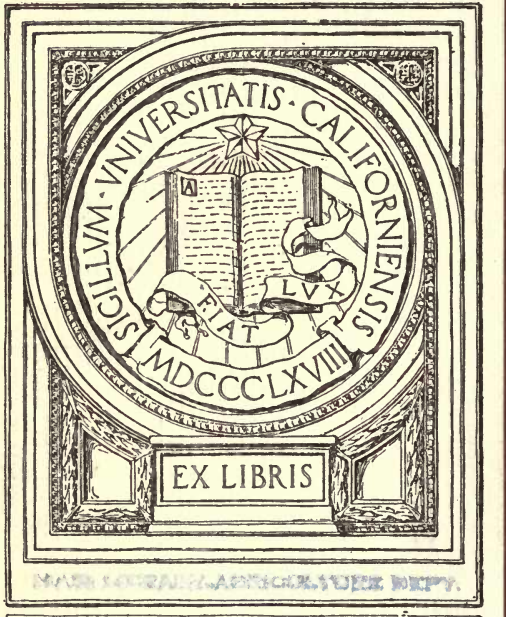
Vinegar
from
Honey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THE PRODUCTION OF

Vinegar from Honey.

BY THE

REV. GERARD W. BANCKS, M.A.

FOURTH EDITION.

Entered at Stationers' Hall.

PERRY & SON, PRINTERS, DARTFORD,
AND 4. PAUL BAKEHOUSE COURT, LONDON, E.C.
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VINEGAR from HONEY.

VINEGAR, or dilute acetic acid, is produced by a process of fermentation from certain vegetable substances. After alcoholic fermentation has taken place there follows, under suitable conditions, a further decomposition, by means of which the alcohol is converted into a more highly oxidized body, acetic acid, with water as a by-product.*

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*$C_2 H_6 O + O_2 = H_2 O + C_2 H_4 O_2$
Alcohol + Oxygen = Water + Acetic Acid.

The proportions of the chemical constituents of Acetic Acid are as follows :—Carbon 46·83, Oxygen 46·82, Hydrogen 6·35.

These conditions require that the liquid shall contain alcohol, nitrogenous matter, and alkaline salts in certain proportions, and that it shall be in contact with the air, at a suitable temperature, for a sufficient length of time.

The researches of Pasteur showed the process of oxidation to be due to a microscopical fungus (mycoderma aceti), possessing the power of condensing oxygen and conveying it to the fermentable substance. This organism, which is a true bacterium, as the fermentation proceeds , forms a leathery membrane (slightly differing according to the substance fermenting) on the surface of the liquor, which constitutes the so-called mother of vinegar, or vinegar plant.

The oxidation of alcohol into acetic acid can also be performed independently of the organic agent. Finely divided platinum, for instance, is capable of effecting disintegration of the alcohol, and of placing it in immediate contact with the oxygen of the atmosphere, thus accomplishing the acetification.

Vinegar, on the continent, is prepared from weak or sour wine, hence its name *(vin aigre.)* In this country it is, to a large extent, produced from an infusion of malt, but considerable quantities of inferior quality are made from sour beer, etc.

The vinegars thus produced, if properly purified, and providing no injurious adulterants are resorted to, are, for many purposes, almost all that can be desired ; but for table use, for sauces and salads, where delicacy of flavour is appreciated, and for medicinal purposes where pureness and wholesomeness are essential, I venture to say that no vinegar can be compared with that produced from **Honey.**

In the first place it possesses a delicious flavour and aroma, altogether lacking in the ordinary vinegar.

Agreeableness of taste and smell are to a large extent dependent upon the substance from which the vinegar is manufactured, and it is impossible to supply these artificially.

That the malt vinegar manufactured in this country is conspicuously wanting in these qualities must be a matter of general experience.

Moreover, owing to its great cheapness, acetic acid distilled from wood (besides being employed for pickling and other purposes, for which it is well adapted), diluted and treated with volatile oils, is every year superseding to a larger extent the vinegars in general use. That this bears no comparison as regards the agreeable qualities, even with the ordinary vinegars, need scarcely be pointed out.

On the other hand, **Honey**, of all saccharine substances, containing as it does all the essentials for harmonious bouquet and flavour, is the one *par excellence*, from which we might expect to produce an ideal vinegar. The result is found amply to justify the anticipation, and that its superiority in this respect will be duly appreciated by the connoisseur in salads and condiments goes without saying; but, indeed, so marked is this distinction that I venture to think it would be readily admitted by all who gave it a trial.

On the ground of wholesomeness honey vinegar is to be preferred.

It has been clearly ascertained that large quantities of vinegar sold in this country contain injurious adulterants and impurities. Many samples, upon analysis, have been found to include a considerable percentage of sulphuric acid, or nitric acid,added either as a preservative or to increase the acidity. Others have contained, as the results of carelesnesss in manufacture, such poisonous ingredients as copper, arsenic, and lead. Little wonder that disagreeable consequences so often follow the taking of vinegar, even in small quantities !

Immunity from these impurities and adulterants, producing as they so frequently do injurious effects, especially in the case of invalids, is surely greatly to be desired, and every possible improvement, either in respect of the material employed or in the process of manufacture of so important an article of consumption, surely deserves to receive the most careful attention.

MODE OF PRODUCTION.

If honey and water in proper proportions be exposed to the atmosphere, at a suitable temperature, for a sufficient length of time, acetic fermentation will in due course ensue. At the same time, to obtain the best results, careful attention must be given to certain details, and various precautions taken. The alcoholic ferment must be carried on under suitable conditions, in order that it may be complete. The temperature must be neither too high, nor too low. Suitable and sufficient nutrient material also for the ferment germ must be present; that is a proper proportion of nitrogenous matter, together with certain inorganic salts, which may be added in the form of a little ammonium phosphate and potassium tartrate.

The acetic fermentation which follows must also be regulated with due care, and not allowed to continue longer than necessary, or deterioration of the liquor will take place with a gradual loss of acidity.

The fining also of the liquor must be carefully attended to, in order to render it perfectly clear and bright.

And finally, it is only when the alcoholic and acetic fermentations have been effected, in a completely satisfactory manner, and the vinegar stored for a sufficiently long period under the most suitable conditions, that the ripening process is effected, without which it will be found lacking in that agreeable flavour and aroma which are its special characteristics.

Proportion of Honey to Water. In the first place, we have to determine the proper proportion of honey to water.

Commercial Vinegar is required by law to contain a minimum of 3 per cent. acetic acid.*

Proof Vinegar contains 5·4 per cent., with a specific gravity of 1·006 to 1·019. For all ordinary purposes this is a convenient strength and first-class vinegars contain about this percentage.

*It is frequently found to contain less, the acetic being often replaced by other and injurious acids.

Of course, the percentage of acetic acid is dependent on a satisfactory alcoholic fermentation and suitable conditions for the development of the acetic germ; but, supposing the conditions favourable, it is possible to obtain from an aqueous solution of 1 part honey to 8 of water, about 5 per cent. acetic acid. A suitable proportion will thus be 1 part honey to from 7 to 8 parts of water by weight.

Suitable Receptacles. When made in small quantities almost any open vessel will serve as a receptacle for the liquor, always excepting glazed or metal ones, in which vinegar must never be allowed to stand. Owing to the solvent effects of the acid, the liquor is, in these cases, liable to be injuriously contaminated.

The vessel used should be covered with muslin or cream cloth, to protect from insects, etc.

A small cask is also a convenient receptacle, but this should not be filled more than three

parts full and the bung hole must be left open, protected with gauze or other coarse material.*

Starting the Fermentation. In due course, if left alone, alcoholic fermentation, by a natural process, will be set up ; but I am inclined to think, from my own experience, that it is best to add, in the first instance, a small quantity of yeast. If, as sometimes happens, the fermentative action be too slow, putrefaction of a portion is liable to take place, and the vinegar is spoilt.

The acetic fermentation is accelerated by the addition of vinegar plant, and also by the presence from the commencement of a small quantity of vinegar.

Temperature A suitable temperature is 70 deg. Fah.. or from that to 80 deg. Summer is therefore by far the best time for vinegar making, as this temperature is then easily obtainable, especially if the vessel be exposed to the heat of the sun.

*The process here described has reference only to the production of the vinegar in small quantities. It is impossible to produce it on a large scale with any degree of success without the employment of artificial heat and with special apparatus.

At a little over 100 deg. Fah. the development of the acetic germ ceases, while below 68 deg. it is gradually arrested.

Duration of Process. The length of time before the completion of the process varies according to circumstances. While usually, under completely favourable conditions, in from six to eight weeks sufficient acetification has taken place, not unfrequently a longer period is required.

Racking and Clearing. When the proper degree of acetification is reached, the liquor should be strained, or, if in a cask, be racked into a fresh one, without tilting. Then fined with isinglass, or allowed to settle for a week or two, when it may be drawn off clear and bottled. It may subsequently require decanting and re-bottling.

The membrane or plant is useful for re-starting the action, but it must not be allowed to remain for any length of time out of the liquor, or be exposed to a low temperature, or it will be injured.

Colour. The colour will at first be found to be quite light, but in course of time it will assume an amber shade and gradually darken with age. That this colouration may proceed as rapidly as possible, the vinegar should be bottled in light glass bottles, and exposed to the light.

* * * *

Dilute acetic acid has been in general use from remote times.

The ancient Hebrews used it, as we know from the several allusions to it in the Old Testament. It is mentioned also in the New Testament. The Greeks and Romans, too, made use of it. It is frequently spoken of by classical writers, as Pliny, Livy, and others.

In our own times it is almost universally employed for culinary and preservative purposes, besides being largely used medicinally.

Vinegar is anti-scorbutic and anti-bilious. Largely diluted it forms a very refreshing beverage. It has been in past ages and in modern times so used by soldiers on long marches, and by others employed on hard and exhausting labour, with beneficial results.

The vapour of vinegar inhaled greatly relieves hoarseness, and, diluted as a gargle, is useful in throat complaints.

Honey and honey vinegar in equal quantities, and taken a teaspoonful at a time, is an excellent remedy for sore throat and cough.

Mixed with water it is cooling and invigorating for sponging the body.

Taken in moderation, owing to its effect upon fatty and other substances, vinegar is an *aid to digestion.* Pure vinegar is usually only unwholesome if taken in large quantities.

Raspberry Vinegar.—Pour 1 pint of honey vinegar on a quart of bruised raspberries. Let it stand in a closed vessel for three days, and stir occasionally. Strain through flannel without squeezing, and to 1 pint of liquor put 1¼lb. of honey. Boil for ten minutes, skim, and bottle when cold.

* * * *

One great advantage in using honey vinegar is that, being quite free from sulphuric or nitric acid, it does not stain silver or table linen.

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