We are told that the Engineers in charge of the Mexican central railway reported that in the building of the road, it was noted that with the coming of the construction train, bearing great quantities of steel rails, that the rain fell in advance of the train at unusual times and in unusual quantities. It is therefore inferred that in the construction of railways the electrical conditions of the country are disturbed that have an influence upon precipitation. The cultivation of the soil allows of moisture which falls to be absorbed by the soil, rather than allowing it to run off as is the case in hard and unworked soils, hence a greater amount of moisture is present in the soil, which evaporating, produces a higher percentage of moisture in the air; the food for a storm is heat and moisture, hence the influence of the cultivation of the soil is facilitating the deposit of moisture. The planting of trees serves a two-fold purpose in this connection. The leaf surface of the tree is very great, when the aggregate is considered, hence can be seen the great amount of increased humidity obtained from the moisture which is thrown off by the leaves; secondly, the roots of trees serve as a sponge, when taken in connection with the soil. Surrounding the roots, which serve to absorb and retain moisture and to allow its gradual escape to spores, thus affording a more constant supply to the streams, preventing their drying up and affording a greater amount of moisture to the atmosphere. The various systems of irrigation, distributing moisture to the soil which in turn is absorbed by the vegetation and finally evaporated, furnishes a most satisfactory means of making the air more humid and of making the conditions more favourable for possible rainfall. All of these conditions combined add very greatly to the moisture of the air, hence food for the storm and facilitate the possibility of rain, when without these artificial means rain would be practically impossible. Hence it may be considered that the opening up of the land to tillage, planting of trees, the building of railroads and general covering of many square miles with vegetation that were formerly barren wastes, have a tendency to retain the moisture from the clouds, and this in turn renders the air more humid, so that there is an actual increase in the moisture of the air, beneficial to vegetation.

THE AMERICAN DEWBERRY.

Some months ago we received a small parcel of the dewberry from the Saharanpur Gardens. Some of these seeds we distributed for trial in high as well as medium elevations, but have not heard with what result they were planted. We are, however, pleased to note that Mr. J. W. Ebert, Superintendent of the Dematagoda slaughter-house, has succeeded in raising a healthy plant, his other seedlings, as he believes, having been originally weeded out by his coolies. It will be interesting to watch the progress of this single plant, growing, as it does, in an apparently uncongenial situation as regards elevation and temperature. In the *Mayflower* for June 1893, appears an excellent coloured plate of the dewberry, and a description of the plant, from which we cull the following:—Among the most delicious berries of recent introduction are the dewberries, which are running or climbing varieties of the blackberry. They may be allowed to trail upon the ground, be trained on a trellis, or tied to a stake like a grape vine. When in flower, the tree is usually covered with manes of large, pure white, sweet-scented flowers, which are succeeded by a profusion of delicious fruits which are larger, richer, and more juicy than blackberries. The fruit ripens about two weeks earlier than most varieties of blackberries. It makes a delightful wine for invalids, possessing the same delicious flavour as the berries. The vines are perfectly hard, and do not sucker from the roots, but increase from the tips.

SOIL INOCULATION.

Nobbe and Hiltner have during the last few years carried out some important researches in this subject at Tharandt. The power which different leguminous plants possess of fixing free nitrogen by means of their root-tubercles varies widely in different cases, and is largely dependent on the nature of the soil. The bacteria in the tubercles of different genera all seem to belong to the same species (*Bacterium radicicola*), but are so energetically influenced by the plant in the roots of which they live that they *lose* more or less the power of infecting other leguminous plants, except those closely related to the kind which they inhabit. The practical outcome of this is that when any special leguminous plant is sown in a particular kind of soil, it will only develop tubercles on its roots if (*a*) unmodified root bacteria are present, or (*b*) root bacteria modified by living within closely-allied species. (*a*) will be the case if no leguminous plants have been grown on the land in question, or if they have not been grown for a long time; (*b*) will happen if the same or a very similar crop has recently grown on the land. If, however, the last crop been a leguminous one of very different kind, the new crop will either develop no tubercles or the tubercles will be few and small, this being associated with little or no power of fixing free nitrogen. This will be the case, for example, if clover follows peas. The farmer, therefore, in cultivating leguminous crops must take care that the soil is properly inoculated with earth from a field which has grown the special crop the previous year. The inoculating earth for peas must be taken from pea-fields, clover from clover fields, &c. In an experiment made in peas by Dr. Salfeld, soil from a pea-field distributed at the rate of 17 cwt. per acre, produced a marked effect. This soil is taken from the part where the roots are situated, strewn on the ready prepared field, and harrowed in. To what extent the bacteria from one kind of leguminous plant will infect other kinds needs careful determination; but this much is known that pea bacteria will infect vetches and vetch bacteria peas, while on the other hand pea (and vetch) bacteria have no effect on clover, and *vice versa*. The fact that the root bacteria undergo modification in different plants has not been sufficiently taken into consideration in past researches, and this accounts or some of the discrepancies between the obser-