or very thin.—

This is the usual route from the U.S. to the hardest on, as it leads to Lake St Jean 90 miles north of Quebec at Mile 0 the shore of Lake Superior is the north it is come on the Lake of the Chippewas — Ottawas — All the country Ottawa and very little from Lumbering Operations. Close from it is fine again in the Ottawa Valley and perhaps North West, which would be shown a Journey to Manitoba, but I could really Notified of the Hopeless. It is actually Hunting from Kenora and Mileage 25 to 15 days 3 months and the other — in Ottawa [illegible] before we had entered Bays — early in July 1st it was Dry Season in St Jean Bays from Hawkes unexpected and of the Lumbering Operations — particularly in respect is fine though elegant & Rather. It is singular that our visitors have never so far as I could ever made wise of this Opinion nor tried to collect & improve it. They probably spend little money for it

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G. Engelmann on the species of Vitis in Missouri
Trans. Acad. Saint Louis I 660 (1860)

recognizes only V. aestivalis & V. cordifolia (including riparia) in Missouri; states that V. labrusca is an eastern species and that V. vulpina can not stand our climate.
V. rupestris seems to grow also in Missouri.

Grape seeds etc in Bushberg Catalogue 1875 p. 4-7

In Gray's Manual ed 1856 Vitis cordifolia & riparia are placed together

513 also in ed 5th ~~1870~~. but in addenda of 1868 they are separated by me

Bulletin of St Louis Club Jan 1878
& May 1879 both are more clearly distinguished

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look for Shaw

# partment of the Interior,

CENSUS OFFICE,

*Brookline, Mass.,* April 9th, 1881.

Dear Sir,

Enclosed letter from Curtiss

Gray will have read it please

return.

Would observe that he

is in the field we entirely

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roots from being thrown to the surface by alternate freezing and thawing, a mound of earth hoed up around the plants, or a ridge thrown up with a plow, so as to elevate the ground somewhat in the rows, will be found to afford all the protection necessary. By no means delay planting till *late* in spring (after May first here), and if your ground is not ready in time, you had much better cultivate it with corn or hoed crops of some kind, and postpone planting until next fall. Planting in rows, six feet apart, is now the usual method; it gives sufficient space for a horse and man to pass through with plow or cultivator; the distance in the rows varies somewhat with the growth of the different varieties and the richness of the soil. Most of our vigorous, strong growers, the Concord, Ives, Hartford, Clinton, Taylor, Norton, Herbemont, will need eight to ten feet in the rows; Scuppernongs are planted 20 to 30 feet apart; while the Delaware, Catawba, Creveling, Iona, may have sufficient room when planted six feet apart. The dwarfing treatment practiced with European varieties, especially by German vintners, will not do for American vines, which must have ample room to spread and a free circulation of air. The number of vines required to set an acre (containing 43,560 square feet), will be:

| DISTANCE, FEET. | METRES. | NUMBER. |
|---|---|---|
| 5 ft. by 5 ft. | 1 m 54 by 1 m 54 | 1,742 |
| 5 ft. by 6 ft. | 1 m 54 by 1 m 85 | 1,452 |
| 6 ft. by 6 ft. | 1 m 85 by 1 m 85 | 1,210 |
| 6 ft. by 7 ft. | 1 m 85 by 2 m 15 | 1,037 |
| 6 ft. by 8 ft. | 1 m 85 by 2 m 46 | 907 |
| 6 ft. by 9 ft. | 1 m 85 by 2 m 75 | 807 |
| 6 ft. by 10 ft. | 1 m 85 by 3 m | 725 |
| 7 ft. by 7 ft. | 2 m 15 by 2 m 15 | 889 |
| 7 ft. by 8 ft. | 2 m 15 by 2 m 46 | 777 |
| 7 ft. by 9 ft. | 2 m 15 by 2 m 75 | 690 |
| 7 ft. by 10 ft. | 2 m 15 by 3 m | 622 |
| 8 ft. by 8 ft. | 2 m 46 by 2 m 46 | 680 |
| 8 ft. by 9 ft. | 2 m 46 by 2 m 75 | 605 |
| 8 ft. by 10 ft. | 2 m 46 by 3 m | 544 |
| 9 ft. by 9 ft. | 2 m 75 by 2 m 75 | 537 |
| 9 ft. by 10 ft. | 2 m 75 by 3 m | 484 |
| 10 ft. by 10 ft. | 3 m by 3 m | 435 |

1 acre = 41 *ares* French measure, or one *Hectare* nearly equal to two and a half acres.

Having determined the distance at which you desire to plant the vines, mark off the rows, running them parallel, and with the most level lines of your slope or hillside, so that you may easily plow between the rows and that the ground may not wash. (On an eastern slope the rows will therefore run in a direction from north to south, which most vine dressers prefer.) Be careful, on sloping ground, to leave spaces for surface drains, the steeper the hillsides the more frequent must these surface drains be. Then divide the rows into the desired distances, by the aid of a stretched line, and put small stakes where each plant is to stand. Now, if the ground is sufficiently dry so as to pulverize well, make the holes to receive the vines, as shown in fig. 19. The depth of these holes must necessarily vary somewhat with the nature of the soil. On very steep hillsides,

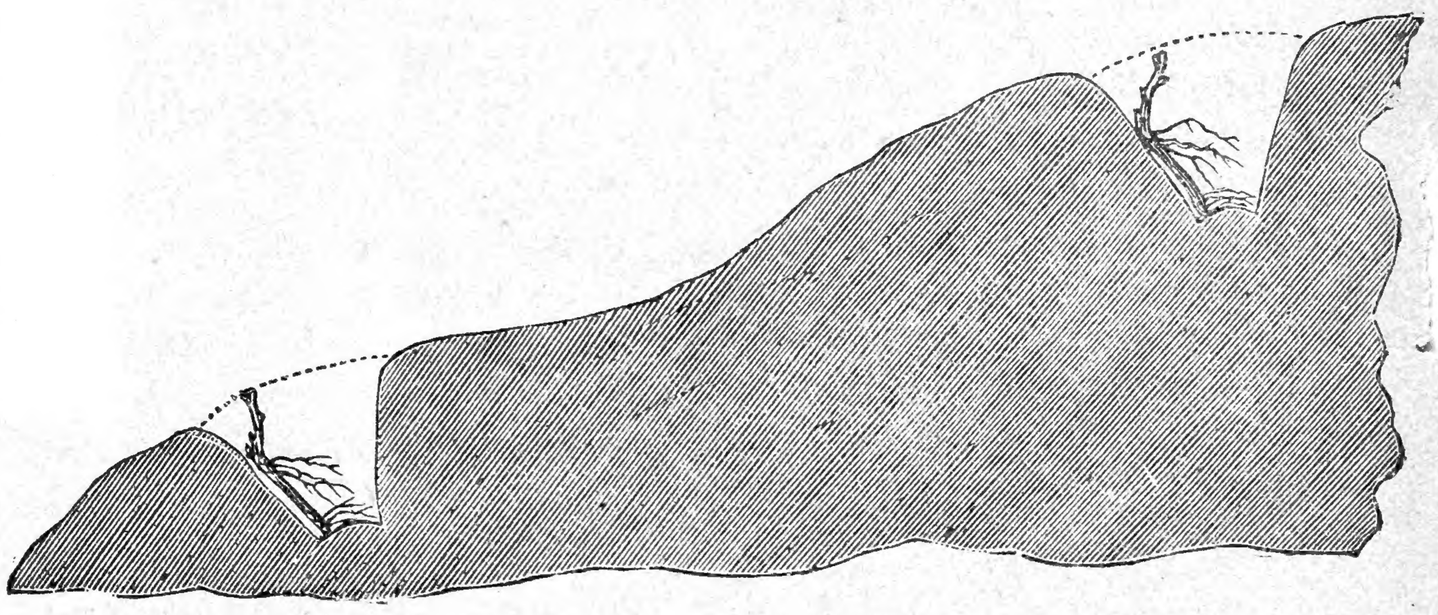

Fig. 19.

and especially on southern slopes, with naturally warm, dry soil, you must plant deeper than on gentle slopes with deep, rich soil, or on bottom land and rich prairies. Eight inches will be deep enough on the latter; on the former we should plant from twelve to fourteen inches deep.

Having made the holes, and it is best not to make too many at a time, as the ground will dry out too quickly, you can go to planting.

We do not intend to discuss here the various modes of multiplication or propagation of grape vines from cuttings, layers or single eyes (buds), still less the production of new varieties from seed and Hybridizing, as this would far exceed the scope of this brief Manual, nor do we desire to say whether you should plant cuttings or rooted plants, and whether plants grown from cuttings, from single eyes or layers, are preferable. Propagators and nurserymen are not considered disinterested, impartial judges on this question. But we may reasonably suppose that those who read this catalogue are either our customers or desire to purchase rooted vines from us, and want to get *the best plants*. Vines raised from layers were in former years held to be superior, and are still preferred by many, but unprejudiced and observing cultivators have found that they only *look* stronger and finer, but are *not as good* as plants properly

513-A

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3. Hybrids between *Delaware* and *Vinifera*:—

CROTON, ITHAKA, WYLIE'S DELAWARE HYBRIDS.

By crossing the *Delaware* with *Diana* were produced the ONONDAGA and WALTER, perhaps also RARITAN; by a cross of Delaware and Cordifolia Mr. Rickett produced the PUTNAM, and finally, some crosses between Hybrids were produced.

So far most Hybrids produced were between *Labr.* and *Vinifera;* as the former have a tendency to leaf mildew, to fruit rot, and roots subject to the attacks of Phylloxera; the production of a healthy, resisting form, in a Hybrid between these and the here still more unhealthy Vinifera, is highly improbable, especially when some tender, glass-house grown variety is used for that purpose. Only by the selection of the most healthy and hardy varieties of a native and foreign species, or, perhaps still better, by an intermixture of the best and most vigorous native species, may really valuable results be obtained.

Most of the Hybrids which we now cultivate are of too recent introduction to be thoroughly tested; yet it is already apparent that their adaptability to successful culture is in proportion to their affinity to the native parent, especially in roots and foliage. And the requirements of Hybrid grapes, as to climate, soil and aspect, will be found quite similar to the requirements of one or the other of their progenitors.

### LOCATION.

The only *general* rules we can give, to guide us in the selection of a proper, desirable location for vineyards, are:

1. A good wine-growing region is one where the season of growth is of sufficient length to ripen to perfection our best wine grapes, exempt from late spring frosts, heavy summer dews, and early frosts in autumn. Do not attempt, therefore, to cultivate the grape in low, damp valleys, along creeks; low situations, where water can settle and stagnate about the roots will not answer; wherever we find the ague an habitual guest with the inhabitants, we need not look for healthy grape-vines; but on the hillsides, gentle slopes, along large rivers and lakes, on the bluffs overhanging the banks of our large streams, where the fogs arising from the water give sufficient humidity to the atmosphere, even in the hottest summer days, to refresh the leaf during the night and morning hours, there is the location of the grape.

2. A good soil for the vineyard should be a dry, calcareous loam, sufficiently deep (say three feet) loose and friable, draining itself readily. New soils, both granitic and limestone, made up by nature of decomposed stone and leaf mould, are to be preferred to those that have long been in cultivation. If you have such a location and soil, seek no further, ask no chemist to analyze its ingredients, but go at once to

### PREPARING THE SOIL.

The old system of *trenching* is no more practiced, except upon very hard, stony soil, and upon steep hillsides, being too costly and of very little, if any, advantage. The plow has taken the place of the spade, and has much lessened the expense. While we would urge a thorough work in the preparation of the soil before planting the vine, and warn against planting in ditches, or worse yet in square holes, we believe that by careful grubbing (in timber lands) leaving no stumps, which would only be a continual eyesore and hindrance to proper cultivation, and then using a large breaking plow, followed by the subsoil plow, the soil will be stirred as deep (say twenty inches) as is really necessary to insure a good and healthy growth of vines. This will require two to three yoke of oxen to each plow, according to the condition of the soil. For old ground a common two-horse plow, with a span of strong horses or cattle, followed in the same furrow by a subsoil stirrer, will be sufficient to stir the soil deeply and thoroughly, and will leave it as mellow, and in its natural position as desirable. This may be done during any time of the year when the ground is open and not too wet. Most soils would be benefited by underdraining; the manner of doing it is the same as for other farm crops, except that for vines the drains should be placed deeper; it is less important on our hill sides, and too costly to be practiced to a great extent here; wet spots, however, must be drained at least by gutters, and to prevent the ground from washing, small ditches should be made, leading into a main ditch. Steep hill sides, if used at all, should be terraced.

### PLANTING.

The soil being thus thoroughly prepared and in good friable condition, you are ready for planting. The proper season for doing this is in the fall, after the 1st of November, or in the spring, before the 1st of May. Most vineyards are planted in spring, and in northern, very cold localities, this may be preferable. *We* prefer fall planting; the ground will generally be in better condition, as we have better weather in the fall, and more time to spare. The ground can settle among the roots in winter; the roots will have healed and calloused over, new rootlets will issue early in spring before the condition of the ground would have permitted planting, and the young plants commencing to grow as soon as the frost is out of the ground, will start with full vigor in spring. To prevent the

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Messager agricole, Montpellier 10 Juin 1874
Vol V. no 5. - p. 168 514

Les Vignes sauvages des Etats-Unis par Planchon

Sect I. Muscadinia Pl.

1. Vitis rotundifolia Mich. Durand Vitis vulpina Lin (pro parte)
Engelm Asgray etc.

Vitis vulpina dicta acinis peracutis purpureis in racemo parvis
sapore foetido et ingrato praeditis, cute crassa carnosa Clayton
N° 696 et Gronov. Virg. 1762 p. 34 [which is there given as Synonym
of V. labrusca]

Sect II Euvitis Pl.

2. V. labrusca Lin Jacq. Mich. Durand Engelm

3. V. candicans Engelm Durand V. Mustangensis Buckley

4 V. Caribaea DC. Durand. Engelm [I never placed that among N. Am species!] Floride et des Etats les plus chauds de l'Union - Antilles, Mexique etc.

5. V. aestivalis Mich. Durand. Engelm.
var V. Lincecumii -

6. V. cordifolia Mich.
α genuina Durand
β riparia Torr & Gr. Durand Vitis riparia Mx.
Floride Jacq. Hort Schoenb. p. 14 tab 427. (1804)

Espèces moins tranchées et moins connues :

7. Vitis sylvestris Scheele Missouri - Texas

8. Vitis monticola Buckley Texas

9. Vitis Arizonica Engelm

10. Vitis Californica Benth.

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1874

average

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Mr J. LeConte

Enumeration of the Vines of N. America

in Proceedings Acad Philad VI. p. 269 (1853)

1. V. labrusca !
2. V. tenuifolia (from description labrusca aestivalis)
3. V. aestivalis !
4. V. bracteata (from description, to be referred to aestivalis
5. V. vulpina (probably = V. cordifolia)
6. V. araneosus (= aestivalis see exemplar!
7. V. bicolor (seems to be aestivalis var)
8. V. pullavia (V. cordifolia)
9. V. riparia (probably our V. cordifolia factich)
10. V. odoratissima (seems also to belong to cordifolia)
11. V. rotundifolia !
12. V. palmata "Blaud Grape" a labrusca var?

Therefore:

1. V. labrusca with 12 palmata
3. V. aestivalis with 2 tenuifolia
4 bracteata
6 araneosus
7 bicolor
5. V. vulpina (= cordifolia)
with 8 pullavia
9 riparia
10 odoratissima

11 V. rotundifolia

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Vitis

Native Grapes and their allies.
Varieties by H. W. Ravenel
Patent Office Report
Agricult. for 1859
p. 537

Vitis labrusca with many alt. v.
var.
V. aestivalis with some —
V. cordifolia with none
V. vulpina with one (Isabella)

---

Native Grapes of Pennsylvania etc
by J. T. Weber
ibid p. 64

Native Grapes of Arkansas Thurber
Ill Rev. Grape p. 37 ibid p. 30

Saccharin matter of Grapes
Inst. p. 42

Les Vignes des Etats unis, Durand.
Bullet. Soc. Acclimat. vol IX. p. 313 & 409

Smithsonian Institution,

*Washington, D. C., May 20, 1862.*

*Dear Sir:*

*The reductions of the meteorological observations made for this Institution from 1854 to 1859, in all parts of the United States, have been printed, and form a volume of 1270 quarto pages. The general temperature tables, periodical phenomena, storms, &c., which will form the second volume of about equal size, is now in the press.*

*The first volume is nearly ready for distribution; and as its size and weight prevent its safe transmission by mail, we request you to inform us how you wish it sent to you, whether by Express direct to your address, or to the care of one of our agents, viz:*

*Swan, Brewer & Tileston, - - Boston.*

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March 1872

# American Grape vines.

517

I. Grape vines with loose bark (at last separating in shreds with the aid of) the young shoots climbing by branched tendrils. seed ovate, usually grooved

1. Berries small, 3–6 or in some large forms even 7 lines in diameter, usually more or less deeply notched top of the seed. — These plants exhibit a tendril opposite each leaf on well grown canes, with only rare and irregular intermissions.

II. Grapes with a firmly adherent smooth bark which does not scale off. tendrils always almost simple

1. V. vulpina. Leaves heart shaped, usually 6–9 inches in diameter — leaves heart shaped, not usually coarsely dentate toothed, rarely slightly woolly, smooth and shining, sometimes when young slightly downy. Berries 7–9 or 10 lines in diameter, seldom more than 6–9 lines in diameter, usually in large bunches, black, without a bloom, mature late in the fall, and dropping off when ripe, usually with only one seed, which is short and broad and has a very prominent raphe. Several varieties of this form are known. This is a common form

and usually 3–5 lobed, with very thick and broad teeth, when young always downy and soft, bright red or rusty, at last smoothish, but dull and never shining like the preceding one. Berries usually larger than in both others, and ~~in pendulous clusters~~ when well grown in compact bunches, coated with a distinct bloom, seeds usually 2 or 3 ~~with a cord similar to~~ larger than those of No 1 but smaller than the latter with a very prominent cord.

This is the well known sassafras ~~common~~ throughout the middle & southern states, most usually found in open wood, dry edges or uplands, which ripens its fruits earlier in fall than 1. It is the most variable of our species and hence has occasioned superficial observers into ~~establish~~ the establishment of numerous nominal species. A form which keeps leaves which retains the green long after they are dull green has often been mistaken for the next species which does not grow in our state. Another form with deeply lobed rusty downy leaves, often more deeply the lobes of the leaves of the young with another form again a peculiar form apparently distinct though it is smaller bearing distinct bloom and in larger bunches grows in our bottom lands, and often climbs high trees, on account of its whitish downy leaves, which are scarcely lobed at the base distinguish the leaves at least when old, naked, and berries small black are not rare in dry shady woods and it is not easy always to distinguish such forms from Corylifolia, although the characters enumerated above are well marked. ~~This is~~ We cultivate many varieties of this valuable shrub, the most important of which are the Dwarf Sadley, the Cynthiana and the Herbemont.

Gd Fr

Missouri Botanical Garden
George Engelmann Papers

518 St Louis 8 Aug 1847

Lieber Freund,

ich habe Ihr vor 3 oder 4 Tagen per Steamer geschrieben, und wahrscheinlich hat Ihr Ihr viele Briefe von mir in Händen, ohne dieses Packchen, das erreicht. — Herr Meisch von Mistbach, Bruder der die bekannten Apparate Meisch, und Verwandter von Allemand ist, hat die Güte diese Zeilen so wie einige historische Merkwürdigkeiten mitzunehmen. Zugleich hat er sich angeboten bei Lodi in Ohiostadt, mit der er persönlich bekannt ist, die Vollmacht, die ich von mir bestellten Bäumen zu betreiben, und sie ganz ist schon abgeschickt, selbst im Herbst mit hierher zu bringen. Ich habe sein Anerbieten mit grossem Dank angenommen und bitte Dich der Mühe mit ihm zu besprechen. Mir scheint daß sie ist Ihm hier sind; 4 davon sind schon hier verlangt worden, und ich glaube statt 6 könnte ich 12 bequem absetzen! Auch sollen wir beide allen Fall bleiben. Jede Gefälligkeit die Du Herrn Meisch erzeigst bringt mir ein Dankbares anerkennen

Dein

Georg Engelmann

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~~of the shady river bottoms~~, # and is called river grape, bull grape or else in some parts of the country chicken grape

in the woods from New England to Texas and to the Assiniboine; western limits of the wooded parts of the Mississippi Valley; in the shady river bottoms it attains its greatest development. ~~At least~~ ~~In the western states~~ its fruit has a fetid, aromatic taste — # The cultivated varieties of this form are known

2. Vitis riparia Mx Mostly a smaller plant than the last, but with larger and more or less cut lobed shining glabrous, or rarely somewhat downy leaves; lobes ~~as~~ acute ~~as the teeth of the leaves~~ long and pointed; berries ~~small~~ as small or often larger than the last usually in much smaller bunches, mostly little a bloom ~~the seeds~~ each mostly with 1 or 2 seeds, ~~in each by~~ Pulp less juicy than the last.

This species extends as far east and south as the last, and much farther north, as it is the only species in lower Canada. The northern form (north of New York to Michigan along the lakes) has fewer and larger berries in a bunch, and is more distinctly marked; the southernmost form has mostly smaller berries, and approaches nearer to the last species, ~~often even in the form of the leaves~~ with which Prof Gray in the late editions of his manual unites it; the fruit ripens always earlier (in Illinois it is often ripe to make in July) and is ~~more or less~~ pleasanter to the taste. A number of cultivated varieties are referable to this species, among the Green Taylor, the Delaware and probably the Clinton

3. Vitis aestivalis Mx Usually smaller than the first climbing over bushes and smaller trees; leaves large of firmer texture than both preceding, entire or ~~with about lobes, the lobes often~~ more or less deeply

4 Vitis labrusca L. Plant usually not large, climbing over bushes or small trees, with large thick entire or sometimes deeply lobed, very slightly dentate leaves, which are covered with a thick whitish or usually rusty downy tomentum, which is retained on the under side, but is collected or some wholly disappears. Bearing large & small or undeveloped branches, with 2 or 3 or sometimes 4 seeds.

519

This plant is a native of the eastern declivity of the continent from New England to S. Carolina, where it prefers deep shady ravines & here & there extends to the eastern declivity of the Allegheny Mts, but is not found in the Mississippi valley. The most important (now cultivated varieties such as the Catawba, Concord, Isabella, Hartford Prolific and dozens of others are offspring of this species, and are all easily recognized by the unmistakable specific characters (especially the form & still more ~~especially~~ the down of the leaves, though the form of the leaves and the amount of the tomentum above)

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5 Vitis rotundifolia Michx bushy, or climbing ~~high~~, with small (2 or 3 feet 3 inches ~~wide~~) round firm & glossy leaves, rarely somewhat hairy ~~downy~~ on the under side, with coarse or shallow teeth.

This southern species ~~grows~~ is found not farther north than North Carolina & Arkansas, but may perhaps straggle into southern Missouri. Its collected varieties, especially the white Scuppernong, are highly esteemed in the south, but ~~cannot be cultivated~~ do not ~~perfect~~ fruit in our climate.

To complete the list of grapes found in Missouri

~~In addition~~ must be mentioned the Sandgrape of Missouri, Vitis cinerea Scheele (named from Texas specimens found on rocky places or beds of streams) with us it grows on the gravelly banks of streams — the hills being very ~~st~~ often bushy and rarely climbing. It is rough distinctly even tomentose without glandular. Its leaves are small, 2 inches long, pale yellow or ash colour on the under side, coarse at the base, the last but the basal lobes; the other of the ordinary grapevines, ~~with~~ berries small and in small bunches, ripe with us in August, early with us a distinct ~~taste~~ odor or tang — earlier than any other grape except the V. riparia form. — The Texas sandgrape ~~slightly~~ of a pale green colour