The Native Vines:
An Exploration of Pre-Prohibition Missouri Winemaking and Grape Growing and the Future of Heritage Cultivars

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by

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ABSTRACT

This study aims to explore the Missouri wine industry prior to Prohibition through the creation of a historical narrative, an analysis of the most popular wine grape varieties of the time, and a genetic analysis of remnant pre-Prohibition grapevines in the region. At one time, Missouri was an important and leading wine producer for the United States, and its story has not been fully described, therefore this study explores it in depth. Collecting pre-Prohibition grapevine samples throughout Missouri, these samples will undergo genetic marker analysis and comparison to the Cornell database produced as part of the VitisGen 1 and VitisGen2. While the genetic pedigree analysis is ongoing, the goal is to identify mystery vines and create a network of relational mapping between the collected grapes which may ultimately impact modern grape breeding efforts. Future research may allow for the return of some of these lost pre-Prohibition varieties.

BIOGRAPHICAL SKETCH

Nathan Held is a Master of Professional Studies student in the School of Integrative Plant Science with a concentration in Viticulture at Cornell University. He graduated from Saint Louis University in 2020 with a Bachelor of Science degree, majoring in Entrepreneurship and Philosophy and minoring in Biology.

Nathan is from Hermann, Missouri, and grew up surrounded by grapes and wine. His family reestablished Stone Hill Winery in the town in 1965. He is the 3rd generation of his family to operate the winery. He is passionate about viticulture, conservation, and history.

After graduation, Nathan intends to continue working with Stone Hill Winery. His hope is to champion and promote heritage grapes such as those in this study so that they may once again be broadly celebrated and enjoyed.

To my grandparents, Betty and Jim Held.

Their hard work and perseverance have made this industry and this study possible.

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I would like to thank my advisor, Professor Jason Londo, for his support and guidance during the entire extent of this project. His early support of this topic and initial suggestions allowed me to explore it thoroughly and passionately. His expertise relating to genetic pedigree analysis made a project like this feasible. Though we experienced some bumps along the way, his moral support and advice allowed for the successful completion of this study.

Thank you to TerraVox Winery, the Deutschheim State Historic Site, and the many people of the Missouri Rhineland and Hermann who allowed me to tramp through their homes, yards, and vineyards so that I could collect all the sampled specimens for this study. Without their willingness and curiosity, a study like mine could never be done.

Thank you to my brother, Eric, whose help with the second round of grape collections was vital to getting this project started.

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TERMINOLOGY

Cultivar/Variety: For this paper, these terms are interchangeable and are to denote a grapevine which is intentionally grown for a domesticated purpose, whether that is agricultural or ornamental. This vine may be an intentionally bred hybrid or seedling, an intentionally collected and propagated wild vine, or chance hybrid or seedling, all of which must have been intentionally propagated for a commercial purpose. While this is a generally liberal interpretation of a variety, it is apt for the study period due to the numerous breeders and early viticultural scientists selling and studying hybrids and seedlings which were presumed to have unique, desirable traits which made them distinct from other seedlings and available varieties.

Grapevine Species: Within this paper, many species of grapes will be discussed. While the distinction of each species is not important, an awareness of some details is valuable. Specifically, the *Vitis vinifera* L. is the Eurasian grapevine of which most varieties of grapes are derived. All other species in this paper (*Vitis acerifolia* Raf.*, Vitis aestivalis* Michx.*, Vitis berlandieri* Planch.*, Vitis bourquiniana* Munson*, Vitis cinerea* Engelm.*, Vitis labrusca* L.*, Vitis riparia* Michx.*,* and *Vitis vulpina* L.) are native to North America.

Heritage Grapes/Cultivars/Varieties: Pre-Prohibition grape hybrids or seedlings which are derived wholly or partially from native North American *Vitis* species often crossed with, or have some ancestral pedigree from, *Vitis vinifera.*

American *V. labrusca* Grape Aroma/Character: Known as the foxiness aroma in *V. labrusca* grapes, this flavor was controversial in wine, sometimes finding favor in the Americas while finding disdain in Europe. While historically and contemporarily described as foxy or grapey, both terms fail to describe the actual character or flavor of the grape. The aroma appears to be

from multiple chemical compounds present in some American grape species, particularly *Vitis labrusca*. Research continues to be ongoing, but the flavor is believed to be derived from methyl anthranilate, isoamyl acetate, and other compounds. This aroma should be thought of as a candylike grape flavor combined with bubblegum. It may also have earthy notes.

Pre-Prohibition: For this paper, pre-Prohibition should be understood to be the time period prior to the enforcement of the Wartime Prohibition Act which banned the manufacturing of beer and wine after May 1919 and the sale of alcohol above 2.75% after July 1, 1919 (New York Times 1919). While this preceded the more well-known 18th Amendment and its enforcing Volstead Act which went into effect on January 17, 1920, the temporary Wartime Prohibition Act effectively shuttered the law-abiding wine and beer producers in 1919.

Remnant Vines: Historic pre-prohibition cultivated (not wild) vines which continue to grow.

Mystery Vines: In this study, mystery vines are presumed remnant vines which do not have documentation or ampelographic analysis asserting what variety they are.

Viticulture: Viticulture is the study and practice of the cultivation of grapes for any purpose.

Viniculture: Viniculture, though more obscure than viticulture, has been used in this study to denote the focus on grapes that are for wine use. It is the study and practice of the cultivation of grapes specifically for winemaking purposes.

PREFACE

Growing up in Hermann, Missouri with a family deeply intertwined with the state's wine and grape industry, I have always had a curiosity and fascination with the people and grapes who made this once highly esteemed wine region. While Missouri no longer holds a place of honor in the minds of wine connoisseurs nationally or internationally, the story of its previous acclaim deserves to be shared. As my grandparents reestablished this industry in 1965, it was only natural that I gravitated toward it as I grew. Many of my earliest memories are running through the vineyards, hiding in the cellars, and climbing on barrels at the family winery. This project is a culmination of my earliest fascinations with this region's unique history, as well as a springboard for future explorations into the grapes, the wines, the people, and the culture of this place.

Section A. Introduction

The purpose of this study is to examine a once dominant region in the Pre-Prohibition United States wine industry, the Missouri Rhineland[1] primarily centered around Hermann, Missouri. Relatively unique compared to other wine regions of the time, the Missouri industry found its success with native and hybrid grapes made into European style dry wines, as opposed to the champagne and sparkling wine industries of Ohio and New York as well as the *Vitis vinifera* wines made in California (Pinney 1989). Due to this, there was an inherent entrepreneurial and experimental spirit needed for its industry to succeed. By examining the story of this region and the grapes of most importance to it, the unique culture of this community can be preserved for future generations. Once the context of the time and its grapes are understood, the endeavor of searching for these missing varieties can begin. By seeking to find lost grape cultivars which were once highly esteemed, they can potentially be enjoyed once more.

This study has three main goals: 1) To build the narrative of the Missouri wine industry, from its founding until Prohibition, 2) To identify and discuss the grapes which were most important to the region and its wines, and 3) To begin studying remnant pre-Prohibition vines in the Missouri Rhineland to better understand and rediscover lost varieties. With achieving these three goals, a solid foundation for future research into the world of pre-Prohibition American wine grapes will be constructed. Through this study and future efforts, these unique vines and this industry can be celebrated and enjoyed once more.

[1] The Missouri Rhineland is the region following the Missouri River starting slightly west of St. Louis, Missouri, and stretching until slightly east of Jefferson City, Missouri. It was primarily settled by German settlers during the early 19th century and continues to show the influence of its original settlers.

Potential Future Impact

Some of these lost grapes may still hold value for modern viniculturists. While many of the grapes included in this study have been lost to time or intentionally removed from production in this country, they still have a potential for an exciting future for use in wine production or grape breeding efforts. Factors such as Prohibition and cultural repression policies throughout the early 20th century cut down these grapes while they were still in their infancy. These grapes are relatively untested compared to most of the world's wine grapes yet still found an excited consumer-base at home and abroad, with some still finding acceptance internationally (Balay 2019).

These grapes may be worthy of continued experimentation and cultivation. At a time where modern grape hybrids continue to be released and planted for wine purposes, some of these heritage grapes have the potential to be of equal value and importance to today's grape growers where sustainability and quality are of utmost concern. In today's world, wine grapes, particularly *V. vinifera,* are continuing to be planted in increasingly less hospitable growing regions, and historically hospitable growing regions are becoming increasingly less so (Monteverde 2020). Both lead to increased inputs and interventions in the vineyard, and therefore a less sustainable management strategy (Santos et al. 2020). Some growers have turned to modern hybrids to limit their environmental impact while still aiming to produce wine from the variety. With this renewed interest and need for hybrid wine-grapes, these heritage varieties, some of which have historic international success as well as unique flavors, can serve as another option in the vineyard for these growers.

Beyond their potential value as alternatives to *V. vinifera* or modern hybrids in the vineyard, heritage varieties may also hold important traits which are not being examined in

modern grape breeding efforts. Most modern breeding efforts are reliant on specimens from USDA germplasm repositories or their own university breeding collections, most of which are wild *Vitis* specimens or catalogued hybrids and *V. vinifera* (Zou et al. 2020). Unfortunately, the repositories' wild vines are often not representative of the broad genetic and specific diversity across North America, and instead are overly representative of areas which had more thorough specimen collection throughout the 20th century, specifically the northeastern and southwestern United States. Due to this fact as well as the limited knowledge of the *Vitis* germplasm collections, there are gaps in access to traits which are endemic to populations of wild *Vitis* species and subspecies across this country (Klein et al. 2018). One answer to this issue is expanded collections and analysis of wild *Vitis* species such as what is being done by Jun Wen's lab at the Smithsonian (Talavera et al. 2023). Another answer may exist in the examination of some of these lost heritage varieties which were originally crossed and derived in part from wild *Vitis* populations from across the Midwest and South which are not as well documented in national repositories and breeding stock. By rediscovering and returning these heritage varieties to modern breeders, some varieties and seedlings may reemerge as valuable breeding stock. For instance, new studies being undertaken by the University of Missouri Grape and Wine Institute are examining the different tolerance levels to 2-,4-D drift between Norton and Cynthiana, the former being derived from wild *V. aestivalis* from Virginia and the latter theorized to derive from wild *V. aestivalis* subpopulations from the Midwest (Volenberg 2023; Muench 1865).

Cultural Value

This study, in both the historical narrative as well as the genetic analysis of extant remnant heritage vines, aims to lay the groundwork for future research efforts into the culturally traditional grapes and wines of the Missouri Rhineland and its German immigrant population

during the mid-19th and early 20th century. While other regions continued to grow and produce culturally distinct cuisine, the German American citizens of the 20th century had much of their culture, including food and drink, intentionally suppressed through the enforcement of Prohibition and harmful government policies due to a general distrust of their cultural group. This distrust originates from the German Americans' contentedness to resist anglicization as well as the compounding effects from World War I (Finkelman 1993). In 1917 the popular *McClure's* magazine, known to a moral compass for the nation at the time, published a story stating that "We are at war with Germany, the German people, and everything connected with Germany… make this an America for Americans" (Kirshbaum 1986). This sentiment was broad across the nation and aimed to affect all facets of life for this culture. For these German immigrant communities, their culture was once a point of pride. However, through the efforts from a xenophobic populace and government, a general shame was successfully produced against decidedly German aspects of their culture in most localities across this country (Finkelman 1993). This included a general disinterest in food and drink practices, such as the production and experimentation with wine and grapes. The German American community saw prohibition as a direct threat to their way of life and that "if prohibition prevailed in Missouri the German cultural and social institutions that they supported and enjoyed would be destroyed" (Detjen 1985).

This project studies the grapes and wines of this populace, most of which were almost entirely erased due to the pressure of Prohibition and World War I. The traditional wines of the Midwestern German Americans were valuable both commercially and culturally and are worth preserving and celebrating. Through a construction of the narrative of the historical context of the region's wine industry, the story and practices can continue to be a point of celebration to the descendants of this cultural group. By examining the remnant heritage vines and expanding their

cultivation, this living manifestation of a cultural connection to the past can be preserved and restored. Agricultural biodiversity has a bright future ahead due to the desires of consumers to limit pesticide application and increase sustainable farming practices. These grapes, due to their potential for a more sustainable vineyard as well as their historical and cultural value, may still have an important part to play in the American wine industry.

Section B. Historical Discussion

Reflection on Context

While this project is primarily an examination of the unique story of American heritage grapes and their success and eventual demise through the lens of Missouri viticulture and enology during the late 19th and early 20th century, there is a recognition that this focus excludes earlier American viticultural successes of these grapes such as in Ohio or later successes in New York. However, it is the story of Missouri's industry that best mirrors the rise, fall, and slow return of these heritage grapes. While Missouri's overall wine production throughout the period of study oscillated somewhat and was most often not one of the top players in terms of sheer quantity, its industry, its wines, and its personalities played an outsized role on the national stage up until Prohibition. Missouri's role as a hub for the scientific development and advancement of viniculture and enology throughout the mid-19th century was unmatched within this country. Wine historian Thomas Pinney would remark:

> The Missouri Germans made contributions to the scientific, practical, commercial, and promotional history of wine in this country beyond those of any other group. And their contribution was not limited to the United States. Missouri, thanks to the knowledge and

experience of the Missouri Germans, supplied many of the native rootstocks that saved the vineyards of Europe and America after the phylloxera devastation[2] (Pinney 2005). Through the ingenuity and perseverance of its adherents, Missouri continued to remain relevant as New York and California solidified themselves as the centers for vinicultural science toward the turn of the century.

The Story of Missouri Viniculture and Enology

Missouri holds a peculiar place in the history of this country's vinicultural industry. When one combines Missouri's status as western frontier with a burgeoning American wine industry just finding its footing, what is found is an industry forced to have an inherent entrepreneurial and pioneering spirit, ready to pivot and shift its focus as necessary to survive. Remaining from its inception until Prohibition as a unique player within the broader national industry even for its time, Missouri helped lead the surge of experimentation with native vines and wines. While today the state has lost its status as a major wine producer, Missouri continues to have a strong industry that explores its history and is still making wine with some of the grapes that once brought it to its initial fame.

Missouri's history as part of the wine industry extends almost as far back as its history as a state in the Union. In 1823, the first wine known was made by Jesuit seminarians in St. Louis (Pinney 1983). It took some time, however, for wine to be made on any meaningful scale or outside the context of sacramental wine. It would not be until the German immigrants of the 1830s and 40s moved to the region that wine culture would be considered seriously. These

[2] The Great French Wine Blight was an epidemic affecting *V. vinifera* caused by grape phylloxera, an American aphid that damages grapevines. Starting in 1863 and spreading across the world through the 19th and 20th century, the *V. vinifera* vineyards were devastated by this insect due to their limited natural resistance to the insect. Through experimentation, it was discovered that some American derived *Vitis* spp. had high degrees of natural resistance and could be used either as direct producers instead of *V. vinifera* or as rootstock for *V. vinifera* scions to be grafted upon.

immigrants, known as Dreißiger and forty-eighters,[3] respectively, were often adherents of democratic liberalism fleeing the politically repressive regimes of Germany during this period (Rowan and Primm 1983). Spurred on by hopes of establishing a German region within the United States, these immigrants quickly settled throughout the Midwest, including the Missouri Rhineland and Hermann in particular. Throughout the mid-1830s, the settlers would establish towns across the Missouri River valley stretching from St. Louis to Kansas City. Due to the rolling hills and river valley, the German immigrants were reminded of their cities along the Rhine River in Germany.[4] Founding Hermann in the early winter of 1837, the newly furnished American citizens would discover that their idyllic outlook on their self-described utopia was somewhat misplaced. That winter was devastating due to harsh weather, and the following spring brought no respite for the people as they discovered the rough hilly landscape incredibly difficult to farm with traditional crops (Bek 1907). It is said that grapes were brought by some of the settlers of these first years who were vintners in Germany, though it is believed that the European grapes all died within their first season in the ground (Poeschel 1849). While the town continued to grow during its first years, it was not the perfect society that was dreamt of prior to leaving Germany.

In the early 1840s, some of the townspeople began experimenting with hybrid varieties of grapes. The first grape harvest and vintage came in 1846. Vinified by Michael Poeschel (see

[3] Throughout the early to mid-19th century, German immigrants were fleeing to the United States and other countries to find political freedom and a guarantee to human rights. In the early 1830s, failed revolutions such as the July Revolution in France and the Frankfurter Wachenstrum in Germany would lead to political repression and limits on academic freedom. Similarly, the Revolutions of 1848 throughout Europe mostly failed and led to further repression of those involved. Many immigrants held on to their ideals of classical liberalism such as human rights, the value of democratic representation, and individual freedom when they settled in the United States.

[4] Many of the German immigrants would be fervent abolitionists, which would put them at odds with many of the surrounding communities. While Missouri was legally designated a slave state with the Missouri Compromise of 1820, it would remain in the Union during the Civil War due to the efforts of the German American population within it. The German American vinicultural individuals focused on in this paper directly supported the Union, the abolition of slavery, and subsequent black suffrage.

Section C, Stone Hill Wine Co.) and George Riefenstahl, it would be the early American grape 'Isabella' that became Hermann's first wine (Muench 1865). The following year, Missouri's first commercial winery was established by Poeschel in Hermann which would continue until Prohibition as Missouri's most successful (Bek 1907). While some residents were persuaded by the promise of Californian gold in 1849,[5] those who remained fervently adopted the pursuits of the grapevine, planting and experimenting with the most popular grapes of the day, both European and American derived (Muench 1865). Poeschel would even remark:

> It is astonishing that so many of our countrymen subject themselves to the privations and hardships of a trip to California to seek gold, when it may so easily be obtained by cultivating grapevines and pressing out the precious juice from the ripe grapes among the beautiful hills and charming valleys of southern Missouri. No employment can give a man of taste more enjoyment than the cultivation of a vineyard, and we are convinced that no tillage, in this or any other country, can produce even half the profit that can be realized by grape growing in Missouri during the next twenty years (Poeschel 1849).

While his hopes of prosperity for the future of the fledgling industry would prove true for himself, it would not be an easy endeavor for most who endured the coming years. By late 1844, the town was already convinced of the potential of its wine and grape industry and began offering 'wine lots' available for purchase with incentives such as a ten year pay period with no interest for those who would plant 2/5ths of the lot to grapes (Town of Hermann 1845). The community primarily grew 'Isabella' and 'Catawba' during its first years, though by 1847, vines

[5] Starting in 1848, the California Gold Rush would lead to hundreds of thousands of individuals moving to the territory for the chance at becoming rich by finding gold. While much gold was found, most settlers did not ever find gold themselves. However, the rush and subsequent rapid increase in population would likely be partially responsible for California's admittance as a state in 1850.

of Norton found their way to the community (Husmann 1866). Norton, though its wine was initially criticized by Nicholas Longworth the wine baron of Ohio, would become the single most important wine grape for the region, eventually winning the Missouri Rhineland acclaim for its wines internationally (Pinney 1989).

The 1850s would see Missouri's most prominent vinicultural figure, George Husmann, come of age and return to Hermann – after heading West seeking Californian gold – eager to push forward efforts to improve the grapes and wine (see Section C, George Husmann). While difficult growing conditions and struggles with rot throughout the 1850s tested the mettle of the new adherents, many growers continued to farm grapes and work on producing better quality wine. During this time of hardship in the vineyard, growers such as Husmann, Poeschel, Franz Langendoerfer, and others would experiment with new grape hybrids from the East as well as grow their own crosses and seedlings (Husmann 1866).

In the neighboring German community of Augusta, the populace would also actively participate in the new grape and wine industry. After seeing the success in Hermann, the first grapes would be planted there in 1847. Augusta's first commercial wine producer, the Augusta Wine Co., would be established in 1867 and operate as a cooperative until 1884 (Mallinckrodt 2012). While Augusta would not reach the quantity produced or fame of Hermann's growers, a few of its wineries would continue to operate up until Prohibition shut down their industry (see Section C, Friedrich Muench). Augusta would cement its legacy in America's wine industry by

becoming the nation's first federally designated AVA in 1980. Hermann would follow and receive its designation in 1983.[6]

Throughout its whole pre-Prohibition existence, the Missouri industry was completely beholden to the temperamental shifts of the weather which led to many adherents giving up on their hopes of creating a winery in their own right. Some of the regional grape growers would tear up their vineyards during the difficult years of the 1850s, 1870s, and at the turn of the century. However, most growers turned to selling their grapes to the larger wine producers (Goodman 1890). As the 19th century progressed, there was a trend toward consolidation of the industry. Wineries which were able to win the highest honors at national and international wine expositions[7] quickly grew in market share and required more grapes for their production (Pinney 1989). The first and arguably most impactful award would come in 1873 for Poeschel's 'Norton' wine. Lauded as the best red wine of all nations by the famed English wine critic Henry Vizetelly, this proclamation and award would catapult the region's renown as a producer of Old-World style dry wines (Vizetelly 1874). Other wineries such as the American Wine Co. from St. Louis, the Mount Pleasant Wine Co. from Augusta, and the Bluffton Wine Co. as well as the Oscar Loehnig Winery from the Hermann area found some degree of success at competitions of the period as well (Vizetelly 1874; Hermanner Volksblatt. 1881).

In 1870, Missouri would reach the pinnacle of its wine production in market share, producing the most of any other state in the union (Special report on wine 1900). The year prior,

[6] An AVA is a federally designated "grape-growing region with specific geographic or climatic features that distinguish it from the surrounding regions and affect how grapes are grown" (TTB 2023). AVA stands for American Viticulture Area and is similar to other appellation systems used internationally. There are currently 268 AVAs, 148 of which are in California.

[7] Wine competitions of the time were often conducted at World's Fairs. These competitions would be hosted by wine judges of the host nation as well as international critics and provide the wine and producer with an award designation. Oftentimes, producers would add the award to their wine label. World's Fairs were international exhibitions where the technological, cultural, and agricultural achievements of nations could be put on display.

1869, it would be second to California (General tables of agriculture 1870). Missouri would overtake the state in 1870, and once again in 1873 due to high yields and very favorable growing conditions in Missouri paired with unfavorable conditions in California as well as concerns about quality from consumers of Californian wines at this time (Special report on wine 1900). One factor which led to the success of Missouri producers during this time, and their ability to remain competitive until Prohibition, was the intentional maturation and aging of their wines after fermentation, in some cases over eight years prior to sale (Stone Hill Wine Co. 1907). This practice made the wines expensive to produce, but it also produced wines far closer to immigrant population expectations of their wines (58th Congress 1904). Californian vintners during the mid and late 19th century were primarily producing fortified sweet wines and unaged dry wines which were not satisfying the desire of middle-class immigrant populations matured and complex wines similar to their foreign imports (UC Davis Library 2021; Pinney 1989). Though they grew the well-known European varietals, they did not yet have the European wine style mastered. While European critics would appreciate the non-sparkling dry *V. vinifera* wine made in California versus the *V. labrusca* wines of the East, due to the *V. labrusca*'s general tendency toward American *V. labrusca* grape aroma, the Californian wines of this period were found to be inferior to both European produced wines as well as the non-*labrusca* wines of the East such as 'Norton', 'Cynthiana', 'Delaware', and 'Herbemont' (Vizetelly 1875). Toward the turn of the century and up until Prohibition, California started shifting their tactics to better emulate the styles which were desired by the consumers, though many of its major producers would continue being purveyors of bulk wine (Pinney 1989).

The waning years of Missouri's pre-Prohibition industry would be marred by inconsistent gallonage produced, in large part due to weather, disease and rot pressure, and changes in federal

legislation which disproportionately affected the state's production.[8] However, many years between 1900 and 1918 would still be record-setting years in wine produced by the state, in both quantity and value. In 1904, Missouri produced approximately 1/12th of the United States' total wine output. Of the 3,068,780 gallons of wine produced in Missouri, 2,971,576 gallons (approximately 97%) were produced in Gasconade County, almost all of which came from Hermann (Anderson 1905). To contextualize the production of Missouri during this period, New York in 2022 produces approximately 3.5% of the country's wine (TTB 2023). From 1874 until Prohibition in 1919, Missouri's rank in the national annual gallons of wine produced would fluctuate greatly, from a position of second behind only California to sixth (Special report on wine 1900; Bek 1907; Report on states: Agriculture 1910; 64th Congress 1916; Denman 1985).

By the 1900s, Missouri would only have one major commercial winery that would compete on a national and international level, that being Poeschel's original winery, now under the name Stone Hill Wine Co. and helmed by the Stark family (Denman 1985). While the American Wine Co. continued to sell nationally, its relatively small gallonage was almost entirely Ohio-grown Cook's Imperial brand sparkling 'Catawba' wine which was only finished in St. Louis (Pinney 1989). The other small commercial wineries, such as the newcomer Sohn's Winery and the older enterprises such as Oscar Loehnig Winery and the Mount Pleasant Wine Co. would continue to sell regionally and in localities like Chicago and Philadelphia where there

[8] Legislation such as the McKinley Tariff Act of 1890, the War Revenue Law of 1898, the Pure Food and Drug Act of 1906, and the Emergency Internal Revenue Tax Act of 1914 would disproportionately affect Eastern wineries as compared to Californian producers due to changes of taxation relating to how sweet wine is produced, what kind of distilled spirits are used in fortified wines, and whether wine was bottled (as was practice in the East) versus sold in bulk to saloons (as was common in large California wineries of the time). These different outcomes under the law were the source of many conflicts between the Eastern wine producers and Californian producers during the 1890s to Prohibition.

were large German immigrant populations (Hesse 1998). It was at this time that a clash between East and West would emerge in the American legislature.

Though California and the Eastern wineries were united during a debate over tariffs on wine imports during the recessionary economy of the Panic of 1893,[9] they would be at odds merely a decade later due to what Eastern vintners would claim to be unfair tax breaks for the Californian industry (53rd Congress 1894; 58th Congress 1904). The debate occurred over the Congressional Pure Wine Bill and its potential enactment of a Californian-backed tax on wines that underwent amelioration, chaptalization or gallization, processes which the eastern cool climate wine regions of the United States used to correct acid levels in certain wines and vintages. The Eastern growers would push against this claim and point to the acidification undertaken in California as an additive technique similar to the techniques they were potentially being taxed for (58th Congress 1904). While the states eventually came together and set limits on the additives allowed in a 'pure wine', another fight would be just around the corner, even as the threat of Prohibition loomed over the whole industry (59th Congress 1906). Yet again a Californian-backed bill came forward trying to adjust how sweet, fortified wines were taxed. Ottmar Stark, then president of Stone Hill Wine Co., was at the center of the discussions between the East and California. The East argued that the Californian bill was meant to bankrupt their competition in the East due to their hold on higher priced American wines which directly competed with Californian wines. After multiple Congressional sessions and years of debate, compromise was found once more which allowed the East to survive and California paying an

[9] The Panic of 1893, lasting from 1893 to 1897, was one of the United States' most severe economic depressions which upended the political landscape of the nation. During this time, the international economy was suffering due to the upheaval in the American financial institutions, including American stocks, U.S. Treasury gold, and bank runs.

equitable share of taxes on fortified wines (64th Congress 1916). However, all these legal battles would become moot just two years later.

By 1917, the temperance movement had been on the minds of alcohol producers for over fifty years. Stark would remark in 1914 of the fear of the infighting leading to distractions:

> It is necessary for those engaged in the wine-growing industry to present a united front. In the absence of such unison, we cannot make a good and lasting impression upon the public, nor can we hope to cope with the activities of the Anti-Saloon League and Prohibition Party. Quarrels in our own ranks, therefore, are disastrous, and when both factions have the same interests at stake and in jeopardy, are then even shortsighted and inexcusable (Stark 1914).

1918 would see the temporary Wartime Prohibition Act passed (New York Times 1919). With the enactment of the 18th Amendment and the subsequent enforcing Volstead Act in 1919, national prohibition was achieved, potentially permanently.[10] Stark, dejected by the enactment of Prohibition and the overt anti-German enforcement of it and other laws, would decide to have all the vineyards torn up and eventually sell the land and close the winery (Kirshbaum 1986; Kliman 2010). While producers in states such as New York, California, and Ohio survived in some part through Prohibition and continued storing and making some wine, it is believed that Missouri's industry was completely extinguished due to being interwoven with German identity and culture,

[10] The 18th Amendment, known as Prohibition, is the Constitutional amendment which outlawed the production, transportation, and sale of most alcoholic products. The Volstead Act, passed soon thereafter, would define what kind of alcohol was permitted or banned. While Prohibition was a national law, stricter state prohibitory laws were often enacted and enforced. In 1933, the 18th Amendment would be repealed, though many states still limited alcohol production.

which had been directly attacked in the United States during WWI and its aftermath (Pinney 2005).

Once Prohibition was repealed, the Missouri industry did not rebound for some time. A few small pre-Prohibition wineries remained in existence, though they would be classified as hobbyist operations using today's standards and were not run as commercial enterprises. Most would close their doors as their owners passed, having no impact on the economy of the state or the American industry as a whole. Curiously, the American Wine Co., now reliant on California wine for its sparkling Cook's Imperial, would sell its famed sparkling brand and switch entirely to vinegar production in the early 1950s, and soon close its doors permanently. It wouldn't be until 1965 when Stone Hill Wine Co. would be reestablished that a new wave of excitement and expansion would restart the state's industry (Pinney 2005). Today, Missouri's industry continues to grow and evolve, with old grapes and new.

Section C. Grapes and People of Central Focus

Important Grapes of Region

The primary period of concern and relevance is from 1850 to 1920, spanning 70 years of evolving vinicultural and enological practices as well as grape discovery and breeding efforts. Unlike the most prominent winemaking regions of the United States today, Missouri's industry has always been reliant on native and hybrid grapes. Due to this and the entrepreneurial spirit of its founding adherents, Missouri's wine and grape industry was a heart of early American vinicultural advances and grape breeding efforts during the mid to late 19th century.

The first grapes of prominence in Hermann were 'Isabella', 'Catawba', and 'Norton' (Husmann 1869). In 1876, while Hermann was nearing an apex of its wine renown, the standard cultivated varieties were Concord, Norton, Martha, Goethe, Taylor, and Herbemont, with Elvira

and Uhland growing in prominence during this period (Hermann Advertiser-Courier 1876). Many of these grapes would continue to play important roles up until Prohibition. Many others still would come and go as new varieties were tested, enjoyed, and then discarded due to general preference toward a new hybrid on the market.

Stark's Suggestions

Ottmar Stark, president of the Stone Hill Wine Co., considered a reestablishment of the business which once brought him to national prominence after Prohibition was repealed. Though he never followed through with his potential restart of the winery, he would write to his fellow Missouri Rhinelanders to share what he believed were the most valuable wine grapes prior to Prohibition. His hope, it seems, was to give guidance where he could to any who were willing to reembark on the Missouri wine journey (Stark 1933). Alas, no entrepreneurs emerged, and his advice had no one to heed it. However, his list gives value to this study as expert testimony and will serve as a guide for which grapes to focus on in the next section. This list, informed by his experience helming one of the largest American wineries outside of California at the time of Prohibition (New York Times 1899; 64th Congress 1916), gives a direct insight into what hybrid grapes were considered most valuable to Missouri growers. His list consisted of twenty recommended varieties (somewhat in order of importance): Norton, Ives, Clinton, Isabella, Missouri Riesling, Niagara, Delaware, Catawba, Vergennes, Martha, Diamond, Goethe, Taylor, Noah, Hermann, Herbemont, Rulander, Marsala, Aroma, and Elvira begrudgingly (Stark 1933).

Norton

Synonyms: Norton's Virginia Seedling, Virginia Seedling, Cynthiana (disputed)

Assumed Parentage:

Bland x Pinot Meunier (Prince 1830)

Bland x *V. aestivalis* (Ambers and Ambers 2004)

[*V. aestivalis* x *V. vinifera*]

Origins: It is believed that Dr. Daniel Norton in Richmond, Virginia, started breeding and experimenting with grapes in 1818 with 'Norton' appearing to have been producing fruit by 1822 (Prince 1830).

Figure 1. The Norton Grape (Hedrick et al. 1908)

Uses: Through much of its history, it was used for Burgundian-style dry red wines, though at times it was also made into a Burgundian-style sparkling red (Stark's Price Current 1916). It was considered the best medicinal wine of its time as well due to its high level of anthocyanins (Ripley 1883).

History: The first public listing of 'Norton' appears in a William Prince Jr. nursery catalogue in 1823 (Prince 1823). The following year, it is believed 'Norton' cuttings were delivered to Thomas Jefferson's Monticello, though there is no evidence it was planted (Betts 1944). Tested in Ohio by Nicholas Longworth, it was rejected due to its inability to fully ripen in that climate (Muench 1865). In 1845, 'Norton' was delivered to Hermann, Missouri, where it soon became the most favored grape, going on to win acclaim for the region at the 1873 Vienna World Expo wine competition, winning the top premium award (Husmann 1869; Vizetelly 1874). With

Prohibition, the grape was lost to the wine industry until 1966 when it was returned to commercial production. It was designated Missouri's official state grape in 2003 and is now the most widely planted grape in the state.

Ives

Figure 2. The Ives Grape (Hedrick et al. 1908)

Synonyms: Ives' Madeira, Ives' Seedling, Ives Noir, Bordo in Brazil

Assumed Parentage: 'Hartford Prolific' Seedling [*V. aestivalis* x *V. labrusca*] (Bushberg Vineyards 1869)

Origins: Planted as a seed of unknown origin in 1840 in Henry Ives' garden in Cincinnati, Ohio, it was shared with the Cincinnati Horticultural Society in 1844 (Hedrick et al. 1908).

Uses: 'Ives' was used in many styles, including fortified sweet wines across the East. In Missouri, it also found use as a dry red varietal being produced from the 1870s until Prohibition (Stark 1908-1915, Bushberg 1895).

History: Being first grown in the 1840s, it wasn't until the late 1860s that 'Ives' became somewhat widespread in the eastern United States. In 1868, it was awarded by Nicholas Longworth's Wine House for being a top new wine grape (Hedrick et al. 1908). While the Ohioans and New Yorkers found it highly valuable as a potential replacement for Catawba which was experiencing issues due to disease pressure, the Missouri growers found it to be less valuable than 'Norton' which was already highly planted in the state. However, 'Ives' found success in Missouri and continued to be grown in the state until at least Prohibition (Kemper 1919). It continues to have large acreage planted in Brazil and other South American countries (Brighenti et al. 2018).

Clinton

Synonyms: Clinto, Worthington

Assumed Parentage:

V. riparia x *V. labrusca*

Origins: It is believed to have originated from Maryland by William Prince and John Adlum in the late 1810s under the name 'Worthington' (Hedrick et al. 1908).

Figure 3. The Clinton Grape (Hedrick et al. 1908)

Uses: It is still used in traditional wines across the world, including in the Austrian Uhudler as well as in France, Italy, Switzerland, and Brazil (Gangl et al. 2017). Through the 1860s and 1870s, it was used as a varietal claret style wine, produced to be reminiscent of Bordeaux red wines (Bushberg Vineyards 1883).

History: After originating in Maryland, it found its way as a mystery vine to New York where it found some prominence in the 1840s as it was considered the earliest *V. riparia*-derived hybrid. Finding its way to Missouri in the early 1850s (Muench 1865), it found some value as a varietal though lost interest across the eastern United States due to its difficult reaching peak ripeness (Bushberg Vineyards 1895). During the powdery mildew and phylloxera disasters of Europe in the late 19th century, 'Clinton' was planted as a hybrid variety in replacement of *V. vinifera* vineyards. However, it ultimately was designated a prohibited grapevine and removed from most European vineyards in the early 20th century (European Union 2013). Some vines continue to exist in small quantities across central Europe as well as Brazil (Balay 2019).

Isabella

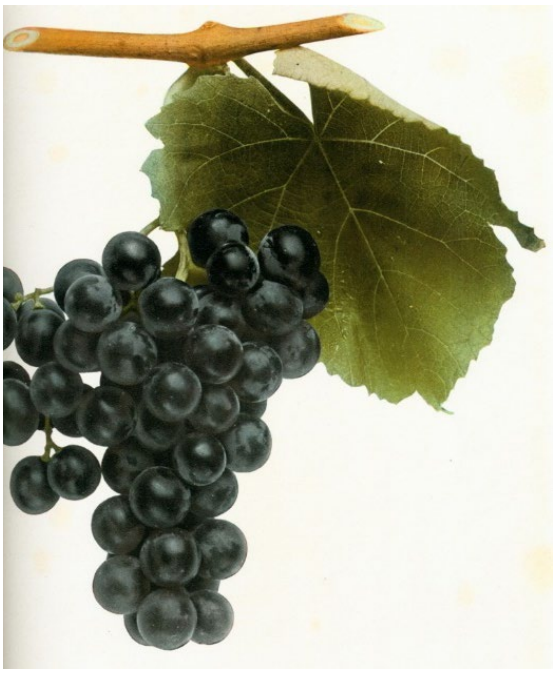


Figure 4. The Isabella Grape (Hedrick et al. 1908)

Synonyms: Isabel, Isabell, Fragola in Italy, Odessa in former Soviet nations.

Assumed Parentage:

V. labrusca x *V. vinifera*

Origins: In 1816, it found its way to William Prince Jr. in Long Island who was given it by a family who believed it was derived from a wild hybrid from South Carolina (Prince 1830).

Uses: It is in many traditional wines across the world, including in the Venetian sparkling Fragolino, Austrian Uhudler, Georgian Radeda, and Azorean Vinho de Cheiro (D'Onofrio 2015, Gangl et al. 2017). It is celebrated for its aromatic strawberry notes and refreshing lightness. In Missouri, it was used for lighter red wines as well as sparkling wines early on (Muench 1865).

History: While it came into commercial use in 1816 with the Prince Nursery, it is believed to have been grown by communities throughout the Carolinas in the 18th century (Hedrick et al. 1908). It was well known as a native-derived wine grape during the early 19th century. Planted in 1843, in 1845 'Isabella' became the first grapes harvested in Hermann (Husmann 1869). Through the 1840s and 50s, it was sent to Europe where it became a popular grape due to its inherent resistance to powdery mildew. While it became a less prominent grape for the region with time, it continued to be planted and grown until Prohibition (Viala et al. 1903). It continues to be grown in Georgia, Brazil, Austria, Argentina, the Azores and Madeira Islands of Portugal, India, as well as in New York in very small quantities (de Oliviera et al. 2015, D'Onofrio 2015).

Missouri Riesling

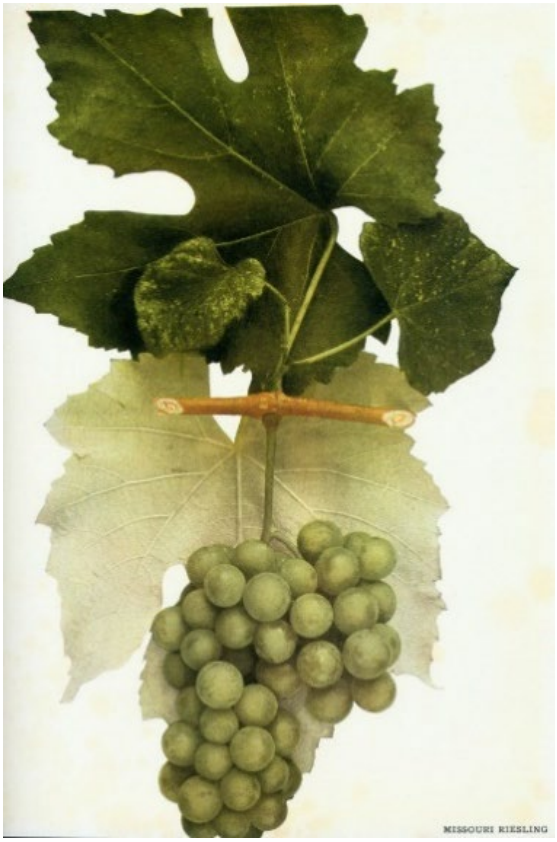


Figure 5. The Missouri Riesling Grape (Hedrick et al. 1908)

Synonyms: Riesling, Grein's Riesling

Assumed Parentage:

Taylor Seedling [*V. riparia* x *V. labrusca*]

Origins: This grape is a seedling from 'Taylor' produced by Nicholas Grein of Hermann, Missouri, in 1870. Grein, however, thought it was a seed of Riesling (Hedrick et al. 1908).

Uses: 'Missouri Riesling' quickly became a stand-in for the European 'Riesling' which struggled to survive in Missouri. Used to produce a gold-colored dry and acidic white wine (Hedrick et al. 1908), premium bottlings would often receive prolonged maturation in oak similar to the high-quality Rhine Rieslings the immigrants knew well (Stone Hill Wine Co. 1907).

History: Since its inception, it found popularity throughout the lower Midwest, though was unable to ripen fully in more northern areas of the eastern United States (Hedrick et al. 1908). During the difficult years of the 1870s for the Midwest industry, 'Missouri Riesling' started growing in acreage across Missouri and Illinois. By 1883, it was widely planted and known as a valuable white grape for wine production (Bushberg Vineyards 1883). It continued to be grown in small quantities in the Midwest and produced as a varietal up until the 1980s. There are very few plantings still known.

Niagara

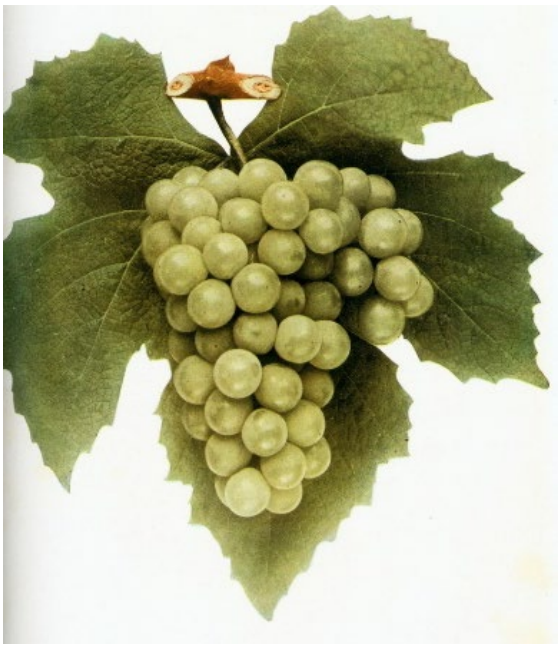


Figure 6. The Niagara Grape (Hedrick et al. 1908)

Assumed Parentage:

'Concord' x 'Cassady'

[*V. vinifera* x *V. labrusca*]

Origins: Produced by Hoag and Clark in Lockport New York in 1868, it was marketed soon thereafter as "like Niagara herself as one of the wonders of the world" by the Niagara Grape Company (Bushberg Vineyards 1883).

Uses: While not as desirable as a wine grape as compared to other varieties of the time, it became a reliable grape to use for white blended wines primarily due to its prevalence in vineyards. Vineyardists enjoyed it due to its showiness and relative ease. However, the grape was known to have a higher level of American *V. labrusca* grape aroma than most of the alternatives and therefore was not highly favored apart from its consistency in farming (Hedrick et al. 1908). It also was popular as a component of Missouri sparkling wines (Stark 1933).

History: By the standards of the times, the Niagara Grape Company took a unique strategy to sell the grape, opting to be the only suppliers of the grape and limit other nurseries (Bushberg Vineyards 1883). This proved to be successful, however, as by 1908, 'Niagara' was the leading green grape of the East (Hedrick et al. 1908). Its status as a popular grape during that time is seemingly not due to its quality, which arguably was less than other white varieties available on the market. It is still grown widely throughout the United States primarily for grape juice

production. It has also been grown internationally in Brazil for wine production in Jundiaí since the late 19th century as well as a source for table grape varieties in modern times (Verdi 2019).

Delaware

Synonyms: ‘Powell’, ‘Heath’

Assumed Species Parentage:

Complex hybrid of *V. cinerea, V. aestivalis, V. labrusca,* & *V. vinifera*

Origins: Brought to commercial importance by Abram Thompson of Delaware, Ohio, in 1849, the grape was thought to originate from New Jersey as a complex hybrid. It was theorized that European vines farmed in New Jersey by Joseph Bonaparte, Napoleon’s older brother, were the *V. vinifera* source for ‘Delaware’ (Muench 1865).

Figure 7. The Delaware Grape (Hedrick et al. 1908)

Uses: ‘Delaware’ found much acclaim as a stand-in for gewürztraminer wines from the Rhine (Husmann 1869). It was quickly known for its feisty spice and aromatics which made it desirable as a dry white wine grape (Morse 1869). It also was popular as a component of Missouri sparkling wines (Stark 1933). It continued to be used for these styles until Prohibition.

History: After being found in Ohio, it quickly found praise for its similarity to European wine grapes. It soon found champions in Ohio, New York, Illinois, Michigan, Maine, and Missouri and quickly grew in plantings due to its ability to produce a quality Rhine wine (Bushberg Vineyards 1883; Vizetelly 1875). It remained in production for dry white wines up until Prohibition (Kemper 1919). Today, a grape called ‘Delaware’ continues to be planted across the eastern United States for wine production and Austria for Uhudler wine (Gangl et al. 2017).

Catawba

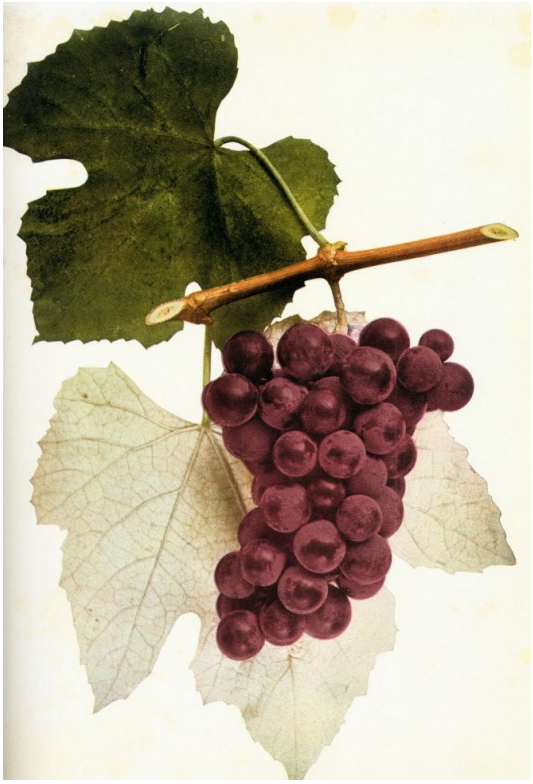


Figure 8. The Catawba Grape (Hedrick et al. 1908)

Synonyms: ‘Tokay’ (Prince 1823)

Assumed Parentage:

V. labrusca x ‘Semillon’ (Huber et al. 2016)

Origins: John Adlum found this vine growing in a garden in Maryland in 1823 and was told it originated from the Catawba River region of the Carolinas (Prince 1830).

Uses: The grape was most famously used to make sparkling white wine in Ohio, New York, and Missouri but was also commonly made into a sweet white, dry white, and dry light red/pink wine (Vizetelly 1875). Most premium dry wines would be matured for three or four years and were said to be reminiscent of Mosel (lower alcohol, crisp, higher acidity and more emphasis on flowery character versus fruit) or Franconian wines (higher alcohol, fuller body, fruity, and meant to mature up to ten years) (Muench 1865). It was also used to make Hochheimer style dry wines (high minerality, crisp acidity, light body, and fine fruit character). Many ‘Catawba’ wines would go through an intentionally cool cask primary fermentation as well as malolactic fermentation and receive a degree of barrel aging (Poeschel 1849). Some wineries would have different tiers of varietal ‘Catawba’ wine available, with four dry tiers (Extra Select, Premium, Cabinet, Very Old Vintage) and two sweet tiers (Private Stock, Very Old Vintage) (Stark’s Price Current 1916). It also was popular as a component of Missouri sparkling wines (Stark 1933).

History: In 1825, ‘Catawba’ found its way to Ohio where it quickly became the most planted grape there and would serve as Nicholas Longworth’s grape of choice for his sparkling wine empire, America’s earliest successful national wine enterprise (Pinney 1989). It found its way to Hermann in the early 1840s and was the second variety to be harvested and made into wine (Muehl 1993). Issues of rot and mildew would make the ‘Catawba’ a temperamental grape for the Ohioans and the Missourians, though it would never lose its prominence in either region. Between 1855 and 1865, ‘Catawba’ struggled throughout the Missouri Rhineland which made viniculturists search for a replacement white wine grape (Husmann 1866). It was important in New York up until the modern era through its use in Gold Seal Champagne. In Missouri, ‘Catawba’ remained the most widely planted wine grape from its introduction in the 1840s until at least 1865 when it seems to have been supplanted by ‘Norton’ and ‘Concord’ (Muench 1865). Even with its trouble with rot and disease, it would continue being a vital grape until Prohibition. It remains in cultivation throughout the eastern United States.

Vergennes

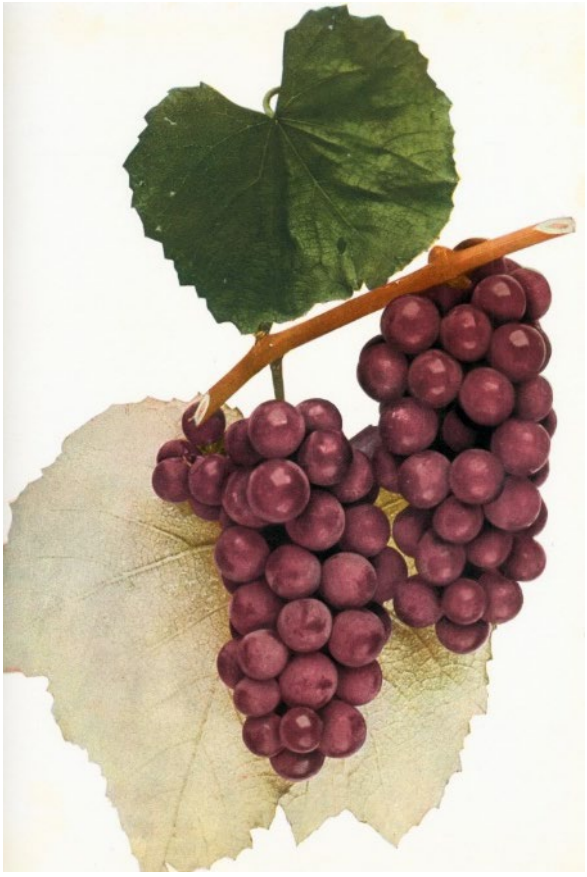


Figure 9. The Vergennes Grape (Hedrick et al. 1908)

Synoynm: 'Vergeness'

Assumed Parentage: *V. labrusca* x *V. vinifera*

Origins: It was a chance seedling found in Vergennes, Vermont, and grown by William Green, fruiting first in 1874 (Bushberg Vineyards 1883).

Uses: While it found use for table and wine production, it was primarily grown due to its cold hardiness and more pleasing flavor compared to other *V. labrusca* cultivars available (Bushberg Vineyards 1895; Munson 1909). It seems that it was primarily used in blends of dry white or blush wines as well as in sparkling wines (Stark 1933).

History: It was available commercially in 1880 and became a valuable grape for northern growers due to its cold hardiness (Munson 1909). While having some promoters early on championing the grape, the excitement started to slow due to a consensus that the flavor and grape was lower in quality than other grapes available in the Missouri Rhineland and East broadly. However, 'Vergennes' was still considered to be valuable and an above average grape for both wine and table uses. (Bushberg 1895; Munson 1909; Hedrick et al. 1908). It continued to be planted in northern regions due to its ability be kept late into the season and ship well (Hedrick et al. 1908).

Martha

Synonyms: Miller No. 1

Assumed Parentage:

'Concord' Seedling

[*V. labrusca* x *V. vinifera*]

Origins: Grown by Samuel Miller in Calmdale, Pennsylvania, from a seed of 'Concord' which was given to him by Ephraim Bull, the breeder of 'Concord' (Fuller 1864). It was available commercially by 1868 (Morse 1869)

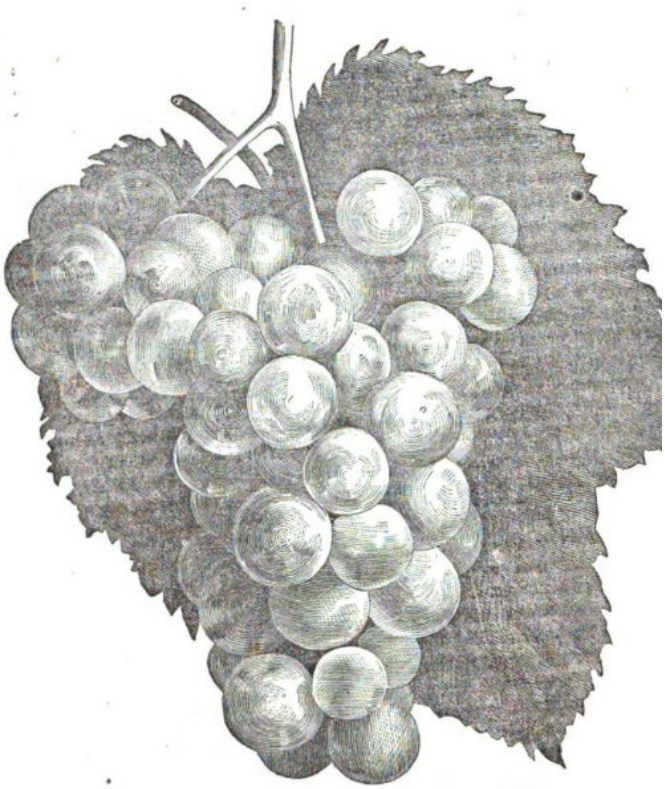


Figure 10. The Martha Grape (Bushberg Vineyards 1869)

Uses: While it at first was considered the "most valuable white grape yet introduced," it started to lose its acclaim as more desirable white grapes were introduced (Morse 1869; Bushberg Vineyards 1895). In 1874, the French Congres Viticole de Montpellier described the wine as approaching a 'Piquepoul blanc' from the Herault (Leenhardt-Pomier 1875). Its wine was said to have "a straw color and delicate flavor" (Bushberg Vineyards 1875).

History: One of the earliest white seedlings from Concord, it gained prominence due to its similarity to the grape, having its parent's strengths while having far less of the American *V. labrusca* grape aroma than Concord in its wine (Morse 1869; Bushberg 1875; Hedrick et al. 1908). It would continue to find praise as a white wine grape, often used in blends, until Prohibition in the Midwest (Bushberg 1869; Hedrick et al. 1908).

Diamond

Synonyms: ‘Moore’s Diamond’

Assumed Parentage: ‘Concord’ x ‘Iona’ [*V. labrusca* x *V. vinifera*] (Munson 1909)

Origins: Intentionally bred by Jacob Moore in Brighton, New York in 1873, it was released commercially in the mid-1880s (Bushberg 1895; Munson 1909; Hedrick et al. 1908).

Uses: It was considered a quality *V. labrusca*-derived wine grape where it was used as a standalone varietal and as a blending grape (Hedrick et al. 1908, Munson 1909).

Figure 11. The Diamond Grape (Hedrick et al. 1908)

History: Being released in the mid-1880s, it was a later grape to be introduced to the eastern wine industry. While it slowly found acceptance throughout the 1890s, many of its adherents believed it to be much higher quality than the far more popular ‘Niagara’ grape (Hedrick et al. 1908). While it found general acceptance in both the Northeast and the South, it was less popular in the Missouri Rhineland where it was subject to rot and other more desirable white grapes were available (Bushberg 1895). It appears to have been less popular by the 1910s in the region, though it continued to be considered a worthwhile wine grape (Hedrick et al. 1908, Kemper 1909, Kemper 1919).

Goethe

Synonyms: ‘Rogers’ Hybrid No. 1’

Assumed Parentage: ‘Carter’ x ‘Chasselas blanc’ or ‘Black Muscat’

[*V. labrusca* x *V. vinifera*]

Origins: Bred by Edward Staniford Rogers in Salem Massachusetts during the 1850s, it was called Rogers’ No. 1 by 1858 (Hedrick et al. 1908).

Figure 12. The Goethe Grape (Hedrick et al. 1908)

Uses: It was used for both table and wine production, being known to have a nectar-like flavor (Munson 1909). It was said to produce a “very delicate, fine flavored, white wine” which was reminiscent to ‘Piquepouls’ from the Languedoc-Roussillon (Morse 1869; Leenhardt-Pomier 1875). Later years would see it commonly used to create a dry or off-dry Rheingau-style Auslese as well as a Malaga-style wine (Stone Hill Wine Co. 1907) It is said to have fruity, citric, and floral aromas which are relatively delicate.

History: It quickly gained popularity due to its European character compared to most other *V. labrusca*-derived hybrids available at the time (Muench 1865, Hedrick et al. 1908). It became very popular across the Missouri Rhineland where it would be a varietal white wine grape (Hedrick et al. 1908, Munson 1909). It continued to be grown and planted in the region up until Prohibition (Kemper 1919). It remains an important variety in Brazil where thousands of acres remain in production where it is used for fruity dry white wine as well as sparkling wine in all sweetness levels.

Taylor

Synonyms: ‘Bullitt’, ‘Taylor’s Bullitt’

Assumed Parentage: *V. riparia* x *V. vulpina* x *V. labrusca*

Origins: It was believed it be an accidental seedling of *V. labrusca* and wild vines which was found by John Taylor from Jericho, Kentucky, in 1840 (Bushberg Vineyards 1869, Hedrick et al. 1908).

Uses: When it arrived in the Missouri Rhineland, it was originally used to create something akin to a Rhine Riesling (Morse 1869). It continued to be used in white blends. Surprisingly, it’s wine was sometimes said to have a blackcurrant taste (Leenhardt-Pomier 1875).

History: While it did not receive widespread acclaim on its own, it continued to find favor as a grape which could be used to produce a very nice, light, Rhine-style dry white wines for amateur and commercial producers (Muench 1865, Husmann 1866, Kemper 1919). However, it was supplanted for this purpose by its many progenies which were believed to have more pleasant ‘Riesling’-like character and were lacking some of the varieties challenges in the vineyard (Bushberg 1883). ‘Taylor’ reached the pinnacle of its prominence due to its ability to effectively resist phylloxera. This trait made it one of the most popular grafting options across France throughout the late 19th and early 20th centuries. It continued to serve as the *V. riparia* source of other rootstocks which continue to be important (Viala et al. 1903, Munson 1909).

Noah

Assumed Parentage: 'Taylor' Seedling

[*V. riparia* x *V. labrusca*]

Origins: 'Noah' is a seed from 'Taylor' planted by Otto Wasserzieher in Nauvoo, Illinois in 1869, and was then sent to Bushberg Vineyards who released it commercially in 1876 (Bushberg Vineyards 1883).

Uses: It was used to make a dry white wine with some strawberry character present in both aroma and flavor as well as a fruity brandy (Bushberg Vineyards 1883, Hedrick et al. 1908). It continues to be used in Uhudler in Austria (Gangl et al. 2017).

Figure 13. The Noah Grape (Hedrick et al. 1908)

History: Popular relatively soon after its release in the Missouri Rhineland, it was considered similar in character to 'Elvira', though perhaps a better grower in the vineyard (Bushberg Vineyards 1883). It gained prominence due to its use as a consistent dry white varietal wine and was known for its relatively high sugar levels at harvest which would translate to higher alcohol than most whites of the time (Bushberg 1895, Hedrick et al. 1908). During the phylloxera epidemic of France, it was very popular as a direct producing wine grape, though it was outlawed in the country in 1934 and the rest of the European Union in 1979 (European Union 2013). Some producers still grow it there, as well as in other parts of Europe such as Austria (Balay 2019, Gangl et al. 2017)

Hermann

Synonyms: ‘Langendoerfer’s Seedling’

Assumed Parentage:

‘Norton’ Seedling

[*V. aestivalis* x *V. vinifera*]

Unique Characteristics: As it is a seedling of ‘Norton’, it is very similar in appearance though with lighter colored foliage and more deeply lobed (Bushberg 1873). It ripens slightly later than ‘Norton’ (Husmann 1869).

Origins: Produced as an experimental seedling by grape grower Franz Langendorfer in Hermann, Missouri, in the year 1860 (Husmann 1869).

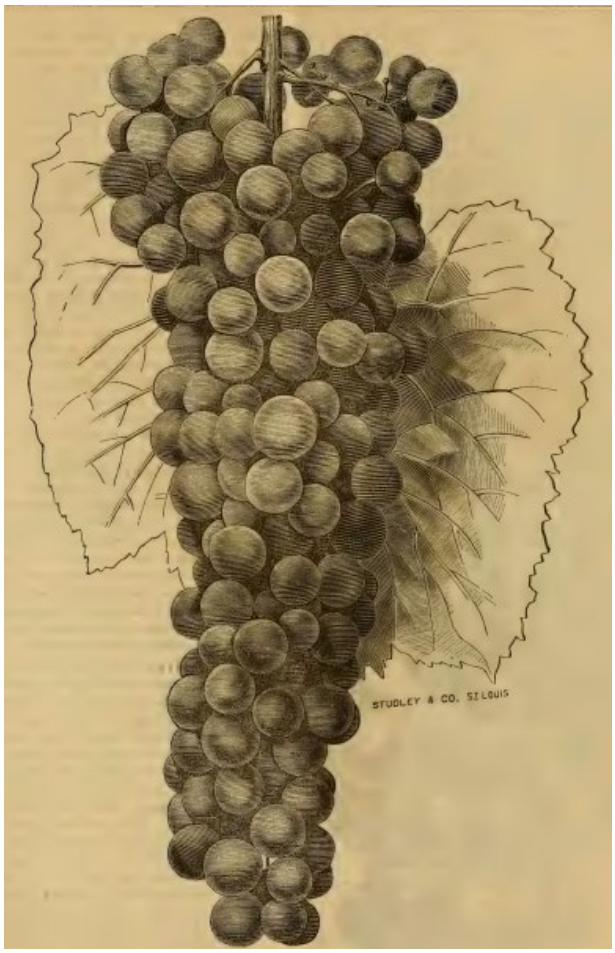


Figure 14. The Hermann Grape (Bushberg Vineyards 1869)

Uses: ‘Hermann’ quickly came to be used to produce an American Madeira-style wine (Husmann 1869). It was also used for sweet style sherry wines and dry white wines (Morse 1869). The dry varietal was said to produce a wine which was spicy and full bodied (Leenhardt-Pomier 1875).

History: While relatively little is known about this grape due to its comparatively limited adoption outside of the Missouri Rhineland region, it continued to be produced by grape growers for commercial wine production in Hermann at least up until Prohibition (Stark 1933 & Table 1). It is believed that a remnant vine of ‘Hermann’ existed within the town boundaries until the mid-1990s when it was removed. It is possible that remnant vines exist on the historic Langendoerfer homestead which may be included in future research.

Herbemont

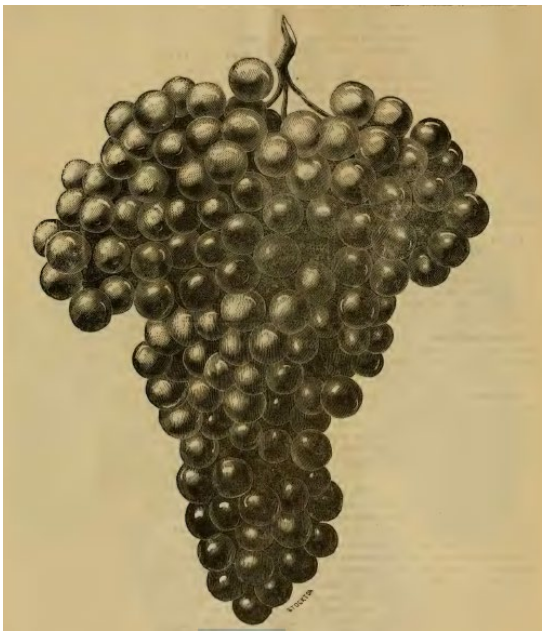


Figure 15. The Herbemont Grape (Bushberg Vineyards 1869)

Synonyms: 'Madeira', 'Warren' (disputed)

Assumed Parentage: Complex hybrid of *V. cinerea, V. aestivalis (*or *V. bourquiniana)* & *V. vinifera*

Origins: Though its origins are somewhat unknown, it was popularized by Nicholas Herbemont during the early 19th century in South Carolina (Muench 1865).

Uses: 'Herbemont' was used in many ways, including in blends, varietal wines, and in fortified sweet wines, both white and light red. It was used for a 'Riesling'-style wine which was said to be similar to those from Rüdesheim (Husmann 1869). When done as a dry white varietal, it was also compared to wines of Eastern France by French viniculturists in Montpellier (Leenhardt-Pomier 1875). At times, it was also mixed with Norton to produce a blended wine (Muench 1865). Most commonly, however, it was used to produce Madeira-style fortified wine in the Missouri Rhineland and Texas due to its purported similarity to 'Verdelho' (Shields 2009).

History: It was said to be grown throughout the southern United States during the late 18th and early 19th centuries, though this cannot be confirmed. Commercially available during the 1820s, it became a popular grape in southern localities such as Texas where it could survive winters, with Missouri and southern Ohio being its northernmost range (Hedrick et al. 1908). It continues to have some small plantings in the United States as well as the Azores and Madeira of Portugal and should be assumed to be growing in other parts of Europe (Balay 2019). It was outlawed in France in 1934 and the rest of the European Union in 1979 (European Union 2013).

Rulander

Synonyms: Louisiana (disputed), Ste. Geneieve (Morse 1869, Hedrick et al. 1908)

Assumed Parentage: Complex hybrid of *V. cinerea, V. aestivalis (*or *V. bourquiniana)* & *V. vinifera*

Origins: Its parentage is quite obscured, though some suggest it has a heavy degree of *V. vinifera* in its heritage, potentially from the 'Malvasia' grape from Madeira, or 'Pinot Grigio' or 'Pineau' brought over from France, while others believed it to be American-derived primarily (Munson 1909, Viala et al. 1903). It either was found in New Orleans and brought to Friedrich Muench in the 1850s or cultivated in Ste. Genevieve, Missouri by French settlers during the 18th century (Muench 1865, Bushberg 1869).

Uses: Early on, the 'Rulander' was used to produce dry sherry-style wines, sometimes with a pale red or golden color (Husmann 1869). It was also used to produce wines similar to German or French 'Pinot Grigio' or 'Pinot Blanc' (Bushberg Vineyards 1869, Bouschet and Douysset 1875). It continued to be used for this style wine until Prohibition and would be priced equally to Norton, often the highest priced dry wine (Stone Hill Wine Co. 1907).

History: While its origins are unknown, it quickly became a popular wine grape once commercially available after being distributed by Muench in the 1850s. It was popular throughout the Missouri Rhineland, though it did not spread north of the Missouri River due to its intolerance to frost and cold winters (Bushberg 1895). 'Rulander' would consistently rank as one of the top white wines for the region, winning premium awards and acclaim regionally, nationally, and internationally (Bushberg Vineyards 1895). French wine critics at Montpellier would even consider it equal to their own white wine grapes (Leenhardt-Pomier 1875).

Marsala

Synonyms: Stayman's Marsala

Assumed Parentage: *V. labrusca* x *V. vinifera*

Origins: It was bred by Dr. Joseph Stayman in Leavenworth, Kansas in 1877, though what it is derived from is not well known. It was commercially available by the late 1880s.

Uses: While it was not used to produce Italian Marsala-style wine, it was used in some white wine blends even though it was a dark red grape (Bushberg Vineyards 1895). While it had some degree of American *V. labrusca* grape character, it had far less than many other *V. labrusca*-derived grapes and found itself to be a valuable grape for wine production during the late pre-Prohibition era (Bushberg 1895, Kemper 1919).

History: A relatively late addition to the Missouri Rhineland, it found itself planted relatively quickly due to its strong resistance to rot damage compared to other *V. labrusca*-derived grapes popular at the time. It found some popularity as a wine grape, though it was not commonly used for varietal wine itself, instead being often used for blending (Bushberg Vineyards 1895).

Aroma

Assumed Parentage: *V. labrusca* x *V. vinifera*

Origins: The 'Aroma' grape was found by Michael Romesier growing wild in Kansas. It was brought to Hermann, Missouri and was available commercially by 1906 (Kemper 1909, Hedrick et al. 1908).

Uses: While it was originally a curiosity due to its large berry size, it soon found adherents in Hermann who had interest in producing wine from it as it had a unique aroma and very limited to no American *V. labrusca* grape aroma (Kemper 1919). Though it was a red grape, it was often used for white wine production (Stark 1908-1915).

History: As it only was released less than fifteen years prior to Prohibition, the grape did not have a chance to be experimented with broadly outside of Hermann. However, it quickly found supporters within the town from the vineyardists as well as the wine producers (Kemper 1919, Hesse 1998). It is not known to still be grown anywhere.

Elvira

Figure 16. The Elvira Grape (Hedrick et al. 1908)

Assumed Parentage: 'Taylor' Seedling [*V. riparia* x *V. vulpina* x *V. labrusca*]

Origins: It was produced as a seedling from 'Taylor' by Jacob Rommel Jr. in Morrison, MO in 1874 (Bushberg Vineyards 1875).

Uses: Upon its release, it became a very popular option for white wine production, though it started to lose value due to its tendency to crack (Hedrick et al. 1908, Stark 1933). It was used as a component of Missouri sparkling wines, though it was less favorable than other similar grapes such as 'Niagara', 'Delaware', 'Vergennes', and 'Elvira' (Stark 1933). It also continues to be used in Uhudler in Austria (Gangl et al. 2017).

History: It quickly became popular during the late 19th century through the Midwest and to some extent throughout the East, particularly due to the promotion by George Husmann. After the start of the phylloxera epidemic in France, it became a direct producer and a source of rootstock, though it eventually fell out of favor on both accounts (Hedrick et al. 1908). Due to its general trend toward American *V. labrusca* grape aroma and berry cracking, it started to lose popularity in Missouri where other similar grapes were available (Stark 1933).

Other Grapes of Prominence During the Early Years

Cynthiana

Synonyms: Red River (Morse 1869), Norton (disputed)

Assumed Parentage: *V. aestivalis* x *V. vinifera*

Unique Characteristics: Wood and leaf are said to be nearly identical to 'Norton' though its bunch is more shouldered, and its berry is slightly juicier and sweeter (Husmann 1866).

Origins: Its origins have two conflicting accounts. The first is that it was a wild grape found in Arkansas (Bushberg 1883). The second believes it to have been wild in Ohio (Muench 1865). While its origins are unknown, it was available for purchase from the Prince Nursery by 1857 (Prince 1857).

Figure 17. The Cynthiana Grape (Hedrick et al. 1908)

Uses: It was used to make a wine similar to 'Norton', though it was said to be lighter in color (Muench 1865). A regional dry red blend of 'Norton' and 'Cynthiana' was known as the Missouri Black Rose. Noted English wine critic Henry Vizetelly would describe both 'Norton' and 'Cynthiana' as "similar to a first-rate Burgundy." He found 'Cynthiana' to be "darker, less astringent, and more delicate growth" (Vizetelly 1875).

History: It was received by George Husmann in Missouri by way of William R. Prince from Flushing, New York, in 1858. The Missouri Rhinelanders were the first to test the grape and found it to be equal or superior to 'Norton' (Husmann 1866). However, it quickly became

evident that most growers could not distinguish the two from each other. This led to the industry eventually treating them as one variety. By the 1880s, it appears that ‘Cynthiana’s’ distinction as a separate grape mostly vanished (Rommel and Sobbe 1883). For a time, it was grown as a direct producer for wine in France, though it fell out of favor due to its tendency to prefer cooler environments and the less temperamental *V. rupestris* hybrids (Viala et al. 1903). Today, it remains a debate as to whether ‘Cynthiana’ is a distinct variety compared to ‘Norton’ with research continuing to be ongoing (Reisch et al. 1993; Volenberg 2023).

Concord

Figure 18. The Concord Grape (Hedrick et al. 1908)

Assumed Parentage:

V. labrusca x Catawba

[Catawba = *V. labrusca* x Semillon]

Origins: Believed to be a 'Catawba' seedling, it was produced by Ephraim W. Bull in Concord, Massachusetts, at his home in 1843 (Hedrick et al. 1908).

Uses: While it is widely used for juice and table today, it was commonly used for wine production prior to Prohibition. To cut down on its American *V. labrusca* grape character, it would undergo gallization in Missouri if made into a dry varietal wine (Muench 1865). It would be added to 'Norton' to produce a Port-style wine (Husmann 1869). It remains a component of Uhudler wine in Austria (Gangl et al. 2017).

History: A company out of Boston started selling the variety in 1854 (Hedrick et al. 1908). In 1855, it arrived in Hermann and received praise in its first year after being grafted to 'Catawba' vines to hurry along its production. In the eastern United States, it was said to have low fruit quality, but this was not the case across the Missouri Rhineland where it quickly found support due to its ability to produce a light red wine which was lively and a less expensive product able to target the working-class wine drinkers (Husmann 1866). It is widely planted and known throughout the United States and the world.

Cunningham

Synonyms: ‘Canim’, ‘Barco do Porto’, ‘Gropel’

Assumed Parentage: ‘Red Bland’ Seedling [Red Bland = Wild *V. aestivalis* x ‘Petit Meslier’]

Origins: It is believed to have originated in Virginia from a Mr. Cunningham around 1812 (Hedrick et al. 1908).

Uses: It was used solely for wine production, most often to make a very heavy Madeira-style wine (Muench 1865).

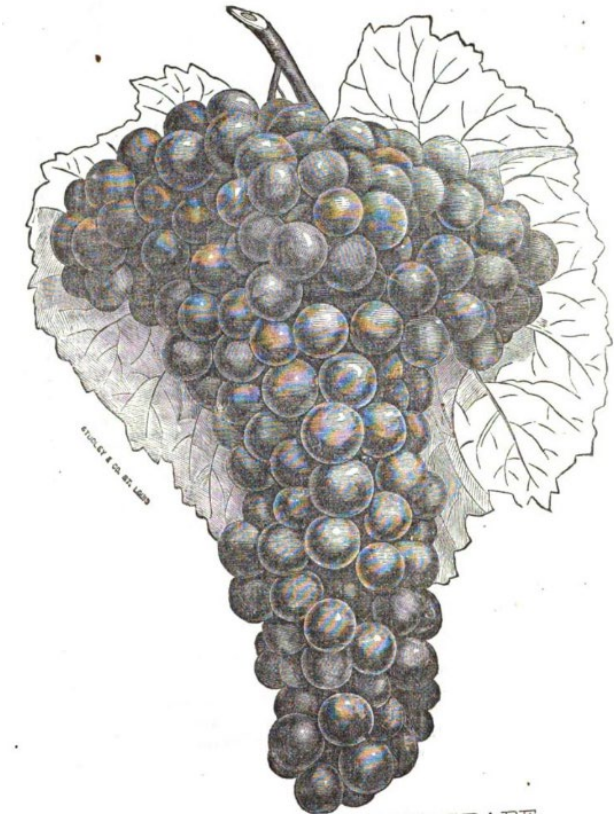


Figure 19. The Cunningham Grape (Bushberg Vineyards 1869)

History: It appears to have reached Missouri during the mid to late 1850s (Muench 1865; Husmann 1866). Due to its inability to weather frost, it fell out of favor in Missouri (Muench 1865; Bushberg 1883). While it did not find large support in America, it appears to have done well in France where it was celebrated as an American variety equal to French varieties (Bushberg 1883; Hedrick et al. 1908). It is believed that it is still in existence in France in small quantities (Balay 2019). It seems to continue to find cultivation in Portugal, specifically on the Azores and Madeira, as well as in Brazil and South Africa (de Oliviera et al 2015).

Perkins

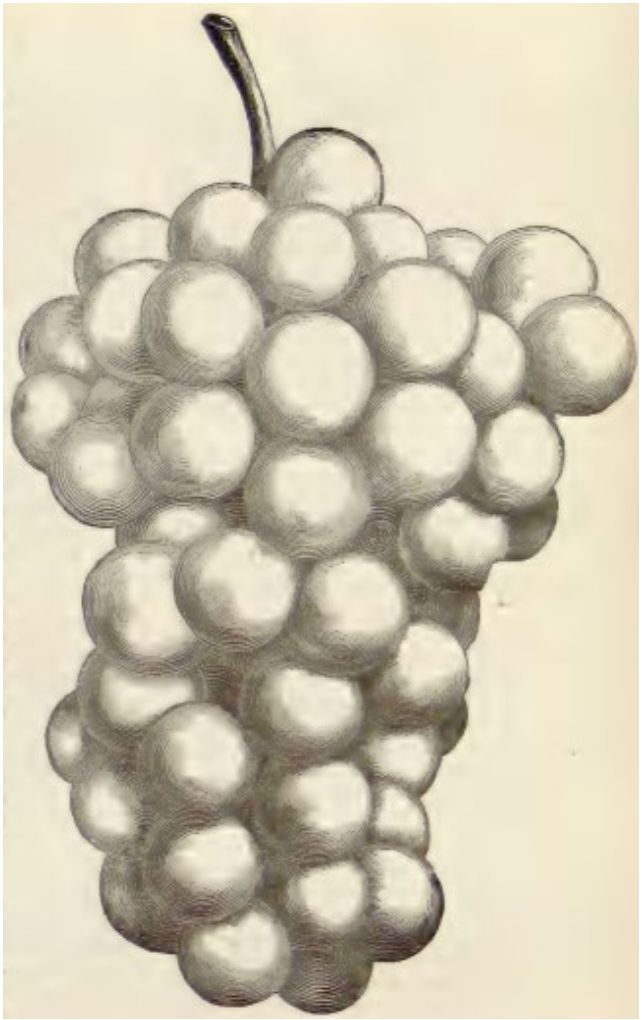


Figure 20. The Perkins Grapes (Bushberg Vineyards 1895)

Assumed Parentage:

V. labrusca x *V. vinifera*

Origins: It is believed to have been a chance seedling from a Mr. Perkins in Massachusetts in 1830 (Hedrick et al. 1908)

Uses: Primarily a table grape in Missouri, it also found some limited use as a wine grape. Due to its high level of American *V. labrusca* grape character compared to other *V. labrusca* hybrids, it was mostly relegated to white blends which could mask its disagreeable character or undergo long periods of maturation to subdue this aroma (Bushberg 1883).

History: While it found little excitement in its home territory of the American North-East, it was said to be a valuable *V. labrusca*-derived table grape in Missouri due to its perceived ability to resist rot better than alternatives (Bushberg 1883; Hedrick et al. 1908). It continued as a cultivated grape toward Prohibition due to its relative early ripening, thereby filling in a gap which would otherwise go unfilled (Husmann 1866).

Lenoir

Figure 21. The Lenoir Grape (Bushberg Vineyards 1895)

Synonyms: Black Spanish, Jacquez, El Paso, Burgundy

Assumed Parentage: Complex hybrid of *V. berlandieri, V. aestivalis, V. rupestris, V. riparia,* & *V. vinifera*, or *V. bourquiniana* (Galet 1998).

Origins: There are differing accounts of its origins. One suggests it was found wild in Lenoir County, North Carolina. Another suggests it was found by a man with the name Lenoir on the border of South Carolina and Georgia (Bushberg 1883; Hedrick et al. 1908).

Uses: Due to its mix of dark fruit aromas and herbaceous spice, it was and still is often used for Port-style wines.

History: Known to have been cultivated in the late 18th century, it would travel across the country. While it was used for some time by both the Ohio and Missouri growers, it fell out of production rather quickly due to more promising alternative red varieties (Hedrick et al. 1908). From there, it found its way to Texas where it remains an important grape due to its resistance to Pierce's disease. California was known to grow a sizeable amount of 'Lenoir' prior to Prohibition as well (Bushberg 1883). Introduced in France in 1869, it is believed that 'Lenoir' vines remain growing there, though it was banned in 1934 (Bushberg 1883; Balay 2019).

Neosho

Assumed Parentage: *V. aestivalis*

Unique Characteristics: It was said to have an exceptionally unique aroma compared to all other grapes, though the specific scent does not appear to have been recorded. Friedrich Muench would say the wine "has a most peculiar aroma," and Samuel Miller would announce "The fragrance of the Neosho grape is unsurpassed by any grape that ever tickled my olfactory nerves. Neosho is a treasure to the land" (Bushberg 1883). It should be noted that this should not be assumed to be American *V. labrusca* grape character as both Muench and Miller would know that aroma well.

Origins: Found wild by Hermann Jaeger (see Section C. Important Vinicultural Figures of the Period - Hermann Jaeger) in Neosho, Missouri, he would ship it to Muench who would seemingly become an ardent champion of the grape sometime in the early 1870s (Bushberg 1883; Hedrick et al. 1908).

Uses: It was said to make a remarkably enjoyable dry white varietal wine with the unique aromas still present and a greenish yellow color (Bushberg 1883).

History: Though it appears to have not been popular in Hermann, it seems to have found support in Warren County with Muench as well as in Augusta (Bushberg 1883). It is possible that the grape remains on a pre-Prohibition farm in that vicinity.

Other Grapes from Breeders of the Area

Grein Hybrids

Nicholas Grein, a breeder from the Hermann area, would be actively producing grapes during the 1860s and 1870s. He states that he was producing seedlings from both the *V. vinifera* Riesling and the *V. riparia*-derived Taylor. His claim was that the Riesling seeds germinated, and the Taylor did not, though his contemporary viniculturists dispute the veracity of this claim due to the seedlings' lack of resemblance to *V. vinifera* (Husmann 1869; Bushberg 1883; Hedrick et al. 1908). He would produce the popular 'Missouri Riesling' which would be popular in the region until the mid-20th century. 'Grein Golden', which he considered to be a marked improvement compared to 'Missouri Riesling' when he released it in 1875, has been lost to history. He would produce other seedlings as well including 'Grein Extra Early' (Bushberg 1883).

Rommel Hybrids

Jacob Rommel Jr. produced a sizeable number of grape varieties during the latter half of the 19th century. Striving for wine grapes which were vigorous and highly productive and well adapted specifically to Missouri, he used the Taylor grape as the parent for most of his varieties (Hedrick et al. 1908). Rommel's grapes of importance were 'Amber', 'Beauty', 'Black Delaware', 'Elvira', 'Etta', 'Faith', 'Montefiore', 'Pearl', 'Transparent', and 'Wilding'. The Bushberg catalogue would mention the exciting potential of Montefiore as the most promising new red wine grape (Bushberg 1883). His most prominent grape, the Elvira, continues to be in production whereas it's believed his other varieties have been lost due to their lack of adoption outside of Missouri.

Robyn Brothers Hybrids

The Robyn brothers were grape breeders and vineyard operators within Hermann. Their parents moved to Hermann in 1860 and started a vineyard. The family would raise a sizeable vineyard on the outskirts of the town and would sell their grapes to the commercial wineries (Hesse 1998). The younger Robyn's would be late additions to the grape breeding scene in the region, only releasing their first grape variety around 1909 (Kemper 1909). Their grape cultivar, 'Dry Hill Beauty' was a red grape which was said to be very sweet, hardy, and good as a table or wine grape (Hesse 1998).

Miller Hybrids

Originally a grape breeder in Pennsylvania, Samuel Miller would move to Hermann at the behest of George Husmann to join as a partner in the Bluffton Wine Company (Pinney 1989). While the Bluffton Wine Company ultimately failed, he would find some acclaim in the region for his other contributions. The 'Martha' grape would be his most impactful asset to the wine industry, though he would develop other grapes while in Pennsylvania and in Missouri. His released varieties appear to be *V. labrusca*-derived, most of which tracing lineage to 'Concord' or 'Isabella'. His other somewhat popular grapes were the 'Black Hawk', 'Eva', 'Macedonia', and 'Young America', though most did not make much of an impact (Hedrick et al. 1908).

Munson Hybrids

While not a breeder from Missouri, Thomas Volney Munson was a prolific and meticulous producer of hybrid grapes. It would be fair to state that he is to Texas what Husmann is to Missouri. Taking a rather scientific approach to grape breeding, he would coordinate with the top ampelographers and viticulturists of his time from across the globe, including the famed Frenchmen J. E. Planchon, A. Millardet, Pierre Viala, and Louis Ravaz as well as his American counterparts in Missouri, New York, and California (Munson 1909; McLeroy and Renfro 2004).

An expert viticulturist in his own right, he would scour the country documenting wild vines. Over the course of his life, it seems that he would release well over 100 varieties, many of which remain in the vineyard of Grayson College in Grapevine, Texas (McLeroy and Renfro 2004). Most of his varieties did not find an opportunity to be widely planted in Missouri, though some are known to have been available such as ‘Brilliant’, ‘Carman’, ‘Dr. Collier’, ‘Elvicand’, ‘Fern’, ‘Gold Coin’, ‘H. Jaeger’, and ‘Rommel’ (Bushberg 1898).

Important Vinicultural Figures of the Period

Stone Hill Wine Co.

Founded in 1847 by Michael Poeschel on the crest of what was called Stone Hill, this winery, then eponymously known as M. Poeschel Wine Company, was Missouri's first commercial wine enterprise (Pinney 1989). The first wine in Hermann was made by Poeschel and George Riefenstahl from Isabella in 1846 (Hermann Advertiser-Courier 1876). Poeschel would establish a name for himself as a leader in quality in the burgeoning industry, winning awards at regional wine expositions throughout the 1850s and 1860s (Schulenberg 1852; Hermann Advertiser-Courier 1876). Poeschel would take on a partner in 1861, John Scherer, and would be known as Poeschel and Scherer Wine Co. In 1873, the winery would win the highest honor at the Vienna World Expo with its Norton wine being declared 'Best Red of All Nations' (Vizetelley 1874). This award and subsequent awards at major wine expositions and World's Fairs would help the winery solidify its status as a major producer of quality American wine.

The winery and cellars would expand throughout the 19th century, eventually having a production capacity within the cellars of 1,250,000 gallons (Stark Price Current 1916). By 1876, the winery had a branch house in St. Louis and was shipping their wines throughout the entire United States as well as exporting to Europe and China (Hermann Advertiser-Courier 1876). In 1883, winery ownership would be passed to salesmen William Herzog and George Stark. Stark and his sons would become sole owners in 1894 and take the winery to its largest production volume. Even as Missouri's industry started consolidating and slowing, the Stone Hill Wine Co. continued to grow and establish itself as one of America's largest wine producers by the start of the 20th century (Anderson 1905). As a result of this, the winery would find itself in direct competition with the rapidly expanding and dominant California wine industry, including the California Wine Association and eastern producers who were using and bottling Californian bulk

wine. By the 1900s, it was common practice to resell Californian wine. This practice was damaging the prestige of America's wine industry, both the California wine industry by selling adulterated inferior products which were called Californian and Eastern producers who were selling cheaper bulk product. The concern over the damage being done by these repackagers ultimately was the common ground which Ottmar Stark, representing the Eastern wine makers, and the Californian wine industry were able to come to regarding the Pure Wine bill and subsequent related discussions (58th Congress 1904; Stark 1914; 64th Congress 1916).

Throughout its pre-Prohibition history, Stone Hill Wine Co. was Missouri's largest winery. Many years would see hundreds of thousands of gallons of wine being produced at its winery in Hermann (Anderson 1905; Bek 1907). While the winery farmed a vast array of vineyards within and outside the town, tons of grapes would also be sourced across the region (Stone Hill Wine Co. 1907). From 1908 to 1915, the types of grapes purchased were recorded and showcase the breadth of varieties that were being sourced at this time (Table 1). Other grape varieties not shown in the table are believed to have been farmed by the winery as well during this period.

Table 1. Grape Variety Purchases by Stone Hill Wine Co. Between 1908 - 1915 (Excluding 1910 due to Missing Data) (Stark 1908-1915).

1908	
Red	**White**
Concord	Aroma
Ives	Catawba
Virginia Seedling	Elvira
	Herbemont
	Hermann
	Marsala
	Martha
	Missouri Riesling
	Muscatel
	Noah
	Perkins

1909	
Red	**White**
Concord	Aroma
Ives	Catawba
Virginia Seedling	Elvira
Black Pearl	Goethe
	Herbemont
	Hermann
	Marsala
	Martha
	Missouri Riesling
	Muscatel
	Perkins
	Taylor
	Vergennes
	White Pearl

1911	
Red	**White**
Concord	Aroma
Ives	Catawba
Virginia Seedling	Elvira
	Goethe
	Hermann
	Marsala
	Martha
	Missouri Riesling
	Perkins
	Taylor

1912	
Red	**White**
Concord	Aroma
Ives	Elvira
Virginia Seedling	Hermann
	Marsala
	Martha
	Minor's Seedling
	Missouri Riesling
	Perkins
	Taylor
	Woodruff

1913	
Red	**White**
Concord	Aroma
Ives	Catawba
Virginia Seedling	Elvira
	Goethe
	Herbemont
	Hermann
	Martha
	Missouri Riesling
	Perkins
	Taylor

1914	
Red	**White**
Concord	Aroma
Ives	Catawba
Virginia Seedling	Elvira
	Goethe
	Herbemont
	Hermann
	Marsala
	Martha
	Minor's Seedling
	Missouri Riesling
	Niagara
	Perkins
	Taylor

1915	
Red	**White**
Concord	Aroma
Ives	Catawba
Virginia Seedling	Elvira
	Goethe
	Herbemont
	Hermann
	Marsala
	Martha
	Missouri Riesling
	Perkins
	Taylor

George Husmann

The single most important person from the Missouri Rhineland regarding viniculture must be George Husmann. While finding only limited achievement from his pursuits in nursery and winery businesses, his successes are innumerous regarding the promotion and advancements of scientific understanding of grapes and wine throughout the 19th century for not just the region, but for the whole United States. His life mirrored and pivoted along with the evolution of America's wine culture as it migrated East to West.

Husmann came of age while Hermann's vinicultural industry was in its infancy. Being enamored by the region's grapes and wine, he quickly became one of the burgeoning industry's most ardent champions. In 1847, he encouraged his father to plant their first vines, 'Isabella' and 'Catawba' (Husmann 1869). Two years later, however, he would be swept up by the promise of Californian gold and head west. Returning to Hermann in 1852 due to unexpected deaths in his family, he would quickly join the ranks of the vintners and viniculturists of the town, aiming to continually improve the industry and its wine. He would lead the county's agricultural society in 1853 and in 1855 bring the valuable 'Concord' grape to Missouri (Schroeder et al. 2002). During the early years, he sought out new grape varieties by experimenting with wild grapes from the region and securing cultivated varieties from across the country (Hesse 1998). Throughout the latter half of the 19th century, he would write multiple treatises on American wine and grapes which would continue to be beloved as technical manuals for viniculturists across the country well into the 20th century.

Moving from Hermann in 1869 to establish his own wine cooperative in the nearby hamlet of Bluffton, the Bluffton Wine Company would only survive until 1872, even with President Ulysses Grant as a fan of their 'Cynthiana' (Pinney 1989). During the 1870s, he would

work with Charles Valentine Riley, Hermann Jaeger, Thomas Volney Munson, and Jules Émile Planchon to fight against the Great French Wine Blight caused by phylloxera throughout the late 19th century. Husmann along with many other Missouri and Texas grape growers sent millions of rootstocks to France, eventually successfully combatting phylloxera and helping to save the world's industry (Gale 2011). During this time, he would become the first Professor of Pomology at the University of Missouri until moving to California in 1881. There, he would continue to impact the early viniculturists in Napa Valley and found his own winery which he farmed until his death in 1902 (Schroeder et al. 2002).

Bushberg Vineyards and Grape Nursery

Isidor Bush, founder of the Bushberg Vineyards and Grape Nursery, would arrive in the region in 1851 and plant his first vineyard. While originally starting with a small vineyard, he soon gained acclaim as an authoritative viticulturist. Coordinating with Husmann, Muench, and the other Missouri Rhinelanders, Bush would experiment with many varieties from across the nation at this time (Ehrlich 1999). In 1868, he would publish the first edition of his Bushberg Catalogue, a compendium of grapes of the period which included best practices, critiques of specific varieties, and commentary from other prominent viniculturists (Bushberg Vineyards 1869). In 1869, Isidor Bush reported what he planted for the year:

> 9 acres… containing 2,500 Concord, 1,800 [Norton], 750 Herbemont, 250 Hartford, 600 Delaware, 500 Catawba, 300 Clinton, 250 Taylor, 100 [Goethe], 100 Perkins, 100 Cunningham, 100 Ives, 100 Maxatawny, 100 Creveling, 100 Alvery, 100 Rogers' No. 4 [Wilder], 150 Martha, 50 Rulander, and 50 Cynthiana (Husmann 1869).

The following year he would establish his nursery business which would supply the region with many different types of grapes. He would also help Planchon and provide the French with

rootstocks and cuttings to fight against phylloxera. It would continue to be a prominent business and he would remain a trusted voice in the industry until his death in 1898 (Ehrlich 1999).

Bush's nursery would have over 100 varieties available throughout the 1890s (Bushberg 1898). Each year in his price list, he would list approximately a dozen grapes which he considered to be the best for the times, many of which match Stark's suggestions (Stark 1933). Table 2 shows his suggestions during this period. Unfortunately, it appears that neither the original nursery nor the vineyards have survived into present times, though future research may be valuable to examine this more closely.

Table 2. Grapes of Prominence Per Bushberg Vineyards Between 1892 - 1898

Listed Grapes of Prominence				
1892	1894	1895	1897	1898
(Bushberg 1892)	(Bushberg 1894)	(Bushberg 1895)	(Bushberg 1897)	(Bushberg 1898)
Catawba	Catawba	Catawba	Catawba	Catawba
Concord	Concord	Concord	Concord	Concord
Cynthiana	Cynthiana	Cynthiana	Cynthiana	Cynthiana
Delaware	Delaware	Delaware	Delaware	Delaware
Elvira	Elvira	Elvira	Elvira	Elvira
Empire State	Empire State			
Etta				
Ives	Ives	Ives	Ives	Ives
Martha	Martha	Martha	Martha	Martha
Moore's Early	Moore's Early	Moore's Early	Moore's Early	Moore's Early
Montefiore	Montefiore	Montefiore	Montefiore	Montefiore
Niagara	Niagara	Niagara	Niagara	Niagara
Norton	Norton	Norton	Norton	Norton
			Delawaba	Delawaba

Friedrich Muench

Known as “Papa Muench” to the Missouri Rhinelanders, Friedrich Muench would be an early champion of Missouri viniculture. Leading a settlement society from Germany in 1834, he would settle east of Hermann along the Missouri River. Seeing the success of the early years in Hermann, he would follow suit and plant his own vines and quickly be an ardent supporter of the burgeoning industry. While he would not run a commercial wine or grape venture, he would write a popular treatise on wine in 1859, expanding and publishing it in 1865 under the name *School for American Grape Culture* and continue encouraging other German settlers to adopt the trade (Muench 1865). An unshakably committed abolitionist and Unionist, a trait he shared with almost all the other German immigrants of the period, he saw the propagation of grape culture in direct competition with other agricultural pursuits of the time which relied on enslaved labor. To Muench, grape and wine production inherently limited the expansion of slavery (Muench 1859). Muench would receive and promote specific varieties throughout his life including Rulander and Louisiana, a vine he received from New Orleans that he believed to be of European origin (Husmann 1869). Muench would raise many seedlings and crosses he produced himself as well as promoting and testing grapes from Hermann Jaeger (Bushberg 1884). He would die while tending to his grapes in 1881 (Muench 2011).

His brother, Georg, would settle in Augusta, Missouri, and start growing grapes in 1859. His grapes would be sold to the Augusta Wine Company cooperative when it was founded in 1867 until its dissolution in 1884. His son would establish Mount Pleasant Wine Co. in Augusta in 1889 and operate it until Prohibition (Muench 2011).

Jacob Rommel Jr. and Hermann Sobbe

Rommel was a prominent grape breeder throughout the late 19th century in Morrison, a neighboring village of Hermann. His most famed grape, 'Elvira', continues to see production in the United States. His father was one of the earliest vintners of 'Hermann' and, along with Poeschel and Husmann, would be one of the most vocal proponents of the 'Norton' grape which would become the most important variety of the state (Husmann 1869; Muehl 1993).

In Morrison, he would establish a sizeable grapevine nursery with his brother-in-law Hermann Sobbe. The Morrison Nursery would operate throughout the later years of the 19th century and sell a variety of grapes, many well-known varieties as well as hybrid varieties first cultivated by Rommel (see Appendix A). This nursery would also supply rootstocks to the French, Californian, and other European nations struggling with the phylloxera epidemic (The History of Gasconade County, Missouri 1888).

George Engelmann and Henry Shaw

George Engelmann and Henry Shaw were prominent botanical leaders in St. Louis. Each had a strong interest in grapes and wine. Shaw, successful businessman, would retire and become an amateur botanist and establish what would become the Missouri Botanical Gardens with the help of Engelmann. Shaw would write a history and modern reflection of grapes and wine in his book *The Vine and Civilisation* in 1884. Engelmann, a doctor turned botanist, studied the grapevines of Missouri closely. In 1860, he would publish *The Grapevines of Missouri*, his first scientific treatise (Bushberg Vineyards 1875). Both, but particularly Engelmann due to his prestige as one of America's preeminent botanists, would help the French government with their fight against phylloxera and host Planchon while he visited the United States to research phylloxera (Gale 2011).

Hermann Jaeger

A Swiss immigrant, Hermann Jaeger would move to southwestern Missouri in 1865. The following year he would plant his first grapevines. He would become a prominent grape breeder, viticulturist, and experimenter. Working with Riley, Munson, Engelmann, Husmann, and Planchon, he would heed the call of the French government and contribute rootstocks to help fight phylloxera. Many of his hybrid grapes would also be shipped to France during this time. His hybrid, 'Jaeger 70', was used by Albert Seibel as the parent for many of his most popular French-American hybrids (Heming 1999).

Charles Valentine Riley

While not directly a viticulturist, Charles Riley would become instrumental in the global fight against phylloxera. Named Missouri's first state entomologist in 1968, Riley would work with Planchon from France when it was determined that phylloxera was the cause of the dying French vineyards (Gale 2011). Working with Engelmann, they determined that *V. labrusca* grapes were resistant and could be grafted as the rootstock for *V. vinifera* scions (Heming 1999). Traveling to France three times during the epidemic, he worked tirelessly to save the French wine industry. For his efforts, he received France's highest order of merit. Hermann Jaeger and Thomas Munson would also receive the distinction. He still is called the "Father of Modern Entomology" as well as the "Father of Biological Control" due to this and his other efforts against agricultural pests (Gale 2011).

Section D. Research

Goal

The aim of this study is to examine the remaining pre-prohibition grape vines in the Hermann, Missouri region. Through genetic marker analysis and comparison to the Cornell

database produced as part of the VitisGen 1 and VitisGen 2 USDA-SCRI projects, it is potentially possible to identify these remnant vines. Some of the most popular American Pre-Prohibition cultivars have been lost due to intentional uprooting during Prohibition, replacement with *Vitis vinifera* or modern hybrids, and loss of the cultural practice of producing family wine in the United States. Many of these cultivars have found a new home in international communities where they have become important folk wines for certain locales. This phenomenon is relatively widespread and has not been studied in a meaningful capacity. While some of these grapes survive in other countries, they have almost all been forgotten in the United States.

By rediscovering these lost cultivars, there is the potential to return once valuable wine grapes to American cultivation. In addition, many of these missing grapes are derived from native grape populations from the Midwestern states. These Midwest native grape populations are often not present in germplasm collections, and therefore, many genetic traits endemic to these populations are not available to modern breeding efforts (Klein et al. 2018). By returning these grapes to modern breeder awareness, there is the potential to inform modern breeding efforts and allow for stronger resistances to present concerns such as heat tolerance, drought tolerance, or pesticide resistance.

In addition, there is the goal to create a phylogenetic tree of known American vines compared to the mystery vines and related wild and *V. vinifera* vines. Preserve the economically and culturally important historic cultivars (many of which have found homes as traditional wines in international communities)

Site Selection

Sites were chosen within and around Hermann, Missouri, which were documented to still have historic grapevines growing on the premises. In addition, sites which were historically

major vineyard and nursery sites that have been largely undisturbed were surveyed for remnant vines. Modern vines in the region were also collected to serve as controls to ensure the protocol and genetics analysis is accurate. Seventeen individual pre-Prohibition sites and 3 modern vineyards were collected from. At almost all sites with pre-Prohibition vines still present, the modern owners believed them to be 'Norton', however this was often not the case. It appears that this assumption was due to the renown of the 'Norton' grape and its history in the region and a lack of ampelographic knowledge of other grape cultivars.

Pre-Prohibition Sites with Notable History:

Carl Strehly House

Built in 1842, this site was used as a home and printing house of the first German newspaper west of St. Louis. In 1857, a winery with a vaulted brick cellar and production area was added onto the site (Historic American Builds Survey 1975). There is a small vineyard on property which is assumed to date to the late 1860s; the original vines are said to have been purchased from the Teubner-Husmann nursery and are believed to be 'Norton'. At one time, it appeared that the arbor had fourteen vines, but presently only four vines continue to survive, with dead wood of the other vines still present (see Appendix B). Samples from all four remaining vines were collected for this study.

Chas. Teubner and Bro. Nursery Property

This site, dating to approximately 1847, on the original Teubner-Husmann homestead was run as a nursery, experimental vineyard, and wine production site by George Husmann in the mid-1850s until the early 1860s. The site then passed to the Teubners when they came of age and continued to serve as a nursery (Denman 1985). In 1877, the nursery was known to sell ten varieties, those being 'Concord', 'Catawba', 'Ives', 'Taylor', 'Goethe', 'Martha', 'Norton',

'Herbemont', 'Cynthiana', and 'Elvira' (see Appendix C). At an adjoining property owned and farmed by Husmann until 1869, there are five small rows of vines. These post-Civil War vines may have been planted by Husmann, or more likely by the Loehnigs who purchased and operated the property after Husmann's departure (Denman 1985). The vines have been farmed and managed by OakGlenn Winery since 1997 and are believed to be 'Norton'. Samples from five vines from this site were collected for this study.

Heinrich Gloe House

This property, built in 1855, had a small vineyard planted on site some years after the cabin was constructed (Parkinson 2006). While limited documentation exists on the timing of the vineyard planting, it appears likely that it was planted between 1856 and 1880, during the heyday of viticulture and winemaking in the region. A small wine cellar seems to have been on property during the late 1850s (Parkinson 2006). While this vineyard appears to have been untouched since the death of Gloe's son in 1942, the vines continue to survive in some capacity on what appears to be the original trellising system. Completely overgrown by shrubs and trees, it is remarkable that this vineyard has survived with no care for approximately 80 years. Due to Gloe's absence in early viticultural writings and meetings of the region, it cannot be theorized as to what varieties he may have growing on site beyond assuming the popular cultivars of the time. Samples from seventeen vines were collected from this site – most of which were cultivated varieties and some which may be wild vines growing near the original trellising system.

Johann Fricke Property

Built in the mid-1840s, this site was home to one of the earliest winemakers of Hermann. Fricke, who quickly became known for his quality winemaking, was active in the earliest winemaking years of Hermann during the 1840s and continued until his death in 1873. His

descendants appear to have continued making familial wine until the 20th century (Denman 1985). While historic remnant vines are not known to exist and no trellising system can be seen (apart from one specimen), there is a high density of fruiting vines on the two sites of the pre-Prohibition vineyards. For this reason, present vines were collected to determine whether any pre-Prohibition vines survived into the modern era or have crossed with present wild vines. Of note, there is one large, old vine which appears to have been intentionally cultivated near the wine press house. Samples from twenty-one vines were collected for this study.

Edward Kemper's Hermann Grapevine Nursery Property

Established in 1897, this was a major regional nursery run between 1897 until Prohibition. Prior to 1897, Kemper's father ran a smaller scale nursery on the same site (Hesse 1998). Kemper produced vines, rootstock, and cuttings for growers throughout the region. He contributed rootstocks and vines to the international community in France during the phylloxera epidemic during the 1890s. From surviving nursery catalogues, it can be determined that Kemper grew at least 34 varieties in 1909 and 21 varieties in 1919 (see Appendix D and E). Kemper's father developed his own variety called 'Red Riesling' (*V. aestivalis* x *V. vinifera*), and Edward was known to have developed the 'Aroma' variety (*V. labrusca* x *V. vinifera*) (Hesse 1998). While historic remnant vines are not known to exist and no trellising system can be seen, there is a high density of fruiting vines on the site of the pre-Prohibition nursery. It is now theorized that the neighboring homestead property may have remnant vines on an arbor system designed by Kemper to grow 12 distinct cultivars in a small area (see Appendix F). If the grapevines continue to survive, this may be an avenue for future research as it could potentially contain 'Ives Seedling', 'Moore's Diamond', 'Perkins', 'Norton', 'Martha', 'Aroma', 'Concord', 'Niagara',

‘Catawba’, ‘Moore’s Early’, ‘Elvira’, and ‘Marsala’. Samples from ten vines were collected for this study.

Michael Poeschel House

This property, built in 1878 by Poeschel after retiring from Stone Hill Wine Co., was used as his personal home as well as a small-scale personal winery. The vines on site are believed to have been planted by Poeschel between 1878 and his death in 1893. As Poeschel was a successful vintner as well as a hobbyist grape breeder, it can be assumed these grapes were either his favorite cultivated varieties such as ‘Norton’ and ‘Catawba’ or his own commercial seedlings and hybrids such as ‘Mammoth Catawba’, a *V. aestivalis* seedling called Riesenblatt, or his brother’s ‘Flower of Missouri’ (Bushberg 1869; Bushberg 1895). Samples from six vines were collected from this site, four of which remain in a trellising system.

Rauch House

This property was established as a homestead for the Rauch family in the 1850s or 1860s. By 1863, a ¼ acre of ‘Norton’ grapevines was planted on the site and used for familial wine production until being used for bootlegging purposes during the Prohibition era. Its notable history comes in 1965, when the grapevines on site were used to restore the ‘Norton’ grape to commercial production by the newly reestablished Stone Hill Winery for its first ‘Norton’ vintage in 1966. These vines became the source for other ‘Norton’ plantings for the winery as well as for other growers in the region. In 1988, these vines were used as the source to return the ‘Norton’ grape to Virginia production (Kliman 2010). The vines have been farmed and managed by Stone Hill Winery since 1965. Samples from two vines from this site were collected for this study.

Rommel & Sobbe Morrison Nursery and Winery Property

This nursery was a major commercial enterprise in the town of Morrison throughout the mid to late 19th century. The historic nursery stretched across a valley between the two proprietors' homes on adjacent hills. In an 1883 price list, 33 "leading varieties" are listed, many of which are not known to be extant (see Appendix A). The nursery is known to have produced many other grape varieties including all of the hybrids and seedlings Rommel created (see Appendix A). While most of the valley has been developed since Prohibition, eight vines continue to exist on an original trellising system near Sobbe's home and winery property. These vines survived through Prohibition until today while being used for familial wine production and can be theorized to be Sobbe's favorite grape cultivars, which may include some of Rommel's favored hybrid grapes. Samples from all eight vines were collected for this study.

Wilhelm & Theodora Poeschel Property

In 1850, Wilhelm became one of Hermann's earliest and most acclaimed viticulturists up until his death in 1870. Wilhelm was known as a talented viticulturist who would pioneer shoot thinning and practice as an experimental breeder, producing cross from 'Delaware' x 'Diana' known as the 'Flower of Missouri' (Husmann 1869; Bushberg 1883). This site, with the still standing winery and house built in 1867, continued to serve as a commercial winery run by his widow from 1870 until 1895 when her son took over the winery until Prohibition closed its doors. Theodora was known to be a highly successful viticulturist and winemaker in her own right and would continue winning regional acclaim for her wines (Hermann Advertiser-Courier 1895). Her story may require future research for its value culturally, societally, and historically as potentially America's earliest commercially successful female vintner. The site had eight acres of grapevines which are known to have included 'Norton', 'Catawba', 'Concord', 'Delaware', 'Elvira', 'Rulander', and others (Hermann Advertiser-Courier 1876; Hermanner Volksblatt 1881,

see Appendix G). While historic remnant vines are not known to exist and no historic trellising system can be seen, there is a high density of fruiting vines on the site of the pre-Prohibition vineyards. Samples from six vines were collected for this study.

Other Historic Properties

The following are private properties within the town of Hermann which are less notable related to pre-Prohibition vines and wine but will be included here briefly.

- W 2nd Street House 1: A sample from one vine was collected for this study.
- W 2nd Street House 2: A sample from one vine was collected for this study.
- W 3rd Street House: A sample from one vine was collected for this study.
- W 6th St House 1: Samples from three vines were collected for this study.
- W 6th St House 2: These vines were in a trellis system. A sample from four vines were collected for this study.
- W 7th St House: These vines were in a trellis system (see Appendix H) Samples from ten vines were collected for this study.
- Washington Street House: A sample from one vine was collected for this study.
- Wharf St House: The singular vine at this property appears to be a *V. labrusca*-derived grape. A sample from one vine was collected for this study.

Samples were also collected from known modern plantings of historic varieties, in particular Munson produced hybrid varieties as well as ‘Cunningham’ and ‘Goethe’ vines that were going through virus elimination therapy at the Geneva campus of Cornell University, which

were not known to be included in the VitisGen dataset. This was done to allow for identification of Hermann mystery vines if they were Munson-derived varieties.

Modern Sites

Morrison Ives House

This site has four modern 'Ives Seedling' vines planted near the home. It was included in the study to ensure that an 'Ives Seedling' specimen was catalogued since it was a popular grape in the region prior to Prohibition. A sample from one vine was taken for this study.

Stone Hill Winery

This winery and its grapevines were included in the collection due to its ease of access and its prominence as a historic and modern winery for the region. The modern and heritage grapes which are grown across seven vineyard sites are known to be true to type and will serve as a control to ensure that the testing and analysis of the samples is accurate and able to identify varieties correctly. Samples were taken from twelve vines, eleven of which were distinct varieties.

TerraVox Winery

This winery was included due to its cultivation of T.V. Munson grape varieties, some of which may have been present or grown in the Missouri Rhineland region during the early 20th century prior to Prohibition. Of the grapes grown on property, the majority are Munson hybrid grapes, with a few non-Munson varieties such as 'Norton', 'Lenoir', 'Herbemont', 'Traminette', and 'Vignoles' being grown on site as well. It was not known at the time of collection whether any of these varieties were already in the VitisGen dataset. Samples were taken from thirty-six vines, all of which were distinct varieties.

Since the collection in the summer of 2022, other pre-Prohibition vineyard sites within the Missouri Rhineland have been discovered which may be included in future research efforts.

Sample Collection

Young leaf tissue samples were collected from each vine. Approximately a dime sized amount of leaf tissue was gathered and transferred to a single sample tube on a 96 well plastic collection plate. Once a row of tubes was filled, caps were added to the row to ensure there was no cross contamination between samples. Due to a lab error during sample processing, collections were conducted in two different phases. The first collection was taken on July 12-13 and the second on July 26-27. While collecting in the field, the samples and the collection plates were stored on ice to limit degradation of the samples. Samples were shipped next-day air to Cornell University with ice packs to further ensure limited degradation. Genomic DNA was extracted from all samples using a commercial extraction kit (Qiagen Plant DNAeasy), with a slight modification of 3% PVP40 added to the extraction buffer. DNA quality and quantity was verified using a Nanodrop spectrophotometer (Thermo Fisher Scientific).

Process

The collection plates were submitted to Cornell University Institute of Biotechnology for library preparation and sequencing. The marker platform and sequencing technology used is known as rhAmpSeq (Zou et al 2020), a modification of amplicon sequencing technologies. The rhAmpSeq marker panel is a set of 2057 conserved molecular marker sites distributed across the grapevine genome. These marker sites are designed to amplify specific anchor regions in the core grapevine genome where the DNA in between primer sites is variable. This variation forms the basis for the genetic fingerprinting approach designed in this study. The core concept here, is shared marker state, having the same DNA base pairs at any given set of markers, helps associate

identity between the unknown mystery vine collections and the reference panel of known pre-prohibition cultivars and other known varieties in the VitisGen database. Using PLINK, a genome data analysis toolset, the molecular marker dataset is manipulated and analyzed. Specifically, PLINK was used to exclude marker data from specific samples which failed to be sequenced allowing for cleaner comparison between individuals. This then allowed for relatedness metrics to be developed between samples across the whole dataset.

Outcomes

Through an initial analysis of the PLINK relatedness study, specific samples could be identified as potentially interesting for further research. Specifically, it allowed for many samples to be conclusively identified as Norton. Other samples were initially found to have no close relations (>0.5 average pairwise relatedness index) to samples within the VitisGen dataset and suggests that they may be unique varieties which may not be represented in modern collections.

Some initial results suggest that there are unique varieties still present in the Missouri Rhineland that are not available in the VitisGen dataset (Table 3). Some of these vines are clear hybrids of *V. labrusca* x *V. vinifera* while others seem to be primarily *V. aestivalis*-derived. The most promising selection of vines are shown in the following table. Continued research on these specific vines may allow for an eventual identification.

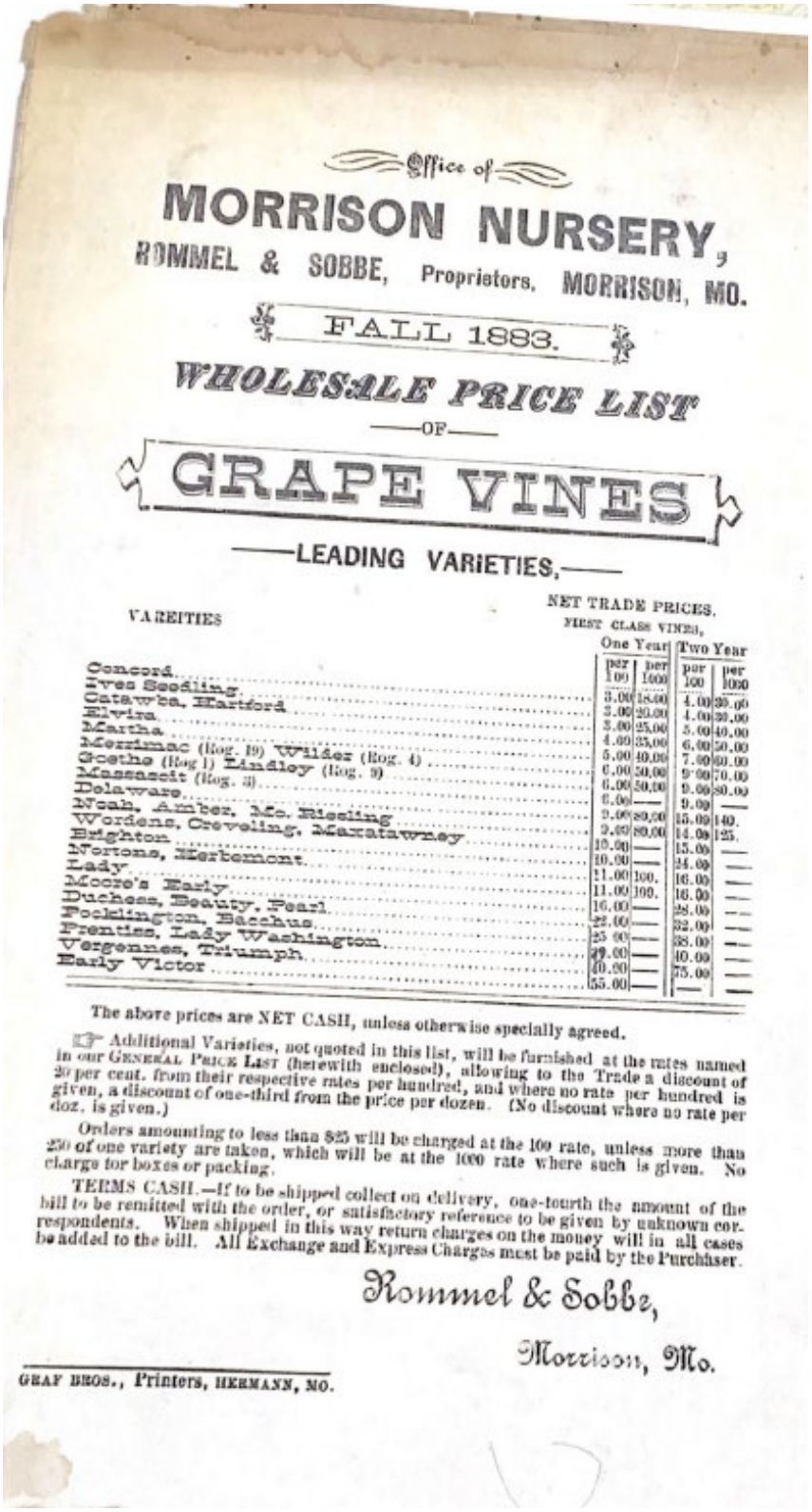
Table 3. Results from Initial PLINK Relatedness Analysis which Showcases Potential Mystery Vines Not in the VitisGen Database

Sample	PLINK Relatedness Presumed Variety	Closest Relative	Equivalence
Deutschheim 1	Norton Relative	'Norton'	~0.78
Heinrich Gloe House 1	Inconclusive (*V. labrusca* x *V. vinifera*)	PI 588576 'Cottage'	~0.25
Heinrich Gloe House 2	Inconclusive (*V. labrusca* x *V. vinifera*)	PI 588576 'Cottage'	~0.16
Heinrich Gloe House 3	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Wilhelm & Theodora Poeschel House 4 (*V. riparia* x *V. rupestris*)	~0.23
Heinrich Gloe House 4	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Michael Poeschel House 1	~0.42
Heinrich Gloe House 5	Inconclusive (*V. labrusca* x *V. vinifera*)	PI 588077 'Concord'	~0.24
Heinrich Gloe House 6	Inconclusive (*V. labrusca* x *V. vinifera*)	Heinrich Gloe House 5	~0.24
Heinrich Gloe House 8	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Heinrich Gloe House 4	~0.47
Heinrich Gloe House 9	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Michael Poeschel House 2	~0.26
Heinrich Gloe House 14	Inconclusive (*V. labrusca* x *V. vinifera*)	PI 588576 'Cottage'	~0.25
Heinrich Gloe House 15	Inconclusive (*V. labrusca* x *V. vinifera*)	'Concord'	~0.26
Heinrich Gloe House 17	Inconclusive (*V. cinerea* x ?)	PI 588222 *V. cinerea*	~0.44
Michael Poeschel House 1	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Heinrich Gloe House 8	~0.42
Michael Poeschel House 2	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Heinrich Gloe House 9	~0.25
Michael Poeschel House 3	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Heinrich Gloe House 15	~0.23
Michael Poeschel House 4	Inconclusive (*V. aestivalis* x *V. labrusca* x *V. vinifera*)	Heinrich Gloe House 6	~0.24
Rommel Sobbe 3	Ives Relative	PI 588110 'Ives' & Morrison Ives House	~0.50
Rommel Sobbe 5	Norton Relative	Deutschheim 2 'Norton'	~0.70
W 6th House 2	Inconclusive (*V. labrusca* x *V. vinifera*)	PI 597254 'Varatura'	~0.24
Wharf St House 1	Inconclusive (*V. labrusca* x *V. vinifera*)	PI 597186 'Niagara Rose'	~0.26

While a full genetic pedigree analysis has not yet been fully completed, analysis will continue to potentially identify mystery vines as well as create a network of relational mapping for the collected grapes. Further analysis is ongoing and intends to examine the putative parents of specific specimens and common varieties grown in the region at the time. Through analysis between putative parents and specific samples, identification of some of the mystery vines may be able to occur. This also may allow for identification of parents for known varieties such as ‘Norton’, ‘Isabella’, and others.

APPENDIX

A. Morrison Nursery Fall 1883 Whole Price List of Grape Vines



Office of

MORRISON NURSERY,

ROMMEL & SOBBE, Proprietors, MORRISON, MO.

FALL 1883.

WHOLESALE PRICE LIST

—OF—

GRAPE VINES

—LEADING VARIETIES,—

VARIETIES	NET TRADE PRICES. FIRST CLASS VINES, One Year per 100	One Year per 1000	Two Year per 100	Two Year per 1000
Concord	3.00	18.00	4.00	35.00
Ives Seedling	3.00	20.00	4.00	30.00
Catawba, Hartford	3.00	25.00	5.00	40.00
Elvira	4.00	35.00	6.00	50.00
Martha	5.00	40.00	7.00	60.00
Merrimac (Rog. 19) Wilder (Rog. 4)	6.00	50.00	9.00	70.00
Goethe (Rog 1) Lindley (Rog. 9)	6.00	50.00	9.00	80.00
Massasoit (Rog. 3)	6.00	—	9.00	—
Delaware	9.00	80.00	15.00	140.
Noah, Amber, Mo. Riesling	9.00	80.00	14.00	125.
Wordens, Creveling, Maxatawney	10.00	—	15.00	—
Brighton	10.00	—	24.00	—
Nortons, Herbemont	11.00	100.	16.00	—
Lady	11.00	100.	18.00	—
Moore's Early	16.00	—	28.00	—
Duchess, Beauty, Pearl	22.00	—	32.00	—
Pocklington, Bacchus	25.00	—	38.00	—
Prentiss, Lady Washington	29.00	—	40.00	—
Vergennes, Triumph	40.00	—	75.00	—
Early Victor	55.00	—	—	—

The above prices are NET CASH, unless otherwise specially agreed.

☞ Additional Varieties, not quoted in this list, will be furnished at the rates named in our GENERAL PRICE LIST (herewith enclosed), allowing to the Trade a discount of 20 per cent. from their respective rates per hundred, and where no rate per hundred is given, a discount of one-third from the price per dozen. (No discount where no rate per doz. is given.)

Orders amounting to less than $25 will be charged at the 100 rate, unless more than 250 of one variety are taken, which will be at the 1000 rate where such is given. No charge for boxes or packing.

TERMS CASH.—If to be shipped collect on delivery, one-fourth the amount of the bill to be remitted with the order, or satisfactory reference to be given by unknown correspondents. When shipped in this way return charges on the money will in all cases be added to the bill. All Exchange and Express Charges must be paid by the Purchaser.

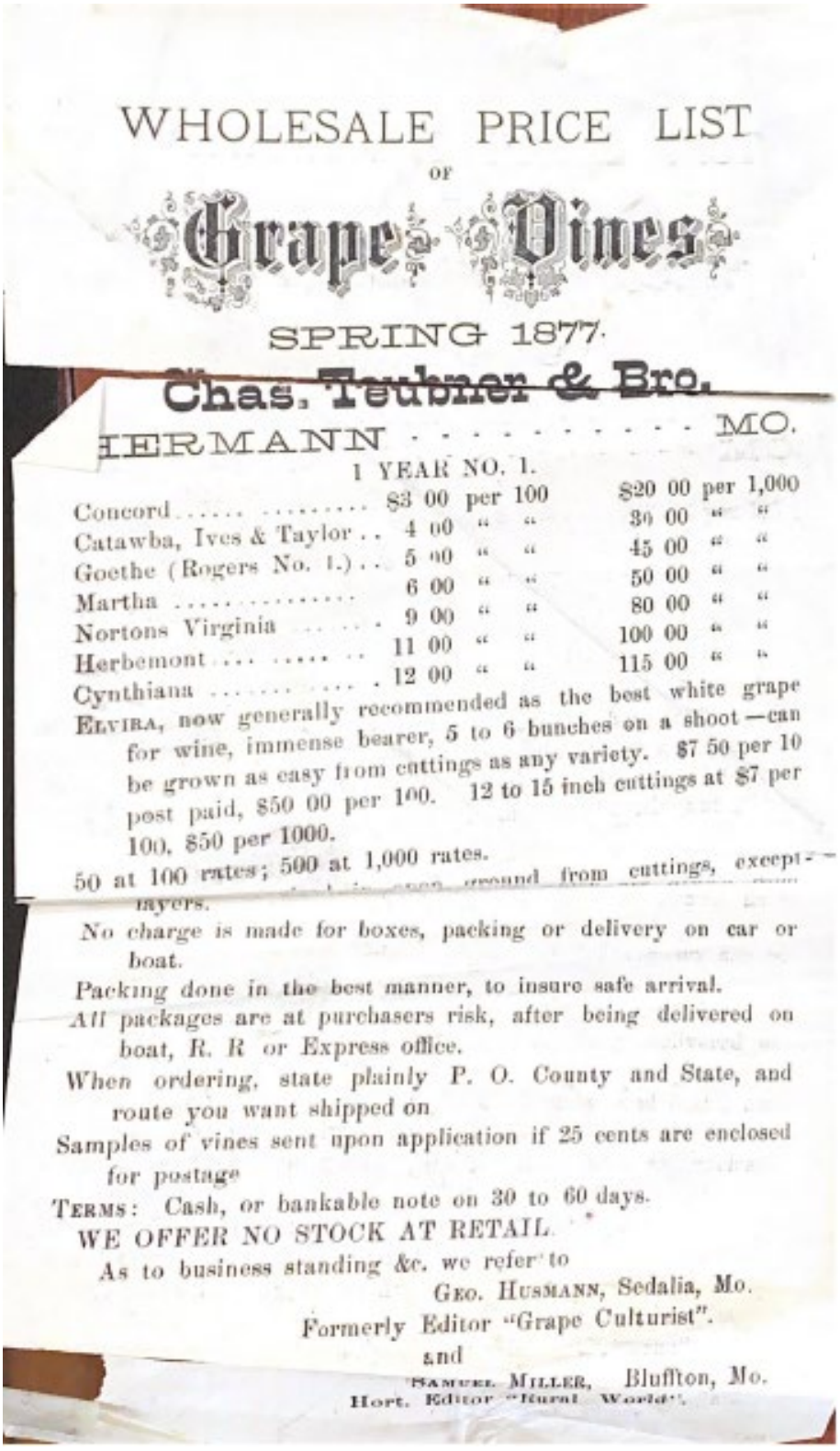
Rommel & Sobbe,

Morrison, Mo.

GRAF BROS., Printers, HERMANN, MO.

B. Carl Strehly House with pre-Prohibition Grapevines Visible in Foreground

C. Wholesale Price List of Grape Vines in Spring 1877 from Chas. Teubner & Bro. Nursery



WHOLESALE PRICE LIST

OF

Grape Vines

SPRING 1877.

Chas. Teubner & Bro.

HERMANN - - - - - - - - - - - MO.

1 YEAR NO. 1.

Concord	$3 00	per	100	$20 00	per 1,000
Catawba, Ives & Taylor	4 00	"	"	30 00	" "
Goethe (Rogers No. 1.)	5 00	"	"	45 00	" "
Martha	6 00	"	"	50 00	" "
Nortons Virginia	9 00	"	"	80 00	" "
Herbemont	11 00	"	"	100 00	" "
Cynthiana	12 00	"	"	115 00	" "

ELVIRA, now generally recommended as the best white grape for wine, immense bearer, 5 to 6 bunches on a shoot—can be grown as easy from cuttings as any variety. $7 50 per 10 post paid, $50 00 per 100. 12 to 15 inch cuttings at $7 per 100, $50 per 1000.

50 at 100 rates; 500 at 1,000 rates.

[illegible] ground from cuttings, except layers.

No charge is made for boxes, packing or delivery on car or boat.

Packing done in the best manner, to insure safe arrival.

All packages are at purchasers risk, after being delivered on boat, R. R or Express office.

When ordering, state plainly P. O. County and State, and route you want shipped on

Samples of vines sent upon application if 25 cents are enclosed for postage

TERMS: Cash, or bankable note on 30 to 60 days.

WE OFFER NO STOCK AT RETAIL.

As to business standing &c. we refer to

GEO. HUSMANN, Sedalia, Mo.
Formerly Editor "Grape Culturist".

and

SAMUEL MILLER, Bluffton, Mo.
Hort. Editor "Rural World".

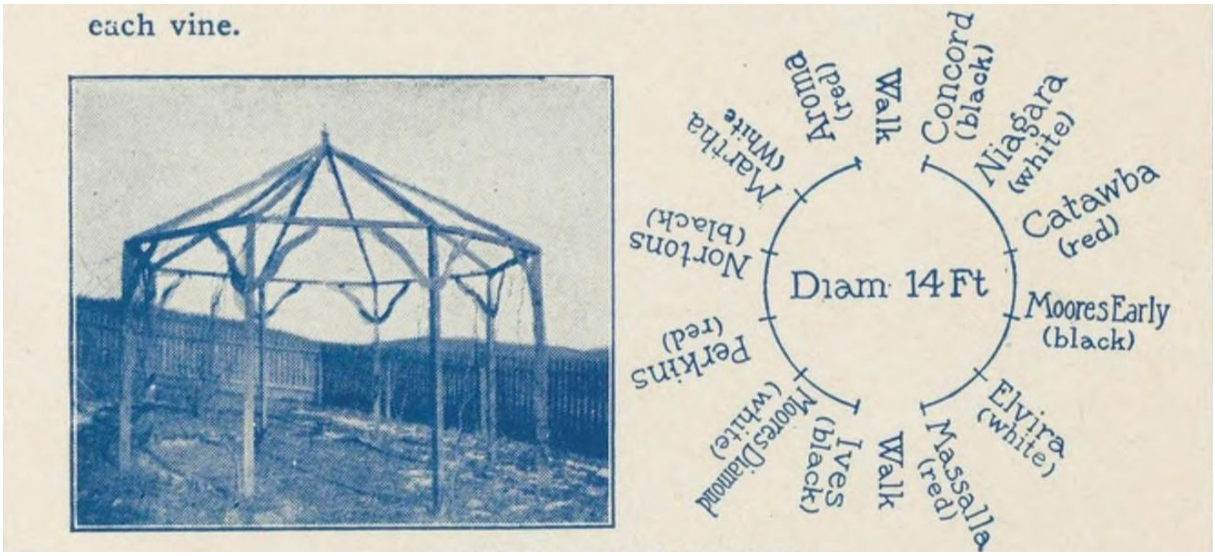
D. Edward Kemper's 1909 Hermann Grapevine Nursery Catalogue and Variety List

VARIETIES	2 Year or Extra Select 1 Year No. 1, each	2 Year or Extra Select 1 Year No. 1, per 10	2 Year or Extra Select 1 Year No. 1, per 25	1 Year, No. 1, per 100	1 Year, No. 1, per 1,000	2 Year, No. 1 per 100	2 Year, No. 1 per 1,000
Agawam	$0.08	$0.70	$1.40	$ 2.00	$18.00	$ 3.00	$28.00
Aroma (New).	.25	1.50	3.00	7.00	50.00	9.00	60.00
Blue Black	.12	1.00	2.00	4.50	.....	.....	.....
Brighton	.07	.60	1.10	2.50	22.00	4.50	35.00
Black Pearl.	.10	.80	1.60	4.50	.....	.....	.....
Concord	.07	.50	1.00	1.85	17.00	3.00	28.00
Catawba	.07	.60	1.10	2.00	16.00	3.00	24.00
Campbell's Early.	.20	1.25	2.50	6.00	55.00	10.00	90.00
Delaware	.07	.60	1.10	2.80	25.00	4.00	38.00
Dry Hill Beauty (New)	.20	1.25	2.50	6.00	45.00	8.00	55.00
Elvira	.07	.50	1.00	1.85	17.00	3.00	28.00
Eaton	.20	1.25	2.50	6.00	.....	.....	.....
Early Ohio	.12	1.00	2.00	5.50	.....	.....	.....
Goethe	.07	.60	1.10	2.50	21.00	3.50	29.00
Herbemont.	.12	1.00	2.00	4.50	.....	6.00	.....
Hermann	.10	.80	1.60	4.50	40.00	6.00	50.00
Ives.	.07	.50	1.00	1.85	17.00	3.00	28.00
Moore's Early.	.08	.70	1.40	2.70	25.00	3.80	35.00
Moore's Diamond	.08	.70	1.40	2.50	22.00	3.50	32.00
Martha	.07	.60	1.10	2.50	22.00	3.50	33.00
Mo. Riesling, No. 1	.07	.50	1.00	1.85	17.00	3.00	28.00
Montifiore (New).	.12	1.00	2.00	5.00	45.00	.....	.....
Marsala	.12	1.00	2.00	5.00	45.00	6.50	60.00
McPike (see D. list)	...	.....	.....	.....	.....	.....	.....
Neosho	.10	.80	1.60	4.50	.....	.....	.....
Niagara.	.08	.70	1.40	2.50	23.00	3.20	30.00
Norton's Vir. Seedling	.12	1.00	2.00	4.50	40.00	6.00	50.00
Perkins	.07	.60	1.10	2.50	22.00	3.50	30.00
Red Riesling (New).	.10	.80	1.60	4.50	40.00	6.00	50.00
Taylor.	.10	.80	1.60	4.50	40.00	6.00	50.00
Telegraph.	.08	70	1.40	3.00	.....	5.00	.....
Wyoming	07	.60	1.10	2.80	25.00	4.50	40.00
Worden.	07	.50	1.00	2.50	22.00	3.50	32.00
Woodruff Red	.12	1.00	2.00	4.00	38.00	6.00	57.00

E. Edward Kemper's 1919 Hermann Grapevine Nursery Catalogue and Variety List

VARIETIES							
Aroma	$ .25	$1.50	.....	.....	.....	.....	.....
Blue Black	.12	1.00	.....	.....	.....	.....	.....
Brighton	.12	1.00	2.00	4.50	40.00	6.00	50.00
Concord	.08	.60	1.10	2.00	17.00	3.00	28.00
Catawba	.08	.60	1.10	2.00	16.00	3.00	24.00
Campbell's Early	.20	1.25	2.50	6.00	55.00	10.00	90.00
Dry Hill Beauty	.20	1.25	2.50	6.00	45.00	8.00	55.00
Elvira	.08	.60	1.10	2.50	22.00	3.50	32.00
Ives	.08	.60	1.10	2.50	22.00	3.50	32.00
Moore's Early	.09	.80	1.50	3.00	27.00	4.50	40.00
Diamond	.09	.80	1.60	3.50	30.00	4.50	40.00
Martha	.09	.80	1.50	3.00	25.00	4.50	40.00
Mo. Riesling, No. 1	.09	.80	1.50	3.00	25.00	4.00	40.00
Marsala	.12	1.00	2.00	5.00	45.00	6.50	60.00
Neosho	.12	1.00	.....	.....	.....	.....	.....
Niagara	.09	.80	1.60	3.50	25.00	5.00	40.00
Norton's Vir. Seedling	.18	1.60	3.00	5.50	45.00	7.00	65.00
Perkins	.12	1.00	2.00	4.50	40.00	6.00	50.00
Taylor	.10	.80	1.60	.....	.....	.....	.....
Worden	.08	.60	1.10	2.50	22.00	3.50	32.00
Woodruff Red	.14	1.20	2.50	5.00	45.00	7.00	60.00

F. Edward Kemper's Hermann Grapevine Nursery Arbor System (Kemper 1919)



G. Wilhelm and Theodora Poeschel Home with Grapes Visible in Foreground

H. West 7th Street Property with Vines in View to Left of People and Step

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