

order to produce a good crop of seeds must have abundant foliage the previous year. It is our belief that when shrubs and trees have accumulated a certain amount of this elaborated sap they are induced in nature to bear fruit, but just what proportion of such sap it is necessary for each tree to have is not known. What is known, however, is that certain methods of cultivating fruits will induce fruitfulness. Most fruits require bright sunshine for the development of fruit buds, but with the sunshine there must be an abundant supply of leaves to convert the crude sap into the elaborated form.

There are many examples showing that when a certain proportion of elaborated sap is in the branches of trees, that fruit production will follow. If a branch of a tree is injured in some way so that the flow of elaborated sap downward is checked it accumulates in the branch above, and that branch having more than its proportion develops fruit buds. When the roots of a tree are severely pruned and the flow of sap downward and into them is checked the top has a larger proportion of elaborated sap than is necessary for the development of leaves merely and it develops fruit buds. A spell of dry weather at the right time in summer will probably induce the production of fruit buds as growth is checked and there is a larger proportion of elaborated sap available than there would otherwise be. When one variety of fruit is grafted on another the sap at the point of union is more or less checked in its downward course and the top retains a larger proportion of elaborated sap than it needs for its healthy development and fruit buds are produced before they would be if the tree were grown as a standard tree. Some plants and some varieties take longer to come into bearing than others, but what the vital principle is which governs this is not known, but it is evident that just as soon as there is a surplus of elaborated sap then fruitfulness is induced, hence methods of cultivation should be adopted which are known to induce fruitfulness.

**PLANT FOOD AND TILLAGE.**—The relation of the supply of plant food to fruit and seed production should be, and is, of the greatest interest to fruit growers. Plant food, however, is of little value unless there is moisture and heat. Some kinds of fruit require more moisture than others, and some more heat. It has been already explained that the place of origin of the original type may have much to do with the kind of soil that they will do best in.

While there is vigorous growth there is usually little seed production. Herbaceous plants, as a rule, have made most of their growth before they bloom. Woody plants also have made their strongest growth before they begin to fruit. An excess of a