

5 annas per pound, and its greatest price never exceeds 6. The price of the American varies from 12 to 16.

The price at which country snuff is generally sold varies from 8 to 16 annas per pound, according to quality, while Macoba and Musilipatam bring as much as 2 rupees per bottle, of 1½ pounds.

Independently of the different descriptions of tobacco imported from various countries, the best varieties of what is called the country tobacco, cultivated in the province of Gujeerath and over the Ghants, are mentioned below, in the order of their quality:

Melao, Jode, reddish-brown.
Vurtal, Merjee Ghatty, dark-brown.
Vara, do.
Bhooka, do.
Kala, or black, do.

The last description comprises a great variety, distinguished by the names of the towns and villages near which it is cultivated. The following are a few of the Kala, or black:

Chachwa,
Paley,
Dhamie,
Vursal, Khanpoor,
Dessarc, cutch,

And a great number of others, which, not being imported here, it is not necessary to specify.

With regard to the character, dimensions, and average number of leaves to a plant, it is difficult to give any correct information. They depend, in a great measure, on the nature of the soil, the manure used, and the water and climate of the country. The leaves of the Melao and Jode are short, being about a foot long by 6 or 7 inches broad, and very pungent in flavor. When dried, they assume a reddish-brown tinge, and are from 8 to 15, and sometimes more, in number. The leaves of the Vurtal and Vara are sometimes larger, and less pungent, than those of the Melao or Jode. The largest leaves are 2 feet in length, by 1½ in breadth, and are generally to be met with in one or other of the different varieties under the head of Kala, or black tobacco. The leaves of this description are bitter in taste. The plant, when full grown, is from 3 to 4 feet in height. The annual yield of the different kinds varies from 2,100 to 6,000 pounds per acre, according to the information furnished by the dealers. The following is the annual production, per acre, of each of the several kinds mentioned below:

Melao	2,100 to 2,700 pounds.
Vara	4,200 to 5,400 "
Bhooka	4,200 to 5,400 "
Dhamie.....	6,300 "
Vursal and Khanpoor, each.....	5,100 "
Chachwa.....	3,000 to 4,200 "
Paley	4,200 "

Much additional information might be procured on this subject, and also on various branches of agriculture, horticulture, &c. Valuable

and interesting researches might also be made in this vicinity on relics, caves, &c., of great antiquity, and geological formations; but it would be attended with considerable expense, and I am not instructed by government to appropriate anything in this way. I would most cheerfully make such researches and furnish full reports.

Comparative statement of the fall of rain at Bombay for the four years past, ending September 30.

Year.	Inches.
1856	71
1857	79
1858	61
1859	81

MISCELLANEOUS.

GRAPE CULTURE IN ILLINOIS.

BY JAMES G. SOULARD, OF GALENA.

After ten years cultivation of the Catawba and Isabella grapes in the vicinity of St. Louis, and twenty years near this city, I am convinced that the high lands in the neighborhood of Galena and Dubuque, (and I may extend this opinion to a considerable portion of the high clay soils in Northwestern Illinois, and in the central parts of Iowa, bordering on the Mississippi,) are much superior for the grape culture to the environs of Cincinnati, St. Louis, or Hermann, in Missouri.

There an average of one half of their Catawba and Isabella crops is lost; even admitting, as I have been informed, that Norton's Virginia seedling, Lenoir, Missouri bird eye, and some other varieties, have been entirely free from the rot around Hermann and other places.

Now, on my farm, a few miles from this city, I never saw the rot in twenty years in a little vineyard of Catawba and Isabella, and a few plants of other varieties, except during three very wet summers, when it exhibited itself in a sporadic form, and then only on a narrow depression of the ground, where there was a great excess of moisture during the whole summer.

In the first six years of my experiment here, I did not cover the vines in winter. They were killed to the ground three winters. But the three seasons they resisted, they yielded well. I then adopted the low culture; starting new wood each preceding year from the ground,

cutting off all the old wood, covering after pruning every fall with a one-horse plow, and uncovering in the spring with the same implement and a six-pronged fork. This can be done very rapidly. During the fourteen years that I pursued covering in this manner, with earth only, I met with but one failure; it was total, however, and caused by continued cold rain and foggy weather, which destroyed the blossoms. The ground had a very gentle eastern slope. Except this failure, every year produced a crop; say, four years light; six years abundant; two years enormous; one year the heaviest I ever saw, and one year the above failure.

The yield was very large in 1857, but most of the Catawba did not ripen well, though the berries on each bunch advanced equally toward maturity. I never saw here uneven ripening, that is, green and ripe berries in the same bunches, nor the vine shedding its leaves during summer. Still, many bunches remained entirely green. My vines were planted from four and a half to five feet apart. I found the same unripe condition, that year, on ground similarly situated, around St. Louis. I believe, even in that season, upon high and steep southern declivities, though not too steep to plow well, they would have ripened in this locality. Continued rain, cool, cloudy weather, and very wet ground through the summer, caused their tardiness.

Covering the vines entirely with earth in the fall is indispensable to success, for two reasons: to protect them against cold winters, and the blossoms from late spring frosts. They should not be uncovered until the season is sufficiently advanced, keeping the vines thus protected as long as the vegetation of the buds will permit, without danger to the crop. Great care should be taken at this time to examine them, on several vines, in different positions, regularly every two or three days.

I give the duration and manner of my experiments, that all may know, how in this northern climate, I arrive at such a favorable and generally unexpected conclusion. This locality, favored with dry, clear summers and falls, having a pervious, friable, clay stratum underlying, to a considerable depth, our fertile light soil, affording easy percolation to any superabundance of water, is unsurpassingly congenial to the perfect production of the grape. The Catawba, whether for table or wine use, for abundance and regularity of yield, and hardiness of plant and fruit, is unsurpassed in this country, among either native or European varieties, while this neighborhood is at least equal, and I think superior, for the culture of the grape, to any other section of the Union east of the Rocky mountains.

FROM H. W. RAVENEL.

AIKEN, S. C., November 13, 1859.

I am now engaged in an investigation into the characters of *all* our native vines, with a view to their classification as descendants of some or other of our pure native species. I would prefer waiting, therefore, until I could complete my plan. I have made a beginning in a paper which I read before the "Aiken Vine-growing and Horticultural Association," at a late meeting, and which has been since published in

the "Farmer and Planter." I send you with this a copy. My object in having it published now is to get the aid and coöperation of other vine-growers, and all the information possible on the subject. On looking it over, should you think it proper to give it an insertion, it may be the means of affecting my object and of obtaining additional information.

With the view of clearing up the nomenclature of our native cultivated grapes, which has been brought to a state of great confusion, we have it in contemplation by the "Aiken Association" to invite a convention of vine-growers, to meet us next summer, from all quarters of the United States, in order to unite upon some definite arrangement, and reduce the synonyms to some intelligible form.

PAPER ON GRAPES.

Read before the "Aiken Vine-growing and Horticultural Association,"
September 15, 1859, by H. W. RAVENEL.

The grape, like all other domesticated plants long subjected to cultivation, has formed innumerable varieties, differing: First, in *size, flavor, color, and time of ripening its fruit*. Second, in *shape and size of leaf*. Third, in general thriftiness and vigor of *growth*. These variations are, however, confined within certain limits; and, through all their varieties, they yet preserve their specific identity, and reveal their parentage and origin.

There are certain bounds within which Nature seems to revel in producing changes and combinations of various forms and qualities, but these bounds are never overstepped.

Species in Nature are primordial forms whose characters remain constant through all time, and which are capable of propagating their kind. Within the limits of these specific characters there may be variations in minor points, occurring sometimes in the wild state, but oftener through the effects of high culture and artificial treatment. Thus, in the United States we have a certain number of species of wild grape. According to the best authorities, the number is reduced to *four* east of the Mississippi. From one or the other of these four species are descended *all* our indigenous varieties. Of these there are now upwards of one hundred in cultivation in the United States, and their number will go on increasing, as seedlings of good qualities are brought into notice. Many of them, no doubt, will prove valuable acquisitions, either for the table or wine-making, but a large number will be thrown aside. There is such a strong temptation to multiply varieties, either as a source of profit to sellers of the vine, or as a matter of pride to amateur cultivators, that the only corrective for the evil will be a publication, at stated periods, of a list of condemned varieties, as is now done by the United States Pomological Society, in the matter of fruit trees.

I am not aware of any attempt to classify these indigenous varieties, and trace them to their proper parentage, to one of the four native species; nor, perhaps, has the time arrived yet when it can properly

be done, from the want of general dissemination, and the difficulty of obtaining many of the latest varieties.

I will, however, give an enumeration of our four American species, with the varieties of each, so far as our information permits:

NATIVE, OR INDIGENOUS GRAPES.

1. *VITIS LABRUSCA*, LINNÆUS.—*Mx.*; *Ph.*; *Ell. Sk. Torr. & Gr.*; *DeCand.*; *Prod.*

Fox Grape.—Stem of a pale brown color, the bark more readily exfoliating than in the other species; and the internodes or joints rather longer. Leaves large, three to five lobed, dark green above, densely tomentose or woolly beneath, the tomentum whitish or rusty. Bunches are not very compact nor shouldered. Berries large, dark-blue, with a thickish skin, and always pulpy, with a musky flavor. From this species are descended the following cultivated varieties:

Isabella or Laspeyre, Mary Isabel, Catawba, Bland's Madeira, Concord, Diana, Rebecca, To-Kalon, Anna, Hartford Prolific, Ontario, Catawissa, Northern Muscadine, Minor or Venango, Garrigues, Stetson's Seedling, York, Madeira or Canby's August, Hyde's Eliza, Union Village, Early Chocolate, Early Black, Harvard, Green Prolific, Kilvington, Ives, Charter Oak, Schuylkill or Alexander, Shaker, Sweet Water or Early Muscadine.

2. *VITIS ÆSTIVALIS*, MICHAUX.—*Ph.*; *Ell. Sk.*; *Torr. & Gr.*; *DeCand.*; *Prod.*

Summer Grape.—Stem stout and of a reddish brown, with the internodes generally shorter than in the preceding. Leaves broadly cordate, three to five lobed, or sinuately palmate; when young, downy, with cobwebby hairs beneath; smoothish when old; of a lighter green than the preceding. Bunches shouldered and compact. Berries small, round, black, rather acid, never pulpy. From this species are descended the following:

Warren, (Herbemont,) Pauline or Burgundy, Guignard, Clinton, Delaware, Lenoir, (*Black July, Lincoln, Thurmond, Sumpter, Devereux,*) Marion, Traveling, Long Grape or Old House, Elsinborough, Seabrook, King, Ohio or Cigar Box, Missouri, Norton's Virginia.

3. *VITIS CORDIFOLIA*, MICHAUX.—*Ph.*; *Torr. & Gr.*; *DeCand.*; *Prod.*

Winter or Frost Grape.—Leaves thin, smaller than the preceding, glabrous on both sides, with broad mucronate teeth. Berries small, nearly black, ripening late, and very tart. There are no varieties of this in cultivation that I am aware of.

4. *VITIS VULPINA*, LINNÆUS.—*V. rotundifolia Mx.*; *Ph.*; *Ell.*; *Sk.*

Bullace, Bullet, or Bull grape, known in Florida and Texas as "Mustang."

Stem whitish, the wood more compact and close-grained than in the other species. Leaves cordate, shining on both surfaces, somewhat three lobed, coarsely toothed, smaller than any of the other species. Berries in loose clusters, scarcely exceeding five or six, changing from reddish brown to black in ripening, with a thick skin and large pulp.

The only cultivated variety is the "Scuppernong," so called after a lake in Eastern North Carolina, where it was first discovered. There may be more than one variety in cultivation under this name, as the so-called "Scuppernong" has been found in other native localities since.

The *Vitis rupestris*, Scheele, is found in Texas, about the Upper Gualoupe, near New Braunfels, and is there known as the "Mountain Grape." It is said to have been found also in Arkansas. Professor Gray, in his description of the plants of Texas, found by Lindheimer, says of this species: "It does not climb, but the stems are upright, and only two or three feet high. The branches are small, and the berries, of the size of peas only, are black, very sweet, and the most grateful, as well as the earliest ripened grape of Texas."

The following comprise a list of native cultivated grapes, which I know only by name, not having had access to any means of information by which they may be classified. They are all, most probably, descendants of *V. labrusca* or *V. æstivalis*, and some may be synonyms of those already enumerated:

Norton's Seedling, Logan, Rock-house Indian or Waterloo, Little Ozark, Graham, Miller's Seedling, Burton's, Early August, Sage, Early Amber, Clermont, Jane, Harris, Long, Baldwin's Early, Louisa, Mary Ann, Clapier, Canada Chief, Secerd's Sweet-Water, Golden Clinton, Senior, Archer, Monteith, Huber.

These are names of grapes taken from various sources, and mentioned as native or indigenous seedlings. After being better known, and with full opportunities for examination of their fruit, leaves, and habit, doubtless we shall be able to classify them, and trace their parentage to one or other of the four American species.

How far the effects of high culture and the propagation of new seedlings from these improved varieties may cause them to deviate from their typical state, it is impossible to foresee; but if our botanists are correct in their limitation of species, these variations must be within the specific characters assigned to the species respectively.

There is one prominent character which distinguishes the grapes of the United States from those of the eastern hemisphere, and that is in the *inflorescence*. All the species of American grapes are *dioecia polygamous*, that is, some of the vines bear staminate or barren flowers only, and are forever sterile. Others bear perfect flowers, and are fruitful.

All the species of the eastern hemisphere are *Hermaphrodite*, that is, every vine bears perfect flowers, containing stamen and pistils, in the same corolla, and are fruitful. In the absence of other evidence, this fact would be conclusive of the parentage of an unknown seedling, whether it be of exotic or indigenous origin.

FOREIGN GRAPE.

Of the vast number of varieties of the foreign grapes now in cultivation in Europe and the United States, all are referred to the single species, *Vitis vinifera*, *Linnaeus*, a native of the southern parts of Asia.

It has been under cultivation more than a thousand years, and was known under many varieties by the ancients.

Upwards of thirty years ago, when Chaptal was minister of the interior, there were fourteen hundred varieties enumerated in the Luxemburg catalogue, obtained from France alone. The Geneva catalogue numbered six hundred. Doubtless they have been much increased since; and, as in the propagation of varieties of other fruits by seedlings, there is no limit to the number that may be brought into existence.

De Candolle, in his "Prodrômus," enumerates and gives descriptions of eleven other species of *vine* from the Old World, mostly natives of the southeastern part of Asia; but none of these have been cultivated extensively. The grape of Europe is *one species*, but of *numberless varieties*.

Most of the early attempts at grape culture in this country were with the foreign grapes; but all, without exception, have been failures. The foreign grapes (varieties of *Vitis vinifera*) seem, from their constitution, unfitted to our soil and climate. (I here allude to open air culture—under glass they appear to thrive very well.) How they will succeed when grafted upon the hardy native vine, remains to be proved. Partial experiments, made in Florida and in this vicinity, are promising of success.

If the cause of failure is the greater humidity of our climate, grafting on the wild vine will scarcely prove a corrective, as the leaf and fruit are still exposed to the atmospheric influence. If the cause proceeds from uncongeniality of soil, then grafting upon the wild stock will most probably be successful. As this mode of increasing a vineyard for wine-making must necessarily be more tedious and expensive than by cuttings, it is our policy, as well as true philosophy, to endeavor, by the raising of seedlings, to obtain varieties best suited to our soil and climate.

Every encouragement should be given for the accomplishment of this end, and our association has consulted the true interest of all vine-growers in offering handsome premiums towards that object.

From WILLIAM A. FORWARD, of Palatka, Florida.

PALATKA, FLORIDA, January 4, 1859.

I feel it due to Mr. Townsend Glover that I should bear testimony to his usefulness in the duties assigned him at this place.

He experimented upon my orange grove, and I consider he has saved it. His syringing of the trees regenerated them, and destroyed the insect. I have no doubt his remedy is a thorough one. It has

certainly proved so in my grove, and others in this town, wherever practiced. I feel that now we have nothing to fear from the orange insect.

From S. M. BAIRD, of Albuquerque, New Mexico.

ALBUQUERQUE, NEW MEXICO, September 16, 1859.

I know of nothing in this Territory so embarrassing to agriculture and horticulture as insects. They swarm here during the entire growing season in quantities and kinds almost innumerable. One species or another attacks vegetation from the root to the blossom. Wheat, however, is free from weevil and the fly. It has been found nearly impossible to grow potatoes, and many other vegetables in the Rio Abajo, in consequence of insects, and hence the introduction here of any means of destroying them would be a great blessing.

This is the climate and country for the alpaca and cashmere coat. I would also call your attention to the Rocky mountain goat, or sheep, as it is called by the mountaineers, most of whom contend that it is a sheep, though Colonel Bonneville says it is a goat. I have seen nothing of it except its horns, a pair of which I have known to weigh twenty or thirty pounds. Doubtless naturalists by this time have thoroughly examined, and properly classified it, though in the "American Encyclopedia," which contains the only written description, I have found under this name only an account of the antelope instead of the Rocky mountain goat. With the former I am well acquainted, even to the flavor of its meat. Old mountaineers inform me that the latter sometimes grows to the size of three hundred or four hundred pounds, that they are very hardy; the flesh fine for the table; the skin, when dressed of a superior quality, and that beneath the long shaggy hair, it produces a dense coat of wool, as fine as silk or fur, to use their own language. The immense horns would be made useful in the arts.

Should not this animal be domesticated, if possible? The mountaineers say they used to catch the lambs, or kids for pets, and they were easily domesticated. Through the agency of the army now dispersed, or rather located in the mountains throughout New Mexico, Kansas, Nebraska, Utah, California, and Oregon, if the object be desirable, any number required could be procured. Were this animal domesticated, it would surely be superior to anything of the kind now known. The antelope also evidently belongs to the goat family, and I think it might be domesticated without difficulty.

NOTE.—It is a common error to confound the Rocky mountain sheep, *Ovis montana*, which inhabits the whole chain of the Rocky mountains on their highest peaks down to California, and the Rocky mountain goat, *Capra americana*, which is also found there, and on the head waters of the Mackenzie, Columbia, and Missouri rivers.

These animals have a number of synonyms. The sheep have been called "wild sheep of California," "big-horned sheep," "big horn," &c.; the goat, "Antelope americana," "Antelope lanigera," "Capra americana," &c.

Of the *Capra americana*, Audubon says: "The coat is composed of two kinds of hair, the outer and longer considerably straighter than the wool of the sheep, but softer than that of the common goat; the long hair is abundant on the shoulders, back, neck, and thighs; on the chin there is a thick tuft, forming a beard, like that of the latter animal. Under the long hairs of the body there is a close coat of fine, white, silky wool, quite equal to that of the Cashmere goat in fineness. The resemblance to some of the antelopes, the chamois, the goat, and the sheep, caused it to be placed by some authors under several genera."

Of the *Ovis montana*: "The hair" (of the male) "bears no resemblance to wool, but is similar to that of the American elk and reindeer. It is coarse, but soft to the touch, and slightly crimped throughout its whole length. The hairs on the back are about two inches in length; those on the side, one and a half inches. At the roots of these hairs, especially about the shoulders and sides of the neck, a small quantity of soft fur is perceptible. The legs are covered by short, compact hairs. The horns of the male are of immense size.

"The female Rocky mountain sheep resembles some of the finest specimens of the common ram. Its neck is a little longer, as are also the head and legs, and, in consequence, it stands much higher. Its horns resemble more those of the goat than of the sheep, in fact. Whilst the fine, erect body of the male reminds us of a large deer, with the head of a ram, the female looks like a fine specimen of the antelope."

From C. R. BUCKALEW, Minister Resident.

QUITO, ECUADOR, *January 16, 1859.*

Great importance has been attached to the cinchona tree, which furnishes the Peruvian or fever bark. There can be no doubt that some parts of our country are adapted to its cultivation.

It is found in Ecuador, as well as in Peru, Bolivia, and New Grenada, and its value as an article of commerce has very greatly increased during the last half century. In this country it formerly sold at forty dollars per hundred, while its present price is one dollar per pound. These prices are in Ecuadorian currency, to reduce which to United States money requires a deduction of about one-fifth. In Ecuador the tree is found at elevations of from six to eight thousand feet, and where the temperature ranges from 60° to 66°. But, as Humboldt observes, a comparison between the climate of these regions and others is not satisfactory, and it does not follow that the tree will not flourish in temperatures quite different. Within a few years, seeds of the tree have been sent to England and propagated, in order to be forwarded to India. The plants are forwarded thither in boxes, glass-covered, with what success remains to be seen.

The seed is diminutive, and may be sent by post to remote countries.

In Northern Ecuador, and west of the mountains and of Quito, the inferior kind is found. The red bark variety, which is most valuable, is everywhere becoming scarce before the depredations of the hunters, and, as no care is exercised in its cultivation or preservation, it may, after some years, unless attention is turned to the subject, become nearly extinct. The most valuable and extensive forests of the tree are situated in Southern Ecuador, in the vicinity of Loxa, and it is from that quarter, so far as this country is concerned, that supplies are drawn.

Information regarding the cinchona tree may be found in Humboldt's Personal Narrative, volume 1, page 138, and more particularly in his Views of Nature, (Bohn's translation, 1850,) pages 280, 390, and 422, in note.

From my position here, I enjoy peculiar facilities for obtaining the seed of the tree and information regarding its culture, and, in concert with the Patent Office, would take efficient steps towards its introduction into the United States.

From S. B. PARSONS, at Lausanne.

I have been seeking for the Italian bees which I was desired to procure by the Agricultural Division of the Patent Office. I found that a mixed breed could easily be obtained throughout Lombardy, and that little care is taken to preserve them pure. I succeeded, however, in finding an enthusiastic bee cultivator in Mr. Hermann, of Tamins, who makes frequent incursions in Lombardy, and selects wherever he can find them, the pure queens of this breed impregnated by pure males. They are easily distinguishable by a broad yellow band across the abdomen. The proboscis is also longer, enabling them to feed on many plants which are beyond the reach of common bees. They are also about one fifteenth larger than the ordinary breed. A small hive will make sixty to seventy, and an old hive one hundred to one hundred and thirty pounds of honey in a season. Mr. Hermann's experience in shipping bees renders reliable his decided opinion that they can be safely sent to America only in the autumn, and that it is essential to send them by steamer, as they would not endure a long voyage.

I have purchased of Mr. Hermann ten hives, to be forwarded from Havre. In order to insure their safety, I purchased old hives. I will furnish a more detailed report on these bees, including drawings. It will describe the best mode of educating the queens, of preserving their purity, and increasing their number. Until spring, the only attention these hives will require will be that which is given to ordinary bees.

It will be expedient to make no distribution before another year, as I can describe a mode by which these large hives can be increased to six hundred small ones, each with a queen, and each of which can be placed in a box six inches square for more convenient transportation over the country.

I appreciate very highly the value of these bees. I think that their acquisition alone would have merited a special mission from America.

I am in receipt of a letter from the director of the botanic garden at Odessa, in which he states that "the industrial vine culture of the Crimea is principally of well known European kinds, while there are to be found also some varieties which are native to the country, and some obtained from the Trans-Caucasian provinces, from China, Persia, and the river Amoor. Of such, however, it would be impossible to obtain five thousand cuttings in the space of one season. The culture of the olive is very limited in Southern Russia. For some time the demand for young plants has been only from the Trans-Caucasian provinces. That demand has now nearly ceased, and the nurseries have so small a stock on hand, that they could not furnish this year more than four hundred or five hundred plants. The remaining four thousand five hundred can be supplied in the autumn of 1861."

This state of things renders useless any visit to the Crimea, and I wrote him that I should not wish the vines of western Europe, as they are already abundant with us, but that he might send as large a part of the five thousand cuttings as can be obtained this year, and the remainder another season, all to consist of sorts from the Trans-Caucasian provinces, from Chiva, Persia, and the river Amoor. I requested him also to send one hundred scions of each Crimean variety of apples, pear, cherry, currant and quince. I wrote him that I wished the novoli of the olive. He wrote only of plants, and I have therefore requested him to send five hundred now, and I would write him this winter whether the remaining four thousand five hundred would be desired another year.

WINE-MAKING IN NEW YORK.

ITHACA, TOMPKINS COUNTY, NEW YORK,
January 18, 1860.

SIR: I received from the Patent Office, about a year ago, a tin case, with two grape-vines inclosed in moss, marked "grapes from Hungary." These I set in a pot, in the latter part of February, 1859, and early in May took them out, and set the younger and most thrifty of the two in a favored spot on the south side of my house. By cold weather last fall it had grown two main vines, one four feet seven inches, and the other five feet two inches ripe wood. This vine is short-jointed; eyes, or buds, prominent; leaf cleft, and resembles most foreign grapes in appearance; have cut away two-thirds of the ripe wood, and distributed the cuttings to my neighbors. So far it has stood out of doors, borne 3° Fahrenheit below zero, and appears hardy, and uninjured by the frosts of this winter. The other vine was old wood—at least two or three years old; appears like the other; grew badly, (only some sixteen or eighteen inches;) ripened the wood badly. Transplanted at the same time, (May,) but to a richer soil, in a less sunny spot.

As to wine-making, let me add that this valley, three hundred to eight hundred feet deep, at the head of Cayuga Lake, has always been noted for its fruit. The vintage of this town, in 1858, was about 1,000

gallons, of which over 600 gallons were made by my press. The result has been some 700 to 800 gallons of wine that will compare very favorably with any of Europe or America. Especially do the still Catawba and Isabella mixed compare with the bland German and French wines brought home by travelers in their trunks; that is, a sweet, mild, spiritous, bland wine, suited to the sick chamber, sacramental, and table use. If asked, as a chemist and manufacturer, from my experience now of fifteen years in wines here, how can wine be made in Central New York? I should reply, that the variety made of the same grapes can be very great, and by the *mere manipulation* you can produce variety in color and roughness and quantity of spirit. As the Catawba usually ripens poorly, a fine wine is made here by one-third half-ripened Catawba, and two-thirds ripe Isabella, and if the manipulation has been correctly made, cannot easily be told from the best Catawba.

Again, the manipulation can vary the quality to suit the time of sale and use. I speak all the while of no additions of any substance whatever, except *sugar* or *refined syrup*. The wines soonest ripened will not keep the best or longest.

A fine wine, ripe for use in six months, may be made by crushing half a bushel of grapes at a time in a butter (Orange county package) firkin, with a handle (broom or hoe handle) inserted into a round block of hard wood, sawed off square at both ends, a style I prefer, and putting thirty gallons so crushed in a forty-five gallon alcohol barrel for a fermenting tun. Add two pounds of sugar to the gallon, and ferment as long as the color deepens. The moment the color ceases to deepen, put to press, transfer the pure juice immediately to a close cask, and let the fermentation go on as rapidly as possible. Keep the room so hot that it shall not be over twenty days before the fermentation ceases spontaneously. Then put into a cool cellar, and when clear, a *strong red wine* will result. If you have succeeded in the manipulation, this wine can be used at once, and will give good satisfaction to the palate. It is much admired for its rich, splendid colors, like Bohemian red-stained glass, clear and pure. But it will not keep well.

Probably the best wine we can make in this valley of Cayuga Lake is by the following manipulation. Use the hoe, or broom-handled block, round, with square ends—say a piece of locust, five inches in diameter and six inches long; crush just hard enough in your butter firkin to mash the pulp and lacerate the skins of the grapes, but not crush the seeds, half a bushel at a time, putting, as before, 30 gallons into an alcohol cask, with one head out for a fermenting tun. To every gallon add one pound of sugar, or equivalent of clarified syrup. If sugar is used, boil in sufficient water or wine to dissolve it—the longer the better, before you add to the mashed grapes—making 30 or 35 gallons in your 40 or 45-gallon fermenting tun. Ferment rapidly, by maintaining such heat that you can hear the bubbling and a hissing sound from the tun all over the room. The color will deepen, and then fade, when the supernatant skins and pulp have become dingy and muddy, and the must or liquor pale reddish amber color, put to press, and pour the must or grape-juice into the cask, where it is to ripen. Ferment again rapidly, so that not over twenty-five days shall elapse before the fermentation shall cease spontaneously—that is,