MARCH 16, 1911

306

or

in

fine

awy

ible.

acre

e as

the

s of

ught

and

the

wire

best

re-

t the

laced

eight

more

wide,

and

used

four

ne for

s ap-

out.

it it

deed.

rcely

labor

s the

ouble-

d for

ds, a

vs, is

re set

rows

aving

The the

also

two

at the

being

eeding

tinued

comes

fields

ng is

field.

time

by an-

strong

SO as

ow of

inchea

onions

over,

o that

s, six,

wind

teeth

before

erally,

oon as

with

much lavor, as an onion pest, and, according to some, a much worse one, pest, and, according, or blight. Thrips are tiny are or worms which attack the leaves just where they divide one from the other, and are sometimes in such numbers as to cause the leaves to wither and dry up, though more commonly a graying of the green is all that is noticed. Onion smut is also sometimes serious, the plants affected showing smut on the leaves and also between the layers Nothing of much value has ever been used in the Scotland neighborhood as a remedy for these pests, though it is believed that rotation of crops would be of some avail.

Three hundred bushels of onions per acre is an average crop, though twice that number of bushels have been raised occasionally. An average fair price, loaded on cars, has been one cent per pound-75 cents per 75-pound sack. In the fall of 1910 the price was 85 cents, and the demand so keen that there were none left to store. The crop was two-thirds of an average one.

## Science of Pruning.

By Prof. J. W. Crow, O. A. Com Guelph, Department of Pomology.

Before one can hope to regulate intelligently the fruit bearing of trees, it is necessary to understand something of the nature of plants. In all organisms there are at present two opposite and conflicting tendencies. There is, firstly, the tendency towards physical development or vegeta-In plants, the vigor of physical tive growth. development depends upon the degree of activity of the roots, as it is the function of the root system to supply the moisture and raw material out of which tissues are manufactured. There is, secondly, the tendency towards reproduction-the individual perpetuating itself. While a tree is young, the roots are very active, and strong growth is the result. As maturity is approached -and maturity is simply the stage at which physical vigor begins to decline—the top and root come into a state of equilibrium or "balance." It is not until this condition is approached that the process of reproduction can begin. Previous to this time, the top continues to increase in size in response to the activity of the root, but now it begins to develop fruit buds, blossoms and fruit. The function of the top is, primarily, to become the means of reproduction. The leaves transform the raw materials furnished by the roots into material which can be used for the direct manufacture of wood-tissue, leaf-tissue, or the tissues of the reproductive parts. The products of leaf activity are principally starch and These are used in all portions of the sugar. plant for growth purposes, and, if produced in excess of growth requirements, are stored up, to be drawn upon as required. It is probable that stored plant food must be present in considerable quantity before fruit buds will be developed.

The purpose of pruning is to assist in creating and maintaining the proper balance between root and top. It is possible, by pruning, to accelerate vegetative growth, if desired, and it is also possible, in cases where growth is excessive, to check it, and cause development of fruit buds, Pruning the top in the dormant season reduces the proportion of top to root, and is known to result in increased vigor of growth. On the contrary, pruning the top in the growing season growth by interfering with the manufacture checks

## THE FARMER'S ADVOCATE.

much favor. Next to the maggot, as an onion of food material, thereby reducing the quantity available for growth the following season. Other means of checking excessive vegetative growth are root pruning, which directly reduces the quantity of raw material taken in ; girdling, which nourishes the top at the expense of the root; and dwarfing, which starves a tree by growing it on a restricted root system.

It will be noted at once that pruning is but



## Effects of Bad Pruning.

Stub left too long, and was probably not cut at the best time. Instead of healing over promptly, as it would have done if cut close, the stub has decayed, forming a hollow in which birds nest.



## Serious Case of Sunscald.

Was cleaned out and painted twice, and is now healing Short trunks lessen danger of inover. jury of this kind.

one of several means of influencing fruit bearing. Cultivation, fertilization, spraying, and even drainage of the soil, exercise a considerable influence on the vigor of growth. Cultivation may be excessive, in which case growth may be so strong and rapid as to prevent fruit bearing, and fertilizing, also, may be carried to such an extreme as to lessen production. It is not, of course, advisable to go to the opposite extreme, and entirely withhold fertilizers or cultivation, for the reason that a tree requires a certain amount of vigor in order to properly develop its fruit Spraying and drainage affect vigor In so buds. iar as they permit the plant to reach its normal state of healthful development, without being compelled to overcome adverse soil conditions or the attacks of insects or diseases.

Pruning to increase vigor of growth may be necessary in the case of diseased or decrepit trees, and unhealthy trees can sometimes be revived by Trees which overbear severe winter pruning. may be pruned for the double purpose of thinning the truit and increasing vigor of growth. variety such as Wealthy, which bears very heavily every other year, should be severely pruned the spring previous to the bearing year. This thins the fruit and tends to the production of fruit buds and wood for the following year's bearing. If the pruning is done previous to the non-bearing year, growth is stimulated, and the tendency to bear in alternate years is exaggerated, instead of lessened. Old, neglected trees can be invigorated by severe pruning in the dormant season, which extends up to the time the trees have developed some little quantity of leaf surface. The removal previous to that date of a portion of the top means a proportionate increase in the stored fruit supply, as well as in the root area, and a proportionately stronger growth in consequence. Pruning after that date checks growth, by reducing the leaf area, and may result in the production of fruit buds. This explains the statement that "June pruning produces fruit." With some trees, the dormant season extends to the period of full bloom, or even later, depending on the degree of development of the accompanying leafsurface.

So far as the healing of wounds is concerned, the best time for pruning is just previous to the beginning of active growth, although the matter is not important, except in northern districts or in the case of large wounds. Evaporation of moisture from wounds made in winter is a frequent source of injury in districts where low temperatures are experienced. It is probable that the drying-out is more dangerous than the actual degree of cold reached, and it may be prevented by covering with grafting wax or paint made from white lead and oil. This treatment also prevents decay of the exposed wood, and may result in keeping the tree sound and healthy for many years longer than would otherwise be the Wounds on or near the trunk should recase. ceive particular attention at all times, as trees are likely to suffer very seriously through decay and disease at those points.

In removing large branches, or branches which arise near the trunk, it is always well to avoid leaving stubs. Make the cut close to the parent branch, or close to the point from which another branch arises This will facilitate healing. A small stub left in the outer portion of the tree is not likely to cause damage, although smooth work is always desirable.

457

this being power ole bedriven so far

ice to year. by had a full course. oractice be at ted an , which grown

e with past it erchants s been alk now at little couragen being d, while er cent. show a

especialf of the sual, as ss from mage to ne magradishes not find



Before Pruning. An old, r slected King apple tree in "The Farmer's Advocate" Demonstration Orchard No. 8.



After Pruning. Same tree after pruning. Pruned in June, 1910.