

drying? Possibly the shape and texture of the leaf will help answer this question.

Does the wood in a tree prepare for winter? In a cross-section, we have seen the annual rings of growth. If the wood always grew at the same rate, these rings would not exist. In late summer, however, the tree grows slowly, making denser, drier wood than the spring growth. What has this to do with winter? If the newest, or outer layer of wood had an excessive amount of sap, what effect would severe freezing have? We know the more porous wood holds more sap. Slow growth late in the season, therefore, tending to store less sap, may prevent winter-killing. Fruit growers apply this principle in avoiding late cultivation and planting cover crops. Their fruit trees, being somewhat artificial, profit by artificial assistance in preparing for winter.

School children might profitably look for other examples of winter preparation. What about bulbs, tubers, etc?

In spite of these preparations, plants seem conscious of possible death during the long winter. Their habit of annual seed formation, however, assures life to the race, if not to the individual. The seed, therefore, is a resting winter form. In fact many plants (annuals) make no other preparation than an abundant seed supply. The seed is so dry that frost does not injure it; nor is decay likely to attack it.

To summarize, then, the winter problems are: (1) to avoid death of the individual by sudden freezing and thawing, as in perennial parts; or from excessive evaporation of water, as in leaves; and (2) to assure continued life to the race by storage of surplus food, and the formation of an embryo plant with its concentrated food supply in the seed.

Many plants have given up the first problem, and are content to direct all their energies toward the perpetuation of their race. Others, however, have solved, or are solving both problems.

The world is not yet finished. It is still in the making. To see the operations at their present stage, noting changes that take place in the habits of cultivated plants when moved from their native climate, helps us read the history of the struggle of all plants to meet winter and summer conditions.

In temperate climates, we have a seed-time and a harvest. In warmer countries, however, culti-

vation has made the two dates synonymous — or, rather, synchronous. Were it not for our extremes of heat and cold, many habits plants now possess would never have been acquired.

Let us, then, study these winter conditions, and try to learn what circumstance has brought about any particular structure our observations may lead us to discover.

GETTING READY FOR WINTER.

There's a little gray squirrel, high up in the tree,
He chatters and scolds. Is he talking to me?
"There are nuts to be gathered, there's plenty to do!
I'm getting all ready for winter. Are you?"

The flowers are asleep in their warm earthy beds,
The leaves form a blanket to cover their heads;
The woods are so still, for the birds have gone, too.
They're getting all ready for winter. Are you?

There are bulbs to be planted, and apples to string;
There are warm coats and caps from the attic to bring;
For winter is coming—there's so much to do!
I'm helping my mother get ready. Are you?

—Primary Education.

There is a story I have heard;
A poet learned it of a bird
And kept its music, every word.

About two thousand years ago,
A little flower as white as snow
Swayed in the silence to and fro.

Day after day with longing eye
The flow'ret watched the narrow sky
And fleecy clouds that floated by.

And swiftly o'er its petals white,
There crept a blueness like the light
Of skies upon a summer night.

And in its chalice, I am told,
The bonny bell was formed to hold
A tiny star that gleamed like gold.

Like the star
Which shines afar,
Without haste,
Without rest,
Let each one wheel
With steady stay
Round the task
Which rules the day,
And do his best.—Selected.