

evaporation on the one hand, and chemical solidification on the other, the sap in the autumn so much diminished in quantity, as to be no longer discoverable by mere incisions. The power that a plant may possess of resisting cold is in proportion to the completeness of this drying process.

When the leaves have fallen off, the tree is no longer subject to much loss of fluid by perspiration nor to extensive chemical changes by assimilation, for the leaves are the principal organs of perspiration and assimilation. But the absorbing power of the roots is not arrested; they, on the contrary, go on sucking fluid from the soil, and driving it upwards into the system. The effect of this is, that after some months of such an action, that loss of fluid which the tree had sustained in autumn by its leaves, is made good, and the whole fabric of the plant is distended with watery particles. This is a most wise provision, in order to insure abundant food to the new-born leaves and branches, when warmth and light stimulate them into growth.

During all the winter period the sap appears indeed to be at rest, for the re-filling process is a very gradual one. But M. Biot, many years ago, proved, by an ingenious apparatus, that the rate of motion of sap may be measured at all seasons; and he ascertained it to be in a state of considerable activity in midwinter. Among other things he found that frost had considerable influence upon the direction in which sap moves. In mild weather the sap was constantly rising; but when frost was experienced the sap flowed back again—a phenomenon which he referred to the contracting influence of cold on the vessels of the trunk and branches, the effect of which was to force the sap downwards into the roots, lying in a warmer medium; then, again, when the frost reached the roots themselves, and began acting on them, the sap was forced back into the trunk: but as soon as a thaw came on, and the ground recovered its heat, the roots out of which a part of the sap had been forced upwards, were again filled by the fluids above them, and the sap was forced to fall. A large Poplar-tree in the latter state, having been sawed across the ground-line, the surface of the stump was found to be dry, but the end of the trunk itself dripped with sap. Sap, then, is always in motion; and if it ever settles to the root in a visible manner, that is owing to external temporary causes, the removal of which secures its instant ascent.

As to the idea that the bleeding of a tree begins first at the root, and in connection with this supposition, that what is called the rise of the sap is the cause of the expansion of buds and leaves, and branches, nothing can well be more destitute of any real foundation. If in the spring, when the buds are just swelling, a tree is cut across at the ground-line, no bleeding takes place, neither will the sap flow for some distance upwards, but among the branches the bleeding will be found to have commenced. Let the line A B represent the trunk and branches of a tree; let incisions be made at *c, d, e, f*; the sap will run at *c* first, then at *d*, next at *e* and last at *f*, next the roots. This was observed some years ago by Mr. Thomson, at that time the Duke of Portland's gardener, who thought he had discovered that the sap of trees descends in the spring, instead of ascending: a strange speculation enough, it must be confessed. The fact is, that the sap is driven into accelerated motion, first at the extremities of a tree, because it is there that light and warmth first tell upon the excitable buds. The moment the buds are excited they begin to suck sap from the parts with which they are in contact; to supply the waste so produced, the adjacent sap pushes

upwards: as the expansion of the leaves proceeds, the demands upon the sap near them become greater; a quicker motion still is necessary on the part of the sap, in order to make good the loss: and thus, from above downwards is that perceptible flow of the fluids of trees, which we call the bleeding, effected.

A correspondent remarks that the well-known fact of trees sprouting in the spring, although felled in the autumn, proves that the sap had not that at time quitted the trunk to take refuge in the roots. And we agree with him in considering that such a common occurrence should have put people on their guard against falling into the vulgar errors on this subject.

MAKING STRAWBERRY BEDS OR PLANTATIONS.

Those who intend to form new beds or plantations of Strawberries, are admonished that if they wish to be successful, it is time to be preparing their ground and making ready for the young plants. Every family who have a few rods of ground to spare, should have strawberries, for home consumption at any rate, as it will require but little care to keep a plantation of sufficient size in order, and a few rods will produce a bountiful supply for a large family, of the most delicious and healthy fruit our climate or any other affords. If situated near a city or market town, any surplus amount of fruit may be disposed of at high prices and at great profit; and if in the interior, the time spent by the children and female part of the household in trampling over the farmer's grass, "strawberrying," as it is termed, were devoted to the culture of a strawberry bed, more fruit and of a better quality would be obtained with the same labour or time, and then there would be no scolding about the grass, which sometimes causes the farmer some unpleasant feelings, as he sees a gang of youngsters driving through the thickest of it for a few miserable little strawberries. We advise all to have a strawberry bed and to take immediate steps to form one.

The location for a strawberry bed should be neither a very dry or wet one—for if made on a dry spot, in seasons of drought the crop will be a meagre one, as we have ourselves experienced the present season—and if very wet, in rainy seasons the ground will be so saturated with water that the fruit will be of inferior quality, and the plants less luxuriant and productive. A reclaimed meadow well drained, or a rich loamy soil inclining to moisture, will be most favorable for the growth of the strawberry plant, and produce the best fruit.

The ground should be enriched with fine, well rotted barnyard manure, and faithfully pulverized and dug to the depth of fifteen inches or more; it should then remain a week, when the soil should be dug over again, after which it should be raked and made perfectly fine and smooth, when the bed will be ready for the plants, after it has been lined out in drills eighteen inches apart. The plants should be the offsets of the present season, the first ones thrown out by the parent plant, which are the strongest and best. Old plants should never be used, as they are not so sure to live, nor will they make vigorous, fruitful plants. The proper time for planting is as soon as the offsets have become well rooted, which will be from the 10th to the 20th of August. They should be set out a foot from each other in the drill, and if the operation is well done, having the earth pressed closely round the roots, they will be sure to live, unless an unusually dry time succeeds, when it will be well to give occasional waterings at the close of the day. They will need no other care than to keep down the weeds, until severe cold weather, before winter sets in, when the plants should have a slight protection of strawy horse manure or sea-weed. Covering too deep is injurious, and sometimes destructive.

For a plantation two rods by one, in drills 18 inches apart, 360 plants will be required, but as it is well to have a few supernumerary plants in case of accident, 400 may be ordered, or 200 per square rod. If they are planted in beds with three drills lengthways in the bed, with a space of 2 1-2 feet between the drills in each bed, the exact