can be done. We make the rows for all varieties the same distance apart, namely: three and one-half feet, and set such varieties as Wilson, Capt. Jack and those that make few plants, twelve to fifteen inches in the row, while Crescent, Manchester, Park Beauty and that class from eighteen to twenty-four inches. If possible, always use plants from a new bed, and only good, strong, thrifty ones. If plants were very small or land very poor, we should set closer in the row than above. The after cultivation consists in frequent and deep stirring of the soil (with a narrow-toothed cultivator which does this work thoroughly, but leaves the ground nearly level), hoeing often to keep down all weeds and make the soil mellow around the plants, and picking off all blossoms the first season. My friends, don't plant strawberries on poor land and expect a big crop, for if you do you will surely be disappointed. The best land you have is none too good. Plant on rich land. Manure heavily. Keep thoroughly cultivated and hoed all summer, and mulch with marsh hay or straw that is free from weed seeds as soon as ground freezes hard enough to drive on, and then you have good reason to expect a crop that will be both satisfactory and profitable even at low prices for the berries. In the fall of 1885 we had one bed of about two acres (Williams and Crescents) that had been grown as above, on which we spread sixty loads of fine manure just before putting on the mulching. Last season we picked from that one bed one of the best crops of large, perfect berries that we have ever harvested, in spite of the very dry season.

CRANBERRY GROWING IN WISCONSIN.

BY J. S. STICKNEY, WAUWATOSA.

The following paper makes no pretentions to knowledge or skillful management. It is a simple statement of my efforts and failures for ten years, and of thoughts and questions suggested thereby. My first visit to the marsh I now own was made in company with a gentleman of large experience and well versed in cranberry knowledge.
In pointing out the royal road to wealth, his frequent remark was, "all that is necessary to successful cranberry growing is to produce the proper conditions." That sounded not only wise but easy, and I have ever since been earnestly at work producing conditions—more conditions than fruit. Chief among conditions was abundant water supply, and I think chief among mistakes has been too much water in summer.

My predecessor, to make sure of water, had built a heavy sand dam at the lowest line of the marsh and lighter dams above. Next to this sand dam was a level of perhaps ten acres; having on it a few scattering vines which in about three years were to become a mass of solid productive vines because their water supply was sure. Nine years thereafter that most promising level was as bare of vines and fruit as at first, because of too much water. On the balance of the marsh the vines have, perhaps; doubled; sage and feather bush have doubled also; moss has fallen off one-half or more. All the while we have been "producing conditions" according to the best theories of the most experienced growers; all the while figuring how much 100 acres would yield at 100 bushels per acre; all the while walking over 100 acres of marsh to find vines enough to closely occupy perhaps five acres; and all the while holding the water so high, to mature and protect the few scattering berries, as to check and almost defeat the growth of new vines. After nine years of this sort of management, we, in the spring of 1886 concluded to see if we could grow vines whether we grew fruit or not, and drew all the water that we could from the marsh. Kind nature came to our aid and evaporated what would not flow off, thus producing excellent conditions—for a big fire! And in August the big fire came, but not until it was plainly evident that vines were making such a growth as we had never seen before. That fire burned deep and thorough and destroyed 99 per cent. of all our vines, root and branch—a sad and disappointing loss, leaving behind a black and very uninviting field, but to us its results are not at all bad. With the vines it cleared away worlds of worthless rubbish and in six days there-
after we were supplementing its work by removing all the objectionable things that remained; so that now we have thirty acres in excellent condition for new vines in the spring. We shall not be bothered with berries in the three coming years, and at the end thereof shall know certain whether we can grow vines or not. If yes, then we will hope further on to grow berries also.

Our next problem is how best to plant; and here, as in all else, there is a diversity of opinions, ranging from sods of vines to two inch cuttings. That two-inch cuttings, under favorable conditions will grow I have no doubt. Rare and choice varieties would go much farther in that way than by six-inch cuttings. Perhaps they would be a year longer in maturing, but I doubt it. The slight covering admissible could be given with a light roller, with inch long cogs, or by pounders with similar projections, or in other ways that ingenuity would suggest. This plan of short cuttings we shall give a faithful trial in the spring, but the bulk of our planting will be with about six-inch cuttings, two to four in a place, one foot apart each way, and either stepped in with an attachment to the boot, or pressed in with a long flat stick — the stepping in being more expeditious, but leaving them in an upright position: while the other gives them a leaning or half recumbent position, which is claimed to be better. We shall try both and note results.

Who has grown vines and fruit from seed? We have asked this many times, but received only vague and unsatisfactory answers. Nothing to indicate what one could or could not hope to do. Experimenting in this direction we last spring crushed three hundred bushels of berries, mixed the pulp with sand and scattered it broadcast over our marsh, some on well prepared soil, but mostly among moss and grass, as found in the average marsh. Seven weeks thereafter a careful examination showed millions of young plants, from one-half to one inch long. In no place had they failed, and in many places they were much too thick. Shortly thereafter the fire came and destroyed nearly all, but fortunately a few remain; and we shall watch them with much interest the coming season. Encouraged with last
spring's efforts, we now have nearly one thousand bushels of berries crushed and mixed with sand ready for spring planting. The danger now nearest at hand is the possibility — I may say probability — that the seed will start so early in the spring as to be liable to injury or ruin by the late frosts. We shall guard a little against this by covering, while frozen, with marsh hay and evergreen boughs so as to keep them frozen as late as possible. The scientific critic would object to seeds, because they may sport into a variety of forms, sizes and qualities, like seedling apples, thus giving an undesirable product, possibly "figs and thistles" mixed. I think the dangers are small as compared with the benefits to liberal seed planting. Even apples, where there is no opportunity for crossing varieties, sport much less than is generally supposed. All vines about Berlin are bell and bugle, with little or nothing to change their offspring for the worse. Those along the Valley road are about as uniformly cherry. No one can doubt that many vines in all marshes have sprung from seed, and if the tendency to sport was great, the results would be very manifest. Yet distinct variations are not common.

Who has made a broad, generous and faithful experiment in sanding marshes, after the manner of eastern growers, and with what results? To this question no satisfactory answer has reached me. One plantation has been made by leading water over sandy land and holding it there, planting vines and treating them in all respects as peat marshes are treated. The results have been very satisfactory. Of our newly prepared ground we have carefully leveled and sanded three acres, making the sand about four inches deep and hope to prepare two more acres in the spring. We do this in imitation of eastern methods, believing that what is deemed vitally important there ought to be of some use here. Two or three inches may be just as good, but we want the trial to be just and honest. Aside from plant food furnished by the sand, the probable advantages are freedom from grass and weeds, and that heat absorbed and held by the sand, may be gradually given off during the nights,
thus giving to the plants stronger growth and to the fruit earlier maturity.

We hear much about scalping and removing the sod to fit for vines. It is a nice theory to talk about, and I think mostly ends in talk. Yet I know of one broad guage, persistent and successful example. There, at the proper season you can see blocks of several acres side by side, 1, 2, 3 and 4 years’ planting, the sod having first been plowed and removed. Each years’ work is a success the four years’ bearing 70 to 100 bushels per acre; the 3-years’ perhaps half as much; the 2-years’ a sprinkling of fine large berries, and the 1 year a good growth of vines. Yet a careful study of this work confirms in my mind two ideas not in accord with the owner’s views: 1st. The use of less water in summer. This marsh is a dry one, more natural for hay than vines. The past summer it was very dry, its ditches two feet deep being good places to walk in. Yet both vines and fruit were doing fairly well. 2d. That the removal of sod is a large and unnecessary expense, and in many cases it would be very beneficial left on the ground. After plowing thoroughly haul and smooth the sod and it will make a more congenial seed bed for vines than will the soil below, and their growth will be more free and vigorous. On lands too wet to plow, the surface should be made as level, smooth and compact as possible. In many cases a light coat of sand (one or two inches) would be a great helper and cost less than the removal of sod.

Do not mistake my views about water and its uses. While I fully appreciate its value for winter covering and protection against untimely frosts, I think we have terribly mismanaged it in summer. In White’s “Cranberry Culture” we read on page 58: “Until vines are matted, keep the meadow thoroughly drained at least one foot below the surface.” And on page 64 he goes so far as to say, “Young plantations should not be flooded over in winter until after the third season’s growth.” These indicate eastern practices. Why should our vines require different treatment? Yet how few of us drain a foot below the surface. Water, for frost protection is very valuable, but a 40-acre reservoir
will not thoroughly protect 100 acres of vines, especially if
the reservoir is only half full; neither are 10 acres of vines
so readily protected when scattered over 100 acres of land
as when on a 10-acre block. These thoughts indicate about
our average facilities for protection. Happy is he who has
better.

Most discouraging of all and hardest to meet is the short-
ness of our season. Many things are short at one end, but
this is terribly short at both. If we hold our vines back to
escape trouble in the spring we run straight into trouble in
autumn. I have often felt puzzled at the greater tendency
to frost in one locality than in others until the idea of alti-
tude came in explanation. One who has not investigated
will be surprised at the different altitudes and will see there-
in a reason for things not before made plain. Let me give
you a few figures taken from our State Geology:

New Lisbon is 893 feet above sea level; Camp Douglas 934;
Tomah 961; Tunnel City 1051; La Crosse 648; Valley
Junction 932; Hitchcock’s Marsh 942; Norway Ridge 985;
Bears’ Marsh 987; Grand Rapids 926; Berlin 762.

While this is not flattering or encouraging for my locality,
it only braces me up to the idea of a better stand of vines
on a smaller number of acres, thereby securing better water
protections and more prompt and cheaper gathering of fruit
when ready.

The importance of the cranberry industry is made suffi-
ciently plain by the fact that Wisconsin produces one-third
of all that are grown in America. But a study of statistics
running through 10 years shows a rather even and con-
stantly increasing production by eastern growers; while
ours is very fitful and uneven, with small increase. How
much of this is climate and how much our own mis-
management or rather want of management are points worth
knowing.

One other thought, as to quality of fruit. About three-
fourths of our fruit are cherry berries, the other fourth bell
and bugle. The latter two, costing no more to grow and
market, sell in all markets for two dollars a barrel more
than the former, this two dollars being always a clear gain
over all profits on the cherry. We often hear the injunction "be good to yourself;" and whatever else we do we are supposed to be just and honest with ourselves. From this standpoint how long can we afford to grow cherry when we might grow bell and bugle.

THE GRAPE.

By Mr. MOULD, Baraboo.

There is perhaps no fruit that can be grown with more ease, that is more refreshing and helpful than the grape; and yet many persons do not grow them because of some fancied mystery attending their cultivation.

To such persons I will give in as simple a manner as I can, a few points in the cultivation, and care of the grape as I understand and practice it.

And I will take up my subject under five heads. First will be location, second, soil; third, planting; fourth, care and pruning; and fifth, what varieties or kinds to plant.

In locating your vineyard do not plant where the water will stand at any time near the roots. If possible, plant where the foliage will get the morning sun, as the dew or rain remaining on the leaves long at a time is apt to cause mildew, and this is especially true of some varieties.

PREPARING THE SOIL.

Any soil that will grow good corn will grow good grapes, but it is better to prepare the soil quite deep, so that the roots can run freely; for the amount of fruit a vine will bear depends largely on its root power. I think the best soil for the grape is one not very rich, nor would I select a very poor soil.

PLANTING.

Do not crowd or confine the roots in a small hole, be sure and have it large and roomy, let the lower bud of the cane be even or a little lower than the surface of the ground; but before setting, cut off about one-third of the length of the