THE

WONDERS OF VEGETATION.

THE LEAF.

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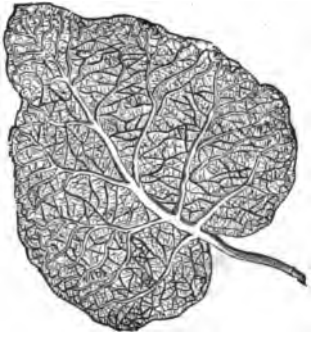


THE LEAF.

CHAPTER I.

BEAUTIES OF SPRING—FORM OF THE LEAF.

'Tis past, 'tis over, stern winter's reign,
The earth has burst from its icy chain;
List to the voice of the balmy breeze,
Sweet is its tale of the bursting leaves;
Of green buds swelling beneath its power,
Of flowers up-springing each sunny hour.

We all love the bright and pleasant days of spring. We rejoice to see the bare and leafless trees once more putting forth their buds, and the tender grass again covering the earth, when the cold chilling winds and

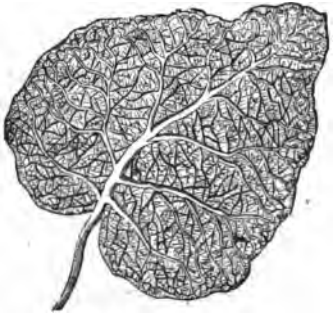
the biting frosts of winter have passed away. There are countries where the seasons do not vary as they do here; where the snow and the ice never appear; but we love better the changing climate which God hath given to us.

In the season of early spring, what is there that we more admire than the opening leaf? At first, as it lies folded, or rolled up in the scales of the leaf-bud, we see none of its beauty; but the bud gradually opens, and the light and delicate leaf appears, varied in its colour and shade, from the light yellow to the pale and the deep green. Soon we look abroad, and how changed is all around us! The forests are thickly covered with green foliage; the fields, hills, and vales have their own soft carpet of tender grass, and the garden displays a rich and endless variety.

But what are these beautiful leaves? God

has given them to us: God has clothed these trees with their verdure. We repose under their grateful shade, we admire their beauty, but have we ever thought of their wonderful formation, or of their usefulness to the trees and shrubs upon which they grow? God, in his wisdom, has formed them in a most curious manner, and has made the existence of the plant to depend almost wholly upon their action as the organs of life.

Let us look at the structure of the leaf. The arrangement of its skeleton or framework is beautiful even to the naked eye. The fibrous parts of the leaf, which compose this curious frame, are continued from those of the stem. These fibres and vessels of the leaf are covered with a pulpy substance, called the *parenchyma*, or cellular tissue. It consists of a mass of little cells or cavities, differing in size in different leaves. Those leaves which are most pulpy and juicy con-

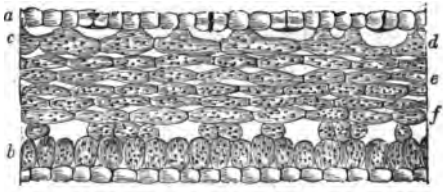


Vessels of a leaf.

tain more of the cellular substance than others. The covering of the whole leaf is a green coat or skin, called the cuticle. This is soft, yet firm, preserves the inner parts from injury, and is furnished with pores, or openings, by which it receives nourishment for the plant.

Both the skin or cuticle and the cellular substance are different on the upper and lower surface of the leaf. The pores, or openings, are generally most numerous on

the lower surface. This engraving is the leaf of the white lily, supposed to be cut through, and very much enlarged, so that the parts of which it is composed may be seen.



a, Cuticle of the upper side of the leaf; *b*, ditto of the lower; *c*, breathing pores; *d*, *e*, *f*, the layers of parenchyma.

In no part of the plant do we see so great a variety of form as in the leaf. If you will walk out upon the lawn, in the garden, or even by the road-side, for a few moments, and gather a specimen of each leaf you may discover in that short space of time, you will be astonished by their very great number.

Leaves are divided into simple and compound. They are called simple, when the foot-stalk bears but a single leaf, as does the lilac, or the vine; and compound, when it supports several leaves, as the rose, the acacia, and the horse-chestnut.

In each of these divisions there are many varieties, and these are called by as many different names.

The leaves of the beautiful lime, or linden-

Leaf of the Linden.

tree, are simple; as are also those of the oak, the ash and the elm.

The holly is an evergreen, everywhere much admired. It is a native of our forests, though often cultivated to adorn the lawn or

Waved and prickly leaves of the Holly.

the garden. How beautiful is the contrast between its brilliant scarlet berries, and the dark green of its polished leaves! Those thick, rich leaves are on all its lower branches wavy on the edge, and sharply

armed with a thorny prickle, while the upper leaves are less pointed, and end in a blunt prickle. Thus this elegant shrub seems to have something like a natural hedge set round about it; for the cattle cannot browse upon its leaves, the careless hand cannot easily break off its branches, nor the foot tread them down. Perhaps, too, when the smaller birds make their nests within its shade, the larger and stronger ones are afraid to attack them behind their prickly fence.

The olive-tree is also an evergreen. Its leaves are simple, opposite, and narrow; oblong, and tapering at each end, as the leaf of the peach-tree. The under surface of the olive leaf is covered with a scaly powder, which gives it a silvery appearance. This tree is chiefly valuable on account of its fruit, from which oil is extracted in large quantities. It does not grow

in our own country, but is a native of Syria, and the countries bordering on the Mediterranean. Its leaf is considered an emblem of peace. The olive is often spoken of in Scripture. It was the leaf of this tree which the dove brought to Noah, when he had sent her forth after his long confinement in the ark. How must joy and thankfulness have filled the heart of the patriarch, when he saw by this token that God would yet spare a guilty world, though all who had lived on its whole surface, except those who were with him in the ark, had perished! Thus God has shown to all men his hatred of sin. It is probable that the olive-leaf is considered an emblem of peace, from its use at this time, when God spoke peace to Noah, as the waters of the deluge were subsiding, by sending to him this leaf in the mouth of the gentle dove.

When several leaves are supported by

one stalk, they are called compound. The parsley, a well-known garden vegetable, is a specimen of this kind. It is much used

Compound leaves of the Parsley.

to impart an agreeable flavour to soups and other food. Its leaves may be cut several times during the summer, provided that care is taken to water the plants in dry weather. The cow and other domestic animals are

fond of them, but they are said to be poisonous to poultry and many birds.

The gradual putting forth of the leaf in spring, is one of the wise arrangements of our divine Creator. The leaf-buds on the various plants and trees do not open at one time, nor does every leaf appear in a single day fully expanded. No: from March till June, in regular succession, first the bud, then the leaves appear; and one of the beauties of spring, which we most enjoy, is this progress of vegetation. Thus the Lord "crowns the year with his goodness, and his paths drop fatness upon the earth."

Lift now thy grateful voice and sing
With the glad birds, for this is spring!
Look up, the leaves are fresh and green,
Their every branching vein is seen;
And green is every bank, and full
Of flowers and leaves for all to pull.

CHAPTER II.

USE OF THE LEAF TO THE PLANT.

Is the leaf useful? Have you ever thought of this inquiry? You have walked under the shade of the lofty oak, the spreading elm, or the graceful linden-tree, and listened to the gentle murmur which met your ear, as their leaves rustled softly in the summer wind; but did you know how much the life of those noble trees depended on that waving foliage? There is scarcely a tree or shrub that, stripped of its leaves, would not wither and die. Leaves are to most plants the organs of life, and as necessary to them as are to you the lungs with which you breathe.

You can easily perceive that leaves perform a very important service, in sheltering

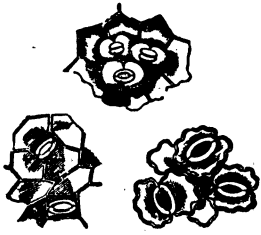
and protecting the flowers and fruit, and in affording shade to man and beast. How pleasant is the shelter of a spreading tree, when the sun is high in the heavens, and pouring its hot beams upon us!

But how are the leaves the means of supplying life to the tree or plant itself? They are to them the organs of respiration, and therefore they are often compared to the lungs of animals. There is indeed a strong resemblance between them, in the part which they bear in the support of life, yet they are in many respects very different. Animals are sustained by means of the action of the lungs and the circulation of the blood; plants receive nourishment from the sap and pulp, by the action of the air upon these substances through the pores of the leaves.

Plants have no stomach, but the soil seems to supply to them the place of one, the tips of each of their roots being furnished with

something like a little sponge, so wonderfully contrived as to take up from the earth only that sort of moisture which is suited to form the sap. Such moisture is supplied by the refreshing rain mingling with the soil, or with manure of different kinds placed around the tree and about its roots to nourish and strengthen it. This sap rises from the roots, through the woody and inner layers of the bark, we do not certainly know in what manner; perhaps in some similar way to that in which water ascends in a piece of lump sugar, or spreads through blotting-paper. However this may be, it rises from the stem to the branches, until it reaches the leaves. Passing through the minute branches of the leaf-stalk, which form the ribs and veins of the leaf, the sap is spread throughout the fine net-work of vessels of which the leaf is composed, entering into all its substance and filling its little cells.

Here the air acts upon it through the stomata, or breathing pores of the leaves, causing it to undergo such changes as fit it for further use. The sap then descends again to nourish the branches, stem, root and other parts of the plant with its juices. In its descent it is especially nutritious.



Specimens of the stomata, or breathing-pores of leaves.

The leaves absorb moisture too in their different cells and pores, in addition to that which they receive from the root. We can perceive that they appear refreshed by the sprinkling of water upon them in dry weather, and revive by the portion they have absorbed.

But the liquid sap which passes through the stem, to reach the leaves, does not all return again—it is partly exhaled through the pores of the leaves in the form of vapour, or pure water. This process of perspiration, as it is often called, is visible on the leaves of some plants. Upon those of the Indian corn, if they are examined before sunrise, a drop of pure water might be seen near the end of the leaf where it had collected. When the air is warm and dry, this exhalation takes place more rapidly, and it is supposed that the water thus escaping from the plant, is equal to about two-thirds of the quantity taken up by the roots. It is given out chiefly through the leaves. A young vine leaf in a hot day perspires so copiously, that if a glass be placed next its under surface, it is soon covered with dew, which, in half an hour, runs down in streams. A sunflower was found to lose one pound

four ounces daily, and a cabbage one pound three ounces.

Light, heat and air are necessary to plants for carrying on the process of respiration, or breathing the air; and exhalation, or perspiring water. Light has the property of causing the breathing pores, or stomata, to open; but these openings close when the plant is placed in the dark; and when this is the case, it will bend and turn its leaves toward the light, in whatever direction it may appear. Even in a dark cellar, if there be but a small chink through which light gleams, the plant will send out its leaves, and throw out shoots in the same direction, of a great length. Without air, plants cannot live at all; it is just as necessary to them as it is to animals.

Plants that are shaded from the light, are not of a healthy green colour, but of a pale sickly yellow. Though healthy leaves

are usually green, we sometimes see them variegated, or partly white or yellow, and partly green. Such are those of the golden laurel, the milk thistle, the several kinds of variegated holly, and other shrubs and trees with spotted leaves. It has been found that in all spotted and variegated leaves, the white or yellow portions are not formed like the green portions. They consist of air cells, having only the upper and under coverings, with no sap or pulp to produce the green colour.

How beautiful is the fresh green of the leaf! Its colour is of all others best suited to give us pleasure. It is adapted to the use of our organs of sight. God made the eye, and He, in his wisdom, contrived the natural colouring of the earth, the forest, and the garden, so that we should obtain and enjoy the benefit of the blessing which he gave us.

"He has made all nature beauty to the eye,
And music to the ear."

This dress of nature is the only colour upon which the eye can rest for any length of time without pain. It is not so brilliant and showy as that of many of the beautiful blossoms and flowers, which delight our sight all around us, but it is far more permanent; and the green leaf remains fresh and verdant, when the flower in its beauty has withered away.

The variety of shades of this enduring colour, green, could hardly be counted. The beauty of our forests is much increased by the effect of these differing, yet mingled shades, when you look upon them at a little distance, especially in the spring, when the young leaves appear just bursting from the bud. Then all the leaves are much paler than they afterwards become, owing to the small quantity of sap which has yet flowed to them, and perhaps also to the light not being so intense, when the days are still

short. In the leaves of the linden and of the larch, this paleness is strikingly seen during the first few weeks after they expand from the buds; it gives them a delicacy of colour which is much admired.

That the cause of this colouring of the leaves, is found in the fact, that the great Creator has so formed them that they absorb all the rays of light except green, and reflect only that one, is perhaps too difficult to be understood without some previous knowledge of the action of those rays, which could not be given here. But the freshness and beauty of the leaf of a plant in health and vigour, is so striking, that in the holy Scriptures it is often made use of to convey instruction to our hearts. It is used as a figure to show us the happy condition of one with whom the Lord is at peace, whose ways please him, and whose delight is in the study of his word: "He shall be

like a tree planted by the rivers of water, that bringeth forth his fruit in his season; his leaf also shall not wither; and whatsoever he doeth shall prosper." The desolate and decaying condition of them that forsake the Lord is strongly pointed out to us in the words, "Ye shall be as an oak whose leaf fadeth, and as a garden that hath no water."

CHAPTER III.

CURIOUS LEAVES—THE PITCHER PLANT—USEFUL LEAVES.

THOUGH we cannot walk into the open air and look upon any single plant or leaf but we behold a display of the power and goodness shown in all the works of God, yet many leaves are remarkable, on account of some peculiar beauty or usefulness which he has given them.

Some of these curious leaves are worthy of our particular regard at this time, and although we may speak of only a few, the mention of them may lead you to seek an acquaintance with many more.

A few years ago, a new family of plants, resembling that of the water-lily, was dis-

covered by a traveller in Guiana, a country of South America. In proceeding up the river Berbice, he reached a point where its stream widened, and formed a smooth basin. Here a singular object on the surface of the river attracted his attention. He gazed

upon it with surprise and admiration. It was a wonder of the vegetable world, such as he had never before seen. A gigantic

leaf, of an oval shape, and nearly two yards in diameter, rested on the water. Its broad brim rose from five to six inches above the stream; its colour on the upper side a light green, and a bright crimson below. Equally wonderful as the leaf, was the luxuriant flower. It consisted of many hundred petals, or coloured leaves, shaded in alternate tints, from pure white to pink and rose. The smooth water was quite covered with these remarkable flowers. Here, in this lonely spot, for how long a time had they continued unseen by man to bloom, wither, and die! Yet they grew not here without the notice of one great Being. No spot of all the earth is so solitary, that in it we find not the work of his hands, for God is everywhere present, and "the earth is full of his riches."

Perhaps the most singular of all the various leaves are those of the pitcher-plant.

Its leaf forms a natural pitcher, holding from a pint to a quart of water.

Leaf of the Pitcher Plant.

Each pitcher is provided with a perfect lid or cover, moving on a hinge. It is usually filled with sweet and limpid water, at which time the lid is closed. In the course of the day the lid opens, when more than half the water evaporates, or dries up. This loss is made up during the night, and in the morning it is again filled and the lid closed. It is remarkable that the water which supplies these pitchers is sweet and pure, though the plant grows in a muddy and

unwholesome marsh; and the water is produced by the process of vegetation. But how is the pitcher held up when it is full of water? For this, also, provision is made. A hook is placed behind its lid, by which it seizes on some tendril growing near, and thus obtains support. As this plant is found only in very warm countries, it has been supposed that these pitchers were intended as reservoirs, in which water is stored for the use of the plant in extremely dry weather. In Ceylon it is called the monkey cup, as it is resorted to by these animals for the purpose of quenching their thirst.

In some countries of the torrid zone is found the wild or barren pine, so called because it never bears fruit. It is not however useless, for its leaves, hanging down, are hollowed out like a bowl, so as to be capable of containing more than a pint of water. In this the rain collects, during the

wet season, and remains a long time quite pure and sweet. This water is not a secretion from the plant itself, as in the pitcher-plant, but often affords moisture and nourishment to its parent stem. But more than this, it generally grows on the tops of mountains, where there are no streams or springs, and in hot weather it yields to the thirsty traveller a cool and refreshing draught of water, when none beside is to be had near it.

The banana is one of a numerous family of plants, growing only in hot countries. It has leaves about six feet or two yards in length, and one foot broad. These leaves are remarkable for the beauty of their veins, which run directly parallel to each other, from the middle vein or nerve of the leaf to its edge, forming a series of delicate lines. The texture of the leaf is firm, but thin, and the surface it presents to the wind is so

broad, that it is soon torn into narrow strips, and one leaf thus has the appearance of many on the same stem. These leaves are used for thatching the cottages of the natives of those countries. In preparing and cooking their food, the South Sea Islanders also apply them to various purposes. We should never suppose that the best way of dressing a joint of meat, or a fowl, was to wrap it up in green leaves; yet this is a practice they approve and follow. It prevents the meat from burning, or losing its juices and becoming dry, while the leaves do not impart any taste, to spoil the flavour of the food. The means of cooking, which these people possess, are very simple. Their oven is a hole in the ground, about a foot deep, with a layer of heated stones in the bottom, covered with banana-leaves. The article to be cooked is then placed upon the leaves, and other leaves being laid over it,

the whole is covered with the stones heated, and the mouth of the hole closely stopped with earth. In about four hours, the oven is again opened, the stones removed, and the meat, well baked and ready for eating, taken out of its covering of leaves.

But of all the varieties of leaves few are more useful than those of the talipat-tree of Ceylon. The flowers are seen at a distance, rearing their white pyramid of plumes above the foliage of the extensive jungle or thicket of forest trees by which they are surrounded. The height of these trees varies from eighty feet to one hundred and ten feet, without the flower, which, rising as a splendid crown on the top, often adds twenty-five or thirty feet to their height. The trunk of the talipat is straight, but it retains a mark wherever a leaf has grown from it, and has fallen off. The leaves are largest when the tree is about twenty years

of age. It is said that at least one dozen persons may be sheltered by a single leaf. Their shape is much like that of a fan. They are from fifteen to sixteen feet across, and with the addition of the stalk by which they are united to the tree, they are sometimes twenty-five feet. While growing on the tree and expanded, they are of a beautiful dark green colour; but they are often cut, to be used for various purposes, before they are fully spread open, and their colour is then like that of old parchment. To prepare them for use, and make them soft and pliant, and to take from them any remaining moisture, they are rubbed with hard smooth pieces of wood.

So light are these talipat leaves that a whole one can be carried in the hand; but as this would not be convenient, on account of their great size, they are generally cut into parts, and with these the people of

Ceylon defend themselves from the sun and rain. They are thus used as umbrellas, but without a handle, the two sides of the leaf being grasped by the bearer and the narrow part carried foremost, when passing through the woods and thickets, with which Ceylon abounds. A natural defence is thus provided for the inhabitants, from the intense and long-continued heat of that country, and from its thick-falling showers. These leaves are also used for thatching houses, as a covering for tents, and, when properly prepared, for the leaves of books. Their most valuable books are always made of the talipat-leaf. When ready for use, the leaf is divided into strips of an equal length, placed between boards of the same size, neatly lackered, and the whole are strung on a cord. To receive this cord, the leaves and boards have two holes in the middle of the leaf and four inches from each

end. The leaves of a handsome Cingalese book are about two inches and a half in breadth, and twenty inches in length.

The writing on these leaves is performed with a long sharp-pointed style, by which the leaf is scratched, or graved; and it is at first difficult, for any one unused to that kind of writing, to see the letters after they are formed. The whole is then made plain by rubbing over the leaf a strong-scented, dark-coloured oil, prepared from a charred or burnt gum; when this is wiped off, the indented or engraved letters only are left black. Books, thus made by the natives of this country, are found of very great age, and in good preservation. This is owing to the imperishable nature of the leaves, and the properties of the oil rubbed upon them, which preserves them from the attacks of insects.

Among the most useful leaves, we must

not omit to notice that of the tea-plant. This plant is an evergreen, somewhat resembling the myrtle-tree in appearance. Its leaf furnishes us with the refreshing beverage for the evening meal, in such common use in our country. It is cultivated chiefly in China, and affords in its cultivation a very profitable employment to many of the poor Chinese.

The tea-plant is raised from the seed. The leaf is not fit for gathering until the third year. At that period the shrub is in its prime. When seven years old, the leaves become few and coarse, and the shrub is then generally cut down to the stem, which springs up again, and in the succeeding summer produces an abundant crop of fresh foliage.

The process of gathering the leaves is one of great nicety and importance. The leaf is plucked separately from the stalk, and in

collecting some of the finer sorts the gatherer hardly ventures to breathe on the plant. But with all this care, he is frequently able to collect from four to ten, or even fifteen pounds in the day.

In our own country, the young plant of the lettuce, with its leaves, the spinach, and many others, are much used, either eaten as a salad, or cooked for the table. The leaves of various garden herbs, as well as those which grow without cultivation in our fields and forests, possess medicinal properties, which make them exceedingly valuable. But we can only allude to these more humble and less remarkable of the leaves that may be called useful, and which contribute to the comfort and enjoyment of man.

CHAPTER IV.

PLEASING EFFECT OF FOLIAGE—AUTUMNAL CHANGES—FALL OF THE LEAF.

In looking abroad upon the country, where the works of God are all around us, we do not always perceive how much of the beauty we behold is found in the foliage of the noble trees of the lawn and the forest. Can you fancy for a moment the appearance of the hill-side and the valley, the orchard and the garden, in the heat of summer, if not a single leaf were seen upon tree, herb, or flower? No relief to the eye, from the glare of the sun; no spot of shade in the broad field, or by the road side; no sound of music in the air, such as steals upon the ear like the fall of distant water from the murmur of the wind among the leaves! If

we could imagine such a state of things as this, would it not be more easy for us to appreciate the goodness of God to us, and the blessing he has given us in clothing the naked stems and branches which he has formed with the useful and beautiful leaf!

Leaves commonly last but one season. In our climate they mostly fall at the commencement of winter, and decay on the earth and enrich the soil by which they had before been nourished. Even the evergreens change their leaves annually; but the young leaves appearing before the old ones decay, the plant continues always green.

God could as easily have formed the leaf so that its verdure should have remained in its freshness for years or ages. But such was not the plan of his divine wisdom. Both plants and animals he has made sub-

ject to gradual and constant decay, and at the same time he has given to some of them means whereby their strength is again renewed. All have proper sustenance to repair for a time the loss they bear, while new parts in each appear, wonderfully adapted to supply the place of those that are worn out and lost, while these new parts are also at last themselves to decay and die.

Had the leaf continued ever green, we should have lost the various pleasing changes produced by the returning seasons. We should have missed the putting forth of the buds in spring, with their varied shades of deepening green, and the glowing beauty of the changing autumn leaves. The richness and variety of colouring which our groves and forests wear towards the latter end of autumn, are splendid beyond any description. How beautiful is the single

branch of crimson leaves, first seen perhaps upon a tree, where every leaf besides remains of the darkest green! Then the bright colours gradually increase; red and brown appear, these varying from scarlet to the deepest crimson, and every shade of yellow, from the pale straw colour to the darkest orange. What care and attention has He condescended to bestow on all these things, whose dwelling-place is in the highest heavens, but who humbleth himself to behold the things that are upon the earth; and who yet taketh up his abode with him who is of an humble and a contrite spirit, and trembleth at his word!

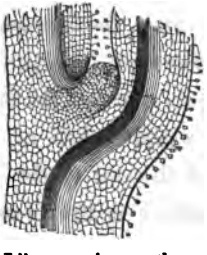
But what is the natural cause of the fall of the leaf from its parent stem? It is not occasioned by the cold, though it commonly takes place at the approach of winter.

The sap which rises from the earth

through the roots, stem, and branches, for the nourishment and support of the leaf, is always in circulation. But the quantity which ascends towards the approach of autumn is very small indeed, and as the vessels of the leaves are not then filled with fresh juices, they shrink in size, and the leaf loses its bright green colour. The vessels shrink most where the stalk of the leaf is attached to the branch of the tree. This arises partly from the pressure of a new bud, which has already begun to swell and grow, to form a new leaf for the next year.

Examine a fallen leaf of the ash-tree. You will find the end of the leaf-stalk hollowed out, where it has been pressed by the swelling bud. When the sap descending in the stem of the leaf reaches this point, it has not room to flow downward, as usual, and the vessels which contain it cause the

stem to bulge out in a sort of knob. As the bud continues to enlarge, the pressure upon the end of the stalk of the old leaf is so much increased, that its vessels are entirely closed up. Thus, no more descending sap being permitted to nourish them, they shrink at this point of the stem and die; the stem is parted from the tree and the leaf falls.



Leaf bud of the Lilac pressing on the vessels of the old leaf-stalk.

In the engraving we see a part of the leaf-stalk of the lilac where it joins the twig.

In the angle, a bud for the next year's leaf appears as being formed, and, as it enlarges, the effect is produced which has been just now described. The fall of the leaf is not then caused by cold, although it takes place when winter is drawing near. Indeed the leaves of some trees, as those of the ash and the poplar, fall sooner than usual, when there is much hot weather in September and early in October. Yet, it is true, (as we know,) that a sharp frosty night in the autumn will cause many leaves to fall. The reason of this we may try to understand.

The sap of plants is a watery juice, and is affected by freezing in the same manner as water; that is, it is increased in bulk and requires more room. You have perhaps known a pitcher to break in a cold room when the water it contained has been frozen to ice. The ice required more room than

the water, and this expansion caused the bursting of the pitcher. So is it with the sap of plants. In very severe frosts, the juices of trees, in freezing, cause large cracks in the wood, as if made by a wedge driven in. When, then, the vessels of the leaves, already begun to be filled up by the swelling of the bud, have their juices frozen, the fall of the leaf is hastened by the frost.

We know that the withering of the leaf is not the occasion of its fall. In riding through the magnificent forests of our country in summer, we may frequently see the branches of a lofty tree, shattered by the lightning or broken by the wind, not yet quite severed from the parent trunk, and clinging to its side, or if broken entirely off, stretched upon the ground beneath; but we do not see these branches leafless; their withered leaves adhere more firmly to the stem than they did

when fresh and green. You will find the same effect to occur if you cut a branch from any tree, and preserve it till its leaves wither, or you may perceive it in the boughs of the currant or other garden bushes, when destroyed by the caterpillar.

There are many trees which lose their leaves every year in our country, and in warm and tropical countries become evergreen. In this case, the swelling bud, which prevents the descent of the sap, does not remain all winter a simple bud, as it does with us, or in our climate, but puts forth at once, when the old leaf falls, and becomes a new leaf, to supply its place. Thus the tree is never stripped of its foliage, but is ever green. Our beautiful passion-flower becomes, from this cause, an evergreen in a more southern climate, as does the oak at St. Helena, and in other warm countries.

With us, the holly and other trees, whose juices are thick and glutinous, and the family of the pines, with juices which are resinous, continue evergreen, from the same cause.

The leaves of trees, decayed and rotted on the ground till they become mould, make one of the best manures to enrich the soil; thus the growth of our splendid forests is increased, and the leaf is useful even in its decay.

As the light greatly affects the colours of leaves, so in hot countries, where the rays of the sun are more intense than in ours, their hues are very dark. This dull blackish-green colour of all the leaves gives to their woods and forests a sad and melancholy appearance.

The leaf then, as we have seen, puts forth its bud, lives, grows and flourishes till a new

bud is ready to take its place, when it falls to the ground, never to revive again. Its decay is certain, and without hope. Is the leaf our emblem? The Scriptures tell us so: "We all do fade as a leaf." "Man dieth, and wasteth away; yea, man giveth up the ghost, and where is he?"

But is there no hope in our decay? Must we too perish for ever? If we believe not in the Lord Jesus Christ, if we have not learned for ourselves the way of salvation which the Bible teaches, through his almighty name and power, we too must die without hope; ruin and utter despair must be ours, and that without end. Let us then seek His favour, in whose presence is life; at whose right hand there are pleasures for evermore.

Beautiful leaf! so green and bright,
In these sunny days of spring,
I grieve to think ere the winter's blight,
Thou wilt fall, a withered thing.

Yet I must fade and die like thee,
Though now so young and gay;
My certain end like thine must be,
To droop and pass away.

But not like thee shall I withered lie,
If my love to God is given;
My dust shall wake—I shall live on high—
I shall bloom again in heaven.

THE END.