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Institute of Jamaica.

POPULAR LECTURES.

THIRD SERIES.

THE VINE AND ITS CULTURE.

BY

REV. W. GRIFFITH.

DELIVERED 6TH MAY, 1884.

HIS HONOR THE CUSTOS, IN THE CHAIR.

MORTIMER C. DESOUZA, PRINTER,  
7, Church St., Kingston.

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## THE VINE AND ITS CULTURE.

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THE vine and its chief product, wine, hold a prominent place in sacred and profane history. Beyond every other natural production, wine took the first hold upon the personal, social, national and religious life of every ancient people. It was the only article of constant use that was legislated for, or against, and with corn and the olive held for ages the proud position of one of the three staples of life. There can be no question that the vine was known to the Antediluvians and it is equally probable that its cultivation was one of the few occupations regularly followed by them. The inspired record gives countenance to this view in the first mention made of the vine and wine. One of Noah's first acts after the Deluge was to "plant a vineyard" and "drink of the wine" and "become drunken." It is just possible that the sin of drunkenness was one element in the wickedness of the men before the flood. There is an added interest to this first reference to the vine and wine, in the fact that to this day the forests of Armenia, the district of Ararat, extending to the Caucasus, are celebrated for their vines, which grow wild throughout the whole region. The bunches are enormously large, and the quality of the fruit unsurpassed. The fact that no apparent signs of degeneracy appear makes it highly probable that this is the native home of the vine. Of course, on this point nothing is, or can be, certainly known. From the time that Noah planted his vineyard, every heathen nation seems to have contended for the honour of being the original distributor of the vine and its benefits. The Egyptian gave the palm to Osiris; the ancient Italian to Saturn; whilst the

Greek shouted for Bacchus, who is said to have brought the goodly plant from Arabia the Happy. There is no room for question that every nation was soon in possession of the vine and of the art of transforming the luscious contents of its glorious clusters into very potent wine. When Melchizidek met Abraham returning from the slaughter of the kings, he set before him bread and wine. Lot was twice overcome by its use, and made drunken, and it would seem that Jacob used it to prevent detection in his successful attempt to obtain his father's blessing. The fact that the prohibition against the use by the officiating priests, of wine, was issued immediately after the sin and deaths of Korah, Dathan and Abiram, makes it very probable that the rash conduct, which for them ended so terribly, was enacted under the influence of too much wine. Some have doubted whether Egypt ever was, or can be, a wine producing country, from the fact that wine-yielding grapes do not thrive in rich alluvial soils. The dream of Pharaoh's chief butler in which the three vine branches blossomed and bore ripe clusters which he pressed into Pharaoh's cup and gave into Pharaoh's hand, may be accepted as proof that the vine was known to him, and that he had been accustomed so to prepare the grape for the king's use. Representations of the vine, the vintage, the gathering of the fruit and the preparation of wine by the use of presses, are all to be found on the paintings discovered on ancient Egyptian tombs. The Jews would seem to have had some knowledge of the vine and its uses during their involuntary sojourn in the land, for we find them complaining that in the desert there was no fig, no pomegranate, no vine. When therefore the spies returned bearing with them the marvellous bunch from Eshcol, the object must have been not to reveal a new friend, but to re-introduce an old one of goodlier proportions. And when we find (later on) Joshua enumerating in the list of their blessings, in the land to which God had brought them "vineyards which ye planted not," it is not straining the sense to infer that they had previously eaten of vineyards which they had planted. Amongst the Jews, vines were not fruited under three years, and the crop of the fourth year was the Lord's. Vinedressers were, in time of war, exempt from military service. The use of wine entered largely into the ceremonial worship of the Jews; and in the religious teaching of both the Old and New Testament, there are constant allusions to it and to the vine, with which we all are more or less familiar.

In the far off times of which Homer sang, the vine and the vintage held a front place. In the description of the shield of Achilles, he says :—

There also laden with its fruit he formed  
 A vineyard all of gold ; purple he made  
 The clusters, and the vines supported stood  
 By poles of silver, set in even rows.  
 The trench he coloured sable, and around  
 Fenced it with tin. One only path is showed,  
 By which the gatherers when they stripped the vine,  
 Passed and repassed. There, youths and maidens blithe  
 In pails of wicker bore the luscious fruit,  
 While in the midst, a boy on his shrill harp  
 Harmonious played ; and ever as he struck  
 The chord, sang to it with a slender voice.  
 They smote the ground together, and with song  
 And sprightly reed came dancing on behind.

Whilst the picture of the garden of Aleinus shows that the cultivation of the vine was followed at times, very largely and in a systematic manner.

Close to the gates a spacious garden lies  
 From storms defended and inclement skies.  
 Four acres was the allotted space of ground,  
 Fenced with a green enclosure all around.  
 Here ordered vines in equal ranks appear,  
 With all the united labours of the year ;  
 Some to unload the fertile branches run,  
 Some dry the blackening clusters in the sun ;  
 Others to tread the liquid harvest join,  
 The groaning presses foam with floods of wine ;  
 Here are the vines in early flower descri'd,  
 Here grapes discoloured on the sunny side,  
 And there in Autumn's richest purple dy'd.

So far as I can learn, there is no classic allusion to the fruit of the vine in which reference is made to white or yellow grapes, when colour is referred to, it is invariably black, red or purple. It may be that the former are the results of cultivation in later times.

Only one recognized species of vine is indigenous to the Eastern Hemisphere, the "*vitis vinifera*," of which all the European, Asiatic, South African and Australasian vines are varieties. It is impossible to give any idea as to the number of varieties now recognized and in cultivation, the Black Hamburg being known under nearly twenty different names.

Miller, in 1768, describes 18 varieties. Speechly, of Welbeck, in 1791, describes 50. In 1831 the Horticultural Society's Fruit Catalogue contained 182 names. In France, they count their varieties by the score of hundreds; fourteen hundred kinds being at one time cultivated in the gardens of the Luxembourg. Every season, so called new varieties make their appearance, and now and again one is found worthy of taking rank with varieties of established repute. The English grapes grown under glass, take the first rank, against the whole world, as a dessert fruit; Grapes are of all sizes from that of a pea to a pigeon's egg. There is an equal diversity of colour. Almost every known shade of colour, having its representative. There is equal diversity found in the character of their fruit; some are harsh and sour, others mild and sweet, and others charged with an aroma so delicate as to scent the atmosphere. So with the wines made from them.—Some, "the best vintages of France are bright and sparkling; others are sound and substantial, as those of Spain and Portugal, and others again are flat, stale and unprofitable, as the 'Vin du Surèni,' of which the proverb goes "that there must be three persons to drink a glass of it, to wit, "the unfortunate patient, one friend to support him, and "another to hold his nose during the operation."

The European varieties are commonly classified as "Muscats" and "Sweetwaters." These terms explain themselves. As a rule the Muscats require a longer time and a greater heat to ripen, and in England they never find them to do well in the same house with the Sweetwaters. For the same reason it is found here that the black and white will not both do well on the same arbour. All our Jamaican white grapes are Muscats—the black grape of which we have several varieties, are all Sweetwaters.

Among the Muscats the best coloured varieties are the black, red and grizzly Frontignans. These bear compact bunches, long and cylindrical in shape, frequently with one large shoulder. Berries are below medium size, skin thin, with a thick bloom, and the flesh firm, of a reddish tinge with a rich Muscat flavour. Madresfield Court, a variety raised by crossing Muscat of Alexandria with black Morocco is one of the finest black grapes grown. Both bunches and berries are very large and extremely handsome, the fruit tender, sweet and rich. It is now very largely grown for the London market. Amongst the White Muscats, there are many splendid varieties, but not



one to approach the White Muscat of Alexandria. As this grape only comes to perfection when it has plenty of heat its successful cultivation in and about Kingston ought to be an easy matter. As a rule all Muscats require a good heat.

At the head of the second class stands the Black Hamburg. It is one of the most prolific grapes and easy to cultivate. It was originally brought to England from Hamburg in the early part of the last century by a Mr. John Warner. At the present day no grape is so extensively grown or so generally esteemed for its many admirable qualities. There are many remarkable vines in England of this variety. One at Cumberland Lodge, in Windsor Park, fills a house 140 feet long by 20 feet wide. Its trunk is 3 feet 8 inches in girth. The crop of grapes in 1879 was 2,000 bunches and weighed 1,500 lbs., an average of  $\frac{3}{4}$  lb. per bunch.

The great vine at Hampton Court is of this variety. It is probably the best known vine in existence. It is over 100 years old, nor is its natural force abated. Its annual yield of grapes is about 2,000 lbs.

At Sillwood Park, near Ascot, a vine, a cutting from the one at Windsor, covers 150 sq. yards and fruits regularly over this extensive surface, and another at Breadalbane, Scotland, covers 475 yards and annually matures large crops of fine fruit.

Occasionally, mammoth bunches of this variety have been produced. We give a list of some of these :—

1858—Mr. Davis, Oakhill,  $8\frac{1}{2}$  lbs,  $4\frac{1}{2}$  in. circum.

1860—Mr. Raynes, Chelmsford,  $8\frac{3}{4}$  lb.

1865—Mr. Meredith, Garston, Liverpool,  $9\frac{1}{2}$  lb.

1874—Mr. Hunter, Lambton Castle, 21 lb. 12 oz.

1875— „ „ Manchester, 13 lb. 2 oz.

There are many excellent white grapes amongst the Sweetwaters, and as they take less heat than the Muscats, we think that it is amongst this class that the grape to suit our mountains will have to be looked for. I believe it is now generally acknowledged that plants from vines doing well in the city usually do not do well in the hills. I think it also very likely that the wide extremes of temperature between mid-day and midnight may have an injurious influence upon the plants. If this conjecture is correct, it might have a good effect to try the vine in a favourable situation, covering the space around, above the roots with dark stones, so as to absorb sun-heat in the day and keep the roots warm at night.

Some cultivators would form a third classification, viz : the Vinous. In this they would include grapes that are usually slow in maturing, have generally thick skins, a fleshy pulp and when properly ripe, have a marked vinous flavour. This class includes such grapes as the black Barbarossa, the bunches of which are at times exceedingly large, some as long as 24 inches. In 1877, Mr. Roberts, Charlieville Forest, Ireland, produced a bunch weighing 23lbs. 5oz. West's St. Peter is another variety ; the fruit keeps from September until the following March—a splendid grape for invalids. Lady Downe's Seedling raised in 1835 one of the best grapes in cultivation. Another seedling raised at the same time from seed from the same cluster is one of the best white grapes. The white grapes in this class are chiefly prized for exhibition purposes rather than for high quality. In the latter part of the last century, Mr. Speechly grew at Welbeck, the seat of the Duke of Portland, a bunch of the White Syrian that weighed 19lbs., its length was 23 inches and 4 feet 6 inches round. His lordship sent it as a present to the Marquis of Rockingham. Four men carried it after the manner of the spies, twenty miles, on a pole. This variety is also known as the Raisin de la Palestine and is currently supposed to be a descendant of the Eshcol varieties. Bunches have been grown on the White Nice that weighed 25lbs ; but all these were surpassed when Mr. Currer, of Eskbank, exhibited in 1875, at Edinburgh, a bunch of the Trebbiana weighing 26lbs 4oz. Facts such as these make it easier to believe the tales of travellers from the East who write of clusters of grapes three feet long furnishing supper for a whole family, the single berries of which were a good mouthful.

Of American grapes there are several native varieties. The *Vitis Labrusco*, or Fox grape, takes the lead. The Catawba, Concord, Isabella and many others, belong to this species. A very remarkable variety of the *Vitis Rotundifolio* is grown in the South. It will not grow in the North. It is said to grow in any soil or situation fruiting always on the old wood—never on the new ; is free from disease either in wood, leaf or berry ; ripens its fruit in the open air in three months ; the clusters are small—never more than twenty berries, but at times only two, from  $\frac{3}{4}$  to  $1\frac{1}{4}$  in. diameter. No known vine bears so heavily. One near Mobile is said to have borne in one season 250 bushels of fruit. Ten-year old vines trained on the extension system often give thirty bushels.

Birds or insects do not destroy the fruit, and when fully ripe, the air is laden with the aroma. From the fact mentioned already that this vine will not grow north I have failed to secure a plant of it. It should do well with us, and if some citizen of public spirit (and private means) would introduce a supply he might perform a public duty as well as confer a general benefit. It would be worth a trial.

The geographical distribution of the vine places it amongst the plants of the temperate zone though not every place in that zone is adapted to its cultivation in the open air. It is found on the Continent and in Asia within an area the northern boundary of which extends from the British Channel through north Germany, north of the Black and Caspian Seas to China. In France, the northern limit advances from  $47\frac{1}{2}$  N. L. on the coast to 51 at the junction of the Moselle with the Rhine. In Germany, it reaches in isolated places as high as 55, falling in Hungary to 49, and on the Caspian Sea it is down to 46. Madeira and Teneriffe received their vines from Crete. Dutchmen carried the vine to the Cape. Swiss emigrants took it to America, and South America owes its vines to the Spaniard. In North Switzerland it thrives 1,700 feet above the sea level and on the southern slopes of the Alps it is found at 2,000 feet. On the Appenines and in Teneriffe it is cultivated at a height of nearly 3,000 feet, while in the Himalayan Mountains it does well 10,000 feet above the level of the sea. During the last half century grape culture and wine making have made enormous strides in new countries. Already the vine crop of California exceeds in value the produce of her gold mines. Her vineyards cover many thousands of acres. In South Africa the vine growers are now sending into the market a wine, the Red and White Constantia, that takes rank with the best productions of France and Germany. This particular wine is the produce of two estates lying on the East and North-east slopes of Table Mountain, twelve miles from Cape Town, known as Great and Little Constantia. Repeated attempts to produce a similar wine have been made on adjacent properties, and also in France, but all have proved utter failures. The soil of these properties is specially rich in alkalies, and the locality so sheltered as to be preserved from sudden or excessive alternations of temperature.

Everyone has heard of the extensive vineyards already established, and being established in Australia. There the

method followed was to bury long cuttings in the soil for about one-half their length, and leave the rest to nature. As a fertilizer the Australians use only, or mainly, broken bones.

There is perhaps no plant that is so much affected by change of soil and climate as the vine, even when every possible precaution is taken to ensure for it congenial surroundings. One grape which grows on the Rhine furnishes a "Hock." In the valley of the Tagus this same grape produces "Bucellas," and transferred to Madeira it yields a wine known as "Sercial," the three wines having scarcely an attribute in common.

It is a fact that has been long well recognized that the best English grapes lose many of their best qualities when taken to America. *It becomes in view of this fact matter of doubtful wisdom to import English varieties from America.* This fact may also help to explain the reason why the Black Hamburg never reaches with us that perfection of colouring, beauty of form, and delicacy of flavour, so eminently characteristic of it when grown in our hot-houses at home. If instead of being cut as soon as the clusters colour and the berries become sweet, they were bagged to keep away birds and insects and allowed to hang a couple of months, or so long as the weather continued dry and warm, the improvement in quality would be considerable, and this excellent grape would take the position with us here to which its many good qualities fairly entitle it.

The Black Corinth, the vine which produces the well known "Currants" of commerce, is a true grape cultivated in the Ionian Islands and the Morea. The whole of these islands have a superficial area somewhat less than the whole of Jamaica. They are of volcanic origin and the vines grow on the hills in a thin soil composed largely of decomposed volcanic rock. They are grown without any mechanical support as low bushes, and the ripe fruit when gathered is dried on the ground. In good years the total yield sometimes reaches the enormous quantity of 75,000 tons of dried currants, besides about 150,000 barrels of wine. This variety when introduced into Sicily and Malta produced ordinary grapes, indeed, they were very ordinary, but in Spain it could never be got to grow at all. Numbers of the best vines of France and Germany were exported to Australia, but none ever succeeded; whilst those taken from the South of Spain turned out excellently well.

Dr. Denman in his work, "The Vine and its Fruit," says, "No attempt hitherto made to transport a particular species

to another country has ever been attended with such a measure of success as to reproduce in the new site precisely the same distinctive properties that signalized it in the old. Whatever care may be bestowed to select an identity of nutrition, aspect and climate, the grape on removal loses its former special and peculiar attributes . . . . The wines of Burgundy and the Garonne take their names respectively from circumscribed spots; and so narrow and seemingly capricious are their several limits, that a ditch divides portions whose produce from time immemorial has been sought with avidity, from others that uniformly bring but one-fifth the price of their more favoured neighbour . . . . Art and science have been exerted to extend the bounds thus prescribed by nature with results but little satisfactory; for the choicest wines of any known vineyard have never been produced beyond it . . . . Hence, it is manifest that it is not more owing to the species of plant than it is to the character and quality of the soil and climate where the grape is grown that wines are indebted for their peculiarities of flavour, fragrance and general excellence."

The "Muscatel" or "bloom" raisin, the choicest dessert fruit grown, is the produce of a narrow strip of country in the South of Spain in the suburbs of Malaga, the chief town of a province of the same name. All attempts to produce them elsewhere have proved abortive. The average annual production is nearly  $2\frac{1}{2}$  millions of boxes of about 20lb. each. Fully one-half of these go to America where the consumption of all kinds of fruit, green and dried, is enormous; an import duty of  $2\frac{1}{2}$  cents per pound having no perceptible influence upon the consumption.

Time would fail us to tell all the minor uses which the vine and its products are put to. Oil is pressed from the dried seeds—vinegar is made from the green shoots. The pulped leaves are valuable as a poultice under certain circumstances. Tea made from the dried leaves is supposed to have a beneficial effect when drunk by tired brain workers, and almost everyone has heard of the wonders wrought in the cure of cancer, consumption, and other kindred diseases by what is now known as the "Grape Cure."

A vine consists of an aggregation of nodes or joints. In the green shoot these are plainly visible and easily separable into parts of from two to five inches in length. In a mature cane these nodes are still distinguishable; but the woody fibres of the vine

having run through, a cutting implement is required to separate them. In old wood the node is not visible to the naked eye, the roughened bark rendering it undiscernible. Let the vine, however, be cut back to this old wood and its position is soon indicated by the growth of a shoot, which if allowed to do so, makes in a few months a cane capable of yielding fruit. It is on this node or joint that all the organs of the vine show themselves, viz., the leaf, the tendril or cluster, the laterals and the dormant or fruiting bud.

The leaf is connected to the stem by a joint at the base of the leaf stalk. It may be easily broken or blown off—a contingency that suggests the desirability of tying down all young growth as soon as it can be done without injury to the shoot. At the end of the season the leaf falls from the vine. In the axil of the leaf there are always one or two buds. Sometimes, not always, one of these will push early. This is called the "lateral." Leaf and stem are usually very small and slender. The purpose these minor shoots are intended to serve is an important one and they must not be removed. Close to it, on the under side, another bud will form; the so-called dormant bud. It is the duty of the leaf to render this bud capable the following season of furnishing a green shoot consisting of a similar series of nodes to that on which itself grew and similarly furnished with tendrils, buds and leaf appendages. If the leaf be accidentally or intentionally removed before this process is completed no such bud will be formed, and if a series of leaves be removed, the length of stem so denuded, will not develop into a ripe cane although both above and below where the leaves remain good cane will be formed.

It is the special province of the lateral to keep the second bud dormant during the first season. Whenever it is removed the dormant bud pushes, and if the period of development is incomplete only a green shoot destitute of fruit appears and at its base another bud begins to form. The following season when the canes are pruned for fruit, it is needful to remove carefully the whole of the laterals; as, if any portion be left, it will surely grow first, and may be all that will grow. On many nodes the laterals may not have shown—they are there nevertheless and should at the time of pruning be sought for and rubbed off. On very gross growing vines I have seen the leading shoot stopped and the laterals permitted to grow unchecked during the first season, when being cut back to spurs, they have borne heavily. With vines that are

constitutionally vigorous growers, this plan will often give fruit when every other fails. On the same node, but on the opposite side, is the tendril or cluster. Unlike the leaf, this organ is not articulated; but is a continuation of the stem, the woody fibres running through. At the end of the season it dries and gradually perishes. The tensile strength of this organ is very great. When well developed and attached to any firm unyielding body it requires great force to detach it. Tendril and cluster are identical—two never grow together on one node, but tendrils are sometimes seen showing bits of bloom, and clusters are sometimes seen with portions of tendrils destitute of fruit. The difference is one of degree, not of kind, the tendril being an imperfectly developed cluster. This view is borne out by the fact that a tendril is never seen before the bloom but always after it.

A shoot may bear any number of clusters—more than two however are never seen side by side on the same shoot. Every third node is without tendril or cluster. It would be a grave error, however, to suppose a vine capable of bringing to maturity as many bunches as it shows bunches of blossom. The less work you give your vine, as a rule, and the better the work will be done, and it is safer to restrict the crop to two clusters per shoot. Ordinarily, one will be as much as can be wisely allowed to remain.

“As soon as the green shoot has changed its colour and turned brown, and the clusters growing immediately from it have been harvested, it receives the name of *cane*. It retains this name a whole year until the clusters have been gathered from its side branches when it becomes part of the stem.

“We distinguish therefore in a grape vine the following three parts, viz:—

“1. The *shoot*, of green colour grown this year (or season) from the eye, bearing the grapes immediately on the peduncle. Its course of life lasts about six months.

“2. The *cane*, of brown colour and of smooth bark bearing the clusters on a side branch, the shoot. Its course of life is generally about a year or from the time of pruning until the vine is pruned again.

“3. The *stem*, of black colour, the bark separating from it, bearing the clusters with the shoot on the cane. Its course of life embraces the life time of the vine.”—*Mohr on "Vine Culture."*

The vine is therefore progressing regularly ; the shoot is changed to a cane, and the cane becomes part of the stem, the stem enlarging more and more as the canes of the preceding year are added to it. Now, as the stem does not bear fruit, it follows that every year there is an increase of unproductive wood, which if permitted to continue, would in process of time take up all the space available and the production of fruit would cease. This renders it necessary to resort to artificial means to restrict on the one hand, the quantity of wood, and on the other hand, to secure along the entire length of the wood remaining, a constant succession of green shoots and bearing canes for fruit. These means are training and pruning, which we now proceed to consider :—

By training we mean giving that form which, under the hand of the grower, the plant is made permanently to take. The common forms are, 1st—The Cordon ; 2nd—the Trellis—flat and horizontal ; and, 3rd—the Standard. It is always difficult and not always wise to recommend a departure from established customs, and the different modes of training found to prevail in different localities or countries which may appear to be only the result of the whim or fancy of the cultivator have very often a sound reason to justify them. Each different system has its advantages and its advocates. We are all apt to think that those methods which are successful in our hands would be equally so in others. This by no means follows. Dr. Mohr, a German writer of eminence on grape culture, strongly recommends growing vines on the single cordon system. His method is as follows : At about ten feet from each other he plants vines all along his garden paths—setting them in about a foot, Mid-way between each plant he pushes in a stout post, about three inches square, to the depth of two feet, leaving eighteen inches above ground. The end posts are stouter and sunk firmly. On these he stretches a galvanized wire, and to this he trains his vines. In addition to the beauty of this arrangement, the doctor gathered grapes that gave 30 gallons of wine from 800 feet of wire. In view of the well known fact that grapes improve in quality the nearer they are grown to the ground, this method is well worthy of a fair trial by all grape growers who have room to make it.

2nd.—There is no question that the flat trellis or arbor, the common method of training here, has its advantages—t is as good as most and better than some. In the first place, there is very little difficulty in getting the canes to BREAK



regularly over the whole extent of surface. In the next, the arrangement of the limbs in such order as shall secure an even distribution of the growing canes is reduced to a simple process. The foliage gets the full benefit of the sun equally, and the fruit being generally on the under side of the arbor, obtains the requisite shelter from the direct rays of the sun; and lastly, the work of thinning the bunches can be performed at any part of the day without injury to the foliage. A very grave disadvantage is the difficulty of getting at the young shoots for the purpose of disbudding, pinching back or tying out without doing serious mischief to the young growth, and another equal in gravity and more permanent in the mischief it does is that the shoots often get so thickly overgrown, that the sun's rays are entirely shut out and the canes do not ripen properly; good fertile buds are not formed, and the succeeding crop, if not entirely lost, is seriously reduced. Where only one vine can be grown and the room is restricted, this method has many things to be said in its favour.

The horizontal trellis, that is, when the vine is grown on wires strained on upright posts, is a plan that admits of an almost endless variety of form. It is the method most commonly found in books that treat on the growth of vines in the open air. My advice is to leave it there. As shewn in books, with its rows of bursting clusters, nothing can be better; but I never yet saw it succeed. My own attempts have all been failures. The difficulty of getting the buds to break on the lower canes, is next to insurmountable. Time and patience would, no doubt, overcome it, but both time and patience have limits. Another method, and one which has not received the attention here, which its numerous advantages merit for it, is to grow the vines, as *Standards*, that is, to dispense with all mechanical support except a stout stick. The plan is to cut your one-year-old vine close to the ground, allowing the shoot from the bud to grow at will, running on the ground or upon the nearest plant or shrub at hand. When it has made a good ripe cane as stout, say, as your little finger, cut it back to within two or three buds, selecting the best bud for the uppermost, earth up to the depth of three or four inches with good soil; in this a mass of rootlets will form, and let the new growth be trained to a slender stick standing five or six feet out of the ground. When this shoot has ripened, it may be cut back to from three to four feet from the level of the ground bending it somewhat to assist the lower buds to break, after which it may be tied to the sup-

port. There will be no difficulty in keeping it at about this height. From a vine so treated I have cut as many as twenty bunches. The advantages of this method are, first, that a greater variety of grapes can be grown than on any other; in the next place, a supply of grapes can be had for a longer period—the vines require no attention at any time which a lady may not give; every part of the plant is at all times accessible, and the processes of pruning, disbudding, pinching back, tying in and thinning the clusters become the pleasant occupation of a few spare moments instead of the tiresome dirty work of a whole day, as is the case with a neglected vine on a decaying arbor; and lastly, it is possible when the fruit is ripening to give it shelter from rain should it be desirable. These various methods are all more or less matters of taste or convenience, and a good rule to follow in selection of one or the other is to "Let every man be fully persuaded in his own mind."

This brings us to the question of pruning; and here we may state at the offset that we know no general principle which applied at all times and in every variety of circumstances will result successfully. There has been a great deal written, much of it wisely, by men of great practical experience, as to the comparative merits of short and long spur pruning and long pruning. Spur pruning is the method usually followed in England. Of these, there are two methods, viz., the close and the long spur—in the former the shoot is cut back close to the last bud; in the latter, two, three or four buds are left. Some of the early varieties which are, as a rule, less robust than the later kinds, do well under close pruning. Others, however, are found at times to miss fruiting wholly or in part when so ruthlessly cut back. Some white sorts here do well pruned closely, black vines never. A better plan as well as more natural is, to obtain all the fruit the vine is capable of bearing from a few canes trained to their full length instead of from a great number of spurs. To provide these, it is necessary to cut one-half of the canes back to one eye, these make canes to fruit the following year. The long canes that bear this year are next year cut back in a similar manner, and so year by year alternately. By this method the accumulation of old unsightly wood is prevented, and the labour of pruning is reduced to a minimum. But whatever method may be followed, in every case the constitution and habits of the vine itself must be taken into consideration, bearing always in mind that the object of pruning is ever the twofold one of obtaining

fruit the present season, and the growth of mature canes for the following one. Each system aims at controlling the general form the vine is to take, limiting the crop taken off within the capacity of the vine to mature. It is possible to overdraw the powers of a vine, and it is well to bear in mind that overdrafts on nature are like overdrafts elsewhere—they are debited against the account and must be paid with interest. Superfluous wood can be got rid of, and the whole energy of the vine directed to the production of good canes and fruit. Conservation of energy is ever an important point in plant life. The time of growth and ripening of the fruit is materially shortened, and finer fruit, more of it, and of a better quality is the result.

Where the growth is overcrowded cut out enough to let in ample light and air. Leave as little as possible, that, if left will be useless. For a succession of canes for the next season, cut back to one eye and let the resulting shoot grow unrestrictedly. For fruit, prune the canes back to a good plump bud. If the cane is very long, let it hang down loosely until the buds break, and then secure it in the place where you intend it to remain. Give neither manure nor water until the buds shew, and then liquid manure in small quantities once or twice a week will do good.

Many persons pay no attention to their vines after pruning. This is wrong. The moment the buds on a pruned vine begin to push, every cane should be carefully examined, and any overlooked lateral that may be shewing should be removed. Disbudding will also require immediate attention—this is rubbing off with the thumb and finger all superfluous and misplaced buds. If this is overlooked the shoots with blossom will be overcrowded and irreparably injured; besides, there will be a serious drain on the vital forces of the plant just at the time when the heaviest legitimate demands are being made upon them. No vine can possibly be in health where the shoots form with the foliage a dense dark mass, through which no ray of light can pierce. No knife is required—the thumb and finger will do all that is needed. When the blossom has shown, and it can be seen what shoots will have fruit, it will be well to go very carefully over all the others and tie in such as promise to make good canes and are favourably placed. All else should be removed without delay. On such shoots as show blossom, if strong, with healthy leaves below the bloom, pinch one leaf beyond.

If the foliage is defective it will be well to leave three or four leaves. On these shoots it will also be requisite to pinch the lateral back to one leaf and keep it so. Non-bearing shoots must be permitted to grow at will.

By the time the fruit is set, that is getting say as large as a small pea, it will be time that the thinning should be seen to. To the new beginner this seems only a terrible waste. If you look, however, at a young cluster and remember that each one of these little berries, will, if you will allow it, develope into a grape one inch in diameter, you will see that less than half the number are more than enough to fill all the space the cluster can take. Some trees, as for instance, English cherry and our own mango, have the natural power of shedding surplus fruit. You cannot over-crop a mango—it will not allow you. The grape has no such power, and relief from the strain of over-cropping, must come from the hand of man. For this purpose a pair of fine pointed scissors should be obtained, with long handle, but short blades, cutting well at the points, and then the thinning be done without handling the bunch if possible. Get well inside and cut out all the little berries, and then those that are crowded, especially taking out those that lie inside on the main stem. This will let in light and air, give the berries room to grow and repay you for all your trouble, in clusters of greater weight, greater beauty, and incomparably greater excellence. Young shoots should be trained over any cluster exposed to the sun's heat. So that warmth and air are not excluded, grapes are always better for shade. Bagging the fruit in muslin is a good protection from birds and wasps, besides improving the quality of the fruit. Water may be given sparingly at this time to the roots, but, if possible, none should get near the clusters.

One subject upon which I ought, perhaps, to have spoken earlier, is that of the propagation of the vine, and the best methods of planting it. The methods followed by some and recommended, are legion. The point really is, how with the least delay to raise a good plant and get it into the soil under the most favourable conditions. We shall therefore speak only of those methods, that having tried, we can speak about with confidence. The readiest way of all, is that which is popularly known as layering. This ordinarily consists in making a shallow trench, from four to six inches deep, and the required length; in this a ripe cane from an adjacent vine is pegged down but not covered. After a time buds break and several

shoots appear; those coming from the underside should be rubbed off, only those that break from the upper side being suffered to remain. Little by little the trench is filled up until it is quite full. In about ten or twelve weeks the cane may be severed from the present vine. At this time, it is well to give the layer a little shade from the heat of the sun. In a week or ten days it can be carefully taken up and cut into as many plants as there are shoots, and be planted where they are intended to remain. A yet better plan is the one mentioned in the lecture on the orange by Dr. Neish. We mean layering by elevation. By inserting a suitable cane through the bottom of a flower pot, and filling with soil, a rooted plant can be obtained in a few weeks. We have now here one which was so treated in January. Another method, indeed, the method almost universally followed, is by cuttings. In Australia they use cuttings five or six feet long. Some plants of American varieties received by me lately were evidently raised from cuttings over 20 inches in length. I do not like them. I prefer cuttings from short jointed canes, not more than two buds on each. I let each cutting rest on a bit of decayed wood and fill up to the second eye with clean sand. After the eye has made a shoot a few inches long, I add more sand, the result being that a mass of rootlets are thrown out, and I get practically my plant from a single bud which makes a good cane the first year. The second I do not cut down, I simply bend the cane nearly flat on the ground and a new stout growth is sent up from the root far stronger and healthier than if the cane had been severed.

I have also raised and now have several healthy vines from seed. This is not a satisfactory method of raising old varieties, and an uncertain one if the hope of getting new and better ones is the motive.

Lady Downe's seedling, a black grape of special excellence, and Foster's white seedling, a white grape, as its name indicates, were raised from seeds from the same bunch of grapes; both are of first class quality, among the best in cultivation.

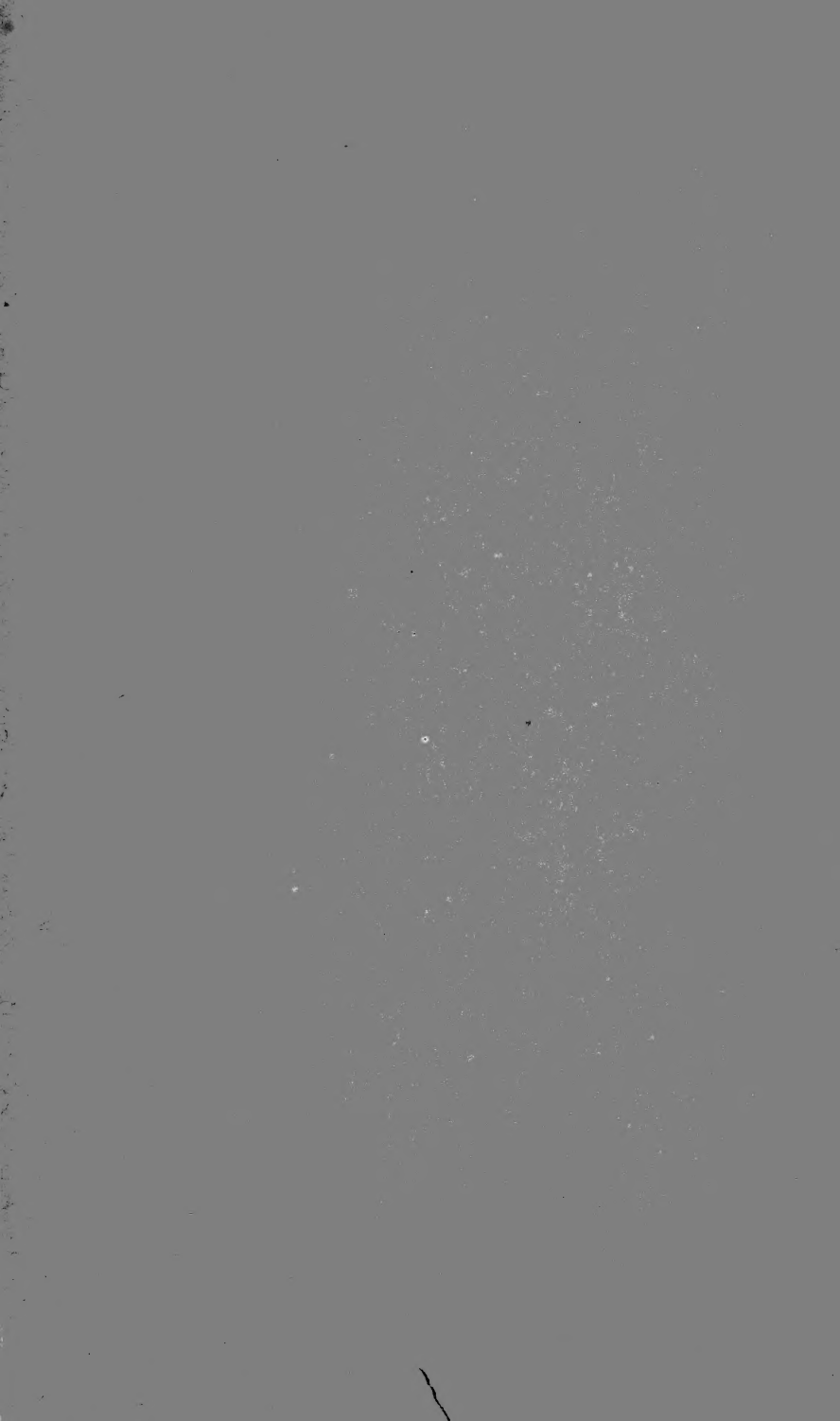
Dr. Grant, of America, out of 5000 seedlings had only two worth preserving, the Iona and Isabella, and Dr. Siedhoff out of 500 seedlings had only one better than the parent vine.

Equally important with obtaining a good variety is it that the aspect, soil and general surroundings should be congenial. The situation where, and the soil in which a vine is planted, have much to do with determining its success or failure. An Eastern or South-eastern aspect is always the best. Nothing can

make up for the loss of the influence of the morning sun. I know two vines in this city; they are sister plants from the same mother vine—they were planted at the same time, in the same garden, but one never sees the sun until afternoon, the other gets the full benefit of it. From the latter, a crop of over seventy bunches has just been cut, the other has never borne a grape. These vines are over five years old.

The sunlight is essential for the health alike of roots and foliage. In planting, a stiff clay is to be avoided (although some of the best African vineyards are said to be on soil containing over 50 % of clay), unless very well drained, and even then a dressing of coarse sand, old mortar and wood ashes would improve matters. One evil to be carefully avoided is the too common one of planting too deep. The vine is a greedy feeder, and wherever food is, if it be at all accessible, it will go for it. Naturally, however, the vine is a surface feeder, and so that you plant your vines out of the reach of danger from tools in digging the surface they are deep enough. The nearer the sun the better. Shallow soil, if of the right kind, will produce grapes of higher quality than a deep soil. The vine may be less vigorous, make less wood, be shorter jointed, the clusters may be smaller both in bunch and berry, but the fruit will mature two or three weeks earlier, and will be of much higher quality.

In conclusion, this subject is one that ought just now to get more attention than it has yet received. It is not to be desired that any attempt should be made to enter the lists as a wine producing country; there is no hope of success. But with the immense market for green fruits which is opening up in the States, and the rapid transit furnished by the several lines of steamers, there is no reason why grapes should not, within a reasonable period, be added to the Jamaica exports.



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