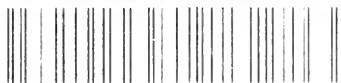


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THE  
CULTURE OF THE GRAPE,

AND

WINE-MAKING;

BY ROBERT BUCHANAN.

WITH AN

APPENDIX CONTAINING DIRECTIONS FOR THE  
CULTIVATION OF THE STRAWBERRY,  
BY N. LONGWORTH.

---

FIFTH EDITION.

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CINCINNATI:  
MOORE, WILSTACH, KEYS & CO.,  
28 WEST FOURTH STREET.  
1855.

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## PREFACE TO THE FIFTH EDITION.

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THE year 1853 was the most favorable for the Grape Crop since 1848, and the yield unusually large, averaging about 650 gallons to the acre, from the best cultivated vineyards, and from a few, 800 to 900 gallons. The writer obtained from 5 acres, 4,236 gallons, or 847 gallons per acre. In some parts of the country, the crop was shortened by the "rot," and in many vineyards by careless cultivation; so that the average yield for the whole county did not exceed 400 gallons to the acre.

IN CULTURE, nothing new has been discovered within the last year. A light dressing of *ashes*, turned in with the first spring hoeing or ploughing, is still thought to be a valuable application, to correct acidity in the soil and in the grape.

IN SUMMER PRUNING, more wood should be left in *dry* seasons than in *wet* ones.

*In making the Wine*, it is now though best *not* to stem the grapes, as the "*tannin*" contained in the stems is supposed to be necessary, in some seasons, to clarify the Wine. The juice from the *last* pressing of each pressful, should be put with the *inferior* wine, as its *weakness* and *astringency* injures the good.

MARCH 7th, 1854.

## P R E F A C E

### T O T H E F O U R T H E D I T I O N .

---

THREE editions of this little treatise, within a year, being required to supply the demand for it, would seem to indicate that the public interest in Grape Culture is on the increase. The author therefore deems it his duty to give the result of his own experience, and that of his fellow-members of the "Wine-growers' Association," in vineyard culture during the past year. It was found that the severe frosts of January and February, 1852—8° to 12° below zero—killed many of the grape buds in warm exposed situations, and several vineyards in Kentucky, a few miles south of this city, scarcely produced any fruit. The hard frosts of the 18th and 19th of March did not injure the grape buds, although many apples, such as the yellow Belleflower, were killed in the opening bud; all the peaches, many of the pears, and most of the cherries were destroyed.

The frosts of the middle of April and second week in May injured the young shoots of the vine, especially in low situations or near moisture, and in the rows near grass; but with all these visitations from frosts, the grape crop was a very promising one until attacked by the *rot*, the second week in July, and subsequently the first week in August—the latter but slight. This disease appeared to affect those vineyards most, that were in low situations, or not fully exposed to a free circulation of air, either from close planting or otherwise.

High manuring, deep hoeing or plowing, and a want of summer pruning at the right time, it was thought, increased the liability to *rot*. This disease, or something like it, prevailed in many parts of Europe, last year, where it had scarcely been known before, and in the island of Madeira caused an almost entire failure of the grape crop.

In this vicinity it cut off about half of the average crop, reducing the product of the whole county to about one hundred gallons per acre. Some made more, but many less than that average. It was



observed that the *poor lands* and *high situations* suffered least. It is supposed by some that the *rot* is allied to the *mildew*, and that scattering flour of sulphur over the vineyard, in June and again in July, may prevent the rot, as sulphur is applied as a remedy for mildew, in grape-houses, with complete success. This experiment might be tried. Ashes are certainly a valuable application, scattered over the surface and turned under with the spring hoeing. Dr. Rehfuß strongly recommends this. Insects did but little injury to the vine last year. The one "resembling a small rose-bug" was scarce.

A new woodcut, to illustrate spring pruning and summer training, has been inserted in place of the old one, which was imperfect in some points. In **SPRING PRUNING** it is found best to *omit* the *first tie*, if the branch is too stiff to bend easily in a circle or bow. This leaves a three-quarter bow or circle. **SUMMER PRUNING** should be done *promptly*; if deferred too late it is certainly injurious, but be careful not to prune too close.

The vineyards near Hermann, Mo., are said now to amount to near five hundred acres. The liberal premiums offered by Mr. Alexander Kayser, of St. Louis, for the best Missouri wines, were awarded at Hermann in August last, at a large and enthusiastic meeting of the wine-growers of that vicinity.

**SCHUYLKILL GRAPE** has been adopted by the "Wine-growers' Association," as the proper name of that heretofore known as the "Cape Grape"—Cape being a misnomer.

---

VINEYARD MEMORANDA continued from page 55—1852. A bad year for rot; lost one-third of a full crop, but still made from five acres in bearing, 1,700 gallons wine. Sold, in December, 1,600 gallons at \$1.25 per gallon. Have for sale this year, about 75,000 cuttings. The grapes ripened well, and the wine was of fine quality. Trenched two acres more for vineyard.

The demand for **CATAWBA WINE** is far ahead of the supply, and the quality is constantly being improved, both by the cultivators and those who prepare it for market. *Mr. Longworth's* expenditures have been large and liberal, fully sustaining his well-earned title—the "*father of vine culture*" in this region.

R. BUCHANAN.

Cincinnati, Feb. 18th, 1853.

## PREFACE TO THE SECOND EDITION.

---

THE first edition of one thousand copies of this Treatise was exhausted in a few months, and a second has been called for. The present is cheerfully undertaken, with a view to add such information as may have been acquired during the last two years, on this so favorite a subject with the Author.

Few changes in Grape culture within that period, however, have been found necessary. Suggestions in relation to spring and summer pruning are still under discussion, and some improvements in Wine-making have been adopted.

Early last year a number of proprietors of vineyards, impressed with the importance of united efforts, formed themselves into the "American Wine Growers' Association," for the purpose of mutual instruction by a free interchange of opinions, at periodical meetings.

Thus far their labors have been eminently successful: "The Western Horticultural Review," edited with great ability by Dr. JNO. A. WARDER, is the medium through which their proceedings are given to the public. The articles on the subject of Grape culture and Wines, with the monthly Calendar for the vineyard, so carefully prepared by the Editor, will be found of great value to the vine-dresser.

It is not pretended that a brief treatise like this, can do justice to a subject of such importance, but it is hoped that it may serve as a hand-book to new beginners in the business, who will, of course, in the progress of their labors, study more elaborate works from abler pens.

Compilations are like labor-saving machines, suited to the present go-ahead age, of Steamboats, Railroads, and Telegraphs, where *time* is everything. The American mind can not *wait for detail*, therefore the extracts from the writings of others are *short*, and the original matter by the author *condensed*.

The object of the publication at first, is explained in the preface to the former edition.

CINCINNATI, March 17th, 1852.

TO THE

CINCINNATI HORTICULTURAL SOCIETY.

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THE cultivation of the Grape in vineyards, for making wine, is now so important a branch of horticulture, in the valley of the Ohio, and especially in this vicinity, that a brief Treatise on the subject may perhaps be considered useful.

The one now presented, has been compiled from several valuable articles on grape culture, published within the last ten years, in horticultural periodicals, by able writers and practical men—members of your society; Mr. LONGWORTH, Dr. MOSHER, Dr. FLAGG, A. H. ERNST, J. E. MOTTIER, C. W. ELLIOTT, WM. RESOR, JOHN SAYERS, T. AFFLECK, and others—the greatest number being from the pen of Mr. LONGWORTH; also from Mr. SCHUMAN's pamphlet, published in 1845, and a book on the same subject, by JOHN JAMES DUFOUR, of Vevay, Ia., 1826; aided by the observations and practical experience of the writer.

After all that has been done, and written, grape culture and wine-making in this country, is as yet but imperfectly understood, and it is only by *experience* and a *free interchange of opinions*, that we shall arrive at a better knowledge of it hereafter.

Our climate, and the native grapes we cultivate, differ so much from those of Europe, that the intelligent vine-dresser from the old world, finds he has much to learn in the new, and that a wide field is presented for observation, in which all must here *work* and *think* for themselves.

At the time Mr. DUFOUR wrote, in 1826, the *Cape Grape* was then the only kind cultivated in the Ohio Valley, for wine. About that time the *Catawba* was brought into notice as a wine grape, by Major ADLUM, at Georgetown, D. C., and by Mr. LONGWORTH, in the West; and it is now so great a favorite as to be almost the only variety planted. To these gentlemen, as public benefactors, the country owes a lasting debt of gratitude for introducing into vineyard culture, this noble grape.

Many improvements in grape culture, and in wine-making, have been made since Mr. DUFOUR'S day—even since the publication of Mr. SCHUMAN'S pamphlet, in 1845, only five years ago, practical cultivators have, in some particulars, adopted other modes than those then recommended; and it is confidently expected, that within the next five years, still greater improvements will be discovered. The business is yet in its infancy, and will require long and careful nursing to enable it to reach maturity.

With our present flattering prospects of success in this branch of home industry, it would be improper to close these prefatory remarks without a passing tribute to the merits of the worthy pioneers in the enterprise—the Swiss settlers of Vevay, and the German vine-dressers of our own county—who, under all the disadvantages of a climate, soil, and vines unknown to them—persevered in their efforts with patient industry, until the present favorable results have been produced. But to Mr. LONGWORTH, more than to any other man in the West, we are most indebted for our knowledge in grape culture. Mr. LONGWORTH has, within the last twenty-seven years, with unwearied zeal and a liberal expenditure of money, in numerous experiments with foreign and native grapes, succeeded in enabling himself and others, to present to the public, a “Sparkling Catawba,” rivaling the best French Champagne, and a dry wine from the same grape, that compares favorably with the celebrated Hock wine of the Rhine.

Several varieties of wine have been produced from other grapes than the Catawba, but with the exception of that made from the Cape—which is a red wine resembling Claret—it will require time to ascertain their value.

From the Isabella, Ohio, Missouri, Norton's Seedling, Minor's Seedling, Lenoir, and Herbemont's Madeira, wines have been made of more or less promise—samples of which may be found at the cellars of Mr. LONGWORTH, and some others.

The views here given are those of many of our most intelligent vine-dressers. A difference of opinion may exist with others on some points, which time and experience alone can reconcile.

R. BUCHANAN.

*Cincinnati, Feb. 18th, 1850.*

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# CULTURE OF THE GRAPE.

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## THE VINEYARD.

IN establishing a Vineyard, it is a matter of much importance to select the right

### POSITION AND SOIL.

A hill side with a southern aspect is preferred, although an eastern or western exposure is nearly as good. Some have recommended the north, on account of safety from late spring frosts, but it will scarcely afford sun enough to ripen the grapes in cold, wet seasons (if the declivity is steep), and may perhaps be more subject to "the rot." Any undulating surface, if dry, is preferable to a level one.

*The soil* best suited for a vineyard, is a dry calcareous loam—with a porous subsoil—not retentive of moisture; if mixed with some gravel or small stones, so much the better. Some prefer a sandy soil with a gravelly substratum; as in this the grapes are less subject to rot; the juice however is not so rich,—lacking in saccharine matter,—and in dry seasons the vines will suffer from the drought, shedding their leaves prematurely, and preventing the grapes from ripening well. In warm, sandy soils, the fruit-buds on the vines, if swelled prematurely in autumn, are sometimes killed by the frosts of a severe winter.

Any soil underlaid by a stiff wet clay, is to be avoided, as also wet or spongy lands. No trees should be allowed to grow within one hundred feet of the vineyard.

For a further illustration of this subject see Mr. Williamson's letter, in the Appendix.

#### PREPARING THE GROUND.

In autumn or early winter, dig or trench the ground all over, 2 to  $2\frac{1}{2}$  feet deep, with the spade—this is far better than plowing—turn the top soil under; the surface will be mellowed by the frosts of winter.

Wet spots in the vineyard may be drained by small stone culverts, or by what is termed a French drain, a ditch, with some loose stones thrown into it edgewise, covered with flat ones, and filled up with the earth again. Surface draining may be obtained by *concave sodded* avenues of 10 feet wide, and intersecting each other at 100 or 120 feet, thus throwing the vineyard into squares of that size. This will do for gentle declivities; but steep ones must be terraced, or benched with sod or stone, which is more expensive. These benches should be as broad as they can be made conveniently, and with a slight inclination to the hill, that they may be drained by stone or wooden gutters, running into the main trunks, to carry off the water without washing away the soil. This is important, and requires good judgment and skill.

#### PLANTING.

Much diversity of opinion exists, as to the proper distance of planting the vines apart in the rows. Our native varieties, with their long joints, large foliage, and luxuriant growth, certainly require more room to grow than the short jointed vines of the Rhine. Hence it is supposed, that our German vine-dressers have sometimes erred, in planting too close in this country,— $3\frac{1}{2}$  by 4; 4 by 4; 4 by  $4\frac{1}{2}$ , &c. For steep hill sides,  $3\frac{1}{2}$  by  $4\frac{1}{2}$ , or 3 by 5 may answer, but for gentle slopes  $3\frac{1}{2}$  by 6 is close enough, and for level land, 4 by 7. This will admit sun and air to mature the fruit, and leave a liberal space for the roots to grow.



Lay off the vineyard carefully with a line, and put down a stick some 15 inches long, where each vine is to grow. Dig a hole about a foot deep, and plant two cuttings to each stick, in a slanting position, separated 6 or 8 inches at the bottom, and 1 inch at the top of the hole ; throw in a shovel full of rich vegetable mould, from the woods, to make the roots strike freely ; let the top eye of the cuttings be even with the surface of the ground, and cover with half an inch of light mould, if the weather is dry. Leave the hole at the lower part about two-thirds full, until midsummer ; *then* fill up.

If both the cuttings grow, take up one of them the following spring, or cut it off under ground, as but one vine should be left to each stake.

To prepare the cuttings for planting, bury them in the earth when pruned from the vines, and by the latter end of March, or early in April, which is the right time for planting, the buds will be so swelled, as to make them strike root with great certainty.

Each cutting should contain at least four joints, and be taken from wood well ripened ; if a small part of the old wood is left on the lower end, so much the better ; cut them off close below the lower joint, and about an inch above the upper. Set out some extra cuttings in a nursery to replace failures in the vineyard.

Some good vine-dressers have recommended planting with roots one or two years old, but the experience of others is in favor of planting at once with cuttings in the vineyard ; the vine being never disturbed by removal makes the more thrifty and permanent plant.

Of course the planting should only be made when the ground is warm and dry, or mellow.

Persons residing at a distance from vineyards, had better procure roots one year old, as the cuttings are apt to suffer from transportation.

## DIRECTIONS FOR PLANTING CUTTINGS IN A NURSERY.

When pruned from the vines, the cuttings should be tied in bundles of 100 or 200, and placed in a cool cellar, until the ground is prepared for planting.

Dig a trench, in spaded ground, about a foot deep, slanting to the surface, the length of the cuttings. Place the cuttings 5 or 6 inches apart, the top eye just above ground. Cover the lower joints with good rich mould, and fill up with the earth thrown from the trench. Keep them clear of weeds in the summer, and in dry weather water occasionally.

## TREATMENT OF THE YOUNG VINEYARD.

*The first year*, keep the ground clean and free from weeds, with the hoe; many use the plow, as being more expeditious and economical, but the more careful vine-dressers who can afford it, never cultivate with the plow, using only the two-pronged German hoe, made especially for the purpose.

The earth should be stirred around the young vines, two or three times during the season, to promote their growth; superfluous shoots must be pulled off, leaving but one or two to grow, at first, and but *one* eventually.

In the spring, cut the young vine down to a single eye, or bud; at first, if two are left for greater safety, take off one, afterward; drive a stake six or seven feet long firmly to each plant. Locust or cedar is preferred, but oak or black walnut, charred at the end, driven into the earth, or coated with coal tar, will, it is said, last nearly as long. Keep the young vine tied neatly to the stake with rye or wheat straw—pick off all suckers, and let but one stalk or cane grow. The vineyard must be kept clean of weeds, and the young vines hoed as before.

The *second spring* after planting, cut down to two or three eyes, or joints, and the *third year* to four or five; pinching off laterals, tying up, and hoeing the vines as recommended

above. Replant from the nursery, where the cuttings have failed to strike root in the vineyard.

The *third year*, the vines will produce a few grapes, sometimes enough to pay the expenses of attending them. Train *two canes* to the stake this year, take off laterals, and keep well hoed.

The vineyard having now commenced to bear, may be considered as *fairly established*; and for the *fourth* and successive years, the following treatment is generally adopted.

#### SPRING PRUNING.

This is usually done from the middle of February to the first week in March. Some prune in January, and Mr. SCHUMAN has recommended November and December, as the proper time. No serious injury to the vines, by winter pruning, has yet been discovered. The writer pruned many of his vines in November and December, last year, and they escaped unscathed through the hardest winter known in this climate for many years.

Pruning, *the fourth year*, requires good judgment, as the *standard stem, or stalk*, has to be established.

Select the best shoot or cane of last year, and cut it down to six or eight joints, and fasten it to the adjoining stake in a horizontal position, or bend it over in the form of a hoop or bow, and tie it to its own stake. The ties should be of willow. This is the bearing wood. The other cane, cut down to a spur of two or three eyes, to make bearing wood for the next season.

Mr. SCHUMAN remarks in his treatise, "There are various methods of training adopted. Some tie the shoot up to the stake with two or three ties at proportionate distances.

"The greater part of the German vine-planters make circular bows with three ties, and another mode is to make half-circle bows. I recommend the latter as the best and proceed to describe it.

“Give the shoot the first tie on the stake nine inches from the ground, and the second, nine inches above it; then bow it over to the neighboring stake in a horizontal position, and give it the third tie to that stake, at the top of the vine.”

In the succeeding, and all subsequent years, cut away the old bearing wood, and form the new bow, or arch, from the best branch of the new wood of the last year, leaving a spur as before, to produce bearing wood for the coming year, thus keeping the old stalk of the vine down to within eighteen to twenty-four inches from the ground. The vine is then always within reach, and control.

The experience of the writer is in favor of the *bow system*; bending the top of the branch in a circular form, to within three or four inches of its stake, and fastening it with a willow tie, or twig, to the stake, — having made two ties previously, one at the lower part, the other at the middle of the bow. From this *bow* the crop of grapes is to be produced, and often a bearing cane for the next year.

The *spur* will bear a few bunches of grapes, but the bearing wood, for the ensuing year, is generally trained from it.

Mr. SLEATH has adopted a new method of training, which will be found in the Appendix.

The best time for tying the vines to the stake is when the sap begins to swell the buds and make them look white— from the middle of March to the first week in April. Then in damp or wet weather, the bow can be formed by a slight twist of the branch, and fastened to the stake without breaking. This requires to be done *carefully*.

See the Appendix for an excellent article on spring and summer pruning from Dr. S. MOSHER, President of the Cincinnati Horticultural Society.

Should a vine be lost after the vineyard is in bearing, it can be replaced by a layer from the adjoining vine, which

is a much better mode than planting a young vine. The layers may be put down late in summer, but spring is preferred.

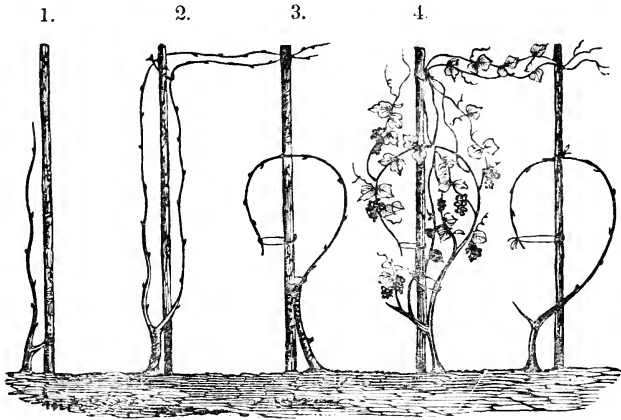
Cultivate the yellow, and the osier willow, to make ties for the spring pruning. They will grow in any wet place.

## SUMMER PRUNING.

Consists in removing suckers, and *pinching* off all lateral shoots, leaving but two stalks or canes to be trained for bearing wood the ensuing year, and *pinching* off the ends of the *bearing* branches, about the time of blossoming, some two or three joints beyond, or above the last blossom bunch; pull no leaves off the *bearing* branches, and but very few from any other. As the vines grow, tie them neatly to the stakes, with rye straw (some use grass), and when they reach the top, train them from one stake to the other, until the fruit has nearly matured; the green ends may then be broken off. If this is done too early, there is danger of forcing out the fruit-bearing buds for the next year, and of injuring the grapes in ripening.

Some of our cultivators are averse to removing any lateral branches from the fruit-bearing wood, — merely pinching off their ends. Others adopt close pruning, in summer, and even taking off some of the leaves of the bearing branches. Both these extremes are wrong. The experience of the writer is in favor of removing such lateral shoots as appear unnecessary to the growth or ripening of the fruit—to pinch off the ends of the bearing branches two, three, or four joints beyond the upper bunch of grapes—according to the number it bears—to take off all laterals from the bearing wood intended for the ensuing year; and not to break off the ends of these branches at all (as has heretofore been done about the time the grapes began to color). The leaves are the *lungs* of the plant, and while it is necessary to remove suckers and laterals, to throw strength into the *fruit* and the *bearing branches for next year*,

a liberal supply of leaves should be left for the maturity of both.



To show spring and summer pruning, the above figures are inserted.

Fig. 1. The vine *second* year before pruning.

Fig. 2. " " *third* " " "

Fig. 3. " " *fourth* " pruned.

Fig. 4. " " *fourth* " summer training.

#### CULTURE.

The vineyard must be kept perfectly clean from weeds and grass, and should be hoed twice during the spring and summer. From the middle of April to the first week in May, is recommended as the best time for spring hoeing, and August for summer.

The cultivator or the plow is less expensive, but the vines and roots are in danger of being injured by that mode of culture; therefore the hoe is preferred by those who can afford it. It has been recommended by some writers, to cut off the roots of the vines near the *surface* of the ground, and for four or five inches under, that the roots, when the vines are young, may be well established at a proper depth below.

By others, this plan is thought to be injurious. The

majority, however, prefer cutting off the surface roots for the first three or four years.

About every third year, put in manure, by opening a trench the width of a spade, and four or five inches deep. Above and near each row, throw in two or three inches of well-rotted manure, and cover up with the earth.

Another plan adopted, is to run a furrow with the plow, put in manure, and cover over, either with the plow or hoe.

Others, again, scatter manure over the surface, and dig it in.

An intelligent cultivator, J. A. CORNEAU, remarks: "High manuring is generally admitted to be injurious to the vinous quality of the Grape; or, in other words, it accelerates a larger growth of wood, and a more attractive looking fruit, while the more essential qualities of the grape for Wine-making, are very much deteriorated. No substance should ever be used which has a tendency to ferment, or which, in undergoing a chemical change in the soil, would form an acid or a salt of a highly stimulating nature. Vegetable manures, bones, &c., may be used to advantage." *Well rotted stable yard manure* has been used *moderately* by the writer, with good effects to the plants and the fruit, and without any perceptible injury to the "vinous quality of the grape."

Dr. L. REHFUSS, President of the "Wine Growers' Association," strongly recommends a light dressing of wood ashes to be dug in with the spring hoeing, to supply to the earth the alkalies taken up by the Grape, and to neutralize acidity in the soil, and consequently in the Wine.

#### DISEASES, INSECTS, AND FROSTS.

The "rot," as it is termed, is the great evil, especially in cultivating the Catawba.

This takes place usually in the latter end of June or early in July, Dr. WARDER says, "about the period of stoning," or "hardening of the seed," after continued heavy rains, and

hot sweltering suns. It strikes, something like the rust in wheat, suddenly, and with the same disastrous effect to the crop. Various modes of prevention have been recommended, but none yet tried have proved effectual.

The cause is supposed to be an excess of water about the roots of the vine, in any clay subsoil retentive of moisture; sandy soils with a gravelly substratum, are generally exempt from this disease.

The opinions of Mr. ELLIOTT, Mr. LONGWORTH, and the Fruit Committee of the Cincinnati Horticultural Society, on this subject, are quoted.

Mr. ELLIOTT, in the *Horticulturist*, Vol. 2, p. 314, says: "The rot for the past three years has followed excessive rains in July and August. Dr. FLAGG, two years since, found a small part of a vineyard where the rot was very slight; (an experiment made by the writer of this Treatise), this had not been worked after the spring, and the ground was in such a state, that most of the rains passed off on the surface. Vines planted in rows eight feet apart, in one instance, were found not to be affected with rot, but very slightly. . . . The subject has been but little investigated, and therefore all can speculate."

In the same article, page 319, Mr. LONGWORTH says: "It is of late years only, that the rot has been so destructive among our grapes; one thing is certain, if we had little or no rain after the grapes are fairly forward, we should see but little of the rot; certain it is, it is continued rains, followed by a hot sun, that causes us to look out for the appearance of the rot."

In the able report of Dr. MOSHER, Mr. ERNST, and Mr. KIDD, the Fruit Committee of the Society for 1848, it is remarked: "Some vineyards were injured by the wet weather in July, causing the grapes to rot and fall off: this, however, seems to have been confined to situations where the air had not a free circulation, allowing fogs and vapors to remain too



long upon the vines in hot weather, as well as to a tenacious, clayey soil; on dry and more airy situations, and where the ground was thoroughly drained, the crop has been fine and fair."

H. W. S. CLEVELAND, of Burlington, N. J., who has a vineyard of two to three acres, and who, Mr. DOWNING says, is one of the most reliable horticulturists in the State, recommends covering the whole surface of the vineyard with shavings, leaves, or coarse grass, to prevent the ravages of insects, and diseases of the fruit—see *Horticulturist*, Vol. 3, p. 113.—In the same Vol., p. 121: "A Jerseyman," in summer pruning, put the leaves and young stems in a trench at the root of the vines—sprinkled gypsum on them, and covered over with earth. This was done at the suggestion of Mr. DOWNING, who strongly recommends it to vine-dressers on the Ohio, with a request that upon trial they "report progress."

And at page 161, of the same Vol., "B.," "of Chester Co., Pa.," recommends "special manures," as a certain specific—having tried with success, a mixture of guano, gypsum, and wood ashes.

Mr. DOWNING says to "J. D. LEGARE, Aiken, S. C.," in the same Vol., p. 255: "We note your experiment with ashes to prevent rot, but you must not decide against it with one year's trial. It has been found effectual here at the north, when used along with gypsum."

Two years ago, the writer of this Treatise tried ashes on a small scale, but *without Gypsum*; a trench was dug above two rows, the width of a spade, some four inches deep, and two or three inches of leached ashes put in and covered over with earth. No beneficial effect was perceived. The two rows were slightly affected by the rot, as were those adjoining.

Hoing in autumn, and not stirring the ground at all in the spring and summer, but keeping the weeds cut down, and

the surface smooth, that the water may not sink, but pass off rapidly, has also been spoken of as a probable remedy against rot.

Some persons even recommend letting the weeds grow : to say the least of it, this would be slovenly culture.

With a view to test the advantages of wide planting, and high training, in preventing the rot, Mr. WERK has planted on his farm, near Cheviot, eleven acres in the Catawba grape, twenty feet apart in the rows each way, and the vines are trained to locust stakes twelve feet high. Last year they produced fruit for the first time, and were entirely free from rot. But here it must be remarked, that the *first crop*, from young vines, is generally but little affected by that disease. Mr. WERK also cultivated the ground between the rows, for other purposes.

In 1850 there was scarcely any rot, and crops averaged about four hundred gallons to the acre. In 1851 the frost on the second of May destroyed two-thirds of the grape-buds, and the crop of grapes, a very small one, was almost entirely clear of rot. The past two seasons were drier than the four or five preceding them.

That the rot, or a similar disease of the grape, existed in the earlier ages, may be inferred from the following passage in Malachi, c. iii, v. 11—"Neither shall the vine cast her fruit, before the time, in the field."

The reader is referred to two articles from the pen of Mr. LONGWORTH, in the Appendix, for his views on this subject. Oct. 21, 1848, and Feb. 18th, 1850.

The "mildew" comes earlier in the season, when the grapes are about one-fourth grown, blighting occasionally a few bunches, and sometimes only the lower end. It is neither common nor destructive. The Isabella is much more subject to mildew than the Catawba, and the Cape is seldom affected by this disease.

The "speck," by some persons mistaken for the rot, and

by others called the bitter rot, is a large circular spot on the side of the grape, looking as if caused by the sting of an insect, and extending to the seed on one side of the berry, while the other is uninjured; but owing to this wound, or speck, the juice will be bitter. This has been attributed to the action of the sun on the fruit when covered with rain or dew-drops.

The vine is so remarkably healthy, and of such luxuriant growth in almost any proper soil, that *diseases at the root* are almost unknown here. Mr. SCHUMAN states that a white worm resembling the peach-tree worm, is sometimes found eating off the young roots of the vine, and Mr. MOTTIER has also found and destroyed it—but it is rarely met with in vineyards.

The *Insects* found most annoying, are a *green worm* that feeds on the vines just as the fruit-buds appear, and before they blossom, eating off the tender bunches, and doing great mischief if not promptly destroyed. The *Canker, or Measuring Worm* (of which the above may be a variety) is sometimes found on the leaves and young shoots. The *Curculio*, so destructive to the plum, has occasionally been found on the grapes; they can be readily shaken down on a sheet, by a sudden blow on the stake, and destroyed. If ever permitted to get domesticated in a vineyard, this insect would be immensely destructive.

The *Rose-bug*, Dr. SHALER says, has been observed in some vineyards in Kentucky, but it is rarely met with here.

For the last two years, an insect resembling the rose-bug, but smaller, and of the same family (*melolontha*), has been discovered in several vineyards in this vicinity, eating off the upper surface of the leaf, and causing the veinous fibers left to look like a sieve. The writer destroyed those in his vineyard, last year, by shaking them off the vines into buckets partly filled with strong lime-water. This was accomplished

in a week, killing three hundred to four hundred thousand from six acres, at an expense of twenty-seven dollars.

Next year they will scarcely be so numerous in this vineyard.

A *large brown beetle*, or bug, will frequently sting the young tender branches of the vine in summer, making a wound that subjects the branch to be broken off by strong winds. They can be watched and picked off, late in the evening or early in the morning. All horticulturists are familiar with the spring and early fall *caterpillar*, and of course, would not permit either to get a foothold in the vineyard.

Mr. N. W. THATCHER, of Chillicothe, sent last summer to the Cincinnati Horticultural Society, specimens of a small variety of *curculio*, which he had found to injure his grapes, like the plum, by depositing ova.

*Frost.* Late spring frosts have some years, but not often, been highly injurious, especially to vineyards near *small* streams of water, damp woods, or in cold situations. The most severe within the memory of the writer, occurred on the nights of the 26th of April, 1834; 9th May, 1838; 7th May, 1845, and the 15th April, 1849.

In the three first named years, the buds had so far put out, that their loss was not replaced by the pushing out, subsequently, of the latent or twin bud, which partially overcame the loss of the first, in the latter year, 1849. These frosts, therefore, nearly destroyed the crop, in situations near moisture.

A more destructive frost than either of the above, occurred on the morning of the second of May, 1851—destroying all the fruit, and about two-thirds of the grape-buds. This frost gave us one test, and proved conclusively, that the grape is the hardiest of all our fruits, not even excepting the apple.

In warm sandy lands, with a gravelly substratum, the buds are in some years pushed forward prematurely by warm autumns, so as to be killed by severe frosts in winter.

Out of eighty-three vineyards in this county in 1845, Dr. FLAGG reported twenty-one much injured by the frost.

*Hail-storms* have in some years injured our grape crop, but they are generally confined to a small strip of country, and have seldom extended to more than eight or ten vineyards in this county in any one year. The *leaves of the vine* are a partial protection to the fruit.

VARIETIES OF GRAPES CULTIVATED, AND WINE MADE FROM THEM.

1. The CATAWBA is our great wine grape, and stands without a rival. Mr. LONGWORTH has offered five hundred dollars reward for a better native variety, and several new seedlings have been produced, but its equal has not yet been found. It is subject to rot.

*Wine*; varying from a clear water color to straw color and pink; of a fine fruity aroma; makes an excellent champagne, and a good dry hock. Requires no sugar in fermentation, if the grapes are well ripened. In the Horticulturist, Vol. 2, p. 317, Mr. LONGWORTH states:—“Maj. ADLUM had a proper appreciation of the value of the Catawba grape. In a letter to me, he remarked:—‘In bringing this grape into public notice, I have rendered my country a greater service than I would have done, had I paid off the National debt.’ I concur in his opinion.”

2. CAPE; this old favorite of former days, is now almost displaced by the Catawba. It is still cultivated in some vineyards, but not extensively—a very hardy variety and but little affected by the rot.

Makes a good *wine*, resembling claret—requires some sugar to be added in fermentation.

3. ISABELLA, a variety much esteemed in some of the Eastern States, particularly about the city of New York—where it ripens better than here. It is almost abandoned as a wine grape, and generally cultivated only for table use; a

hardy variety, subject less to rot than to mildew—in some seasons ripens badly.

*Wine* sometimes good, and resembling a light Madeira—requires a good deal of sugar in the fermentation; say eighteen to twenty-four ounces to the gallon of juice, or “must.”

4. **BLAND'S MADEIRA**; a delicious table grape, resembling the Catawba in its appearance. Too tender for vineyard culture in this climate. On arbors, in sheltered situations, it bears well.

5. **OHIO, or Cigar Box**, is a fine table grape, bunches very large and shouldered, berries small, black, sweet, and without pulp; does well on arbors or trellises, but will scarcely answer for the vineyard culture—requires long pruning.

*Wine*; dark red, inferior in flavor when new, but improves by age.

6. **LENOIR**; a black grape, bunches large and compact, sometimes shouldered, without pulp, berries small, black, sweet and palatable. Subject, in clay soils, to mildew and rot.

7. **MISSOURI**; fruit black, bunches loose and of medium size, berries without pulp, sweet and agreeable. Sometimes cultivated in vineyards; a good variety for wine.

*Wine*; “makes an excellent wine, somewhat resembling Madeira.”

8. **NORTON'S SEEDLING**; bunches of medium size, compact, shouldered, berries small, purple, sweet, but with a pulp.

*Wine*; inferior.

9. **HERBEMONT'S MADEIRA**; a good wine, and a pleasant table grape; bunches medium size, berries small, black, and without pulp.

*Wine*; pink or light red, resembling in flavor the Spanish Manzanilla.

10. **MINOR'S SEEDLING**; a new grape of the Fox family. Fruit; bunches medium size, berries large, pulpy, musky, and rich flavored, very hardy; but little subject to rot.

*Wine*; too musky and high flavored to be pleasant, without mixing with other kinds.

This grape will probably be found a valuable variety for the vineyard.

11. **WHITE CATAWBA**; a new seedling from the Catawba, but far inferior to the parent.

Bunches medium size, shouldered, berries white, large, round, and pulpy—in taste like the Fox Grape.

*Wine*; not tested.

12. **MAMMOTH CATAWBA**; another new seedling, resembling the Catawba in color, but not so well flavored. Bunches large, shouldered, berries very large, round, pulpy—in some seasons subject to fall off before ripening.

*Wine*; not tested.

Mr. LONGWORTH, in a letter to the Cincinnati Horticultural Society, remarks:—“I have for thirty years experimented on the foreign grape, both for the table and for wine. In the acclimation of plants, I do not believe; for the White Sweet Water does not succeed as well with me, as it did thirty years since. I obtained a large variety of French grapes from Mr. Loubat, many years since. They were from the vicinity of Paris and Bourdeaux. From Madeira, I obtained six thousand vines of their best wine grapes. Not one was found worthy of cultivation in this latitude, and were rooted from the vineyards. As a last experiment, I imported seven thousand vines from the mountains of Jura, in the vicinity of Salins, in France. At that point the vine region suddenly ends, and many vines are there cultivated on the north side of the mountain, where the ground is covered with snow the whole winter, from three to four feet deep. Nearly all lived, and embraced about twenty varieties of the most celebrated wine grapes of France. But after a trial of five years, all have been thrown away. I also imported samples of wine made from all the grapes. One variety alone, the celebrated

Arbois wine, which partakes slightly of the Champagne character, would compete with our Catawba.

“If we intend cultivating the grape for wine, we must rely on our native grapes, and new varieties raised from their seed. If I could get my lease of life renewed for twenty or thirty years, I would devote my attention to the subject, and I would cross our best native varieties with the best table and wine grapes of Europe. We live in a great age. Discoveries are daily made that confound us, and we know not where we shall stop. We are told of experiments in mesmerism, as wonderful as the grinding over system would be; but I fear the discovery will not be brought to perfection in time to answer my purpose, and I must leave the subject with the young generation.

“I have heretofore wanted faith in the doctrine of French Horticulturists, that to improve your stock of pears, you must not select the seed of the finest fruit, but of the natural choke pear. I am half converted to their views. The Catawba is clearly derived from the common Fox grape. In raising from its seed, even white ones are produced, but I have not seen one equal to the parent plant, and in all, the white down on the under side of the leaf, and the hairs on the stalk, common to the wild Fox grape, are abundant.”

#### DURABILITY OF A VINEYARD.

The oldest vineyard in this county is one of Mr. LONGWORTH'S, on Baldface.

It was planted twenty-seven years ago, on ground trenched with the spade two feet deep. It is still in vigorous bearing, and has nothing to contend with, but the rot in wet seasons.

Several other vineyards in the county are from fifteen to eighteen, and a few, twenty years old.

Dr. MOSHER in an able article on Grape Culture, in the “Farmer and Gardener,” Vol. 5, p. 206, says :



“Vineyards planted at Vevay, in Indiana, by the Swiss, merely on deeply plowed ground, failed in fifteen years. When the ground is plowed eighteen inches deep, it may bear tolerably well for twenty years ; but a vineyard planted on ground well trenched two feet deep, and properly drained and cultivated, may be expected to last fifty or one hundred years, or perhaps more. The crop, also, is much more certain when the ground is well trenched, not being so liable to suffer from droughts or rainy seasons.”

Mr. MOTTIER is of the opinion that fifty years is as long as a vineyard will last in this country, even with the best attention.

#### TO RESTORE PREMATURE DECAY IN A VINEYARD.

It has been suggested, that when the ground was prepared originally with the plow, and the vines planted too close together, the vineyard might be restored to vigorous bearing, by taking up every other vine in the close planted rows, and trenching the ground for half the distance between the rows two and a half feet deep. How far the partial root pruning thus given to the vines might affect them, is uncertain. The experiment might be tried on a small scale.

The old system of renewing worn out vineyards, by trenching between each row, and forming new plants from layers, is a good one ; but two or three seasons are lost in adopting that method.

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## MAKING WINE.

#### THE WINE PRESS

Is made somewhat like a “screw cider press.” An iron screw, three or four inches in diameter is used—either in a strong upright frame, or coming up through the center of the platform (the latter is the cheapest, and most simple in

construction). A strong, tight, box platform six or seven feet square, of two or three inch plank, six or eight inches high at the sides, is wedged into heavy timbers; and, in this, a box of one and a quarter inch boards, five or six feet square, perforated with holes near the lower edge, ten or twelve inches high at the sides (made to be readily taken apart), is placed to contain the mashed grapes. Boards to fit loosely inside of this box, and lay on top of the pile of mashed grapes (or "cheese" as cider-makers call it) and pieces of scantling to lay across to receive the pressure, complete the press.

The power is applied by a strong lever attached to the nut or female screw, and the juice runs out through a hole, with a spout, in front of the platform, into a large receiving tub.

N. B. Doctor WARDER suggests an improvement, adopted by Mr. RENTZ, in his wine press. Inch strips are placed on the platform, and boards perforated with holes, laid on them as a bottom for the box that contains the mashed grapes.

#### GATHERING AND PRESSING THE GRAPES.

The grapes should remain on the vines until *very* ripe, "dead ripe" as some express it. Pick off all decayed or unripe berries from the bunches, which are then bruised in a mashing tub (a vessel like an inverted churn), or passed through a small wooden mill, breaking the skins and pulp, but *not* the seeds. They are then emptied into the press, and the screw applied, until the pulp and skins are pressed dry, or all the juice is extracted. The outside of the cheese has to be cut off two or three times, and thrown on the top, and re-pressed, in order to extract all the juice. The juice or "must" as it is called, is then put into clean casks in a cool cellar, for fermentation.

Everything connected with the making of wine, requires great care and neatness. The press, vessels and casks, must be perfectly clean; and, in short, as much attention to cleanli-

ness must be observed, as in making butter, else the wine will lose the fine *fruity aroma and flavor* of the *grape*, which is to give it *character* and make it *sell*.

It is now generally admitted that *stemming the grapes*, is a great advantage to the wine. The writer has adopted a cheap and simple method, which, if not as mechanical as Mr. Corneau's, yet answers the purpose very well:—A wire screen of an oblong square form, with meshes of three quarters of an inch, is placed to slide on a slight frame, over a large receiving tub; on this screen the mashed grapes are poured from the mashing tubs,—with a few vigorous slides and shakes, the pulp and skins fall through the sieve, leaving the stems on its surface. The stems comprise about one-tenth of a measured bushel of unstemmed grapes.

The “pummies” (skins and seeds after being pressed) is thrown on the manure pile; or, distilled, to make brandy.

Mr. LONGWORTH says, “To insure success we must observe great care in selecting the fruit. Select good sweet casks, and use cleanliness in expressing the juice, and skill in the process of manufacture and preservation of the wine. Keep it in a cool cellar, cask tight, and carefully rack the same yearly, till the wine is perfectly fine, and fit for bottling; for wines, that have no alcohol added, require tight casks and cool cellars, to keep them sound. They are less subject to run into the acetous fermentation with us, than they are in France and Germany. To the ropiness of which they complain, our wine is not subject. It is a common saying in France and Germany, that ‘a poor man cannot make good wine.’ The reason is obvious. The rich man not only has more influence in obtaining favorable opinions, but he also uses more care and skill in the manufacture. The poor man must sell his wine as soon as made. The rich man retains it till it is improved by age, and never sells any under his own name, but that which proves to be of superior quality. The vintage of bad years, is sold without a name. So much de-

depends on manufacture and reputation in Europe, that wine from the same variety of grape, and the vines divided by a footpath in the same vineyard, have very different reputations. The one will bring eighteen dollars per dozen, where its neighbor will not command three dollars. Many commence the manufacture at the lowest price, and in a few years, by great care and skill, command the highest.”

In the Horticulturist of January last, a writer from Mississippi recommends the use of *whisky barrels*, in wine-making. Perhaps they might answer in Mississippi, but it would be a great mistake to use them here. The taste of the whisky would destroy the flavor of our Catawba grape,—which we prize so highly in our wine,—and render it unsalable. To avoid giving any extraneous taste to the wine, the casks should be at first, *new*, filled up with pure water, and soaked for ten or fifteen days; then, well scalded out, and fumigated with sulphur. In using them afterward, they should be thoroughly cleansed every year, before the wine is put into them to ferment.

#### FERMENTATION.

This process as generally pursued here, is very simple. The casks are filled up within five or six inches of the bung, and the bung put on loosely. The gas escapes without the wine running over. Usually, in two to three weeks, the fermentation ceases, and the wine becomes clear; then *fill up* the casks and *tighten* the bungs.

In February or March, rack off the wine into clean casks and bung tight.

A second, but moderate fermentation, will take place late in the spring; after that the wine fines itself, and is ready for sale; and if the casks are kept well filled, and the bungs tight, it will improve by age for many years. *Use no brandy or sugar*, if the grapes are sound and well ripened.

Since the above was written an improvement has been adopted by many, in the fermentation of wines.—When the

must is put into the cask, and the cask filled within an eighth or tenth of its capacity, (to leave room for fermentation)—a tin syphon is fitted tight into the bung, with the end of the tube in a bucket of water, thus permitting the gas to escape through the water, without the wine coming in contact with the atmospheric air. Some of the strength and of the fruity aroma is thus retained in the wine, that would otherwise escape by exposure in the methods formerly pursued.

The safest method of keeping this wine is in bottles, well corked and sealed, and laid on their sides in a cool place.

The fewer rackings it receives, and the less it is exposed to the air, the sweeter and better it will keep; retaining the fine aroma and flavor of the grape, and acquiring but little acidity. It will do to bottle in about a year after it is made, but two years would be better. Never bottle *before* the *second* fermentation.

Racking but *once*, as here recommended, is in opposition to the opinion of Dr. REHFUSS, who proposes at least three or four.

The writer has tried both plans, and prefers his own, as producing a wine of less acidity than when exposed to the air by frequent rackings. The Doctor is an able chemist, and has doubtless good arguments for his theory. Further experiments may prove that his mode is the best.

As the process of fermentation is a matter of the greatest importance in making wine, the reader is referred to the Appendix, for an able article on the subject, from the pen of Mr. JULIUS BRACE.

Persons desirous of making a variety of wines from the same grape, may do so by adopting the following methods: The juice, or "must," that runs from the mashed grapes, as poured on the press, is put into one cask—that which comes from the *first pressing*, into another, and the juice obtained by the *second* and *last pressings*, into a third cask—the quantity of must in each will be about equal, and the wine different

in *quality*, as *in the order* above stated. A fourth variety may be made of a rich claret color, by *fermenting in the skins*; and by a greater or less fermentation the *quality* may be varied. These last will be too rough and astringent, when new, to suit the public taste, but will become rich and palatable when mellowed by age.

The common practice is to put all the must together in the same cask, believing that the whole of the juice of the grape is required to make a fair average wine.

This has been the custom with the writer, except that the *last pressing*, being weak and astringent, is mixed with the must of the refuse grapes, and sold as an inferior wine—usually at half price.

The quality of wines differs with the seasons, a warm, dry summer and autumn are more propitious to maturing the grape than a wet one, hence the variation in wines of different vintages. 1846, 1848, and 1851 were remarkably favorable in this respect.

We have *much* to learn yet in the art of making wines, and doubtless will be progressing in that knowledge for many years. We have a noble *material* to work upon in our *Catawba grape*, and if we do *not* improve, American ingenuity will for *once* be at fault.

In the valuable work on wines by CYRUS REDDING, second edition, London, 1836, at page 42, will be found the following method of making a sweet wine, by arresting the fermentation with sulphur and spirits :

“In the south of France a quantity of wine is made called *muet*, for which the grapes are trodden and pressed at the vintage, and the wine is fined immediately, to prevent fermentation. This wine, or rather must, is next poured into a barrel until it is only a fourth part filled; above the surface of the liquid several sulphur matches are then burned, and the bung closed upon the fumes. The cask is now violently shaken until the sulphurous gas is absorbed, so that none

escapes on opening the bung. More must is then added, and fresh sulphur, and the cask treated as before. This is repeated several times, until the cask is full. This must never ferments; it has a sweetish flavor and a strong smell of sulphur. A quantity of proof spirit is now added, and a wine highly spiritous is the product. It is generally employed to give strength, sweetness, and durability to wines which lack these qualities."

It is to be hoped that so unwholesome a compound may never be prepared and sold here under the name of *wine*, and that our *Catawba* may not be discredited by *such mixtures*.

## CHARACTER OF THE WINE.

The wine has suffered much from want of skill, and careful attention in making it, as well as from neglect, in not keeping it in cool cellars; but, that it *can* be made *good*, and when so made, enjoys a high reputation both at home and abroad, the following extracts will clearly show.

At the autumnal exhibition of the Cincinnati Horticultural Society in 1843, the committee, after passing judgment on the wines exhibited, remark: "The committee have great confidence in saying, that these fine specimens of pure native wines, have placed it beyond a doubt, that the time is not far distant, when our surrounding hills will be as celebrated for good wine, as any part of the valley of the Rhine."

At the conclusion of a very able report by Dr. FLAGG, chairman of the same committee, May 2, 1846, an analysis of wines by Dr. CHAPMAN, is given:

I. Catawba, from N. LONGWORTH'S vintage, 1845, alcohol 11.5, water 88.5—equal 100.

II. Catawba, from RENTZ'S vintage, 1845, alcohol 11, water, 89—equal 100.

III. Hockheimer, Rhine wine, seven years old, alcohol 7.5, water 92.5—equal to 100.

IV. Red wine (Cape), P. BATE's vintage, 1845, alcohol 9.12, water 90.88—equal 100.

Showing a decided difference in favor of the American wine.

The above wines were the pure juice of the grape.

Mr. LONGWORTH, Horticulturist, Vol. 2, p. 318, in an article to C. W. ELLIOT, written in 1847, remarks :

“ My own impression is, that in skillful hands, our Catawba will make a wine superior in flavor and aroma to the best French champagne imported, or that manufactured in London from *perry*, or in New Jersey from *cider* and *green corn*. The aroma of the Catawba grape continues in the wine in all its stages.

“ I made the first Champagne five years since. It was produced by chance, and induced me to erect a building for the manufacture, and to send to France for a manufacturer ; I shall be content, if we can always make as fine a wine by design as was then made by accident.”

In a communication to the Cincinnati Horticultural Society, Sept., 10, 1845, Mr. LONGWORTH remarks :

“ We have prejudices to overcome, ‘ for a prophet is not honored in his own country.’

“ We become fond of the flavor of particular wines from a continued use of them, as some of our citizens have of the bilge-water taste of the Spanish Manzanilla. Our domestic wines have a flavor of their own, and with wine drinkers accustomed to the particular flavor of other wines, it will require time to form a taste for them. It was so with our German population ; for a time they gave a decided preference to German wines. They now greatly prefer the domestic.

“ For the manufacture of a fine dry Hock, I consider the Catawba unrivaled.

“ But our Madeira and Sherry wine-bibbers would say, as Mr. SCHULTZ's friends told him in Baltimore, thirty years



since, when as a new article in this country, he gave them as a great treat, some old dry Hock. He said nothing, but looked around expecting to see smacking of lips, and hear exclamations of admiration. But the universal cry was, '*What a pity, Shultz, your cider is sour!*'

"At a comparison of domestic wines from our different vineyards, by a dozen of Hock-drinkers, selected for the occasion, the gentleman who acted as chief of the judges, was a great admirer of Spanish Manzanilla; and with a view to test their judgment, I slipped in a bottle of his favorite wine. While his brethren were tasting the wine and expressing their opinions, their leader slowly tasted each bottle, but said not a word until he had tasted the whole. He then remarked that 'he should reserve his opinion as to the best, but would promptly decide which was the *worst* bottle on the table,' and placed his hand on the Manzanilla. I told him I concurred in his opinion, but he might change his mind when advised that it was his favorite Spanish wine, and from the same cask that he had always pronounced a superior article.

"A gentleman from an Eastern city, a few evenings since, very gravely and sincerely gave me an instance which took place in his own presence. Their wine club had recently broached a pipe of high-priced wine, with which they were much delighted, until a conspicuous member observed that he detected a slight taste of copper—a brother member admitted a slight peculiar flavor, but insisted that it was leather. The president of the club was referred to, who promptly decided that it was a compound of both copper and leather. The debate waxed warm, and all three had their adherents, when it was decided to draw off the wine from the pipe in the presence of the Society. This was done, and at the bottom, immersed in the sediment, was found a small copper key with a short strip of leather attached to it!" Mr. LONGWORTH remarks: "I presume the Eastern gentleman took it for

granted that Don Quixote had never got as far west as our back woods.”

A gentleman in our own city, in whose judgment in wines great confidence was placed, could never be induced even to taste our domestic Hock, though a great admirer of the imported article. On two or three occasions I knew him to take a glass, and praise it highly; but the moment that a smile from the host told him of his error, he backed out, *readily discovered* his error, and could not be induced to make a further trial. But on a certain occasion a friend invited him to dine with him, and drink a glass of superior Hock, recently sent him as a present. The bait took—the gentleman praised the wine highly, and pronounced it equal to any he had ever drunk, and proved his sincerity by not leaving the table till he had two bottles under his belt; and for the next month, never met his host without inquiring if all his fine wine was gone, and expressing a great desire to give it a second trial. After he was fairly committed, he was told that it was the native Catawba. From that day he knocked under, and acknowledged his prejudices had blinded him.”

One of the most distinguished physicians and Horticulturists in the State, Dr. KIRTLAND, in his article on the cultivation of the grape, in the “Western Farmer,” Vol. 3, p. 134 (1842), observes:—“The point has been satisfactorily settled, that the rich limestone formations in the south-western part of Ohio, are as well adapted to this purpose as any locality on the earth, unless it be in some volcanic regions enjoying a more uniform climate. Evidences abundant can be brought to sustain the position, that within half a century, Cincinnati will be celebrated for her ‘vine clad hills.’

“I look upon this subject with great interest in another point of view. During an extensive practice in the medical profession, for more than twenty-five years, I have frequently found it important to employ wine and other diffusible stimulants as medicines. Whatever other medical men may say or

think of the matter, I must state, that I cannot in all instances find in the *Materia Medica* a substitute for them ; and while I am disposed to go as far as any one, in excluding strong drinks from the daily use of people in health, I must express my satisfaction, at finding we can produce in our own country, a pure, healthy wine, well adapted to medicinal purposes, and far superior to the adulterated, poisonous foreign compounds, that often find their way to the bedsides of the sick, under the names of 'Lisbon,' 'Madeira,' &c. &c."

In the *Horticulturist*, Vol. 1, p. 53, Mr. DOWNING says :— "Mr. LONGWORTH of Cincinnati very obligingly sent us last month a case of American wine, the product of his vineyards on the banks of the Ohio.

"We have been in the highest degree pleased with these wines. They severally are the product of the Catawba, Cape, Isabella, and Missouri grapes—all native sorts. The very best is the Catawba, of which we received samples of several vintages. The character of the wine is that of excellent hock, like the better class wines of the Rhine.

"We sent a bottle of this Catawba wine to one of the oldest and most respectable wine houses in this country, Messrs. BINNINGER & Co., New York. These gentlemen wrote us in reply :—'We are very much gratified in having an opportunity of tasting this wine, which is the first American wine that deserves the name of wine, that we have ever seen. It strongly resembles hock, and we should have pronounced it such.'"

Mr. DOWNING farther says :— "These wines are entirely pure, without the addition of alcohol, and the temperance cause has everything to gain and nothing to lose, by a general production and consumption of such a wholesome beverage. This, every one familiar with the hock and claret districts of Europe, where ardent spirits are not used, will cheerfully bear testimony to. Indeed, until such wines can be produced, and afforded, as they soon will be, pure, and at low prices at

home, only a small class of persons in this country will ever know what pure light wines really are ; what is sold as such by the retail dealers in the country generally, is so brandied and manufactured, as to become worse than ardent spirits itself."

Dr. FLAGG, in his report to the Cincinnati Horticultural Society for 1846, justly observes:—"I am confident that the introduction of pure light wine as a common beverage, will produce a great national and moral reform—one that will be received by our temperance brethren, ere long, as a national blessing—one that will complete the work they have already begun. The temperance cause is rapidly preparing public sentiment for the introduction of pure American wine. So long as public taste remains vitiated by the use of malt and alcoholic drinks, it will be impossible to introduce light, pleasant wines, except to a limited extent ; but just in proportion as strong drinks are abandoned, a more wholesome one will be substituted. Instead of paying millions to foreigners, as we now do, for deleterious drinks, as brandy and wines, let us produce from our own hill-sides a wholesome beverage that will be within the reach of all, the *poor* as well as the rich."

Mr. W. R. PRINCE, of New York, in his very able article on American Vineyards, in the Horticulturist, Vol. 1, p. 393, remarks: "The pure juice of the grape is an innocent beverage, grateful to our senses, and nourishing to the system. That man has abused and perverted its use, is no argument against the article in its pure and natural state, for what gift of Providence is there, that has not been abused ? In every country where wine is produced in abundance, intemperance is scarcely known, and in this respect the vine-growing countries will compare most favorably with their more northern neighbors, where alcoholic drinks so abound."

President JEFFERSON has recorded his opinion, that—"No nation is drunken where wine is cheap ; and none soter where

the dearness of wine substitutes ardent spirits as the common beverage."

*Extracts from Reports of the Committee on Wines, to the Cincinnati Horticultural Society for 1843.*

Mr. MOTTIER'S Catawba, vintage of 1837—was adjudged the best.

Mr. RESOR'S Catawba, of 1839, "a wine of good capacity," "by age, will become of a high character."

Mr. MOTTIER'S and Mr. RESOR'S "Cape" wines, highly spoken of.

*Report for 1844.* The committee met at the house of the president.

Thirty-nine bottles were exhibited ; some pronounced very fine, the preference given to the Catawba. A few bottles of foreign wines were intermingled, but generally detected, and pronounced inferior to the native. Private marks were placed on all the bottles, known only to the President and Secretary.

This test was very creditable to the discrimination of the judges, and favorable to the quality of the native wines. Three gentlemen from wine countries in Europe, were added to the committee, MESSRS. WERK, REHFUSS, and BRACHMAN, who fully concurred in the opinion of the superiority of the native wine.

[See Farmer and Gardener, Vol. 5, p. 255.]

At an examination of wines of the vintage of 1847, by the wine committee of the Cincinnati Horticultural Society, in March 1848, thirty-six samples were presented, most of them of excellent quality.

The prize of a *silver cup* was awarded to Mr. SCHNEICKE, for the *best* Catawba wine ; a certificate to Dr. MOSHER, for the second, and to Mr. RENTZ, for the third best.

A still larger number of samples was presented at the

examination by the committee, in April, 1849, of the vintage of 1848, viz: *fifty-one bottles of Catawba wine*. The *silver cup* was awarded to T. H. YEATMAN, and Certificates to Messrs. LONGWORTH and BUCHANAN, for the second and third best. The wines presented this year were pronounced "excellent," for new wines.

Samples of wine from HERBEMONT'S *Madeira Grape, Cape, MINOR'S Seedling, Missouri, Ohio, Isabella*, and NORTON'S *Seedling*, were presented by Mr. LONGWORTH, and were ranked in quality by the judges, *in the order here named*.

*Report for 1846.* "The committee on American Wine having examined the specimens sent in to the Annual Exhibition of the Cincinnati Horticultural Society, held September 9th and 10th, beg leave to submit the following brief Report:

"The number of specimens, although greater than at any former Exhibition, was not as large as might have been anticipated at this time, there being such an interest taken, and the amount of capital so great invested, in the cultivation of the vine, the annual product of which, in five years, cannot be less than one hundred thousand dollars to this county alone. In order to do ample justice, the specimens were removed to a good wine cellar, where they remained ten days before they were examined by the hydrometer, and every other necessary means taken to give impartial judgment."

CLASS 1st.—No. 1. Pure wine; vintage 1845. Spec. grav. .78. A most excellent wine; will improve by age.

No. 2. Four oz. sugar to the gallon. Spec. grav.  $76\frac{1}{2}$ . Much inferior to No. 1, the pure wine.

CLASS 2d.—No. 1, with sugar; vintage 1841. Resembles some of the light Mediterranean wines; does not bear comparison with the pure wine.

No. 2, with sugar; vintage 1841. Resembles some of the imitations of Madeira. Spec. grav. .76.

CLASS 3d.—No. 1. Pure wine; vintage 1845. Spec. grav.

.74. Good wine, rather acid ; thought not to have been put into perfectly sweet bottles. Not quite equal to No. 1, in class 1st.

CLASS 4th.—No. 1. Pure wine ; vintage 1845. Not able to judge in consequence of its being pricked.

No. 2. Pure wine ; vintage 1845. A fair light wine ; resembles some of the lower grades of French ; believed care was not taken in picking the grapes, and in fermentation.

CLASS 5th.—No. 1. Pure wine ; vintage 1845. Spec. grav. .75½. A very superior wine ; resembles very much the white hermitage, which may be considered a very great compliment. This wine was made with great care ; the sound and perfect berries being picked from the stems, and every other necessary process received equal attention.

CLASS 6th.—No. 1. Pure wine ; vintage 1845. \* Spec. grav. .75. May have been originally good ; believed to have been put into an impure cask, which formerly contained foreign wine, either French or German, which very much changed its flavor.

CLASS 7th.—No. 1. Pure wine ; vintage 1845. Not able to judge, being pricked, and not properly treated. Perhaps part of the berries were unripe, and other necessary care not taken.

Your committee would remark that great care and attention are necessary in order to produce good pure wine ; much more so than any other agricultural product. The sound, perfect fruit should be kept separate from that which is imperfect, and the wine never allowed to be put into anything but perfectly *pure sweet casks* or *bottles* ; as a very trifling neglect may cause a great loss on wine. Much also depends upon fermentation, which requires great attention, and after being completed, terminates the business of the cultivator.

Some of the specimens for exhibition, were imitations of foreign wines, which your committee very much regret, being desirous to establish a character for American wine, which would soon be accomplished, by giving it a fair trial upon its

own merits. If American wine should ever become a substitute for the present poisonous and unwholesome drinks, it must be done by keeping and using it perfectly pure, and avoiding all adulterations and imitations whatever.

“Your committee award the first premium to Mr. G. SLEATH; pure wine; vintage 1845; spec. grav.  $.75\frac{1}{2}$ ; and the second premium to Mr. L. REHFUSS; pure wine, vintage 1845.

“M. FLAGG, *Ch'm Committee.*”

At the spring exhibitions of wines in 1850 and 1851, about fifty specimens were exhibited at each; the quality was pronounced better than at any former trial. Showing a marked improvement.

Mr. YEATMAN took the *first* premium in 1850; Mr. ——— the *second*, and Mr. S. RINTZ, the *third*. A bottle from Mr. WILLIAMSON'S vineyard—not fairly within the rules—was pronounced equal, if not superior, to the best.

In 1851, the *first* premium was awarded to Mr. MOTTIER, the *second* to F. SCHNEICKE, and the *third* to D. Z. SEDAM.

At the great New York State Fair, held at Rochester in September, 1851, the committee on wines—JOHN A. KING, Chairman—reported on those from the “Rhine of America, the Ohio River,” vintage of 1850, Mr. SLEATH, *best*, Mr. REHFUSS, *second*, Mr. BRANDT, *third*. Vintage of 1849, Mr. BUCHANAN, *best*, CORNEAU & SON, *second*, Mr. WARE, *third*.

Vintage of 1848, Mr. RINTZ, *best*, Mr. REHFUSS, *second*, ditto *third*, Mr. YEATMAN, *fourth*. Mr. LONGWORTH'S Sparkling Isabella, *best*, Sparkling Catawba, *second*, both *excellent* wines.

*Report of the Wine Committee of the Pennsylvania Horticultural Society, Philadelphia, for September, 1848.*

“The committee feel under obligations to Mr. LONGWORTH, for his kindness in presenting them with an opportunity of tasting the best specimens of American wines they have yet met with. And they are pleased to find that the untiring



zeal and energy with which he has for so many years, and at great expense, prosecuted the subject of wine-making, have been crowned with so much success.

“On motion, ordered that a vote of thanks be tendered to Mr. LONGWORTH, for specimens of his fine wines presented to the Society.”

The delegation from that Society to the Cincinnati Horticultural Society's exhibition in September 1848, reported on its return, “various kinds of grapes, both native and foreign, were exhibited in great abundance.

“But the favorite with them, and one which seems to be peculiarly adapted to their soil and climate, is our native Catawba. It is this grape from which they make their choicest wines. Your delegation had the pleasure of tasting, at the Horticultural Hall, a sample of Mr. LONGWORTH's far-famed “Sparkling Catawba;” and a more exquisitely flavored champagne, it would be difficult to meet with among the most celebrated foreign brands.”

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GRAPES RAISED AND EXHIBITED BY N. LONGWORTH, IN 1846.

Ohio,	White Fox (of no va-	Improved Purple Fox,
Catawba,	lue),	Red Fox (of no value),
Graham,	Piqua (of no value),	Virginia,
Elsinburg,	Herbement,	Missouri,
Clarkson's Eastern Ca-	Giant Catawba,	Helen,
tawba,	Minor's Seedling,	Lake (a bad bearer),
Indiana (of no value),	Norton's Virginia Seed-	Guignard,
Black Fox (of no va-	ling (a good grape	White Seedling Cataw-
lue),	but a bad bearer).	

## STATISTICS.

## THE COST OF ESTABLISHING A VINEYARD.

The cost of establishing a vineyard depends much on the position and soil; and on the resources for labor within the family of the proprietor; or, of the tenant who takes the ground on a twelve or fifteen years' lease. It has been usual to give a piece of land, of say fifteen to twenty acres, with a small house on it, to a German vine-dresser, on a lease of twelve or fifteen years, binding the tenant to plant a certain quantity in grapes each year in a proper manner—and at least five or six acres within as many years, he paying the proprietor one-half the proceeds of the vineyard annually after bearing—and one-half of any fruit raised from trees furnished by the proprietor, who also furnishes roots or cuttings for the first two or three acres planted in grapes.

Mr. LONGWORTH observes:—"I would not recommend any individual to hire hands, and cultivate the grape extensively for wine, with a view to profit. But I would recommend landlords to rent from fifteen to twenty acres to Germans, for vineyards and orchards, on shares. We have more to learn in the manufacture of the wine, than in the cultivation of the grape. And I would recommend our German vine-dressing emigrants, to purchase or lease a few acres of rough, cheap land on the Ohio, or near it, with a view to the cultivation of the grape. Land will be suitable for it, that is too rough for the plow, and eight or ten acres will give employment to a whole family."

No accurate statistics of the cost per acre of planting a vineyard can be found, except those of the writer (where everything was paid for in money, and a regular account kept), and of Mr. RESOR's vineyard.

Cost of a vineyard of six acres—fourteen thousand four hundred vines:

Trenching two feet deep, \$65 per acre,.....	\$390 00
Sodding avenues,.....	60 00
Cost of 30,000 cuttings, at \$2,50 per thousand,.....	75 00
Planting,.....	70 00
Fourteen thousand five hundred locust stakes, at \$3 per hundred,.....	435 00
Setting 14,500 stakes,.....	55 00
	1,085 00
Cost of attending the first year—vine-dresser, \$216, and a hand for one month, \$15 (and board themselves),.....	\$231 00
Second year—vine-dresser, \$216, a hand for two months, at \$15 per month,.....	256 00
Cuttings, after first year, to replace failures, say,.....	20 00
Hauling, carting, etc.,.....	68 00
Contingencies, etc.,.....	150 00
Average cost, say, \$300 per acre,.....	1,800 00

The vineyard being on a gentle declivity did not require *benching*, which would have been more expensive than the draining by sodded avenues—nor did the ground contain stone enough to add to the expense of trenching, which, in some positions, is a very serious item.

By proper economy, a man may have a vineyard of several acres in a few years, without feeling the expense to be burdensome. Commence by trenching one acre in the winter, and planting it out in the spring; next year another acre, and so on, for five or six years. After the third year, he will have his own cuttings from the first acre, and also grapes enough to pay for the cost of planting the succeeding additions to his vineyard.

If he has suitable timber on his own land, the stakes can be got out in the winter with but little outlay in money. By this course, the cost of a vineyard of six acres would not be half as much as the foregoing estimate.

In Mr. RESOR's article, published here in full, will be found valuable statistical estimates of the cost of the vineyard, and also of its product.

## MR. RESOR'S VINEYARD.

Upon referring to some memoranda of my father, I find, among others, the following account kept of the produce of his vineyard since 1837. As several of our members are cultivating the vine, I thought it would be interesting, as it is difficult to obtain a statement of the kind, kept minutely for a series of years.

It shows the actual produce, and the certainty of the crop before any other fruit in this latitude, and the difference between the Catawba and Cape, as to the yield and certainty. The Cape having borne a first rate crop for nine successive years, the Catawba failing occasionally, from rot and the effects of insects.

The vineyard has a southern exposure, fronting on the Ohio river; it was planted with rooted plants in 1834, and contained at that time, 1775 vines, placed in rows four feet apart, and three feet distant in the row—the ground being previously trenched, and the stones taken out to the depth of two feet.

In the fall of 1837, the first crop was picked as follows:—163 bushels of grapes, from which were made 667 gallons of wine. At this time there were 1125 Isabella and Cape vines, yielding 113 bushels, making 469 gallons, and 630 Catawba, yielding 51 bushels, making 198 gallons.

1838, Vintage, September 10,	produce	327 galls.
1939, “ “ 5,	“	440 “
1840, “ “ 20, Cape	240	“
	Catawba	65—305 “

This year (1840), most of the Catawba rotted on the vines. From this time there were 2,300 vines, about one-half of each kind.

1841 Vintage, Sept. 15,	produce	237 galls.	Catawba.
“ “ “ “ “	275	“	Cape.
	<hr/>		
	512	gallons.	

1842	Vintage,	Sept. 12,	produce	166	galls.	Catawba.
"	"	"	"	319	"	Cape.
				<hr/>		
				485 gallons.		
1843	Vintage,	Sept. 15,	produce	250	"	Catawba.
"	"	"	"	288	"	Cape.
				<hr/>		
				538 gallons.		
1844	Vintage,	Sept. 15,	produce	108	galls.	Catawba.
"	"	"	"	306	"	Cape.
				<hr/>		
				414 gallons.		
1845	Vintage,	Sept. 9,	produce	283	galls.	Cape.
"	"	"	"	349	"	Catawba.
				<hr/>		
				632 gallons.		

About one-eighth of the Catawba grapes were destroyed by bees and other insects after ripening.

The quantity eaten by three families is not taken into this account.

The ground has always been thoroughly hoed in the spring, and kept free from weeds, and never manured until last winter, when the ground was covered, and in the spring dug in. From the result this season, manuring would seem to pay well, as the vines are in better condition than they ever were after yielding a heavy crop.

The vines have been trained to stakes, and the bearing wood cut out, after having borne one season, leaving two shoots, trained the same season, one to form the bearing hoop, or bow, and the other cut to two eyes, to propagate wood for the next year; the vine never having but the hoop and the two eyes left for fruit each year, growing at the same time.

This year the ends of the vines have been nipped, and the suckers taken out four different times.

The following estimate I have made from what it has cost this year, and it is not far from the actual expense, although the labor has been done by the hands doing the other work

on the farm ; and in making wine extra hands were always employed. By planting cuttings, and preparing the ground by subsoil plowing, when it can be done, the expense would be lessened. The price is what the wine was sold at from the press this season, and is a low estimate.

## ESTIMATE.

2,300 Vines, at 6c.,.....	\$138,00
2,300 Poles, at 2c.,.....	46,00
1,000 " replaced, .....	20,00
Trenching ground and planting,.....	80,00
Manuring last Fall,.....	30,00
Two months' work, each year, nine years,....	225,00
Extra work in making wine,.....	150,00
Interest on investments before crop,.....	15,00
	<u>704,00</u>
Cr. by 4,300 gallons of wine, at 75c.	3,229,50
	<u>\$2,525,50</u>

The expense of cultivation, previous to the first crop, is not accounted for, nor are press, casks, etc. ; but the actual expense of cultivating an acre of grapes, where persons are hired to attend to other work, would amount to but very little, as but a short time is required to attend to clearing the vines during the season.

September 27, 1845.

WM. RESOR.

From Mr. RESOR's statement it appears that his father's vineyard of 2,300 vines, equivalent to about an acre planted 3 feet by 6, cost him \$284, to which add labor for two years, \$50, and it makes \$334 ; or \$34 more than the preceding estimate of \$300 per acre. But Mr. RESOR used two years old vines, which cost about \$125 more than cuttings could have been bought for, which would reduce his acre, had he used cuttings, to \$209, when first in bearing.

It might be fair to range the cost of vineyards, in *trenched*

ground, at \$200 to \$350 per acre—depending on the economy and good management of the proprietor, and the situation of the vineyard.

Dr. MOSHER, one of our most intelligent practical horticulturists, estimates the cost of trenching two feet deep at \$80 to \$125 per acre, according to the nature of the ground.

“On the banks of the Ohio, two miles below our city, I yesterday saw some Germans at work, trenching, banking, and walling one of the most steep, rugged, and stony hills in the county. To have hired the work done by the day, would have cost from \$300 to \$400 per acre. When completed, it will be a lovely spot. The cost to them is a trifle, for the work is done during the winter, when they have no employment. They raise their own hominy and sour-cROUT. And it will not be a serious loss if they occasionally partake of a quarter of lamb, as they can buy it at ten or twelve cents per quarter.”

N. L.

#### COST OF ATTENDING A VINEYARD.

To the proprietor or the tenant who is his own vine-dresser, this will be small, especially if he has a family that can assist him; but to those who have to hire every hand, the following statement will be found pretty accurate. For a vineyard of six acres—

Vine-dresser per year, and board himself.....	\$240
Hands to assist in pruning, say.....	25
“ “ “ in spring culture.....	40
“ “ “ in summer culture.....	55

Or \$60 per acre, \$360

If the cuttings can be sold at \$2 to \$2.50 per thousand, it will reduce this about \$100.

The cost of replacing stakes, repairing avenues or

benches, and manuring every third year, may be offset against the cuttings.

Mr. YEATMAN, who keeps an account of his vineyard expenditures, concurs in the accuracy of this estimate.

#### COST OF MAKING THE WINE.

This will again depend on the force that the family can turn into the vineyard. But when everything has to be done by hired labor, the writer can state from experience, that gathering the grapes, and pressing them, and filling the juice into casks, ready for fermentation, will cost, for an average crop, \$25 to \$30 per acre.

Mr. LONGWORTH remarks : — “ The cultivation of the grape for wine will be profitable where persons do their own work.

“ It is seldom that any farming pays well where there is much hiring of hands. Our German emigrants can cultivate the grape to most profit, for the greater part of the work in the vineyard is performed by their wives and daughters, without interfering with household affairs. A greater profit would accrue to a man of observation and skill, who would devote much time to the subject, be certain to have clean casks, gather his grapes at the proper moment, use great care in picking, selecting, and pressing, and a clean press, a cool cellar, care and skill in the fermentation, racking at the proper time, and always keeping the casks full, never to bottle it till four or five years of age, and never to sell any wine with his own name, in seasons when the wine is not of the best quality.”

#### PROBABLE PRODUCT PER ACRE.

This of course will vary with the season, and with the number of vines to the acre.

At the distance of 3 by 6 ft. 2,420 vines are planted in an acre. They will yield, in fair seasons, 300 to 400 gallons ; in very good years more. A probable average, for eight or ten years, with but little rot, would be about 250 gallons—and



with a reasonable allowance for rot, frosts, &c., 200 gallons might be expected as a fair product per acre for a series of years. This is also Mr. LONGWORTH'S opinion. But even then, bad seasons must not be *too* frequent, or the average will be still further reduced. In the report of Dr. FLAGG, May 1846, he makes the yield per acre, for 1845, about 200 gallons, and the vineyards suffered much from frost and the rot that year.

The Doctor says:—"There are in this county eighty-three vineyards, containing  $247\frac{3}{4}$  acres; 114 being in bearing, from which 23,219 gallons of wine were made last year. Many of the vineyards bore for the first time last year, and more than one-half of the crop was cut off by the frost and rot." The Doctor estimated the crop for five years in succession, with proper care and attention, at 400 to 500 gallons per acre—but this is entirely too large.

In Mr. RESOR'S statistics, it will be observed that in nine successive years, after his father's vineyard commenced bearing, viz: from 1837 to 1845 inclusive, it produced, equivalent to about 480 gallons to the acre, each year. This vineyard, however, was small, very favorably situated, and under the supervision of a judicious and careful proprietor, and the product should by no means be assumed as a general average for the county.

Mr. YEATMAN fixes the quantity higher, but judges from his own vineyard, which occupies a fine position, is carefully attended, and contains a little over 3,000 vines to the acre. The number of vines to the acre is generally about 2,400.

A bushel of grapes on the stem will yield three to three and a half gallons of juice—some have produced four—but this is rare. In measuring, the bushel is "heaped," or liberally rounded on the top, not *strict* measure.

Paper calculations of profits are often deceptive, and sometimes mislead those who are not accustomed to act from their

own judgment; but for the sake of condensing the foregoing estimates, the following is given as a

RECAPITULATION.

Cost of a vineyard per acre, say \$250, interest per annum.....	\$15,00
Cost of attending per acre,.....	60,00
Cost of making the wine,.....	25,00
	\$100,00
Probable average annual product—200 galls. wine, say at \$1,00	200,00
Supposed profit per acre.....	\$100,00

But should the wine bring only 75 cts. per gallon, it would still leave a profit of \$50 per acre, which is large enough, and more likely to be the sum realized throughout the county.

It will be observed that no allowance is made, in the above calculations, for interest on the cost of the press, or the vessels and casks used in making and fermenting the wine. The press will cost \$60 to \$150, and express 160 to 300 gallons per day; the vessels \$10 to \$15; and the casks, four to eight cents per gallon, as to size and quality. The other estimates, however, are made liberal enough to cover all this. The loss in quantity in making the wine, by fermentation, lees in racking, and by evaporation, will be about ten per cent.

Since the first edition of this treatise, the author has had two years' more experience in grape culture, and is therefore induced to give an account of his own vineyard, from its commencement, in the following

MEMORANDA.

1843. Planted 500 vines, two year old *Catawba*, and a few *Lenoir*, *Cape*, and *Isabella*, in plowed ground at the foot of the orchard, on the slope of a hill facing the south, intended only

for table use. *Soil*, a reddish yellow loam, with the usual quantity of lime, and an appearance of iron — *not rich*, but easily mellowed by cultivation—the same composition for four or five feet deep.

1844. Having failed to make clover and timothy take root, on the slope of the hill below the little vineyard ; plowed with the common and subsoil plow, two acres, eighteen inches deep, and planted in *Catawbas*, and a few *Isabellas*, one year old roots, three feet by six in the rows.

Gathered a few bunches of grapes from the small vineyard.

1845. Dissatisfied with subsoil planting, and in the winter had an acre trenched two feet deep with the spade — the "Irish plow" — and planted with cuttings, two to each stick — only lost about ten per cent. by failing to strike root. Gathered a good crop of grapes from the little vineyard, though a bad year for the rot.

1846. Trenched two acres more, two feet deep, and planted in *Catawba* cuttings, with a few *Cape* and *Isabella*. Gathered a good crop of grapes from the small vineyard, but observed the roots of the vines to be too near the surface, and the foliage to suffer from the hot sun. This was the *result of shallow planting*. In autumn trenched the ground two feet deep between the wide (six feet) rows. Lost, this year, about twelve per cent. of the cuttings planted.

1847. Trenched an acre more, and planted in cuttings—lost only nine or ten per cent. of this planting. Gathered a fair crop from the small, and a few bunches from the large vineyard (first two acres)—and sold the grapes, after a liberal supply to the family and neighbors, for near \$100.

The vines were not injured by the partial root pruning in trenching between the rows in the small vineyard.

In autumn and winter, trenched two feet deep between the wide rows in the two acres subsoiled.

1848. Gathered a fair crop from the first two acres, and a few bunches from the second acre — made 530 gallons of wine, which sold, after the second fermentation, at \$1,25 per gallon—lost by lees, evaporation, etc., about fifty gallons.

1849. A bad year for rot, but got a tolerably fair crop from three acres in bearing, and a light one from two acres first commencing to bear. Made 360 gallons of Catawba, and 75 of Isabella wine. The Catawba was sold, in 1851, at \$1,25 per gallon—loss in making, ten per cent. The Isabella unsold.

1850. This was a good year for the grape crop, and but little rot. Made from three acres, fair crop, and three partial, equal to three and a half acres in *full* bearing, 1,638 gallons of wine. 1,200 good Catawba, 288 inferior—75 Cape and 75 Isabella. Sold 400 gallons of Catawba at 80 cents — 288 inferior at 50 cents per gallon, soon after the first fermentation.

The remainder will be ready for market this summer at \$1,25 per gallon.

Trenched a quarter of an acre of waste ground to add to the vineyard.

1851. Planted in the addition, part cuttings, part roots one year old. A frost, on the second of May, destroyed two-thirds of the grape buds, and *all* the orchard fruits. No rot this year—grapes about one-third of a crop, but of a finer quality, and richer in saccharine matter than ever grown here before. Lost about twelve per cent. of the young roots planted, and twenty-five per cent. of the cuttings, owing to the drought, which was more severe during last summer and autumn, than known in this climate for many years. Lost sixty per cent. of the cuttings in the nursery.

Made 630 gallons of Catawba wine, and seventy-five of Cape — quality very fine. Will not be ready for market under two years.

## CUTTINGS SOLD AND PLANTED.

1847.	Sold 10,000 at \$3,00 per 1,000.	Planted in Nursery	3,000
1848.	“ 20,000 “ 2,50 “ “	“ “ “	3,550
1849.	“ 25,000 “ “ “ “	“ “ “	2,000
1850.	“ 33,000 “ “ “ “	“ “ “	1,500
1851.	“ 36,000 “ 2,00 “ “	“ “ “	3,000
1852.	“ 47,000 “ “ “ “	To plant in “	3,500

This vineyard of six acres should produce, on an average, for a series of years, 1,300 to 2,000 gallons of wine, when in full bearing, which usually commences with the sixth or seventh year.

## SALE OF THE WINE.

Here the cultivator is at a loss, and will be, until wine-houses are established in the city, for the express purpose of purchasing the product of our vineyards, and preparing it for market, for consumption at home, and elsewhere.

Mr. LONGWORTH justly observes, that “ those who commence this business, and conduct it properly, will make fortunes by it. For that the grape culture will eventually succeed and be profitable, and the wine gradually grow into public favor, there can no longer be a doubt.

“ Thus far our wine has met with a ready sale in our own city, but with the contemplated extension of the grape culture in this vicinity, we shall soon be compelled to look abroad for a market.”

Suitable cellars are required for the purpose, and in this Mr. LONGWORTH, Mr. YEATMAN, Mr. REHFUSS, and some others, have set laudable examples. Their cellars are large, deep, and admirably adapted to keep and ripen the wine. This is the important matter with light wines; care and a cool cellar are required, until they are sufficiently ripened to prevent acidity by exposure to the air. Every analysis made, proves our native wine to be three to four per cent. stronger than the same class of foreign importation.

“ Before the cultivation of the vine can be carried on exten-

sively and profitably, we must have a sure market for the wine as it comes from the press ; so that vine-dressers can sell their wine as readily as the farmer his wheat. At present it is mostly sold to our German population at fair prices. Many, who are commencing vineyards, without any knowledge on the subject, depending entirely upon others for their success, may have cause to regret it when too late. In commencing the cultivation of the vine, persons should consider the absolute necessity of a certain market for the wine as it comes from the press, and also of producing a quality of wine that will repay for four or five years of anxious labor and great expense. I began the investigation of the subject of making American wine twelve years since ; and, after having satisfied myself of its practicability, my great anxiety has been to secure a ready market for the wine. The farmer who grows wheat, must live where he can readily send it to market, if he expects to realize a fair compensation ; so the cultivators of the vine must depend upon the wine-merchant to purchase their wine. It is as much the business of the latter to prepare it for market, as it is for the miller to grind the wheat. The cultivation of the vine, with its entire management, until he turns out the pure juice of the grape, belongs to the vine-dresser, and the mixing and preparing it for market to the wine-merchant, the latter being a distinct and separate business.”—*Dr. Flagg's Report.*

In a Report to the Cincinnati Horticultural Society, Mr. LONGWORTH, in 1846, says: “In the hope of inciting other Germans ‘to go and do likewise,’ I will state the result of one of my vineyards this season. Sixteen years since I bought an unusually broken piece of ground on Baldface creek, four miles from the city. The soil is rich, but abounds in stone. I had a tenant on it four years, who was bound to plant a vineyard. At the end of four years nothing was done. I tried a second, and after three years, found no grapes. I then gave a contract to a German (Mr. DUFER

BER), who had a wife, daughter, and three stout boys. I gave him a hard bargain. I required him to trench and wall with stone, six acres for grapes, in three years, and nine acres in five years. He was also to plant out a peach orchard, and tend an apple orchard I had on the place. The wine and proceeds of the orchards were to be equally divided. I carefully avoided climbing the stony hill for three years, expecting the same result as formerly. When I visited the hill, at the end of three years, I found the six acres handsomely trenched and walled, and set with grapes. There are now nine acres in grapes. The tenant complained, this year, of the rot in his vineyard. I am in the habit of selling to the tenants, my share of the vintage, at a price that enables them to sell at a profit. I this season sold at seventy-five cents per gallon at the press, for the Catawba; sixty-two and a half cents for the Cape, and fifty cents for the small amount of Isabella made. He has paid me \$661 for my share of the wine; and for his share, and the profit on my part, has realized the sum of \$1,392,50. The Catawba he sold at \$1,25 per gallon.

“The best crop, for the extent of ground, this season, was at the vineyard of Mr. RENTZ, about four miles from town. Two acres yielded 1,300 gallons. This is as large a yield as I have known, taking two acres together. To select particular spots, I have raised at the rate of 1,470 gallons to the acre. The grapes at the vineyard of Mr. RENTZ would have ripened better, had one-third of the bunches been cut off early in the season. Where the crop is very abundant, it requires a very favorable season to ripen the fruit well.

“Six hundred and fifty gallons to the acre, is a large yield, and the season must be favorable, or they will not ripen well. A large crop is often occasioned by leaving too much bearing wood. This should always be avoided; for even if the crop ripens thoroughly, too much of the sap is taken by the fruit

and too little left to produce good young wood for the next season's crop.

“This season I have retained a part of my share of the wine, that I deemed the best, and have also bought a portion of the same quality, from the tenants, at an advanced price. A part of it is fermented, with a view of bottling it for Champagne wine. The residue will undergo a full fermentation, and I shall bottle it when two years old, pure as when it came from the press; when it will be of the character of dry old Hock. Heretofore, all the wine made at my vineyards, has been sold at our German coffee-houses, and drank in our city. That which I have retained this season, is intended to be sent abroad, in the hope that it may lead persons in other sections of the country, to turn their attention to the cultivation of the grape for wine.”

#### WINE CELLARS AND HOUSES.

Within the last two years, and since the foregoing was published, the interest of the producer has been greatly advanced, by the construction of large wine cellars in Cincinnati; and the establishment of regular wine-houses, conducted by dealers of ample capital. This will insure a fair market for the product of our vineyards, and presents a flattering prospect in future for the cultivator. Mr. LONGWORTH has two wine cellars, and is interested in a third. His capital invested in this business is over \$100,000. Last year 75,000 bottles of sparkling Catawba were prepared at his cellars—the year previous 60,000—(this last is now ready for sale). During the coming season, he expects to have 100,000 bottles prepared. The sparkling wines require fifteen to twenty months to ripen, before being ready for market. He has also dry and sweet wines bottled at his cellars.

G. and P. BOGEN bottled last year 26,000, and expect to put up 35,000 bottles, this year, of sparkling Catawba.

ZIMMERMAN & Co. intend to put up 60,000 to 80,000



bottles of still wine this year, and to give their entire attention to that class of wines.

CORNEAU & Sons prepare both sparkling and still wines; their sales, last year, amounted to over 10,000 bottles, and their business is rapidly on the increase.

Dr. L. REHFUSS has an excellent cellar, and is preparing still wines with great care, principally from his own vineyards.

T. H. YEATMAN is arranging to make sparkling wines. He has, heretofore, only made still wines.

Mr. MILLER, near the city, also makes sparkling Catawba.

It is encouraging to the producer as well as the wine merchant to know, that the demand for their wines, particularly the sparkling Catawba, has lately increased beyond all calculations; they can scarcely be prepared fast enough to meet the market. There is no reason to believe that the consumption will diminish, for the wines become popular wherever they are introduced. And yet, we are but just beginning to learn how to make them. This looks well for the future.

#### NUMBER OF ACRES IN CULTIVATION.

Some two years ago, the Cincinnati Horticultural Society appointed a committee, of which Dr. MOSHER is chairman, to take a statistical account of the vineyards in this vicinity. The report is not yet completed, but the following estimate of the aggregate has been furnished, and is supposed to be nearly accurate, viz: Number of acres in vineyard culture within a circle of twenty miles around Cincinnati, 1,200—under charge of 295 proprietors and tenants. Of this, Mr. LONGWORTH owns  $122\frac{1}{2}$  acres, cultivated by twenty-seven tenants.

At the low estimate of \$200 per acre, for cost of planting, etc., this would amount to \$240,000—exclusive of the value of the land; and when in full bearing, produce, at the most moderate estimate, for a series of years (of 200 gallons to the

acre), 240,000 gallons of wine annually; but in good seasons much more.

THE NUMBER OF ACRES NOW IN BEARING is a little over 740. The average distance apart in the rows, is three by six feet, making 2,400 plants to the acre.

(See Appendix for the Report of the President of the Cincinnati Horticultural Society to the Legislature of Ohio, on this subject).

The average product to the acre, in 1848, was about 300 gallons, from near 280 acres then in bearing, and in 1849 (the worst year for rot that has yet been known), about 100 gallons to the acre, from some 360 acres. New vineyards produced 200 to 250 gallons—but the old only 50 to 100; and the crops of a few were entirely destroyed by the rot.

Mr. A. LIGGETT, of Ripley, Ohio, has obligingly furnished the statistics of the vineyards in that neighborhood. There are ninety-three acres planted, and sixteen proprietors; about one-half the vines in bearing. The distance apart in the rows, three by six feet—the quantity of wine made in 1848 and 1849, about the same to the acre as in this vicinity, and the rot equally destructive.

#### VINEYARD CULTURE IN THE UNITED STATES.

The vegetable productions of North America were a source of wonder to the early adventurers to its shores, and the grapevine appears to have especially attracted their attention. Letters to Europe from this part of the world gave glowing accounts of the wild grapes found in Florida, Louisiana, and Virginia.

Redding says, a considerable quantity of wine was produced from a native grape in Florida, as far back as 1564, according to the testimony of Sir John Hawkins. Wine was also made at a very early period in Louisiana.

The more recent attempts at wine-making, from vineyard culture, commenced, about the beginning of the present cen-

ture, at Gallipolis, in our own state; Philadelphia, Harmony, and York, Pa.; Glasgow, and Lexington, Ky.; Monticello, Va.; Baltimore, Md.; and New Harmony and Vevay, Ia. Subsequently efforts were made to establish vineyards in the vicinity of New York, District of Columbia, Demopolis, Ala., and in North and South Carolina. These generally failed, from planting *foreign* grape-vines unsuited to our soil and climate.

A few of the cultivators had the sagacity to discover this error, and substituted the best *native* varieties.

Major ADLUM, Mr. LONGWORTH, the *Swiss* at Vevay, and some gentlemen in *Carolina* were the first to adopt this course. The *Cape*, *Catawba*, and *Isabella* at the *North*, and the *Scuppernong* at the *South*, took the place of the vines from Europe, and wine was made, but of an inferior quality. It is only of late years that *American Wines* have had any pretensions to come in competition with *European*, and to Mr. LONGWORTH, more than to any other man, belongs the honor of having produced this result.

The Ohio river is already called the "Rhine of America," and Cincinnati the center of the grape region in this valley. Within twenty miles around the city, more than 1200 acres are planted in vineyards—at Ripley and Maysville above, about 100 acres—at Vevay, Charleston, and Louisville below, over 250 acres are in vine culture;—making 1,550 acres for the Ohio valley alone, which is a low estimate.

At *Hermann, Mo.*, about forty or fifty acres are in vineyards; and in the vicinity of St. Louis, and some other parts of the State, probably twenty or thirty acres more; a few at *Belleville, Ill.*, and elsewhere in that State. Near *Reading, Pa.*, several vineyards are planted and some excellent wines made. In *North and South Carolina*, the *Scuppernong* wines have been made for many years, but the number of acres in grape culture is to the writer unknown. A few vineyards are in cultivation in the vicinity of *New York* and *Phila-*

*delphia*—and *Burlington, New Jersey*; but more with a view to supply the market with grapes, than to make wine. Efforts have been made in the interior of *Kentucky*, in *Tennessee*, in western *New York*, and on the southern shore and islands of *Lake Erie*, to cultivate the vine for making wine, but sufficient time has not yet elapsed for a fair trial. In the Appendix will be found a letter from Mr. A. H. WAGNER, on *Vine Culture in Canada West*. In a hasty sketch like this, it is merely intended to give a glance at the subject, and invite public attention to what must ere long be a source of great national wealth.

The following extract is taken from a highly interesting address delivered before the Medical Library Association of this city, Jan. 9th, 1852, by Dr. DANIEL DRAKE, “On the early Physicians, Scenery, and Society of Cincinnati.”

“Third street, running near the brow of the upper plain, was on as high a level as Fifth street is now. The gravelly slope of that plain stretched from east to west almost to Pearl street. On this slope, between Main and Walnut, a French political exile—M. MENNESSIUR—planted, in the latter part of the last century, a small vineyard. This was the beginning of that cultivation for which the environs of our city have at length become so distinguished. I suppose this was the first cultivation of the foreign grape in the valley of the Ohio.”

The celebrated traveler VOLNEY, on a visit to the French settlers at Gallipolis, Ohio, in July, 1796, tasted wine made there from a red grape, found on the islands in the Ohio river and planted in a small vineyard. “This wine differed but little in quality from that made from the small black grape found in the woods on shore.” The red grape was supposed to be “a foreign variety brought over by the French to Fort Du Quesne;” but it was doubtless the Red Fox grape, familiar to most of us in the west. Wine has occasionally been made, in different parts of the Union, in years past, from native grapes collected in the forests, but neither the quality of the wine,

nor the prices obtained for it, offered sufficient inducements to persevere.

DUFOUR says: "In my journeying down the Ohio in 1799, I found at Marietta a Frenchman, who was making several barrels of wine every year, out of grapes that were found growing wild and abundantly on the heads of the islands in the Ohio river, called sand grapes. I tasted some of the wine when four months old, and found it equal to that produced near Paris, if not better." The French, on the borders of the Ohio, thought the grape was of French origin, but Mr. DUFOUR subsequently found it growing wild in Kentucky and elsewhere. It was probably the Red Fox grape, varieties of which we now have in our vineyards under the name of the "Venango," "Minor's Seedling," etc.

DUFOUR remarks: "None of the different and numerous trials which were made in several parts of the United States, that I visited in 1796, were found worth the name of vineyards." "I went to see all the vines growing that I could near of, even as far as Kaskaskia on the Mississippi, where I was informed, the Jesuits had planted a vineyard shortly after the first settlement of the country, but that the French government had ordered it to be destroyed, for fear that vine culture might spread in America and hurt the wine-trade of France."

"I found only the spot where that vineyard had been planted, in a well-selected place, on the side of a hill, to the north-east of the town, under a cliff. No good grapes were found there or in any gardens of the country."

#### AMERICAN GRAPES.

Mr. W. R. PRINCE, in his Treatise on the Vine—New York, 1830; enumerates eighty-eight varieties of American grapes, many of them supposed to be valuable for making wine.

The experiments of western cultivators have been confined to but a small portion of that number, and their final selec-

tions for vineyard culture are reduced to the Catawba, Cape, Herbemont, Isabella, and Missouri, ranking in value in the order here named. For profit, the writer can only recommend the Catawba and the Capè; one-eighth or tenth of the latter variety, would be enough. The other kinds may do for experiments until their merits are better known.

There can be no doubt that *other* native varieties may prove to be valuable for wine, when fairly tested, or that new ones, equally good, may hereafter be produced from seeds.

Of the two recommended above, the Catawba is much the most productive; but the Cape is less subject to rot. Both make good wines.

Great hopes are entertained that valuable varieties of grapes may be obtained from our newly-acquired territories of Texas and California. Thus far, none brought here from Texas, have proved to be good. California grapes are yet untried by us.

The following is the extract from Mr. PRINCE, referred to above:—

“The varieties of vines which properly come under this head, may be divided into several classes, arising from the peculiar circumstances of their origin, viz:

Vines of original native species.

Varieties of original native species.

Varieties obtained by admixture of native species.

Varieties obtained from seeds of exotic grapes.

Varieties obtained by admixture of foreign and native varieties.

Although some of these classes are already numerous, others are yet very limited, and from the short period of time that has elapsed, since the public attention and that of intelligent connoisseurs, has been particularly drawn to the subject, in such a manner as to elucidate the various points, and to obtain precise information, it is yet impossible to form a

definite arrangement of all our varieties. The perfection of this desirable object must therefore remain for future labors; but it is to be hoped, an end so desirable will not be lost sight of by the amateurs of the vine throughout our country, and that each will, by developing the various points which fall within his notice, contribute his mite toward a perfect arrangement of the various classes, a precise nomenclature, and a knowledge of the peculiar qualities of the respective kinds."

## ANALYSIS OF SOILS.

A publication under this head, in the first edition, is omitted in the present, doubts having been expressed of its accuracy.

The article was taken from the minutes of the Cincinnati Horticultural Society, and the analysis made by CHARLES WHITTLESEY and A. RANDALL, for the State Agricultural Society.

The following specimen is given, that those who choose may criticise it—and the soil is much like that on which the writer's vineyard is planted.

"No. 2." From land worn down by twenty-five years' cropping.

Oxide of iron, .....	0.31
Carbonate of lime, .....	3.91
Vegetable matter, .....	3.10
Earthy residue, .....	90.31
Water, .....	1.37
	1.00

It may be proper here to remark, that *old* lands, or such as have been under tillage for some years, are better suited to vineyard culture than *new*, the grapes being less subject to the "rot."

## FINING WINES.

In this branch of the business, the writer has had but little experience, and therefore gives the opinion of others, in preference to his own.

It is difficult to fine new wines, so as to keep them perfectly bright after being bottled, for even a few months. The "insensible" or imperceptible fermentation constantly going on in wines, will deposit more or less sediment in the bottles after all the care that can be bestowed in fining. This is the case with *all* wines, the heavy more than the light. The latter, such as Hock and Catawba, deposit less sediment than Madeira or sherry, of the same age. All have to be decanted carefully, or drawn off with a syphon, after standing the bottle on the end, for a day or two. The author has tried some of the finest varieties of each kind, and finds invariably this result. He has now a bottle of Catawba wine, from the vineyard of the late JACOB RESOR; vintage of 1837, which, though well fined at first, and quite sound now, is turbid when shaken, and will have to be drawn off with a syphon. His own wine, and that of others, only bottled a year ago, is in the same state. Frequent *rackings* might in some measure overcome this difficulty, was it not feared that the exposure to the air, would make the wine too acid. The American palate rejects anything like harshness in wines; strength and astringency it can stand, but *not* acidity.

REDDING and other writers, have many recipes for fining European wines, to which the reader is referred. The following extract is from the valuable work on grape culture and wine-making, by the late JOHN JAMES DUFOUR, of Vevay, Ind.; published in Cincinnati, 1826. It is given in preference to others, because it is a western production, and treats of American wines. Mr. DUFOUR, was an intelligent and practical vine-dresser, one of the pioneers of this enterprise in the United States, and one of the *first* who brought it to a successful issue in the *Ohio Valley*. He settled, with other emigrants from Switzerland, at Vevay, in 1805, and cultivated the vine for many years. This was *before* the *Catawba* grape was brought into notice. The Cape grape, planted in *bottom lands* (which was an error), did not pay well, and the wine



business was abandoned.\* Still, the vine-growers owe to Mr. DUFOUR and his associates, a debt of gratitude, which should not be forgotten.

“Artificial fining of wine is performed in different ways, but I shall mention only the three methods I have made use of myself, which I think are the best, and sufficient to answer all purposes. I have always considered that the white of eggs is the best ingredient to clarify wine, and the easiest procured; one egg to every six or ten gallons, according to the quantity of matter to be precipitated from the wine; the eggs are first beat until the ropiness is subdued, and then being put into a tub, wine is drawn on them by a spile-hole from the cask which is to be fined; and while the wine is running, the eggs are in the same time churned or beaten very briskly, until the tub is filled, and the whole is introduced into the cask again, which ought not to be quite full, for the churning will generate an abundant froth, which, I think, is the very thing that fines the wine, therefore, it ought all to be introduced into the cask; for that purpose more wine is to be drawn, to rinse the tub and funnel, until the whole is in; then with a stick, introduced by the bung, a good stirring is to be given to the top of the mass of the wine, and the bung made fast. If that operation is made in a clear day, or when the mercury in the thermometer is high and shows elasticity in the atmosphere yet, there is greater chance of success. I have made use also of isinglass; but I found it very troublesome. It must be pounded very fine, and soaked several days in wine before it is thoroughly dissolved, and then it is only equal to the white of eggs, and must be operated the same way. Some say that it refines the wine quicker; but I could not observe any material difference. It is true, I have not often made use of fish-glue; I had to buy it while I had eggs of my own: beside, I thought that the tannin principle, which exists in some sorts of wine, perhaps more or less in all, and is a desirable quality, may be combined with the glue and form

leather, and thus destroy its best principles of durability. Although the eggs seem also to be a glue, I suppose they do not operate in the same way. The time isinglass succeeded the best with me, I had left it to soak among thirty gallons of wine in a keg, a full month; then beaten in a tub with a broom for an hour before it was introduced into the cask intended to be fined; one ounce per eighty or one hundred gallons is the dose made use of. Some recommend to add the shells, well-pounded, with the eggs; and I have done it myself, but I abandoned that practice after I had considered, that, being limestone, they must neutralize some of the tartar of the wine, which is absorbed again if it is lodged in a vessel having some crystallized tartar adhering to its staves—which is the case of all vessels in which new wine has been made—will again dissolve as much of those crystals as the lime will have neutralized; for only a certain given quantity of that salt can be dissolved by water, and none by alcohol; therefore, the more spiritous the wine is the less tartar it keeps in solution. The must holds as much as its watery part can dissolve; in the course of the fermentation spirit is formed, and all that part of the tartar which cannot be kept in solution by the spirit, or combined in it, is crystallized into hard stone against the sides of the vessel.”

#### VINEYARD CULTURE IN AUSTRALIA.

The vineyards of Asia and Europe have been established for ages, and it would be superfluous here to say a word about them—their history is recorded in numerous volumes.

It is with *new beginners* like ourselves, that our sympathies are naturally most enlisted, and with this view, the following sketch of the progress of our own race on the opposite side of the globe, in vine culture, is given.

It is an extract from the first Vol., second edition, of Dr. Lang's "Historical and Statistical account of New South Wales. London, 1837."

“The soil and climate of New South Wales are universally considered peculiarly adapted for the cultivation of the vine. The vine has been cultivated in various localities in New South Wales for many years past ; but never to any extent, or with a view to the making of wine, till within the last three or four years. There are now, however, many acres of vineyard throughout the colony, the vineyards of several of the more wealthy proprietors being for the most part under the management of scientific and practical vine-dressers from the south of Europe ; and wine and brandy in considerable quantity—as much in one instance as eighteen pipes of the former—have already been manufactured on several estates. It is scarcely possible as yet, to predict, with any degree of certainty, of what quality the wines of New South Wales will eventually prove ; for the vine requires to be in bearing for five or six years before good wine can, in any instance, be produced from its fruit. The specimens of wine, however, that have actually been produced from the colonial grape, have induced a general idea on the part of the colonists, that the wine of New South Wales will be somewhat similar to the light wines of the Rhine and of France. At all events, the highest expectations are entertained on the subject ; and those of the landholders, who have planted vineyards, begin to talk already of exporting wine to India and England.

“Cuttings of the choicest European and African vines have at different times been imported into the colony, by public-spirited proprietors.

“About eleven years ago, Mr. REDFERN, a respectable colonist, touched at the island of Madeira, on returning from Europe to New South Wales, and carried out with him a number of cuttings of the celebrated vine of that island, together with one or two Portuguese families acquainted with its culture.

“The Messrs. MACARTHUR of Camden, had a large collection of cuttings of the choicest French and German vines sent out to them, for propagating in the colony several years ago ;

and cuttings of upward of a hundred varieties were carried out to the colony for general distribution, in the year 1832, by JAMES BUSBY, Esq., now British President at New Zealand ; from several of the first vineyards of France.

“ The success of this branch of cultivation is of incalculable importance to New South Wales ; not so much, indeed, in a commercial or agricultural, as in a moral respect.

“ The raising of an article in the shape of colonial wine, fit for the home or India market, is doubtless of consequence to the colony in a mercantile point of view ; and the annual saving that would accrue from the manufacture of a wholesome and cheap beverage, that would gradually obviate the necessity for importing European and Cape wine, is of still greater moment.

“ But the gradual diminution of the consumption of ardent spirits within the colony, which would in all likelihood be the eventual result, would, without doubt, be a blessing of far greater, and of inestimable magnitude to the whole colonial population. It is a fact well ascertained, that the population of wine-growing countries are not addicted to the brutalizing vice of drunkenness, like the inhabitants of colder latitudes ; and there is reason to hope, therefore, that if the population of New South Wales could by any means be converted into a vine-growing population, they would, in due time, become a wine-drinking, and comparatively temperate, instead of a rum-drinking and most outrageously intemperate population.”

#### PRODUCT OF THE VINE IN FRANCE.

To those who are not aware of the value of this product in wine countries, the following statistics from Mr. REDDING'S work, before referred to, may be found instructive. It will be perceived, that the grape crop of France, like the cotton crop of our own country, is the most valuable of all others for export.

“ France is the vineyard of the earth. There are few de-

partments in France that are unfriendly to the vine; the exceptions are six only. In eighty of the departments wine is made, although of varying quality. The country may be called one vast vine-garden.

The number of proprietors of vineyards in France, is very great.

In 1823, there were 4,270,000 acres in cultivation. The annual mean product, 920,721,088 gallons of wine, at an average value of about thirteen cents per gallon, amounting to 120,000,000 dollars. The product per acre, near 200 gallons. This estimate was sustained by the minister of commerce, in his report for 1828. About 115,000,000 gallons of wine is annually distilled into brandy, producing near 19,000,000 gallons. Beside this, 2,000,000 gallons are obtained from the *mark*, ('pummice,' grape seeds and skins, after being pressed), and 3,000,000 gallons made from corn, potatoes, etc., etc. Swelling the total amount of brandy to 24,000,000 gallons." The wine products of France must have greatly increased since 1828, when these estimates were made.

#### THE VINEYARD REGION IN THE UNITED STATES.

The writer of this treatise does not presume to fix the limits of the vineyard region in this country. The grape-vine is found indigenous over all our vast possessions. There can be no doubt, but *some* of the *native* varieties may be found suitable for vineyard culture, in almost every section of the Union, south of latitude 43°. He can only give the result of his own observations, in relation to the kinds cultivated here; and first, of the *Catawba*:—This grape was discovered, according to Dr. MOSHER's report, "in Buncombe county, N. Carolina; latitude, 35° 30', by Col. MURRAY, and others, in 1802." It has since been found high up the Arkansas river, in about the same parallel of latitude, and on similar soil, "poor and gravelly." Since that period, it has spread over all the country north, as high as lat. 42°; and how far south,

has not yet been ascertained here. In this parallel,  $39^{\circ} 6'$ , it is perfectly hardy, and is our *great* wine grape; nineteenth-twentieths of all the grapes planted here, are Catawba. It does well in favorable positions, as high as lat.  $41^{\circ}$ ; on the southern shore of Lake Erie, and some sheltered localities in western N. York, the fruit ripens well; even in lat.  $42^{\circ}$ , in warm seasons. The influence of the water of Lake Erie, for two or three miles from its shores, makes that a better fruit region than ours here. The *Cape* (*Alexander* or *Schuykill Muscadell*), is a native of Pennsylvania, and was first found on the banks of the Schuykill, near Philadelphia. It bears well as far north as the Catawba does. Its southern limits are unknown to the writer. The *Isabella* is said to be a native of S. Carolina, and strange to say, it succeeds better in the north than in the south, or even our intermediate latitude.

Here it is not prized for vineyard culture, and the young wood is often winter killed; but further north and north-east, particularly on the shores of Lake Erie, and in the vicinity of the city of New York, it bears abundantly and ripens well. *There*, it is the favorite grape for open culture.

The *Scuppernong*, is the principal wine grape south of lat.  $35^{\circ}$ ; but here it is not hardy. The foreign grapes do not appear to succeed much better in that region than this. The foregoing are the grapes most used in vineyard culture as yet. Experiments have been made with other varieties, but not sufficiently to ascertain the latitude that suits them best. The whole valley of the Ohio, between Pittsburgh and Cairo, and not north of lat.  $40^{\circ}$ , is thought to be favorable to vineyard culture; provided a proper selection of soil and position is made. The hills and hillsides should always be chosen, in preference to the plains. Three-fourths of all the vineyards in Europe, are on the hills or slopes of hills, and those in plains are generally in the chalk formations, which we have not here. In the valleys of the Mississippi, Missouri, and other of our western rivers, the same rule will probably apply.

# A P P E N D I X .

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[ The directions and descriptions in the preceding pages of this treatise, have been made as brief and concise as possible, in order that they might the more easily be remembered.

In the following pages, the reader will find a more full and detailed account, of some of the branches in vine culture and wine-making.]

(From the Western Horticultural Review.)

## STATISTICS OF VINEYARDS.

IN accordance with a resolution of the Horticultural Society of Cincinnati, passed at its last session, calling on the President and Council to report on the extent of the interest at this time engaged in the wine business in the neighborhood of Cincinnati, we submit the following report :

Of the number of acres now under cultivation in vines, we are not, as yet, prepared to give an exact account, as the entire statistics of the county have not been fully made out since 1845. In that year (see Report of Wine Committee) there were eighty-three vineyards, covering an area of three hundred and fifty acres. In that year alone, one hundred acres were prepared and planted, and the number of acres brought under cultivation has been steadily and rapidly increasing every year since. The great number of new vineyards commenced since 1845, some of which embrace twenty-five to thirty acres, with the annual enlargement of those previously planted, will swell the aggregate amount to not less than twelve hundred acres. From the statistics already in our possession, we can safely say that this is within the actual amount.

The labor bestowed upon this culture in the preparation of the ground, planting and dressing, and making the wine, gives employment to at least six hundred efficient laborers, at an annual cost of \$120,000, producing, when in a bearing state, in moderately favorable seasons, about 240,000 gallons of wine, estimated at about the same number of dollars. Beside the cultivators and vine-dressers, employment is also given to wood-coopers, equal to the making of eight thousand barrels, estimated at \$8,000.

A considerable portion of this crop now falls into the hands of the wine coopers, and is converted into sparkling wine or champagne, thereby more than doubling its market price. The value of sparkling wine prepared in this county in 1851, as near as we can arrive at an estimate, amounts to not less than \$75,000. The dealing in these wines also forms a considerable item in the transactions of the wine merchants.

As most of those engaged in the culture of the vine have families to support, as well as others engaged in the business, it may, without exaggeration, be calculated that the wine interest in Hamilton county, affords subsistence, directly or indirectly, to at least 2,000 industrious and sober people—a drunken vine-dresser we have never met with.

S. MOSHER, *Pres. Hor. Soc.*

*Cincinnati, March 15, 1852.*

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When this report was read before the society, some of the members expressed great surprise at the large amount of the vineyard interest—but others considered the estimate to be below the truth. Mr. Yeatman suggested that it should be put at 500,000 gallons for the aggregate annual yield, in a fair average estimate.

Mr. LONGWORTH considered the value of sparkling wine, prepared last year, to be \$175,000, instead of the amount reported above.



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(From the Western Horticultural Rev.)

## RACKING WINE.

This being the season of the year when the wine may require attention, the reasons for racking and the manner of effecting it are presented :

This operation is performed to separate the wine from its ferment, in order to prevent further change, either spiritous or acetous—to separate it also from the lees, containing, beside the yeast, cream of tartar, and coloring matter which has accumulated at the bottom of the cask. This process also enables us to avoid the exposure of the surface of the wine to the influence of the air, by which it would suffer more evaporation and be liable to be covered with mould (*Kahnen*) a white cryptogamic plant which covers the wine and gives it a putrid taste.

To effect the first object, frequent racking is required, say 1st, at the end of December ; 2d, at the end of February, in March or early in April ; and then again in the autumn, at the end of October : such is my treatment of the Catawba wine during the first year ; after this, it is only racked in the fall. The latter object is to be attained by keeping the cask always bung full to exclude the air and prevent alcoholic evaporation or absorption of air, to produce putrefaction. The bung should be made of clear wood, wrapped with clean linen to insure tightness ; a caution should however be had to loosen the bungs in April, when the wine is apt to undergo a fermentative change, and should the bung be too tight, so that the gases cannot drive it out, the bottom of the barrel may have to yield before the pressure, and thus the wine will be lost.

In racking, the first requisite is a good *wine-green* cask, which has previously contained similar wine ; it should be carefully examined to ascertain that it is quite clean and has neither a sour nor other bad smell. After the cask is thoroughly rinsed with clear, fresh water, burn a piece of brimstone paper, one by three inches large, suspended from the bung by a piece of bent wire. This is made by dipping

paper into melted sulphur. Then fill the cask, but endeavor to expose the wine as little as possible to the air. Never use a new cask in this process, as the wine will acquire a bad smell and taste from the fresh wood. Neither should you think of taking a barrel that has contained brandy, Madeira, or other wine than good Catawba, as these substances always impart a taste to the wine, and thus destroy the fine flavor of our delicate product. Casks become what is called *wine-green*, or fit for old wine, after having had fermented in them sweet cider or grape must.

Empty casks may be kept in good order by being thoroughly cleaned, and after they have been left to dry for a few days, burn a piece of sulphur paper and bung them tightly, this may be repeated every three or four months. The burning sulphur produces sulphurous acid gas, which prevents putrefaction and acidulation, but they should be well rinsed before they are again used.

Especial caution is given after racking the wine to keep the cask always bung-full; this requires frequent examination, say every three or four weeks, when it should be filled up. In a cask that is not kept full, there is more evaporation, and in presence of the atmospheric air, acetous or vinegar fermentation is apt to be commenced, the white mould (Kahnen) is formed, and the wine is spoiled, never to be restored.

A great many persons believe that the racking of wine is not necessary, they say that it is thereby weakened, because the yeast and all the sedimentary matters give strength to the wine—let us examine into this. The temperature of the must during the first week of the first or quick fermentation is very much increased, the liquid from being clear, becomes turbid, owing to the separation and precipitation of the decomposed and effete ferment, the cream of tartar and other matters which are kept in continual motion by the escaping carbonic acid gas. In the second week the fermentation is moderated, the temperature is reduced; in the third week this reduction

is still more observable, and fermentation nearly ceases, until the temperature becomes almost the same as the surrounding air, and cold weather comes on. At the end of December the wine will be nearly clear, and this is the time I recommend for the first racking. At the end of February, the weather is still colder, and more of these foreign ingredients are separated, hence this period is recommended for the second racking, the wine will then be mellow and nearly clear. In the middle of April, when the *vines* begin to push forth their buds, the *wine* ferments again, but if it has been well racked, it possesses little yeast, and the fermentation will be slow, and more of the sugar will be retained in an unchanged condition, so that the wine is more palatable.

What happens, on the contrary, with wines that have not been racked? With the increasing temperature of the season, in April or May, fermentation commences, and the escaping carbonic gas stirs up all the sediment from the bottom of the cask, bringing it into contact with the wine, which retains a portion of what it had before thrown off, the yeast also, thus mixed, will decompose more sugar, and the result will be a too hard and too astringent wine, that must require years to render it again mellow.

L. REHFUSS.

March, 1852.

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(From the Western Horticultural Review.)

#### FERMENTATION OF WINES.

The growing importance of the manufacture of wine, from our already numerous vineyards in this immediate vicinity, calls for the attention of those engaged in that particular branch of industry.

The great deficiency of the knowledge of the principles which govern the fermentation and changes of the *must*, or juice of the grape, is sufficiently attested by the numerous poor specimens of wine offered in our market, showing conclusively a want of skill, as well as proper attention to the

management of the different changes it undergoes while in its transition from the crude juice of the grape to good marketable wine. There is undoubtedly too much importance attached to *locality and soil*, and too little attention during fermentation. If all could extract the juice from their grapes in precisely the same manner, then the same treatment (other circumstances being similar) would undoubtedly produce nearly the same results; but, with our numerous small beginnings and variety of appliances used in gathering and pressing the grapes, we can look for little uniformity in the quality of the raw juice; hence it becomes absolutely necessary for each one to understand the principles that govern the fermenting process, in order to meet the variety of circumstances that will necessarily follow. Some rack or draw off their wine too much, some not enough: in the course of my remarks I shall attempt to point out the reason why wine may be injured by too much, as well as by too little separation from the lees during its progressive stages of fermentation. In the first place, it will be important to ascertain the character of the agent that produces fermentation, how long that agent should be suffered to operate, and when it is proper to dispense with its influence.

The fermenting or yeast principle is produced during vinous or first fermentation from a vegetable gluten or gum which exists in the juices of all fruits—this yeast or ferment is formed in greater or less quantities, as this gluten or gum pervades more or less the fermenting mass; hence that having a large quantity of gluten will produce an abundance of the stimulating or fermenting principle, and in many cases, to the injury of the wine. In drawing the must from the grapes by pressing, some part will be more charged with this gum than others unless the whole amount pressed at once is run into a single receiver, in which case there will be more uniformity in the process of fermentation, than if it is put into a number of casks during the time it is running from the press. This

gum or mucilage is held in solution in the juice, and is invisible *before* the fermentation commences, but, so soon as that process begins, the clear liquor becomes turbid and a separation takes place; some subsides and settles to the bottom, some becomes charged with carbonic acid gas and floats on the top until the gas escapes, when it sinks to the bottom. This is the time to separate the wine from the superabundant yeast, as there will still be enough left to carry forward the fermentation with sufficient rapidity to insure a sound, good wine. The wine, then, will not, in all cases, be clear, but if it is a little turbid, it should be racked off, and the casks well washed out with cold water, and the wine returned into them to complete its fermentation. Some wines will not require a second racking off, as the separation from the ferment or lees will have been sufficiently effected, and the fermentation during its future progress will be moderate enough to fine itself bright and clear; but if that should not be the case and it still continues turbid or riley, a small quantity of isinglass or fish-glue should be dissolved in strong spirits and added (about one ounce of the glue to one pint of spirit, for a barrel of forty gallons is sufficient); it should be dissolved warm and put into the bung-hole, and then slightly stirred over the top; it is gelatinous, and in subsiding carries down the superabundant particles of ferment that heretofore kept up the action, causing the muddiness of the wine. Whenever the wine appears clear it should be racked off, and, in most cases, it will not need any further assistance, but becomes bright and clear. The process of fermentation does not stop here, however, as it is constantly progressing in the form of an *insensible fermentation*, elaborating and combining the elements of the new and acrid, and producing a mellowness of the wine that is only acquired by age. If the wine has been fined or separated too much from the lees during the first racking off, it will be thin and wanting in "body" and deficient in aroma; this can only be remedied by adding sub-

stances to it that will strengthen it, whether sugar or spirit, but either will injure the quality, and the produce will not be of fine flavor or possess the mellowness that is indispensable to good wine; in fact, the “*manufacturing*” should be as much avoided as possible. The strength of wine depends upon the amount of sugar contained in the juice of the grape, a portion of this sugar is decomposed and its alcohol combined with another portion of the sugar during the fermenting process: now if the fermentation is hurried too rapidly, and is not suspended at the proper time, the spirit will, by another fermentation, the acetous, be converted into vinegar, and the whole irrecoverably lost, as no “*manufacturing or doctoring*” will ever correct a cask of wine after that change has occurred. The acetic acid may be neutralized, but it will never be sound, good wine; for this reason—a too rapid fermentation should be guarded against. Very weak wines are more liable to become acid than strong ones, for the amount of alcohol elaborated, when there is an abundance of sugar, serves to check the rapid vinous fermentation, and prevents its running into the acetic change.

Some have tried adding sugar to the juice, but the difference between cane and grape sugar is such that the product has not been satisfactory.

I think the juice of well-matured Catawba or Cape grapes, that are produced in this vicinity, is strong enough to insure good wine without any addition either of spirit or sugar.

JULIUS BRACE.

*December, 1850.*

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ON SPRING AND SUMMER PRUNING.

R. BUCHANAN, Esq. :—

DEAR SIR.—To your request that I would communicate a detailed statement of my mode of training and pruning vines, I cheerfully comply—and as I think much experience and observation are required to arrive at the best methods, I shall

give only what has proved most successful with me. My vines or a portion of them have been planted nine years ; the rows five feet apart, and the vines three feet distant in the rows. Roots, one year old from the cuttings, were planted after being cut close down to the crown. The first year they were allowed to grow without any other care than keeping the ground clear from weeds. The second spring, early, the tops were all cut down to two eyes, and a stake driven to each vine, six or seven feet long. One or two of the best shoots were allowed to grow, all others rubbed off. These two shoots, or canes as they are technically called, are tied up to the stakes when they have grown eighteen or twenty inches in length, and should be kept tied from time to time, as they advance in height through the second summer ; little or no pruning will be required this season.

The third spring, I would cut these canes down to two eyes, although some of the strongest might bear fruit the third summer, it is much better to let them grow another year, and become strong, before raising a crop. This season more attention is required, and they must be prepared to bear a good crop the fourth summer. The two most thrifty shoots must be selected the third spring and kept tied with rye-straw, or some other strong and suitable material, to the stakes, as in the second summer. This year I pinch off all the lateral or axillary branches between the thumb and finger-nail before they become too large and woody—otherwise, if left too long, so as to require the knife, the determination of sap in that direction is liable to force out the sleeping eyes, which should remain dormant till next year. These lateral shoots should be pinched off to the height of four or five feet, or as high as is intended to prune the next spring ; after that they may be allowed to grow as they check the extension of the main shoots.

The two canes of this year will be strong and vigorous and soon rise to the top of the stakes, where they must always be

strongly tied to prevent the effects of wind. About the first of September, and not much before, the extremities are pinched off to arrest their further elongation and growth—whereby the wood and buds become more perfectly matured—this finishes the work of the vines for the third season.

We are now arrived at the fourth spring. The vines are old enough to bear a full crop—and we have two good thrifty canes ready for the knife—the old strings by which they were secured to the stakes are cut—and the tendrils trimmed off. The cane that comes off highest from the root is chosen to bear the whole crop, and is cut off about four feet from the ground, having from six to ten eyes according to the length of the joints—the other cane, which is often equally beautiful, is cut down to two eyes, and is generally used for cuttings. From these two eyes two more shoots are trained, as in the previous year. After all are pruned, and just when the sap begins to flow freely and the vines are most flexible, the bearing cane is carefully bent round in the form of a hoop, and tied to the stake with willow twigs—one at the bottom, one at the top of the circle, and the third fastens the extremity either to the the stake or to the vine below.

I am often asked, why this hoop or circle? The answer is, gradually to retard the current of sap or juice, that each eye may receive an equal share, and prevent its rushing onward to the last eye or bud, which is sure to gain too great a share and to cause a growth too exuberant if trained upward with the stake.

The operation of tying is performed with much dexterity by experienced hands, and should always be completed before the buds are much expanded, as then they are liable to be broken off.

All my hopes and expectations of a crop are now centered in this little circle. If the winter has not been too severe every eye will shoot, and in a short time show the blossoms, from one to three bunches on each. After the berries are set



my vines are carefully inspected by the vine-dresser, and from ten to fifteen of the largest and most promising bunches are selected, and all the others are pinched off, also all unfruitful shoots that may have pushed out from the circle. I know that many of our vine men allow every bunch to grow for fear of casualties. This I have proved to be an error. Ten to fifteen bunches, according to the strength of the vine, are more likely to remain on and produce more mature fruit than twenty or more. The vines must not be overtaxed—too heavy a burden can never be carried to the end of the journey—but a light task will be more perfectly executed.

Soon after the grapes are set and about the size of common shot, my rule is to pinch off the ends of the bearing branches—leaving four good leaves for the first bunch of grapes, and two additional leaves for every other bunch on the same branch—so that if there are three bunches there will be eight leaves to supply their wants. I have tried leaving these bearing branches to grow their full length without pinching them off, but I find they incumber the ground too much, without any perceptible improvement of the fruit. After these bearing shoots have been pinched off, especially if done too early, the buds in the axils of their leaves will push out. These I pinch off also when quite young, sometimes permitting one or two leaves to remain on them. The leaves on these laterals do not seem to subserve the wants of the fruit, like the original leaves on the bearing wood, which should be carefully preserved. At the fifth spring-pruning the vines will have the two good canes, as in the previous spring, with the addition of the old hoop or circle that bore fruit. This I cut off as close down as possible to the uppermost cane, and the other two canes are managed exactly in the same manner as in the preceding year. I never allow the old stock to rise more than six to ten inches above the ground—the lower they are kept the more healthy they will remain and be much more easily managed. Pruning the vine for wine requires a bold

hand and much firmness of purpose, otherwise the old stock will get too high and become incumbered with too many shoots. It must be borne constantly in mind that one single bearing shoot or cane, having from six to ten eyes, will throw out as many bearing branches. From these ten bearing branches it will be easy to select from ten to fifteen bunches. These bunches, in any ordinary favorable season, may be made to yield one quart of good grapes, which will make, at least, a pint of wine. One acre of ground planted three feet by five will contain 2,904 vines. If each vine, then, yields one pint of wine only, there will be 2,904 pints, or 363 gallons, from each acre. This is more than the average yield per acre—and for the reason only that we are too greedy—by overloading the vines we fail to obtain a reasonable quantity, as well as a good quality of wine.

The above contains most fully my views, derived from practice and close observation, on the subject of pruning the vine for wine. If you think they contain any hints that will aid beginners, or others, you are at liberty to make such use of them as you may think proper.

Yours, respectfully,

S. MOSHER.

*Latonía Springs, Ky., March, 16th, 1852.*

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SOIL FOR A VINEYARD.

R. BUCHANAN:—

DEAR SIR.—I consider the proper selection of the *soil*, as almost everything in the successful cultivation of the grape for making wine. I have visited nearly all the vineyards near Cincinnati, and feel confident that many of them must eventually fail, from a want of selecting at first the right kind of soil; and yet, in my opinion, there is plenty of suitable soil in almost any neighborhood. Some have planted on land of a grayish, gravelly superficial surface, with a heavy blue clay subsoil, impervious alike to water and the roots of the vine, further than is loosened by the spade or the plow in trenching

Such soil, if it does produce a growth of wood, yet causes the grapes to rot.

Another soil, unsuited to the grape, is that with a surface of good, rich mould underlaid by a stratum of fine, bright, yellow sand, clammy and adhesive. This is well calculated to deceive, but it has no strength below the mould, and the vines invariably become weak and of small growth. Such lands may be improved by lime and ashes. But the soil upon which I rely, and from the experience of seven or eight years, place the greatest confidence, is of a grayish black, breaking up into small square lumps in cultivation, deep, and running into a reddish yellow subsoil, friable like the surface in working, and generally resting on limestone rock; in such soil, with proper cultivation, I have never known the vine to fail. As to locality, I prefer a southern, western, or eastern aspect, in the order here named, to a northern, but consider the *soil* of the *right selection* of far more importance.

Respectfully,

JOHN WILLIAMSON.

March 15th, 1852.

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(From the Western Horticultural Review.)

ON GRAPE SEEDLINGS, BY N. RIEHL, OF ST. LOUIS, JAN. 1852.

The method which is most commonly followed in raising grape seedlings, is to sow the seed in the open ground, then select the finest or most vigorous plants and set them out in rows, where they remain until they come into bearing. Experience has now shown that these seedlings are generally inferior in quality to the Catawba, or other sorts from which the seed was taken. Why such is the result, may be principally attributed to the following reasons: Beside the tendency which the grape has, when grown from the seed, to go back to the natural wild state, like all other varieties of cultivated fruit, it also, like the strawberry, has a tendency to become diœcious by the abortion of male or female organs in the flowers. Those plants may be recognized the first season

by their luxuriant growth and longer joints, while those which will probably produce the best varieties are of much slower growth, more delicate, and often die out in the first summer, when left exposed to the drought and scorching sun of our south-western climate. So there is no wonder why the exertions of amateurs have been attended with so little success in the production of better varieties of grapes from seed.

The production of hybrid grapes, by crossing our native kinds with the European species, is a very uncertain process. The flower is formed in such a way as to make it very difficult to decide whether the pistil is not already impregnated by the surrounding anthers; and it is very doubtful whether there is yet one true hybrid grape in cultivation. Although it is not impossible that such hybrids may be produced, but we may be certain that the great number and very different varieties of the European grapes are varieties of one and the same botanical species, and not hybrids. So we have all reason to hope that, by starting with our native grapes, we may be able to produce sorts just as different and excellent, either for table or wine, as those of Europe are, without resorting to crossing the different species.

The seeds should be selected from grapes of the greatest perfection, in every respect, large, fine bunches, and perfectly ripe, of the sort which the experimenter thinks most proper, probably Catawba. They should be sown, as soon as washed from the grapes, in four inch pots, in rich mould, not too thick, and covered about one-fourth of an inch with the same soil. These pots are to be kept always moist, and wintered in a conservatory, or pit, or any other similar place, until spring, when almost every grain will vegetate. They are then treated like other tender seedlings. They require plenty of light, and as much air as the weather will allow. From May or June, they require protection from the sun.

The weaker plants should never be pulled out for the pur-

pose of thinning. I would rather cut off close to the ground some of the most vigorous, if thinning should appear indispensable. If the young plants grow well they may be shifted two or three times into larger pots, being careful not to break the ball of earth, nor let the rootlets become dry. Some time in winter, when the seedlings are in the house again and have lost their leaves, they should be taken out of their pots and planted separately in pots corresponding to the size of their roots.

Should their number be larger than I might wish to keep, I would select the *moderate growers*, with their *short wood*, and reject the longer and thinner ones. The second year or summer, two shiftings may again be necessary, and, if well attended to, they may be strong enough to be planted in the open ground in the spring of the third year. Staking, mulching, and, perhaps, shading will be necessary at first; but after being established, they may be treated like other vines in the vineyard.

In the fall of the fifth year, most of these seedlings will bear fruit, and a number of them will give certain evidence of being inferior and poor, which may then be discarded. The doubtful and promising ones should be kept two or three years longer, before deciding upon their merits.

In judging the qualities of the grapes, we must not ask too many good qualities of one and the same plant. A grape may be small and tough-skinned, and nevertheless make excellent wine; and a very poor wine grape may be a delicious and beautiful table grape. In fact, the finest European table grapes—for instance, the Chasselas de Fontainbleau among others—is nowhere grown for wine; and the grapes which furnish the best wine, like Tokay and Auvergnés, are never seen in market nor presented on the table, when others can be had. Nor should the experiment be made on too small a scale. The attending of four or five hundred pots does not require so much labor. They may be put under

the stage in the winter, when they have no leaves; and one plant of superior quality found in such a lot will amply reward the cultivator for the trouble and expense. The wintering of grape seedlings and their nursing in the greenhouse does not render them more delicate than they naturally are, and whoever attempts to raise them in the climate of St. Louis will find a similar course necessary to insure success.

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(From the Western Horticultural Review.)

FROM THE PRESIDENT TO THE MEMBERS OF THE "WINE ASSOCIATION."

"Allow me, gentlemen, to suggest for your discussion some propositions, by which we may be guided this year, the adoption of which may prove useful and bring our society to the stand she ought to occupy as an institution, by distributing the results of our experiments, founded on practical and scientific investigations, in cultivating the vine, and preparing a healthy drink, which may save our country millions of dollars, now yearly sent away to other lands for mixed liquids, called wine. By introducing a cheap, good, natural wine, whisky and brandy, and other deleterious articles, may be dispensed with, the habits of the people will be changed, and we shall see less drunkenness, as it is a well known fact that in wine-growing countries drunkards are very seldom found.

"As we have in our society high-minded, generous, and disinterested members, who, with indefatigable zeal, have promoted the distribution and cultivation of the vine for a number of years, I do not doubt that they will also be glad to support measures which will bring our society to a higher stand. I, therefore, propose,

"1. Publishing the different modes of pruning and training the vines, and having them all fairly tested for a number of successive years.

“2. Publishing monthly the different parts of the work to be done in the vineyard as a vineyard calendar.

“3. Publishing the different modes of fermenting the wine, and its treatment in the cellar.

“4. To induce wealthy merchants at home and abroad to invest their capital in our wine, so that by a competition for the produce a fair price may be realized by the maker, who may thus always find a ready sale, and not become discouraged by the low state of the market.

“5. Chemical analyses should be made of our soil, of the wood and leaves of the vine, and particularly of the fruit, from the beginning to the time of its maturity.

“On the three first propositions you do not need a comment. To the fourth I have to remark, it would be beneficial for the wine-dealers to open large cellars here, and take the sweet must from the vine-dresser, and ferment it in their own cellars, under regular treatment, by which means the wine would be made of a more equal quality.

“The man who dresses the vine, and he who understands the treatment of the wine in the cellar, are, in Europe, separate persons.

“Here, among our vine-dressers, from a want of good cellars and casks, and from lack of proper treatment, I have found the best must converted into a liquid not good enough for vinegar, and too bad to be called wine.

“L. REHIFUSS.

“*February, 1852.*”

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(From the Western Horticultural Review.)

NATIVE WINE. — BY DR. MOSHER.

In this climate, in good localities, it has already been proved, and many respectable persons in this vicinity can attest to the fact, that the Catawba and the Cape grape, when well treated, will yield a pure and perfect dry wine without

any admixture of sugar or alcohol whatever, or of any other foreign substance. Within my own knowledge, the pure juice of the Catawba grape has been kept in bottles twelve years, the last six of which, it was kept in a dry chamber, and became so much improved as to be pronounced by good judges a most delicious dry wine, that would compare favorably with the very best Hock or Madeira. Twenty-four dollars a dozen was offered for it, by one who knew what constituted good wine.

The pure juice of the grape alone deserves the appellation of wine—to obtain which, of an excellent quality is the grand desideratum that should engage the enlightened efforts of this society. If sugar or spirits is required to convert the juice of the grape into what is called wine, the sooner the vine-culture is abandoned, the better—for we already have among us enough artificial mixtures of this class called wine—many of which, I am credibly informed, have never had the christening influence of a single drop of the blood of the vine.

If, in awarding a premium by this society for the best native wine of the vintage of 1847, it is intended to apply indiscriminately to all the mixtures of the produce of that year, it is difficult to perceive how horticulture is to be benefited by it. It is liberal and praiseworthy to offer rewards that will tend to encourage so important a branch of Horticulture as the vineyard—to bring its produce into a high state of excellence, and to make public that mode of culture and management of the vine, and that treatment of wine which shall elicit the most meritorious production and obtain the prize. I know the Society, in offering this reward, were actuated by the purest motives—to encourage horticultural improvement alone, and never dreamed of ministering to the cupidity of the most skillful inventors of compounds. That cultivator, who manages his vines in the best manner, and thereby produces to this Society a pure juice of the best qualities, such as strength, fineness, aroma, and flavor, should be entitled to



the premium, and not he who possesses most knowledge and skill in combining mixtures. It is of incalculable importance to this Society, as well as to the community at large, to know how to cultivate the vine and to manage the pure juice so as to produce the best samples of wine, which will always be sure to command the highest market value.

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(From the Horticulturist.)

FOREIGN GRAPES. — BY MR. DOWNING.

Mr. TOGNO is sanguine as to the introduction of the foreign grape in this country for open vineyard culture. The thing is impossible. Thousands of individuals have tried it on a small scale in various parts of the Union; and several persons—as for example, M. LOUBAT, Mr. LONGWORTH, etc., of great experience abroad or knowledge at home, joined to abundant capital, have tried it on a small scale. The result in *every case* has been the same; a season or two of promise, then utter failure, and finally complete abandonment of the theory.

The only vineyards ever successful in America are those of American grapes. As it is a pretty well established axiom, that the hardiness of a variety of tree or plant is not affected by grafting it on a hardier stock, though its luxuriant growth may be promoted by it, we doubt if our correspondent will find the mildew less inclined to make havoc on his foreign grapes, when worked on our wild stocks. If he really wishes to *acclimate* the foreign grape here, he must go to the *seeds*, and raise two or three new generations in the American soil and climate. They will then get American *constitutions*—which no grafting, pruning, training, or manuring will give them. The only thing that he can do for them, is to cheat them into the belief that they are in the warmer parts of Europe, by putting them in a glass house. If any of our readers doubt whether grafting can enfeeble a healthy variety, they have only to try the experiment by taking that variety

and grafting it for two or three successions upon unsuitable or unhealthy stocks. We do not mean, however, to assert that grafting on healthy stocks impairs the vigor of a sort—but only that any given variety, which has been propagated in this way time and again, for 100 years, is very likely, in the course of that time, to have been put upon an unhealthy stock, and hence to have lost some of its original vigor.

*January, 1851.*

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(From the Western Horticultural Review.)

#### FALSIFICATION OF WINES.

As an evidence of the great importance our wine interest is assuming among the products of our country, the miserable attempt to palm off other brands at *auction* will show how highly ours are valued. An instance of this kind has elicited an explanation from Mr. LONGWORTH, in the New York Tribune, which is here appended :

#### *“ Sparkling Catawba Wine of Cincinnati.*

“A friend, recently from your city, informs me that, at the request of Mr. LEINAN, a wine merchant on Front street, in your city, he sent him a box of my Sparkling Catawba wine, and charged him the invariable price here—\$12; and that Mr. LEINAN expressed surprise at the price, as he had recently bought my wine at auction, in your city, at \$8 per box. I have not yet been able to supply the home demand—have never sent a box to New York, or any other city, for sale. Our merchants, who sell at \$12, have a commission. My wine has not only an engraved label on each bottle, but ‘N. LONGWORTH, Cincinnati,’ branded on the end of each cork, and my name, and the name of the wine, and Cincinnati, with a circle of bunches of grapes around it, on each bottle. My wine never will be sold at auction. I shall esteem it a special favor if Mr. LEINAN will ascertain who sent the wine to auction, and write me. That he will also compare the labels on

the bottles, and the brand on the bottom of the cork. I have no desire to have even French Champagne sold as my Sparkling Catawba. A merchant of our city writes me, that he was at one of your first hotels, and called for a bottle of my Sparkling Catawba, which was brought to him. That the moment he tasted the wine, he found it had not the Catawba aroma and flavor. He examined the bottle, and found no label on it. He took up the cork, and instead of my brand on its end, found the name of a French house. From the character of the hotel, I am satisfied this was a mistake of the waiter, who perhaps had never heard of Sparkling Catawba wine. Of the flavor and aroma of my wine, each person who drinks it can judge. I claim for it one superiority over imported Champagne. It will be found to suit the stomach better and be much healthier. It is the pure juice of our native Catawba grape, with the addition of the best rock candy. The French champagne is made from a mixture of three or four different wines, which never can be healthy to the stomach. They say one kind is to give aroma and flavor; another strength; another effervescence. If true, our Catawba is superior, for it contains all these properties. Interest may have its influence, even in France, as one of the wines used costs three times as much as the others. I expect, next summer, to have more wine than will meet the home demand, and shall then send to the eastern and southern cities, to wine merchants, to be sold at private sale, but never at auction. Any person who buys it, and is dissatisfied with its quality, can return it to the agent, and receive back the full sum paid.

“ N. LONGWORTH.

“ *October, 1851.*”

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(From the *Western Horticultural Review.*)

TEMPERANCE AND THE VINE.

We have long been of opinion, says the *Southern Press*, that the best remedy against the love of strong drink—a besetting

sin with the Anglo-Saxon race, is the free use of pure wine. It is a remarkable fact, that in the wine districts of Europe, the people are comparatively free from the brutal habit of intoxication. Among the rural population of France, Italy, Spain, etc., the wholesome light wines in common use, are considered as essential to the table as bread and meat. The same, indeed, may be said of all classes. We have heard it remarked in derision, that give a man of this class a piece of bread, a few dry figs or dates, a little sweet oil, and a bottle of claret, and he will feast like a lord, and be happy. This mode of living is coeval with the introduction of the vine and olive of those countries; and where a man is found indulging in the use of strong drinks, he is the subject of remark and commiseration, by his friends and acquaintances. A modern temperance reformer, would probably obtain new and valuable ideas upon the subject, by visiting Havanna. There, a temperance society, except by American newspapers, was never heard of. Yet in a population of nearly 20,000 souls, it is a rare thing to hear of a Creole or a Spaniard, who is in the habit of using distilled spirits. In regard to wines, however, especially claret and Sauterne, all classes make free use of them at every meal.

We find in the *Horticulturist*, the following sensible remarks:

“Very few Americans, except those who have traveled abroad, estimate properly the moral value of pure light wines, because pure wines very rarely find their way across the Atlantic.

“As hocks or clarets contain only about eight or nine per cent. of alcohol, they are far more wholesome than coffee, and the cheap production of such wines, will do more to decrease the consumption of ardent spirits than any other circumstance. Neither law nor morals can be brought to bear upon the present age, so as to force men to be entirely temperate, but the introduction of wholesome, pure light wines, at a

cheap rate will, as there is abundant proof in the wine districts of Europe. It is for this reason, as well as because we look upon it as a source of national wealth, that we regard the successful labors of such men as Mr. LONGWORTH, in introducing and perfecting the wine culture, as worthy of the highest public gratitude."

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*Amherstburg, Canada West, March 12, 1852.*

R. BUCHANAN, Esq. :—

DEAR SIR,—I presented your letter to Mr. JAMES COUSINS, the person on whose lands the vines and cuttings were planted, distant some two miles from here.

Mr. C. says, they have so far, proved a failure owing to the extraordinarily dry season in which they were planted. In fact, all the cuttings died, and also a great part of the vines; but there are some living, and doing well.

He is of opinion, that the grape might be cultivated here to great advantage, with the exception of the foreign kinds, which generally mildew. The fruit of the Isabella and Catawba appears to ripen very well in this section of the country. The soil is clay.

The winters are generally moderate, but the present one appears to be the exception to the rule, for the thermometer has stood as low as 17° below zero. If, therefore, the vines are not affected by this great degree of cold, we may safely say this part of the country would be well adapted to grape culture.

The wild grape grows abundantly here (small black fruit), and I have tasted wine made from their juice, far superior to any Port we can get here.

I have the honor to be, Dear Sir,

Your obedient, humble servant,

A. H. WAGNER.

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(From Cist's Advertiser.)

GRAPE CULTURE NEAR READING, PA.

The following letter from the Reading correspondent of the Philadelphia *Ledger*, invites and deserves a careful perusal in this region, on various accounts :

In the first place, many interesting and valuable facts for our vine growers are contributed from Berks county experience. There can be no doubt that much of the character of grapes is derived from the subsoil, and the suggestion on this point, will be worth attending to.

Passing from *solids* to *fluids*, I would say a few words on the cultivation of the grape vines "in these diggin's." The phrase is literary correct ; for the vineyards here are all undermined by *diggin's* for iron, and their soil copiously interspersed with large fragments of heavy iron ore. I had no idea that such labor could be performed, as has here been expended on the culture of the grape ! Mr. JOHN FEHR, our industrious vintner, of whose wines you will have received a sample, has dug down his whole vineyard to the depth of three feet, to plant the Isabella and Catawba grapes, which now yield beautifully. Some five or six hundred cart-loads iron ore had first to be removed from the soil, before the vines could be planted.

The attempt to cultivate exotic grapes has utterly failed. In 1839, Mr. GEORGE LAUER imported some seventeen thousand grape vines, comprising nine different sorts, of the best European vines ; but they all perished from the vicissitudes of the climate. Previously, in 1831, Mr. WILLIAM TIBLER planted the Isabella grape, indigenous to South Carolina, which produces largely and is less sensitive to changes of temperature, and from which, most of the Reading wine now entering into consumption is made.

The Catawba grape, from North Carolina, was only introduced in 1835, by Mr. GOTTFRIED PFLIEGER, but is now about

to be cultivated on a large scale. The grape of this vine is more spicy than the Isabella, and the quality of the wine much superior; but its yield is less, and its cultivation costs much more labor. The Catawba grape is extensively cultivated in Ohio and Missouri, and is the grape from which all the better sorts of American Champagne are manufactured. It improves, like the Hock grape, for a period of thirty years, after which it declines and becomes gradually unfit for the production of wine. The vineyards must then be renewed. The Catawba and Isabella grapes resemble the German and French grapes in many respects; but their skins are thicker and less transparent, and the interior is more pulpy, or "fleshy," as the Reading and Ohio vintners call it. Cultivation will, no doubt, remedy the defect. The time of the blossoming is about the same as in France; but the vintage is a month earlier. Where the vintner, in Germany and France, must cut the leaves to afford sun for his grapes, the American must try to shade them if he would bring them to maturity. For this reason, I suppose, nature has provided the American grape with a thicker and richer foliage than any other grape in the world.

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## MANUFACTURE OF WINE, AND ROT IN GRAPES.

*To the Wine Committee of the Horticultural Society, Cincinnati:*

GENTLEMEN:—Each year's experience proves, that too little neatness and care are generally observed in gathering and selecting the fruit, in pressing out the juice, and having clean, pure casks, and a cool cellar. After racking in the spring, a cool cellar is indispensable, and few if any of our common cellars, are cool enough. They are too much affected by the outward air, and all jarring from the passage of wagons, or other causes, is injurious. The casks, after racking in the spring, should be always kept full and air-tight. We especially err in gathering our grapes too soon. We should never

do this until they have reached their utmost maturity, unless they should be seized by the rot.

I formerly supposed (being influenced by the opinion of foreign writers), that every object could be obtained by the addition of good sugar. Experience convinces me of the contrary. Sugar will be converted into alcohol, and give strength to the wine. But it will not give the same richness of aroma and flavor as the fruit, so ripe as to require no sugar.

In some parts of Europe, to give richness to their wines, they gather their fruit and partially dry them before pressing, to carry off the watery particles from the fruit. This wine sells at a high price. Before gathering the fruit, its richness should be ascertained, as its color is no certain indication. This richness, when the maturity is the same, will vary in different varieties. To test its maturity, press out a tumbler full of must, and if you have no saccharometer, put in it a fresh laid hen's egg. If of proper maturity, the egg will then rise the size of a quarter of a dollar above the juice. If not rich, it will sink. The Catawba should, in favorable seasons, weigh from 90 to 97 degrees, by our saccharometers.

Many use fresh brandy pipes, to put their must or wines in. They are destructive to the aroma and flavor of the wine. Alcohol should never be added, unless the wine be too weak to keep, and when this is done, it should be distilled from the same kind of wine. If not, you injure its aroma and flavor. Spirit is never necessary, when the fruit is matured, unless it be in a hot climate. Then it seems to be indispensable, as the following hot season brings on the acetous fermentation. An intelligent gentleman of South Carolina, Mr. GUIGNARD, and another friend, both wrote to me to this effect. So much so does the value of the wine depend on the maturity of the fruit, and great neatness in manufacture, that in buying, this winter, from a person in the vicinity of Louisville, I paid him for his new wine, three times the sum that I paid him for his wine made in the year 1848. When that was made, he



acknowledged he was not aware of the great importance of having his fruit fully matured, and the great care necessary in separating green, decayed, and rotten grapes, and neatness in manufacture. The only object in buying his wine of 1848, was to distill it into brandy. One great advantage that our native wine will have, is its being the pure juice of the grape. In Europe, total changes are wrought in the wines in the merchants' wine-cellars. And we are so much the creatures of habit, that for many years we gave a preference to those wines of Madeira, that had the strong fetid flavor which they derived from the old goat-skins in which the must was carried from the mountains, on mules, to the cellars of the wine-merchants at Funchal.

I yesterday had wines offered me for sale, when one of the persons made an observation, that revived recollections of a few years past. The wine of one of the persons was of fair quality, and he offered it to me at little more than half the price fixed by the other. Yet such was the quality of the 400 gallons of the latter person, that even a Jerseyman could not try to buy cheaper, and I promptly complied with his terms. Better Catawba wine I have never seen. I inquired if his grapes rotted the past season. He replied not, and that the rot in the vineyards of all his neighbors had been severe. I observed, yours must be a sandy soil, or more porous than your neighbors. He replied, a stiff subsoil of clay, the same as his neighbors. That he could give but one cause for his success. That before the rot began, his time had been so much taken up by his farm, that he neglected to hoe his vineyard, and it was filled with grass and weeds. Finding his not to rot, while the well-hoed vineyards of his neighbors suffered severely by the rot, he left all standing and had a full crop, and left his grapes until fully ripe, and when he did gather them, did it from a fear of injury from frost, and thought the yield as large as it would have been had he gathered his grapes earlier. I recollect, some years since,

when my vineyards suffered severely from the rot, some of my lazy tenants, who left half their vineyards in grass and weeds, which escaped the rot, while the clean vineyards of their neighbors adjoining, and their own portion cleaned, suffered badly from the rot, attributed their escape to their idleness in not cleaning their vineyards. I was and am unwilling to believe this ;

“ But facts are chiefl that winna ding,  
And dinna be disputed.”

I can scarcely believe this, for though I cannot fully believe the doctrine, that every act of an idle sinner is hateful in the eyes of his Creator, I am slow to believe that he holds out inducements to idleness. His long forbearance and mercy to idle sinners compels me to believe he shows more mercy to them, and views their transgressions with more lenity, and makes more allowance for their bumps, natural propensities, education and examples, than their more fortunate and perfect fellow-mortals. But I would still call the attention of vine-dressers to the subject, as worthy of note. I believe each year's experience confirms the opinion, that a sandy or porous soil suffers but little from the rot. A thorough draining, in our subsoils of clay, may produce the same effect.

N. LONGWORTH.

*Cincinnati, February 18, 1850.*

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COMMUNICATION FROM N. LONGWORTH,

*Read October 21st, 1848, and ordered to be appended to the  
Report of the Committee on Fruits.*

TO THE CINCINNATI HORTICULTURAL SOCIETY.

GENTLEMEN,—I objected to the Report of our Fruit Committee, in giving, as the cause of the rot in our grapes, “their location being in confined situations, not fully exposed to the air, and their proximity to orchards or woods.” My experience is the reverse, as regards a full exposure to the air,

though I do not consider that the location, as to air, either causes or prevents the rot.

Most of my vineyards at Tusculum are on a high hill, and on its sides, fully exposed to the sun and air, and facing east, west, north, and south, with no tall trees in the vicinity. Yet in all these vineyards the rot has prevailed, and this season two-thirds of the crop was lost. The subsoil is a stiff clay; and to this I chiefly attribute the rot. Among my vines near the foot of the hill, where the ground was more porous, there was less rot; and in the bottom, or near it, where the rain immediately sank deep in the earth, there was no rot. And this I have found to be the case at other vineyards. Where the subsoil was a compact clay, the rot prevailed. Where the subsoil was mixed with sand or gravel, or where it was porous, there was no rot.

I have for the past five years believed that the land in Kentucky, on the opposite side of the Ohio, would be preferable, for the grape culture, to our own. The soil on that side of the river is in many situations sandy, and the rain passes freely through it. The consequence is, they supply our market with strawberries a week earlier than we can raise them on our side of the river; and most, if not all their vineyards, are planted in soil of this character; and I have heard of no serious loss by the rot on the Kentucky side. On inquiry of our intelligent Germans, I find their experience coincides with mine. In their vineyards, the rot injured them the least where the ground was porous, or the water, from the declivity of the ground, passes off speedily; or if the subsoil was a clay, and it was mixed with stone, which caused the water to sink speedily. One of my vineyards at Tusculum suffered but little from the rot, and this was on land where the subsoil was a stiff, damp clay, and near to the forest. The German who cultivates it is a perfect "swoab," a very ignorant man. He, however, was able to give the reason for his escape from the rot. He "prepared his ground and planted

his grapes just so as he did in Germany." His vineyard is on the top and sides of a high hill, descending both to the north and south. He trenched his ground, throwing up the earth from each side, making beds fifteen feet wide, with deep trenches on each side, and the trenches having a quick descent for water down the hill, north and south. On these ridges he planted three rows of grapes. The consequence was, that no water lay on the surface, or had time to saturate the clay beneath, but speedily passed into the trenches, and from them rapidly down the hill. On inquiry, I learned the part of Germany he came from had a subsoil of stiff clay, in consequence of which all their vineyards were graded in like manner. Nine-tenths of our "swoabs," in all their business and pursuits in life, must do it "just so as they did it in Germany," without any change for soil or climate; and the result is not always as favorable as it was with my tenant.

But I would not be understood as saying, that other causes may not also operate more or less in causing the rot. One reason for believing that other causes may operate is, that previous to the last six or eight years, we had much less of the rot, yet our soil was then the same, and our rains as frequent and heavy. But the rot should not discourage us. After losing two-thirds of their crops, my tenants, the past season, made upward of nine thousand gallons of wine, and most vineyards escaped much better than mine, and many had no rot whatever.

In Germany, our vine-dressers assure us, the crop is not more certain than with us, though they are but little troubled with the rot. Their seasons are much shorter than ours, and their crops are often destroyed by their early frosts. My wine-cooper informs me that before he left France, they had lost four crops in succession, and many of the poor, owning small vineyards, had cut them up, and planted vegetables in their place. I am informed, by intelligent Germans, that the same would be done in Germany, if the poor vine-dressers

were allowed to do it. But the vine-dressers, both of Germany and Spain, have a greater evil to contend with. In a season when the yield is abundant, so low is the price of wine in Germany, that if you will take two empty casks to the press, you will be allowed to carry away one of them filled from the press. In Spain the evil is still greater. Mr. SAMUEL E. FOOTE, who was many years purchasing wine in Spain, informs me that he paid the cooper \$13 for wine pipes, and the vine-dresser \$5 for filling them.

Mr. REHFUSS recently imported from Germany the instruments used there for testing the saccharine quality of the must, and the strength of the wine when fully fermented. The result surprised me. Our must this season ranged from 80 to 101 degrees. I am informed, by intelligent German vine-dressers and wine-coopers, that in Germany it ranges from 70 to 90. Many are under the impression that the grape, farther south, possesses more of the saccharine principle than it does with us. I believe this is never the case; and if it is, it is more than counterbalanced by their vintage coming on in the heat of summer, and the grape possessing a larger portion of the fermenting principle. Very few, if any, of our wine-coopers now add sugar to the must; yet our wines, in tight casks and cool cellars, keep sound for years, without any addition. But the casks should be kept full, to guard against accident.

I corresponded for several years with Mr. M'CALL, who cultivated the grape for wine, near Dublin, Georgia. He informed me that he was in the constant habit of adding from 2 to  $2\frac{1}{2}$  lbs. of sugar to the gallon of must, of the Schuylkill Muscadell (Cape) and Catawba grape; and frequently found it insufficient to prevent his wine from running into the acetous fermentation. I know that Mr. HERBEMONT, of Columbia, South Carolina, was in the habit of adding as much sugar to his must; yet when his wine was offered for

sale at public auction soon after his death, most of it was turned to vinegar, or undergoing the acetous fermentation.

The pure dry wines of Germany weigh from four to seven degrees, in general. The wines of Madeira weigh from twenty to twenty-five. This is occasioned by the quantity of brandy added. In their hot climate, I believe it is necessary, to prevent the acetous fermentation. If not, they would not add any brandy, or not so large a quantity.—N. LONGWORTH.

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NATIVE GRAPES.

*To the Editors of the Cincinnati Gazette :—*

MESSRS. EDITORS.—I requested last spring, in your paper, that persons having any new variety of the native grape, would do me the favor to forward me cuttings, that I might test their quality both for the table, and for wine.

The communication was extensively republished in most parts of the Union, and the result was that twenty-four varieties were sent me in February and March last. I grafted them, and also planted cuttings. Most of the grafts are now in fruit, and from the wood and leaf, about one-fourth of them promise to be of superior quality. All of them are new in this vicinity, but two, the Olmstead and Minor's Seedling. Both of these are Fox grapes. The fruit of the first, I have not seen; the second, is the best Fox grape that I have seen. The pulp is unusually soft, for that family, and the grape remarkably sweet, though it does not contain as much saccharine matter as some grapes less sweet to the taste. It is not a great bearer, though it bears uncommonly well for a grape of that class.

The Fox grape may never be valuable for a wine grape, except to mix with others, to give aroma and flavor. I received cuttings of several varieties of Fox grapes, and the stem and leaf of most of them are so strongly Fox, that they cannot be valuable. In my boyhood, I thought this grape

the most delicious of all fruits, and found some that bore a fair crop. This vine is easily distinguished from all others. The leaf is like leather—thick, and of a white color on the under side, and downy, and the new wood covered with a hairy down, generally of a reddish cast. It is a great objection to it, that the fruit drops on the ground as soon as it is ripe. I rank the common class as about equal to the Black Scuppernong of North Carolina (the Muscadine of the Mississippi), from which, it appears, a *superior* wine is made in North Carolina, by putting *three pounds of sugar to the gallon*, and sold for \$4 per gallon, and from *two thousand to three thousand* gallons are raised on an acre. Further, a Horticulturist there, tells us, he also makes wine from the green grape; the same person who raises so large a quantity, Mr. ALVES, of Kentucky (formerly of North Carolina), tells me they put from one-fourth to one-third of spirits to the gallon, and sell the wine from seventy-five cents to one dollar per gallon; a wide difference in price this. The North Carolina Horticulturist seems learned in the manufacture of foreign wines, as he tells us that one-third of Brandy is added to Port, Malmsey, and Madeira wines. This will be news indeed, to the European wine merchants.

The black Scuppernong bears from one to four berries on a bunch, and would, in times of war, if lead be scarce, be as valuable, even when fully ripe, as the Fox grape, for bullets. The white Scuppernong, also, has a very small bunch, and is a better grape than the black. But the skin is thick, and the pulp hard; it will never be valuable as a wine grape, unless to give to other must, aroma and flavor.

Our vineyards may have produced 800 and possibly 1000 gallons on an acre, but no vineyard has averaged 300 gallons for ten years. I believe ground, with a mixture of sand, or such as will freely let the rains sink, will be less subject to rot, and average double the crop produced, where the subsoil is a stiff clay.

I shall be gratified to receive letters from all persons having new varieties of hardy grapes in their vicinity, describing the character of the wood and leaf, color, size, and quality of the fruit, etc. After importing foreign grapes for thirty years, from all latitudes, I have never found one worthy of cultivation in open air, nor do we require them. We have native grapes of superior quality, both for the table and for wine; and by raising seedlings from our best natives, and from a cross between them and the best foreign, we can greatly improve them. We have neglected our native grapes.

Forty-five years since, I heard of a superior grape in the garden of Mr. ZANE, of Wheeling, found by him in a wild state on Wheeling Island. I sent for cuttings, and found the grape of no value. I heard of a person in Kentucky, who had it, and that it proved of good quality. I obtained cuttings, and it proved to be the Vevay, or Cape (Schuylkill Muscadell) grape. I am now satisfied that neither was the Zane grape. I, this spring, had cuttings sent me, from a vine got of Mr. ZANE, some thirty years since, and which has never got out of the neighborhood, and which I doubt not will prove of superior quality.

A native grape, of different aroma and flavor, and in all respects equal to the Catawba, would be worth millions of dollars to the nation. If my correspondents do not err, some of the kinds sent me are superior. The origin of the Catawba is in doubt. Major ADLUM first brought it into notice, having found it some twenty-five years since, in the garden of a German, near Washington city.

I received recently, an interesting letter from Mr. ALVES, of Henderson, Kentucky. He was born in North Carolina, and says he heard of the Catawba grape in the upper part of North Carolina, forty years ago, and that it was discovered near the Catawba river, from which it derived its name. A grape, precisely the same, is said to have been discovered in a wild state, a few years since, in Pennsylvania. I have one



from the south-west, of the same color, aroma, and flavor, but smaller, and the vine of slow growth, and a poor bearer ; and one bearing much larger fruit, of precisely the same character, but inferior. I discovered it in the center of my vineyards, and know not how it came there.

My oldest vine-dresser, Father AMMEN, has gone the way of all flesh, and I regret his end. He was a worthy old man. Some twelve years since, he lost his wife, and deeply regretted her loss. He assured me, with tears in his eyes, "she was just so good in the vineyard as one man, and he might just so well have lost his horse." He got a second wife, but she was of hasty temper, and gave the old man as good as he sent. Finally, she told him, if he would give her five dollars, she would leave him, and never see him more. "Give you five dollars!" said the old man: "I will do no such thing; but if you go and never come back, I will give you ten dollars." The money was paid, and the old man was relieved of that trouble; but one that he deemed greater came. I have heretofore said, that after being my tenant ten years, he was ruined by selling his share of the crop for eight hundred dollars. He cleared out; went to the north part of the state; bought land, and planted a vineyard. The location was too far north. His vines were killed, and he came back a poor man, and began a new vineyard on a farm of mine, adjoining his old one, on which his son-in-law has resided since he left it. This year his vineyard came into bearing, and the old man's heart rejoiced to think that he should again be able to sit under the shade of his favorite tree, and enliven his heart with wine of his own making. But, alas! the rot came, and blasted his prospects. He became dispirited; which, the cholera discovering, a few days since, seized his victim. He was taken to the house of his son-in-law (for he lived alone, and I could not prevail on him to take a *Frau* for the third time), when they urged him to take medicine, but he refused. He was told if he did not, in a few hours

he must die. "What I care?" said the old man, "I take none. What I want to live for? My grapes all rotten." A few hours, and he was no more. Peace to his ashes.

N. LONGWORTH.

*Cincinnati, July 16, 1849.*

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MANUFACTURE OF NATIVE WINE.

*Gentlemen of the Cincinnati Horticultural Society :*

The season for our vintage is approaching, and the quality of the wine depends mainly on the period of gathering the grapes, and the care and neatness exercised in the manufacture, and the selection of the casks: skill has little to do with it. To make good butter, is apparently one of the most simple employments; yet not one dairy-woman in ten makes butter of the first quality; while the best commands twenty-five cents per pound, the poorest has a dull sale at half price.

The first error is gathering the grapes too soon. This season has been a severe one on our grape crop, yet from the increased number of vineyards now in bearing, I believe the vintage will be greater this season than last. A late frost was very destructive in our vineyards, and the summer rot more so. From the first, vines often recover. One person informed me the frost killed all the young shoots, and his vine-dresser cleared out in despair, but that the dormant shoots put out with great vigor, and from one acre and one-third he expected to make 1,600 gallons of wine. If this prove true, the frost has to him been a blessing; for I have never yet known 1,000 gallons to be made from an acre.

If we want large crops, we must go to the fertile lands of North Carolina, where, from their famous Scuppernong, they make from 2,000 to 3,000 gallons per acre. This is truly miraculous. I have known a bunch of our Catawba grape, to have 150 berries, and weigh twenty-four ounces. On the Scuppernong, the yield is from two to eight berries. The price is in proportion. We add no sugar, and sell our wine

from one dollar to one dollar twenty-five cents per gallon. They add three pounds of sugar to the gallon, and, strange to tell, make a Hock wine (which is a hard, dry wine), and sell it for four dollars per gallon.

Injurious as we found the frost, the rot has been more destructive. But the experience of this year will confirm the opinion, that the rot is occasioned by a stiff subsoil of clay, through which the water cannot pass freely. In our sandy soils there has been but little rot; and in many, none. On our rich, deep-soiled bottoms, the rot has been less than on our side hills. The first error we commit, is gathering our grapes too soon, and before the saccharine principle is fully developed. Last season, some of the must of Mr. REHFUSS, weighed 101, while that from some other vineyards weighed from sixty-five to eighty only. The best average about ninety-five. In Germany, superintendents have this subject in charge, in the several districts, and they name the day on which the vintage is to commence. I presume this is to prevent ignorant vine-dressers from gathering their grapes too soon, as they are anxious to save a loss in quantity. This creates as great an evil as it is intended to remedy. All vineyards do not mature their fruit at the same time; and often, in the same neighborhood, one vineyard will mature its fruit a week earlier than another. The ripest bunches only should be picked at the first vintage; and all rotten, defective, and green grapes, carefully picked out. The grapes should not be gathered till the dew is off. A second picking should be made some eight or ten days later, when, with great care in picking out rotten, decayed, and green berries, wine equal to the first may be made. The rejected grapes from both pickings, will make a common wine, but will be improved by adding eight or ten ounces of sugar to the gallon of must.

The press and casks should be clean. Even fresh brandy and Madeira wine-casks should be carefully cleansed, to take out all the taste of those liquors; the casks placed in a cool

place, where there is a circulation of fresh air, for fermentation; the bung being left out after the fermentation commences, till it abates, when the bung should be put in tight, and a spile-hole made, and air given from it, two or three times per day, and as soon as it can be done safely, all air excluded till the wine is clear, when it should be racked off. I would sooner pay seventy-five cents per gallon for must weighing ninety-five, than five cents for one weighing seventy-five.

In the manufacture of wine in Europe, in times past, the grapes were always mashed with the feet before pressing, and in many places, the same practice still continues. We have been inclined to attribute this practice to their ignorance, and want of cleanliness. I believe, however, that, like many other old customs, we now treat with ridicule, the practice was important to the manufacture of good wine. My attention was first drawn to the subject by Mr. WM. HATCH, who stated, that in manufacturing wine from the Catawba grape, where pressed with little or no mashing, the wine contained but little of the muscadine aroma and flavor. On inquiring of my manufacturer of sparkling Catawba, I learn that the same opinion prevails in the wine countries of Europe, and in consequence, the machine for mashing the grape is but little used in France. In the manufacture of Catawba wine, it is a great object fully to develop its muscadine flavor, as it is always retained in the wine after the most perfect fermentation. I would, therefore, recommend, even where they pass through a machine, that they be further mashed by pounding, using care not to crack the seed, or much bruise the stalks. By mashing, the pink color is, also, in part, brought out. The muscadine flavor adds greatly to the value of the wine, and where not fully developed, will lead to the conclusion that the wine is not pure. Where it exists in its full strength, it will always be evidence of the purity of the wine, as the aroma and flavor are peculiar, and cannot be successfully imitated. The ma

chine in use for mashing grapes, does not separate the stems from the mashed berries. I would draw the attention of our ingenious mechanics, to induce them to add such an addition to the present machine.

Respectfully,

Sept. 14, 1849.

N. LONGWORTH.

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APPARATUS FOR STEMMING AND MASHING GRAPES.

*Latonia, February 18th, 1850.*

R. BUCHANAN, Esq.:—

DEAR SIR,—In a letter addressed to the Horticultural Society of this city, by Mr. LONGWORTH, some time last fall, he expressed the opinion that two essential requisites were yet needed, to complete the process of making wine from the Catawba grape; one of these was a method by which the grape could be separated from the stem, and the other was to impart the peculiar perfume or aroma of the fruit to the wine.

Before I had seen Mr. LONGWORTH'S letter, my father had resolved to adopt a method for accomplishing both of these objects, by a very simple process, which has been pursued by our family and others, in the vicinity of Tours (in France), for several generations past, in the manufacture of wine. The method is exceedingly simple, and is probably the only one that can be applied successfully to a large crop. Various attempts have been made, in this vicinity, to accomplish the desired object, but they have invariably failed; the only sure method, it being supposed, was, to pick the fruit from the stems by hand: this tedious process could, of course, only be adopted with small quantities of grapes. My father's method is remarkable for its rapidity, and the perfect manner in which the grape is separated from the stem; the unusual excellence of our wine made by this process the last season, bearing ample testimony to the usefulness of the method.

There are many who think it not only a matter of indifference whether the fruit is pressed with the stem or not, but some venture to assume that the astringent principle contained in the stem, is essential to the preservation of the wine. From all these views, I dissent, and take the ground that *nothing but the perfectly ripe grape itself should be subjected to pressure*: and our wine manufacturers will, I predict, find this opinion correct after they have had sufficient time to test it.

The usefulness of the apparatus alluded to, depends more upon the method of using it, than upon the article itself — it being mainly a manual process, facilitated by the use of a screen of wire, so arranged that sufficient space is allowed for the operator to extend his arms freely, and with the aid of hand-pieces, the grapes are made to pass with great rapidity through the screen, entirely separated from the stem. It is difficult to describe the process on paper; in fact, it can only be understood practically by witnessing the operation.

The crushing and attrition of the grape by this method are such as to bruise and rub the skin of the fruit, without breaking the seed, and thus impart the aroma to the wine.

In addition to the stemming process, we pass all our grapes through the “rollers,” in a small wooden mill, before pressing.

Respectfully yours,

J. A. CORNEAU.

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#### FERMENTING THE GRAPES ON THE SKINS.

JOHN WILLIAMSON, a successful cultivator of the vine, who resides near New Richmond, O., has tried the experiment for the last two years, of letting his grapes ferment on the skins, slightly, after being mashed, and before pressing. He allows them to stand in large open hogsheads, for twenty-four to thirty hours, or, until they begin to ferment, and the grapes rise to the surface. They are then pressed. *Too much* fermentation in *this state* would be injurious, and give a bitter, astrin-

gent taste to the wine; but a *slight* fermentation adds to the color and aroma.

Mr. WILLIAMSON'S wine enjoys a high reputation where known, and readily commands \$1,25 per gallon, whenever it is offered for sale.

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VINEYARDS ABOUT CINCINNATI.

*To the Editors of the Cincinnati Gazette:*

GENTLEMEN:—I was yesterday at some of the vineyards on the Ohio, below the city, and among others at the vineyard of Mr. DUHME, who, I understand, resides in the city. The location is a good one, with a favorable soil, and is, I believe, the largest vineyard in the State. It requires his personal attention. The grapes ripen badly, and a large portion of them cannot ripen at all.

In some parts of Europe, where their summers are cool, they find it necessary to shorten the leading branches intended to produce the next year's crop, and thin out the leaves, and head in the short branches, and fully expose the fruit to the sun and air, to insure its ripening. This method, in our hot climate, is often highly injurious to the plant, and destructive to the fruit. If the heading in of the leading shoots be done early in the season, the fruit-buds of the following year are thrown out. As an experiment, I one year, by successive heading, had the fruit of four successive years on the plant at the same time, and the fall being favorable, the second crop ripened its fruit. Where the fruit branches are frequently topped, and the wood becomes ripe, the sap ceases to flow, and the fruit cannot ripen. This is the case at the vineyard of Mr. DUHME. In our hot climate no more lateral branches should be taken from the main shoots intended for next year's fruit than to give them the necessary length. The fruit branches should be topped when in blossom, beyond the second eye from the last blossom, and after that allowed to grow without topping. In our climate, to ripen the fruit, a portion of shade is neces-

sary, for where there is growing young wood, there is of course a full flow of sap to the fruit, without which it shrivels and drops off.

This day I visited a German settlement on the Ohio, commencing about twelve miles above the city, and extending about four miles. The hill commences close to the river, and rises gradually; the usual bottom-land being on the opposite side of the river. The soil is porous and well calculated, in my opinion, for the cultivation of the grape, and nearly the whole of the four miles is occupied by vineyards, and there are also some on the top of the hill. Two of the vineyards belong to Englishmen; the owners of all the others are Germans.

Most of the vineyards in this vicinity have suffered severely from the rot, and some vine-dressers, expecting in the early part of the season to make from 2000 to 4000 gallons of wine, will not make 100. Yet their vineyards are on the sides and tops of the hills, fully exposed to the sun and air. But the subsoil is a stiff clay retentive of moisture. These localities will, I fear, be always subject to rot, and yet the vineyards will be found more profitable than any other crop. To persons having a porous soil, I would recommend the cultivation of the Herbemont grape. It is a fine grape, both for the table and for wine, and perfectly hardy. It makes wine of superior quality, similar to the Spanish Manzanilla, or Mansinælla, as it is generally pronounced. This grape has a soft pulp, and resembles the best foreign table grapes. Lick Run, in our immediate vicinity, will make one of the most beautiful rural spots in the world. It will soon be a continuous line of vineyards. I wish some of our poets would visit it in May or June, and give it a more beautiful and appropriate name. They may rack their brains for months, and not find one worthy of the scene. It is different on Mount Adams, which is in a double sense in connection with the heavens—its height and proximity to the great Telescope of



Professor Mitchel. The highest street is called Celestial street. Commanding as the view is, the name surely equals it.

N. LONGWORTH.

P. S. I have just returned from a visit to the vineyard of Mr. LANGDON, on the bottom of the Little Miami, eight miles above the city, in a sandy soil. That porous soil is not subject to the rot in grapes, is exemplified here. His misfortune is in fact too large a crop of fruit, an unusual complaint this season. Yet he will have a poor vintage, arising from two causes, which prevent the fruit from ripening. The first and least cause is too much fruit, from leaving too much bearing wood. There was more than the vine could give a supply of sap for, in a favorable season. The second and great cause is the same as at the vineyard of Mr. DUHME. The fruit has no shade, few leaves, and but little young wood on the fruit branches, to carry sap to the grapes to ripen them. The wood is life, and the circulation of the sap stopped, not one-fourth of the grapes will ripen perfectly; many of them shrivel and drop, and many of them scarcely change color. A favorable fall will aid them.

I observed in the vineyard of Mr. LANGDON, that the Catawba vine is much closer jointed than in our richer land, where there is a subsoil of clay; and one of my German vine-dressers assured me this is always the case. This would indicate an increased crop, and the change probably depends on the richness of the soil. An important inquiry is, will the grape, in a sandy soil, yield an equal amount of sugar? I wish our vine-dressers to direct their attention to this subject. In some of our vineyards, they have both soils, and the question will be easily decided. The color of the Catawba grape is no certain evidence of its ripeness and richness. They are often of unusual dark color, this season, yet the juice has one-eighth less sugar.

N. LONGWORTH.

*September, 1849.*

## VINEYARDS IN CLARK COUNTY, INDIANA.

The following letter, from Mr. GIBSON, will be found interesting:—

R. BUCHANAN:—

DEAR SIR.—Mr. A. GOODWIN, my father-in-law, yesterday placed in my hands a letter from you of January 28th, and requested me to reply to the questions therein propounded, which I take great pleasure in doing. The number of acres of grapes in cultivation in our county (Clark), is somewhere between 150 and 200, and steadily on the increase. The Catawba is almost exclusively cultivated. Those who plant a few Isabellas, generally dig them up after a few years' trial. The objection to them is that they are much more liable to the rot than the Catawba.

The distances at which the vines are planted vary in different vineyards from 3 by 6 to 4 by 8 feet. Mine is 8 by 8 feet; but I know of no others planted so widely apart. The cultivation adopted is simple, and costs next to nothing. The land is deeply plowed in the spring—holes dug with a spade, and two or three slips planted in each hole—the ground is then planted in potatoes and pays for its culture—second year the same. Third year the vines are staked, plowed and hoed once or twice. I have never known manure to be applied, and most of our cultivators are of opinion, that the poorer the land the better it is for the grape. When Mr. GOODWIN first commenced the culture of the grape, he planted perhaps an acre in a very rich river bottom, and cultivated them with a great deal of care. They made enormous growth of wood and a fine show of fruit; but it invariably rotted. I do not believe that he ever got two barrels of grapes from the vineyard. It was finally dug up and destroyed.

The grape is very subject to rot in some seasons, though hardly as much so, I think, as around Cincinnati; at least ours have escaped here, when yours were partially destroyed.

Vineyards planted in low valleys have generally been abandoned. The fruit is almost always killed by spring frosts. The average quantity of wine per acre is about 200 gallons; this, I mean, for an average of different years. I have known them to rot so badly as not to produce 50 gallons. One thing I have never yet known—a vineyard to suffer much from the rot the fourth year—the crop is always good. The juice is generally sold from the press at from 70 to 80 cents per gallon, to vintners in Louisville, Cincinnati and New Albany.

My attention was called, a few years ago, to a grape which has been cultivated here for the last forty years, and is, I think, a native. It is about the size, shape and color of the Cape, but, in my opinion, superior to the Catawba, as a table grape. It is a vigorous grower, and entirely free from rot, but somewhat liable to crack when exposed to the sun.

T. WARE GIBSON.

*Charleston, Ind., Feb. 26, 1850.*

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SPRING PRUNING — SPUR SYSTEM.

The following letter on this subject will be read with interest by vine-dressers. Mr. SLEATH is one of our best practical horticulturists. He had charge of Mr. LONGWORTH'S green-house and garden for many years.

R. BUCHANAN:—

SIR.—At your request I now give you the method of spring pruning which I have lately adopted in my vineyard, and which I believe to be the best. It may be called the alternate spur system, for want of a more descriptive name. The method is simply this: Instead of training only two canes to the stake for bearing wood, as pursued in the bow system, train three or four. Then, in the ensuing spring, cut down to two or three eyes, and train three or four canes for bearing the next year, from the lower bud, or that next the

stake. This can be done by *pinching in* the bearing branch from the upper bud of each spur.

Subsequently cut down, in the spring, each branch intended for bearing to two eyes, regulating the number of spurs, to the age and strength of the vine.

To prevent the stalks from getting too high, cut back from the top, and train young wood from the lower buds. I will frankly admit that this system requires more care and better judgment in summer pruning than the old one; but I am certain it will produce more perfect fruit, which is the great object.

Respectfully,

G. SLEATH.

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NOTE TO PAGE 67.—The success *at first*, of the *Swiss* at *Vevay*, Ind., in vine culture, was owing to their selection of a *native* grape—the *Cape*. For several years their vineyards prospered; but being planted on new land, in rich river bottoms, and the ground not trenched, they were much troubled by rot, and finally abandoned. Another cause of failure, was in the quality of their wine, which was made too harsh and acid, to suit the taste of the American consumers. But few vineyards are now cultivated at *Vevay*, and those on the *hill-sides*. The town is a *Swiss village* no longer. Many of the descendants of the former "*vignerons*," removed to other parts of the country; some settled in this vicinity, and few of those that remain, follow the occupations of their fathers. It has lost the charm of novelty to the western traveler, which it presented thirty-four years ago, when the writer there, for the first time in his life, saw vineyards.

**CULTURE OF THE STRAWBERRY.**



## PREFACE TO THE STRAWBERRY.

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THE following articles from the pen of Mr. LONGWORTH, on the cultivation of this delicious fruit, will be found highly interesting and instructive.

Cincinnati has, of late years, been famous for her fine sugar-cured hams, sparkling Catawba wines, and a cheap and abundant Strawberry market. The latter has mainly resulted from the discovery, that certain fine varieties of the strawberry were more prolific in the pistillate than staminate organs, and that when beds were planted with a due proportion of male or staminate plants—say one-tenth—the crop was far more abundant, and the fruit finer than that produced by the old methods. When this became known to Mr. LONGWORTH, about twenty-five years ago, he at once made public this secret, possessed by *a few*, that *all* might profit by it. Our cultivators had the good sense to adopt it, and the result has been, that from the same quantity of ground, we produce more Strawberries, in this vicinity, than in any other portion of the Union.

For many years Mr. LONGWORTH was warmly opposed on this question by Eastern Horticulturists. Some of them have lately yielded to his opinions, and others are probably testing its accuracy by experiments of their own.

The Cincinnati Horticultural Society appointed two committees, at different periods, to investigate the subject. After a careful examination, both reported favorable to Mr. LONGWORTH'S position, fully sustaining his views in almost every particular. These reports are herewith presented—the first in full, the latter only in part, for want of room.

Several valuable Seedling Strawberries have been produced by the Horticulturists in this vicinity. Mr. GEO. GRAHAM'S and Mr. MOTTIER'S were favorably noticed some six years ago; and those of Mr. D. McAVOY and Mr. SCHNEICKE, exhibited last spring, created quite a sensation in the Horticultural Society.

The premium of one hundred dollars was awarded to Mr. McAVOY, for his "superior"—the best of three fine varieties of his production;—it was pronounced, by the committee, better, in every respect, than any other Pistillate Strawberry cultivated in this region. SCHNEICKE'S Hermaphrodite Seedling, named "Longworth's prolific," from its size, quality, and the perfect fruit on all its blossoms from its first bearing, was deemed superior to any plant of that class known here, where the best English Hermaphrodites are cultivated.





## CULTURE OF THE STRAWBERRY.

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MR. BUCHANAN :—It occurs to me, that in connection with your publication in relation to the grape culture, and the manufacture of wine, engravings of the Strawberry blossom, and a short description of their sexual and bearing character, will be highly beneficial, if properly understood. Every family having thirty feet square of ground, may have an ample supply of fruit. In our best species of Strawberries, there are four distinct kinds, as to their sexual character, and this character is never changed, if each kind were cultivated for a thousand years.

The last persons to believe in this difference in the sexual character of the plant, are our botanists. For it is true that the Strawberry belongs to a class of plants, that possess both male and female organs in the same blossom. But in their wild state, and in raising from the seed, there are three kinds produced, entirely differing in their character. And in raising from seed, one may be found in many thousand plants, distinct from the former three. Of the last description, until recently, I had met with but two, the Eberlein, and Duke of Kent. The size of their fruit is too small to render them very desirable. A new Seedling, raised by one of my tenants in the Garden of Eden, (Mr. SCHNEIKE), from seed that I furnished, is of this character, and should it sustain the bearing character it has for five years (the period since it first bore fruit), it is superior to any plant of its character, or any Hermaphrodite in cultivation. It has produced each season a full crop of extra large fruit, of fine quality. The pistillate blossoms not only produce a certain crop, having staminate in the truss, but each Hermaphrodite blossom has proved perfect in both organs, and produced large, perfect fruit. In this, it thus far differs from all Hermaphrodites. The famous Keen's Seedling, Swainstone, and others of that class, will not average one-fourth of a crop of perfect fruit. One of the three varieties first named above, is always perfect in the male organs, but the female organs are so defective that not one blossom in ten thousand will bear a perfect fruit, and rarely a defective one. We call them staminate. Another of the three, always perfect in the female organs, but so defective in the male, that it is a rare occurrence for them to produce even a defective berry, without impregnation from other plants. These we call pistillates. The third one we term Hermaphrodites. Being perfect in stamens, and more or less perfect in pistils; these bear from one-tenth to one-third of a crop. This variation in

product is owing to a better development of the pistils in favorable seasons. The famous Keen's Seedling, and other prized English varieties, are of this character, for it is not till recently, that they have understood the true character of the plant, but have adhered to the opinion of Linnæus, that all varieties have both organs perfect, and a failure to bear fruit, they attribute to the effect of frost. The last rare variety is a plant that has, with staminate and Hermaphrodite blossoms, or Hermaphrodite blossoms only, a portion purely pistillate. Hermaphrodites, and staminates, to a casual observer, present the same appearance. Where there are no insects, even Hermaphrodite blossoms require impregnation by hand. It is even said, that some kinds of plants, if not all, require particular kinds of insects to perform the impregnation; that some plants, strangers to our climate, require impregnation by hand, as we did not, with the plant, import the insect designed to perform the labor of impregnation. Of the truth of this, I have no knowledge, never having had my attention drawn to it. I believe one staminate, or Hermaphrodite plant, will impregnate twenty or more pistillates. Both require watching. If you plant but one staminate to twenty pistillates, the staminate will, in two years, take entire possession and root out the pistillates. They are the most vigorous, and having no fruit to exhaust them, make ten new plants, where the pistillates form one.

That Hermaphrodites require impregnation by insects, or by hand, I ascertained last season and this. In my grape-house, I had, last spring, a large number of pistillates and Hermaphrodites in pots. When in blossom, no insects were stirring, and neither bore fruit. In the garden, when the plants were in blossom, it was cold, and an insect was rarely seen, except on the south side of a high garden wall. There my blossoms were fully impregnated, for there insects congregated. I had a large number of beds of plants, commencing twenty feet south of the wall. There, not one blossom in fifty of pistillates or Hermaphrodites, had a perfect fruit. This season, in my grape-house, I impregnated both kinds by hand, with a brush, and now have all fully impregnated, and fruit nearly ripe. I learn from my gardener, recently from England, that they now, in forcing their Strawberries, also impregnate with a brush. To shake the pot daily would produce the same effect, and I presume, more perfectly.

I would recommend to plant three beds of pistillates, then a single row of Hermaphrodites, followed by six or eight beds of pistillates, and so continue to the end of the patch. I should cut off the runners in the single rows, and not allow them to increase. A staminate Seedling may come up in a bed of pistillates, and root most of them out of

the bed, before his presence is observed. This, and the prolific character of the staminates, has led many of our first Horticulturists, and among them Mr. DOWNING, to believe that pistillate plants become staminate by running. For our knowledge of the sexual character of the plants, even our learned botanists and gardeners, are indebted to a thoughtless remark of the son of an illiterate market gardener, who lost many thousands of dollars by the casual remark of his son. He made an independence by selling his strawberries from twenty-five to fifty cents per quart. The discovery reduced the price so much, that he turned his attention to vegetables.

*Cincinnati, March, 1852.*

N. LONGWORTH.

## THE STRAWBERRY.

THIS is one of the most abundant fruits of the west. Immense quantities are raised for the Cincinnati market, one individual (Mr. CULBERTSON), having sent to market, in a single day, *four thousand* quarts, and employing sixty hands to gather them. All the famous eastern varieties are cultivated here, and do well. Beside these, very fine Seedlings have been raised by Mr. MOTTIER, Mr. LONGWORTH, and others, that are as large, prolific, and high flavored, as have been described by eastern writers. The plan of shipping them to

NOTE.—These cuts represent the difference of the flowers of the Strawberry plant. No. 1, is the staminate. No. 2, is the pistillate.

### STRAWBERRY BLOSSOMS.

No. 1.



Staminate or Male Blossom.

No. 2.



Pistillate or Female Blossom.

New Orleans, packed in ice, has just commenced, and may eventually become an important branch of business, as they can be taken down in a week by our regular packets. No place in the world is probably better adapted for preparing strawberry jelly for exportation; of which article, a large quantity is now annually imported from France, and sold in the eastern cities, and at New Orleans.

For an elaborate account of the theory in regard to the influence of the sexual character upon Strawberry plants, the reader is referred to Mr. LONGWORTH'S letter to the Society.—(*Minutes Cincinnati Horticultural Society.*)

I regret that the committee on the character of the Strawberry plant, have not yet been able to make up a unanimous report. It arises from a failure of the crop with some members of the committee, and from a conviction with our European gardeners, that all varieties were perfect in both organs, in Europe; and they are slow to believe the contrary. This I am positive is not the fact in England. In some soils and some climates, and in favorable seasons, such staminate plants as are partially perfect in the female organs, yield a larger crop than usual; but can never be made to bear a full crop. But in raising from seed, fully one half will in general be staminate plants, and not one in fifty of them bear even a single fruit. Those that do bear, produce many defective berries. I do not believe that any soil, climate or season can make the pistillate plant bear singly; and it is the only one worthy of cultivation for a crop. Of this, and of the staminate and pistillate character of the plant in England, we have positive evidence from their great horticulturist, Keen himself. In the year 1809 (if my memory serves me as to date), Keen discovered that a new Seedling of his, planted by itself, did not swell the fruit. On a careful examination of the blossom, it struck him that it might be owing to a defect in the male organs. He then placed some staminate blossoms in a vial of water, and suspended them in the bed. He found the

fruit in the vicinity to swell immediately, and he placed more vials of staminate blossoms in different parts of the bed, and had a fine crop. His letter will be found in the Transactions of the London Horticultural Society for that year. What was true in 1809, will be found still to be true. I have further evidence of the character of the plant in England. Fifteen years since, I imported several varieties of strawberries from London, and among them I had both staminate and pistillate plants, but not one variety in which both organs were perfect in all the blossoms. The staminate varieties bore from one-tenth to one-third of a crop. Under the name of Keen's Seedling, I got a pistillate plant, that impregnated, produces abundantly, and the fruit is large and fine. By themselves, an acre would not produce a perfect berry. It is not, what in England is generally known by the name of Keen's Seedling.—Mr. KEEN raised many varieties. The true Keen, is a staminate plant, and is more perfect in both organs than is usual, and produces a partial crop of large fruit. I incline to the belief, that for market, their gardeners cultivate the same seedling of his as the one sent me, and probably the same kind he impregnated by hand. It is truly a valuable kind, and worth twenty of the staminate seedlings. The staminate Keen is cultivated for forcing, and as the object is large fruit, all the blossoms are picked off, except three or four that set first.

But it will be asked, if true, why is not this known to botanists, and to all our nurserymen who raise the plant for sale. The reasons are obvious. The strawberry belongs to a class of plants that have both the male and female organs in the same blossom. In all the white varieties I have seen, and in the Alpines, both organs are always perfect in the same blossom. Both organs existing in all other varieties, though not both perfect in all the blossoms, the attention of botanists is not directed to it, or where noticed, is supposed to be an accidental defect. In all the other species and varieties I have

seen, both wild and cultivated, I have met with one only, where the defect in the one organ or the other, was not apparent, and in that the fruit was very small. I have never seen a pistillate plant (one in which the female organs predominate), that would by itself produce any perfect fruit. Staminate plants (those in which the male organs predominate), where partially productive, generally produce the sweetest and most highly-flavored fruit. In certain soils and certain seasons, Keen's seedling, Wilmot's, the Iowa, and some other staminate varieties, will produce half a crop.

Where our horticulturists raise from seed, all the staminate plants that are entirely barren, are of course thrown away, and the few staminates that produce a partial crop of large fruit retained. A pistillate plant, that, mixed with others, bears a full crop of large berries, is transplanted as a treasure, into a bed by itself, for increase. The gardener is the next season surprised to find it wholly barren, and after one or two trials, throws it away.

The nurseryman, within a space of 100 feet square, cultivates twenty or more varieties, and a large portion of them are always staminate, and impregnate the pistillate varieties. Fruit not being their object, their attention is not directed to their bearing, and the failure of a full crop, in any variety, is attributed to frost, or accident, or its being a bad bearer. Of this we have a strong instance in Hovey's seedling. It is eleven years since he raised this plant; he has increased it extensively for sale. Six years since, I made known the defect in the male organs of the plant, and drew his attention to it; and asserted that an acre of them, separated from all others, would not produce a perfect berry. Until 1842, he continued to contend, and was positive, that his plant was perfect in both organs. In 1842, he admitted in his Magazine its defect in the male organs. In 1844, he went back to his old doctrine, as will be seen by his Magazine; and it was not until the August No. of his Magazine of the present year,

that his mind was again mystified on the subject. How are the mere *workies* to gain information, when the editor of a Horticultural Magazine, and a nurseryman, who undertakes to enlighten others, has not, in eleven years, ascertained the character of his own seedling? I am the less surprised at this, and acquit Mr. HOVEY of blame, as Mr. DOWNING, in a recent letter, assures me, that last season, he raised a fine crop of Hovey's seedlings, on a bed far separated from all others; and for a still stronger reason—that even the London Horticultural Society holds the same doctrine. But the question is now under investigation, and light is thrown on it yearly by cultivators, and even the London Horticultural Society will soon acknowledge their error; but not until Mr. HOVEY has satisfied his own mind, when he will doubtless draw public attention to it. Yet Mr. HOVEY, in his August No. of the present year, states, a person had cultivated an acre of his seedlings, where they were mixed with staminate plants, and raised two thousand quarts, and that his new seedling is valuable for impregnating his old one. Here is a tacit admission, that his old seedling is defective in the male organs. The yield was not a large one. Mr. JACKSON raised at the rate of five thousand quarts to the acre, near Cincinnati, as he informed the public in a late publication. Mr. DOWNING, I am positive, had not Hovey's seedling unmixed with others.

To keep varieties separate, is next to an impossibility, and the more so, as new ones are often produced in the bed from chance seed. I was absent from home two months this summer, and left it in charge with my gardener to watch the beds, and keep down runners. On my return, I found the pistillate beds had become mixed, and the staminate Iowa had run on the adjoining pistillate beds, on each side, a distance of nine feet. But though Mr. HOVEY appears to admit that his old seedling requires staminate plants near, on the same page, he remarks, "It is time and labor thrown away

to cultivate sterile plants, as has been recommended by some individuals, when varieties *unusually productive*, and of *large size*, can be planted out for that purpose." He here, of course, refers to his own seedlings.

Mr. DOWNING describes the Old Hudson as "a fruit with a neck." Our Hudson is the reverse of a necked fruit, and I have never seen a single berry of this kind with a neck; and I am positive that ours is the same variety that has been cultivated under this name in New Jersey, and in the vicinity of Philadelphia, more extensively for market, for the last fifty years, than all others united. The Hudson, or Hudson Bay, is described in English works as a necked fruit. They obtained it from New York many years since, and do not consider it a first rate fruit. I incline to the opinion, that the true Hudson was not sent them, or has been lost, and a new variety substituted. It has been of late years imported from England by New York gardeners, and by them considered the true Hudson. The genuine Hudson is not now to be found in Boston, and probably not in New York. It is wholly defective in the male organs, and has been thrown by as unproductive. It is a large and finely-flavored fruit, and, where properly impregnated, a great bearer.

Mr. DOWNING, in a letter to me, suggests that our Hudson has probably lost its neck by impregnation with other varieties. I hold that the character of new seedlings is changed, where the mother plant was impregnated by a different variety, but that the shape or color of the fruit is not, where impregnated by a variety differing in shape and color from the plant impregnated. I wish to see the experiment made, whether the size of the fruit of the pistillate plant is increased or lessened by the staminate plant used for impregnation. An experienced market gardener assures me that it is increased.

I have this moment received a letter from Col. CARR, an old and experienced horticulturist of Philadelphia. He



writes me, "I have conversed with Mr. HOBSON and others, who pay great attention to the cultivation of the strawberry, and they all unite with me in opinion." "The Hudson is the principal sort cultivated for market, and has been for fifty years. It is what we call female or prolific. It never has a neck. A Mr. ABERGUST, who was my near neighbor, and excelled in strawberries, removed to Cincinnati about thirty years since, and took the true Hudson with him, and the same now cultivated here. All our principal market gardeners now begin perfectly to understand the difference between staminate and pistillate plants, and find the former such strong runners as generally to prefer keeping them in separate beds." Mr. ABERGUST for many years sold nine-tenths of the strawberries brought to our market, and raised the Hudson only. While I could, from one-fourth of an acre, scarcely raise a bushel, he would raise forty bushels. His fruit was much larger than any other brought to market, and commanded from 25 to 37½ cents per quart. He made a handsome competence from the sale of his fruit. His secret he kept to himself, and had been as much noted for the size of his fruit and the quantity raised on a given space of ground in Philadelphia as he was here. A chance observation of a son of his one day, in my garden, saying, "I must raise but little fruit, as all my plants were males," first led my attention to the subject. I soon discovered that there were what he called male and female plants, and communicated the fact to our market gardeners. The result was, strawberries rapidly increased in our market, till as fine as had been raised by Mr. ABERGUST were sold at from 3 to 10 cents per quart, and he ceased to cultivate them.

The British Queen is, at present, the most popular strawberry in England, and much sought for here. Messrs. CUNNINGHAM & SON, of Liverpool, write me, that it is a fruit of fine size and superior flavor, but with them is a bad bearer; that, in some soils and situations, it is said to be a good

bearer. Here is the old story. I am convinced it will be found to be staminate, and of no value to our market gardeners for a general crop. It may be pistillate, and its bad bearing caused by the absence of staminate plants. If so, it will be very valuable. Certain it is, it will not be found perfect in both organs.

In a late number of the *Farmer and Mechanic* it is said: "Foreign strawberries are unproductive about Boston, and the only ones now cultivated are the Wood, Early Scarlet, and Hovey's Seedlings. That *three* cultivators near Boston sent *four thousand five hundred* quarts to market in a *single season*." What will our market gardeners say to this? The Wood strawberry is thought by them to be worthless, and not a quart was ever sold in our market. Its only merit is, that its blossom is said to be perfect in both male and female organs. The Early Scarlet is raised to some extent; but four-fifths of all the strawberries sold in our market are the Necked Pine and Hudson; mostly the latter. Mr. CULBERTSON brings more strawberries to our market than any other person. The greatest quantity he has brought in any *single day* was *four thousand* quarts; and not one of the kinds named in the *Farmer and Mechanic* among them. All were the Hudson. By properly understanding the true character of the plant, Mr. CULBERTSON has been able to gather nearly as many quarts in a single day as three Boston cultivators were able to do in a whole season. I saw an editorial article in a recent eastern horticultural paper, speaking in high terms of the Alpine strawberry, as raised by a Col. STODDERT, and its great produce, which yielded him, at  $12\frac{1}{2}$  cents per quart, upward of \$1,600 to the acre. It is an indifferent fruit, and never yielded one-fourth the quantity.

Can Hovey's Seedling, or any other large-fruited pistillate strawberry, be impregnated by the Alpine Monthly? It is my impression that they are distinct species, and that it cannot be done. If it can, a cross might be produced that, with

the size and flavor of the one, might be united the ever-bearing character of the other. There is a wild, ever-bearing variety in our State, that would cross with the Scarlet and Pine, and is the only kind I have ever seen worthy of the name of Ever-bearing; for the Alpine, after the first crop, rarely produces much fruit through the season. Thirty years since, I met with a solitary strawberry plant on Mount Adams, then in bloom. I removed it to my garden, and the plant not only bloomed freely till frost, but all the runners threw out blossoms at the same time that they made roots, and bore abundantly till late in the fall. The fruit was small, but of fine flavor. A new hand in the garden, early the next spring, supposed they were weeds, and destroyed them. The old pioneer, LEWIS DAVIS, informed me the same variety grew in Greene county, on the cliffs, and had been frequently seen by him. I trust it may again be discovered, and Ohio have the credit of producing the only ever-bearing strawberry, as well as raspberry. The latter plant, to produce a good crop, during the summer and fall, requires a moist soil. My ground in the city is too rich and dry for it. I have never seen the plant bear as well as in Newark, New Jersey, on a side hill, where the ground is moist, poor and stony. The plant did not attain half the size it does here; but the fruit was large and abundant till frost.

N. LONGWORTH.

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REPORT ON THE CULTIVATION OF THE STRAWBERRY.

(Made June 13th, 1846.)

The Committee appointed two years ago, at the request of N. LONGWORTH, Esq., to investigate the character and habits of the Strawberry, having had the subject under consideration, beg leave to report:

That after numerous experiments made by the members of

the Committee, relative to the character of the plant, and its productive qualities, they have unanimously arrived at the following conclusions :

1. That strawberry plants raised from seed, like many other plants, are liable to run into diversified varieties, and a peculiarity in these varieties, is the irregularity of the reproductive or sexual organs.

2. That a few varieties have the flowers perfect in the sexual organs, and present the stamens and pistils both fully developed in each flower. Such flowers may produce a good crop of medium-sized fruit, as we have witnessed this season, in the cultivation of the La Grange (a variety of the Haut Bois), in the White Pine, and in the Monthly Alpine.

3. Another class, which is numerous and embraces the best varieties cultivated in this neighborhood, has the female or pistillate organs fully developed, and the male or staminate organs so imperfect, that at first glance they appear to be wanting ; but a critical examination and dissection of the flower will disclose them, few in number, and so imperfect in anthers and pollen, that they appear incapable of fertilizing the stigmas ; consequently, they are termed pistillate or female plants, and require a staminate plant near them to furnish the fertilizing powers ; for without staminate plants, the crop will be small, and the berries imperfect. Hovey's Seedling plant will illustrate this class.

4. Other varieties are perfect in the male or staminate organs, with the pistils imperfect. Such plants will produce an imperfect crop, although some flowers may have perfect pistils, and produce the berries of large size ; but under the most favorable circumstances they will fail to mature an abundant crop of fruit.

It may be proper here to state, that these varieties have a strong growth, producing vigorous runners, and when planted with pistillate plants, within two or three years, they occupy

all the ground, and the cultivator, who is ignorant of their habits, generally concludes that his productive plants have become barren; when, after proper examination, he would see that the pistillate plants had been displaced by the rapid growth of the staminate, and the quantity of fruit proportionably diminished.

5. There are other varieties so defective in the pistils or female organs, as to be completely sterile, and fail to produce fruit, either in their native state or under the most careful cultivation.

A majority of the Committee also express the opinion, that the varieties mentioned never change their character, so as to be transferred from one class to another, but continue their original distinction in the runners, and remain the same under all circumstances of cultivation.

The minority of the Committee think that sufficient experiments have not yet been made, to demonstrate fully the truth of this opinion.

Your Committee, therefore, relying upon their own experiments, and those made by other cultivators, freely state, that to insure an abundant product of large fruit, the principle of hybridizing must be adopted, and such varieties selected to bear fruit, as exhibit the female organs, or pistils, largely developed, with the male organs, or stamens, defective or undeveloped. To fertilize the female plant with the necessary pollen, the pistillate plants must be accompanied in the same bed, or near to it, with male or staminate plants.

This rule being strictly observed, in all favorable seasons abundant crops will reward the careful cultivator.

As further evidence that this is the most successful mode for the cultivation of the strawberry, your Committee beg leave to refer to the quantity of strawberries sold in the Cincinnati market this season, which were furnished principally by those who have adopted the system of planting female or

pistillate plants, with a proportion of about one-tenth male or staminate plants for fertilizing.

The amount sold has been ascertained by a Committee appointed by the Horticultural Society. The Committee reported the quantity in market each day during the most productive portion of the strawberry season, commencing on the 19th of May and ending on the 12th of June,—a period of twenty-two days,—in which time they state the aggregate amount at 4,150 bushels, being an average of nearly 200 bushels per day. Other estimates make the quantity much greater.

This product of fruit, compared with other markets, and the quantity of ground cultivated, furnishes conclusive evidence of the success in attending to the cultivation of staminate and pistillate varieties.

JACOB HOFFNER, jr., minority on 5th position.

WILLIAM SMITH,

R. BUCHANAN,

GEORGE GRAHAM,

A. H. EWING,

A. H. ERNST,

J. G. ANTHONY, minority on the 5th position.

S. MOSHER,

S. S. JACKSON,

*Committee.*

*Cincinnati, June 13th, 1846.*

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## R E P O R T

Of the Committee of the Cincinnati Horticultural Society on the Statistics of the Strawberry, and the quantity sold in the Cincinnati market, for the year 1846.

May 19th.....	10	bushels.	June 1st.....	100	bushels.
20th.....	20	"	2d.....	300	"
21st.....	20	"	3d.....	300	"
22d.....	25	"	4th.....	300	"
23d.....	55	"	5th.....	300	"
25th.....	20	"	6th.....	350	"
26th.....	250	"	8th.....	100	"
27th.....	200	"	9th.....	350	"
28th.....	200	"	10th.....	300	"
29th.....	250	"	11th.....	250	"
30th.....	300	"	12th.....	150	"

Total, for 22 days, 4,150 bush.

D. K. CADY, *Chairman.*

## R E P O R T .

The Committee to whom was referred the investigation of the SEXUAL CHARACTERS OF THE STRAWBERRY, beg leave to report:—

That they have endeavored to discharge, in the most thorough manner, the duty imposed upon them, by investigating, with note-book in hand, the condition of various kinds of Strawberries, at the different stages of their progress, from the blossom to the ripened fruit, so as to observe any peculiarities of inflorescence, and watch the consequent effects upon the fructification. As an evidence of the fidelity with which your Committee have discharged their duty, allow them to say that this Report is based upon more than two hundred and seventy recorded observations, which were made with critical accuracy, and as extended, in almost

every instance, as it was possible to render them; hence, it may be safely assumed, that they have now sufficient data and abounding testimony to prove the postulates they intend to lay down in this report. The whole subject has been so ably and so frequently explained to this society and community that there is nothing new left for your Committee, who only reiterate truths well established and generally admitted among us.

After carefully collating and reviewing the facts which they have observed and recorded, the Committee present the following *conclusions* or *postulates*, which have been deduced from their united observations:

1. That there are many different varieties of the Strawberry, which are characterized, in part, by the foliage, pubescence, mode of growth, and fruit, and, also, by their *inflorescence*.

2. That the varieties in inflorescence (the most important to the cultivator) consist in the greater or less development of the stamens and pistils, respectively, upon which are based our terms and classification, "*staminate*" and "*pistillate*," or, more familiarly with the mass of cultivators, *male* and *female*. (See page 123.)

3. That these classes are *permanent* aberrations from what the great Linnæus considered the normal condition of this genus of plants, as of its natural family ROSACEÆ.

4. That nearly all botanists (and among them our most enlightened modern writers) have overlooked the important error of Linnæus, and have simply copied after him in their descriptions of the strawberry, without verifying for themselves; while a plain, unlettered market gardener, but a practical and observing man, discovered\* the important fact, that

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\* We say "discovered," because we are unable to learn that Mr. ARBEGUST ever heard of Mr. KEEN or M. DUCHESNE, or that he was at all in the way of reading anything upon the subject.



while in some plants the flowers are apparently perfect in both sets of organs, one set is really defective, to a greater or less extent, and, in others, the flowers which we style *pistillate*, have the stamens so imperfectly developed as entirely to elude a casual observation, and only to be discovered by a critical observer, and then, in most instances, found to be wholly abortive.

5. That no *pistillate* plant will bear a perfect fruit, if kept entirely apart from staminate varieties.

6. That no *staminate* plants, which we have yet seen, can be depended upon by the cultivator as heavy bearers, though, from some unknown causes, the pistils may be so well developed as to be followed by a good crop, some years, and in some situations.

7. That there is no such thing yet known to us as a perfect flowered strawberry plant, in which the blossoms will *all* be *uniformly* so well provided with both sets of organs as to be followed by *perfect* fruit every year.

8. That the only method of producing this delicious fruit, with any degree of certainty as to the result, is that now adopted by our intelligent cultivators, namely: To set out plants of both of the sexual classes, the relative proportions of each to be determined by experience, selecting such *pistillate* kinds as may prove of good size and flavor, and only so many *staminates* as may be found necessary for impregnation.

9. That the runners from a strawberry plant are as integral portions of itself as the branches and buds of a tree; and, therefore, that we may always propagate any variety by this means, with as much certainty as we perpetuate any variety of apple, or other fruit, by grafting or inoculation.

There are great differences in the productiveness of the *staminates*, from those which are entirely barren to those which may bear tolerably well, or even very well, under peculiar circumstances; but our cultivators have been unable to ascertain any regimen, soil, or treatment, that will insure

a full crop of berries upon any staminate variety, in a succession of years; and they, therefore, condemn them as unworthy of cultivation, except as impregnators, and for this purpose recommend the selection of those which are remarkable for the size and flavor of their fruit, time of flowering, hardiness, etc.

Since the great "*Strawberry Question*" has attracted so much attention, very many persons, anxious to verify for themselves the new doctrine, have tried the experiment of planting pistillate kinds separate and apart from all others. These efforts have been carried on with more or less care and precision; but the results, in all cases that have come within our notice, confirm the Committee in their fifth conclusion, *that no pistillate plant will bear a perfect fruit, if kept entirely apart from staminate varieties.\** And they are perfectly satisfied that where any person thinks he has met with a different result, he must have been deceived by overlooking some male plants in the bed, or near it.

The Committee, having examined a great many new seedlings, which have not yet been tested sufficiently, have observed this fact, that, admitting them to be equally divided in their sexual character, the majority of the staminates will prove to be entirely barren.

All those who would enter upon the business, or try experiments, are advised to commence by impregnating the best and largest pistillates with the largest and most highly-flavored staminates; keep each plant and its runners entirely separate from all others; test them well before exhibition, and lastly, if they be not decidedly superior to the kinds already

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\* They take pleasure in referring to Mr. A. H. ERNST's article upon the "Cultivation of the Strawberry," in No. 11 of the Horticulturist, wherein he mentions some of our most intelligent cultivators, who had brought out this result with different kinds of pistillate plants; and also to the admirable experiment of G. W. HUNTSMAN, of Flushing, detailed in the 2d No., p. 88, vol. i, of the same journal.

grown, in size, flavor and productiveness, or, unless they have some peculiarity of lateness or early ripening, it will be best to say nothing about them; for we have *several kinds* already that are worth raising, and are not confined to a selection of four sorts, as some suppose, namely, Hovey's Pistillate, Boston Pine, Wood, and Scarlet, the three latter of which are here condemned as unproductive, being staminate.

A. H. ERNST, GEO. GRAHAM, S. S. JACKSON, JOHN LEA, N. SHALER, S. MOSHER, J. A. WARDER.	}	<i>Committee.</i>
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(From Downing's Horticulturist.)

#### TWO EXPERIMENTS MADE TO TEST MR. LONGWORTH'S STRAW-BERRY THEORY.

Taking Hovey's Seedling as a subject, I procured a bell-glass, and placed it over an entire plant which had not bloomed. The flowers expanded well under the glass, but did not produce one berry. The plant was frequently agitated to put the pollen in motion, if there was any.

I also introduced under a glass some blossom buds before they had blown. These, as they successively expanded, showed no signs of swelling. I impregnated, at different times, two of the blossoms by hand, applying the pollen from another plant with a camel's hair pencil. These two set their fruit perfectly. The pistils of the other blossoms soon turned to a dark color. These experiments were made at the north side of a picket fence, where the plants were screened from the full effects of the sun, otherwise the heat under the glasses would have been too great.

These experiments prove, to my mind, very conclusively, that Hovey's Seedling will not bear any fruit unless impregnated by some staminate variety. And the same may be

said of other varieties in which the stamens are *obsolete*. I have had some plants of the Hudson Bay for three years, in a position where they cannot very easily be impregnated by other kinds, during which time they have not borne one berry, while other plants of the same variety, exposed, have been productive. A difference in the formation of the flowers on different plants is not confined to cultivated kinds, but may be seen in those growing wild in the fields, the *pistillate* plants of which I have often examined with a magnifying glass, to see if I could discover any pollen, but have never been able to find it; I am forced, therefore, to believe that *pistillate* plants, both wild and cultivated, are absolutely devoid of pollen, and cannot, therefore, produce any fruit except when impregnated by others.

I am also convinced, from observation and theory, that one kind will never change to the other by off-sets. The runner bearing the same relation to the plant producing it as a tree grown from a bud does to the tree from which it was taken. It may, then, be asked, how does it happen that there are *pistillate* and *staminate* plants of the same variety? *I answer, it is not the fact, unless they have sprung from seed, or the plants have been taken from the fields in a wild state.*

That *pistillate* plants are surer and better bearers than *staminate* plants, is, I think, generally true (provided, of course, that they are impregnated). And it would seem reasonable to infer that when but one of the sexual organs is complete, the other will have more strength. Plants, therefore, that are perfect in both organs, require a higher state of cultivation. There is, however, a wide difference in the productiveness of different kinds, that are perfect in both organs, some being much more liable to *blast* than others.

G. W. HUNTSMAN.

*Flushing, L. I., July 14, 1846.*







