学校的理想装备

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《为什么——植物篇》

This album aims to answer child- ren's questions about nature, and the char- acteristics and functions, of plants. For instance: What do trees live on? Are there any leafless trees? Why do flowers have different colours? Why do leaves vary in size? Altogether there are 68 questions. This album will give children a lot of basic information about plants.

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Questions About Plants

1. What Does a Tree Live on?

A tree, unlike an animal, neither drinks milk, nor eats food, so what does it live on? It lives on water and fertilizer. The latter consists of various nutrients-mainly nitrogen, phosphorus and potassium. Each nutrient has a specific function -nitrogen helps a tree develop luxuriant growth; phosphorus makes fruits ripen earlier and potassium helps the trunk grow thick. They all dissolve in water and are selectively assimilated by plant roots according to their needs. In their leaves, trees synthesize carbohydrate from the absorded moisture and carborn dioxide from the effect of sunshine Thus the assimilated nutrients and synthetized carbohydrate keep trees growing

2.Do Bread Trees Really Exist?

In India, Brazil, Sri , and tropi-cal Africa a kind of tall tree grows with a trunk and branches that bear ball-shaped fruit as big as a volleyball and weighs one to two kilogrammes If it is roasted, it looks just like baked white bread and sends out a bread- like smell. It tastes wonderful-sweet with a touch of sour. Scientists call it the "bread tree,, and its fruit ,bread fruit". The fruit is nourishing and consists of starch, protein, fat and plenty of vitamins. It is not only eaten ?IS bread, but also can be made into jam. The tree yields fruit for as nine months a year.

3.Do You Know How to Tell the Age of Wood?

The simple way to tell the age of wood is to count its annual rings. So, what is the annual ring? You might have seen a felled tree. On the cross cut of the trunk you may notice corded lines from the centre to the edge. Each year a tree develops, one care, and this is called the annual ring. However, some trees, such as the orange tree, do not have annual-rings and we cannot tell their age by counting the annual rings.

4.Why Is a Tree Trunk Always Round?

For millions of year-s plants have evolved to survive, and overtime the cylinder shape has proven to be the best. The major advantages are that it is the best for bearing weight -the heavy weight of leaves, branches and fruits. Moreover, the cylinder shape gives the best possibility of with- standing wind storms.

5. Why Do Some Trees Have Fine-Haired Leaves and Others Don't?

China has more than 8,000 varieties of trees and shrubs across the country. Trees grow-ing in a hot climate, such as the rubber plant, bodhi tree, citrus and osmanthus, have green leaves all the year round and have no hair on their leaves so that they dry quickly after rain and suit the hot, wet climate. On the contrary, the leaves of trees growing in a cold climate, such as the Chinese wolfber-ry, apple free and paulownia, wither in win- ter. Such leaves have a thick layer of fine hair on their back. The thick hair protects the leaves from severe cold and keeps moisture from evapourating.

6. Are There Any Leafless Trees?

Trees have leaves, but there is one exception, called the "green jade tree". The trunk and branches are all green and leafless. Sometimes three to five leaflets may be found at the top of new branches, but they soon wither. This tree originally grew in the dry climate of Africa. Without leaves it can keep its moisture content from evaporating, while the green trunk and branches, instead of leaves, produce nutrients for its growth.

7. Which Is the Thickest and Which Is the Tallest Tree?

On the earth various kinds of trees grow, of them the thickest is the "World Grandpa" that grows in North America. It is so thick that a horse- drawn carriage can freely pass through a tunnel made in its trunk. Though it is the thickest, it is not the tallest. The tallest one is the eucalyptus growing in Oceania; its height is on average about 100 metres and the tallest can be 150 metres, which is higher than the total height of 100 children.

8. Why Do Trees in a Forest Grow Straight?

With luxuriant branches and leaves at the tops, trees in forest look tall and straight. This is caused by the crowded environment of the forest. Trees need sunshine for their growth, however, the crowded situation make it difficult for them to get enough. In order to get it they have to grow high. Over a long period of competition they have developed a common appearance tall and straight.

9. Why Can a Forest Be Called a Windbreak?

If a strong wind or wind storm encounters a large forest, its force reduces enormously. The larger the forest, the weaker the wind force.

Why does this happen? When a wind is stopped by a forest, a part of the wind has to change its direction, while the other goes through into the forest The latter comes up against the trees and leaves rustle when it passes through As a result the wind reduces its speed and strength considerably From this we can see it is beneficial to plant more trees .

10. Why, in Autumn, Do Leaves at the Branch Top Wither Last?

in the subtropical zone many trees become leafless in autumn. Generally, leaves at the lower part of a branch wither earlier than those at its top. What's the reason? The leaves of a free have roughly the same life span. In spring the leaves at the lower part of a branch sprout first and consequently wither earlier. Moreover, the leaves at the branch top get more sunshine, moisture and nutrients. In auW= when the roots stop supplying nutrients, the top leaves can still keep going for a while by consuming the nutrients they have preserved.

11. Why Shouldn't Leaves Be Burned?

When autumn comes leaves begin to turn yellow and dry, and finally fall to the ground. Then, people some times gather and bum them. might think it is a good way to keep the environment clean but actually, it isn't. When leaves are burning, harmful par-ticles will float in the air and might be easily absorded into the lungs.Those who breathe them in might feel dizzy,or like vomithing.Or,it might cause other internal diseases.To keep the air fresh and clean,leaves should not be burnt in residential areas.

12. Why Do Forests Often Have "Night Rain"?

In a forest you may see a summer evening sky dotted with bright stars, but at midnight you may hear the sound of rain drops hitting leaves. Sometimes this continues until the next day when the sun rises. This phenomenon is called "i-tight rain"; in fad the "rain" does not drop from the sky, but from the tops of trees. A tree, to some extent, is something like a water pump, fetching water from earth day and night and evaporating it from its leaves at the top. As a result, it is moist in the forest. At midnight the temperature falls and the mois ture condenses into water drops on the branch- es and leaves. The drops will grow more and become bigger and bigger. Finally, they drop down when they can not hold onto the branches and leaves any longer.As the drops are falling so thickly and continuously it seems as if it were raining.When the sun rises next morning,and the temperature gradually

in-creases,the water drops evaporate into the air again and the“night rain”stops.

13. Why Do Some Trees Have Hollow Trunks?

in parks, or in the fields you may find some old trees that are hollow in their trunks. With their bark not broken completely, they are still alive. However, the wood cannot be used for building materials any more. The hollow is caused by a dis- ease. When a trunk is broken, bac-teria get into it and multiply there. They eat the wood to get nutrients for living. As time goes on, the wood becomes hollow or even rot- tell. Therefore, when workers find gaps or cuts on trunk bark they will seal them.

14. Why Do Leaves Turn Yellow or Red in Autumn?

Green Leaves contain various pigments, such as chlorophyll and xanthophyll. The chlorophyll is green while the xanthophyll, yellow. In spring and summer the quantity of chlorophyll surpasses other pigments and the leaves look green. in autumn the situation is reversed and the xanthophyll predominates, as a result the green leaves turn as yellow as gold. In autumn another pigment called anthocyanidin dominates in the leaves of some trees, such as smoke and maple. The anthocyanidin can make them look as red as fire.

15. Why Do Leaves Fall in the Cold Season?

many trees begin to lose their leaves in au- W= and become totally leafless in winter. Why does this always happen? Leaves have countless stomas, through which a large amount of moisture evaporates into the air. In a warm climate, with plenty of rain, trees can maintain enough moisture while in autumn things are quite different. When the cold weather comes, without much rain, it makes the earth dry too. As roots supply less moisture, leaves begin to fall. Without leaves moisture cannot evaporate quickly, thus ,,can survive the winter.

16. Why Are the Pine and Cypress Evergreen?

In winter many trees become leafless, yet the pine and cypress remain green as usual. This happens because their leaves are small, and so only a small amount of moisture can evaporate. The pine leaves are as small as needles, and those of cypress, as small as fish scales. Besides, the leaves are coated by something like wax, which protects them from the severe cold and the dry weather. Hence, these trees can

withstand the cold and preserve enough moisture. As a result they always look green. Occasionally some of the leaves do wither, but they are comparatively few.

17. Why Do the Branches of Fruit Trees Need to Be Pruned?

Every year fruit trees need their branches cut and some are even cut twice a year. This Ls because the branches of fruit trees, such as the peach and apple shoot wantonly every year. If the extra branches are not cut, they will consume nutrients and develop luxuriant growth which even the sunshine cannot pass through. Without the sunshine, how can these trees yield plentiful and substan- tial fruits? Different fruits require different lengthes of branches. For instance, pears and apples develop better on short branches, while apricots and peaches, on long branches. To obtain more fruit, it is necessary to cut branches according to these requirements. Besides, diseased branches should be cut to reduce the damage.

18. Why Is It Wrong to Shake Saplings?

When saplings are planted, first they five on the nutrients preserved within them to take root and sprout. Later, they absorb moisture and nutrients from the earth for their growth. A newly-planted sapling needs special care and shaking it may cause it to die. As it is young, its roots are tender and might be broken by the shaking. Broken roots will not absorb moisture it will wither. The withered sapling never take root again because it has used up its preserved nutrients. Therefore, we take care of saplings and not to shake them.

19. How Can We Get the Saplings of Seedless Orange?

The seedless orange is an improved variety. It tastes juicy and sweet, and it has no seeds To get such a sapling ,a garden keeper should in autumn graft a bud of seedless orange to a trunk of trifoliate-orange When spring comes the following year he should cut off all the trifoliat-orange branches above the grafted bud .Thus a seedless orange sapling remains.In three of four years it will blossom and bear fruit.

20. Can a Single Tree Bear Different Fruits?

It is common knowledge that a single tree only bears fruit of one kind. For instance, a pear tree can only bear pears; an apricot tree, apricots. Is it possible tree can bear fruit of several kinds? The

answer surpris-ingly is yes For instance, if a Chinese flowering crabap-ple is grafted with apple and emmenoptery shenryi, it will bear not only the fruit of the grafted free, but also the fruits of the other two trees. However, the grafting can not be done freely, only trees with similar nature can be grafted together.

21. Do You Know How to Make a Leaf Bookmark?

In autumn when you go to play in a park you may see leaves of different colours, such as the leaves of the ginkgo, smoke tree, Chinese sweet gum and maple. Pick up some of the leaves that are completely intact. At home if you put them between two sheets of blotting paper and press them, when they are dried they will be ready to be used as bookmarks. If you pick up some green leaves in summer, you may boil them in water and add some soda in it. Several minutes later they will become soft. Then you wash the soft part away leaving only the veins. After that you press the veins and dry them. After you have dyed them red, pink or any colour you like they become beautiful leaf-vein bookmarks.

22. Why Can't Salty Water Be Used to Water Plants?

Fresh water must be used to water plants instead of the water for washing dishes because the latter will contain some salt. If it is often used to water plants, the pro- portion of salt in the earth will increase, preventing the roots from absorbing mois-ture, or even making the moisture within the tree run out from the roots. Finally the tree would die from lack of water. In order to clear away snow from streets in big cities, salt solution is usually sprinkled on the snow. Some people heap the melting snow around trees, thinking they are watering them. In fact the salty snow will kill them.

23.Why Doesn't the Cactus Have Leaves?

The cactus does have leaves, but not ordinary ones. They are the sharp and hard thorns pointing out from its surface. As you know, plants consume water everyday for their growth, but at the same time some moisture evaporates from their leaf stomas. However, the cactus grows in deserts, where it is hot and dry and there is littie rain. In such circumstances, the cactus gets very littie moisture. If the cactus had the leaves like trees grOW17 in other areas, it would certainly wither and die due continuous loss of moisture from its leaf stomas. A years of evolution the leaves have developed their presented shape, which prevents nearly all the moisture from eva- porating. In this way the

cactus is able to grow in deserts from one generation to another.

24. Do Plants "Perspire"?

On a hot summer morning you may often see dew shining on leaves. They are the "sweat beads" of plants. This "perspiration", is a normal phenomenon for plants. Particularly on a hot, damp night with little wind when only a small amount of moisture evaporates while the roots continue to absorb a large amount of moisture as usual. Therefore extra moisture and other elements stream out of the stomas at the leaf ed , forming dew.

25. Why Can't Sprouting Potatoes Be Eaten?

You should never eat potatoes that are sprouting. On the surface of a potato there are many small eyes. When it is warm, purple buds grow out of the eyes and these contain a toxin which is poisonous. If someone has eaten potatoes like this, he will feel sick -like vomiting and suffer from diar- rhoea. He may also have difficulty in breathing, or even die. So you must take care and not eat sprouted pota-toes.

If a potato has only a few buds, they still can be eaten however you should cut off the buds peel it and soak it in clear water The toxin will disperse in the water.

26. Can Vegetables Be Cultivated Without Earth?

Vegetables have always grown in the earth, but are there any other way to cultivate them? The answer is yes. Scien- tists have found out that they can grow without earth as long as they have the necessary conditions for growth. This means having the right nutrients, water, air, sun-shine, and the appropriate tem-perature. To do this, you can spread a layer of sand at the bottom of a big tray or a shallow wood box. Then you plant vegetable sprouts in it. Next, you pre- pare a solution with nutrients needed by the particular vegetables you have plant-d and use it to water them regularly. Not long afterwards you should get an abundant supply of fresh vegetables. In this way people are able to grow vegetables in areas where there is little clay.

27. Why Can't Some Flowers Grow into Fruit?

Some plants bloom with both male and female flowers. The female ones have an ovary, while the males do not, which means they cannot bear fruit. Most of the flowers blooming in early summer are male and they wither not long after they've bloomed. As a result people call

them "flashing flowers." The fact that the male flowers do not bear fruit does not mean they are useless. They have pollen, which will be carried by insects, especially by bees, to the female flowers. The ovaries of the female flowers grow into fruit only after they receive the pollen.

28. Where Does the Fragrance of Fruit Come From?

Some fruits taste sweet and smell fragrant. If they are cut open and placed in a room, soon the room is full of their scent. Where then does this fragrance actually come from? When fruit becomes ripe, their cells produce a fragrant substance-fruits produce different scents and the thickness of the fragrance vanes too. Generally speaking, the fruit which ripens in summer emits a thicker fragrance than do those that ripen in winter. Also, the longer lasting lasting fruits reserve more fragrance.

29. What Are the Biggest and Smallest Flowers?

The world's biggest flower, "Big Flower Herb", grows in the tropical forest of Suma-tera. Different from other plants, this one has no stem or leaves, and blooms with only one flower as big as an opened umbrella in its life time. It has another name, "King Flower". Though the flower is not fragrant, on the contrary, it sends out a gusty smell, it is given special protection because it is so rare. The smallest flower is called "Non-Root Duckweed".]'he plant itself is rather small and its flower is as tiny the point of a needle. You may miss it., if you don't look carefully.

30. Why Will a Flower Wither if You Damage All Its Leaves?

Some boys and girls like flowers, but do not appreciate leaves. They would like to take away all the leaves and leave only the flower. By doing so they might have thought they helped the flowers grow to be more lovely but on the contrary, the flowers would soon wither. Why is this the case? Leaves have chlorophyll. With the help of the sunlight, it produces nutrients needed for the growth of the flowers. Without leaves the flowers, having lost the means to produce the nutrients, would certainly wither.

31. Why Is It Not Suitable to Water Flowers in the Middle of a Summer Day?

In summer you should water flowers in the early morning or in the

late after- noon, but not at mid-day. The reason for this is that it is cooler during the first two periods if you water then, the contrast between the tempera-ture of earth and that of the water you put on the earth is not sharp. This minor contrast won't harm the flowers. But if you water at mid-day, the flowers, sitting in the hot earth, cannot stand the sudden decline of temperature caused by watering. If you do water then they may wither and die. If you find flowers drooping in the heat of the sun, you should put them in a cool place and not water them until dusk.

32. What is the Function of the Hole at the Bottom of Flower Pots?

Every flower pot has a hole at its bottom What is it for When watering we might put in more water than the flowers need This hole can let the extra water drain away Imagine if there is not a hole at the bottom and the water cannot go away the flower roots will be soaked If they are in water for a long time they will rot and the flowers themselves will eventually wither.

33. Why Do Some Apples Have One Side Green, and the Other Side Red?

Some apples when they ripen have one green side and the other red. How can an apple have totally different colours? It is caused by a chemical, anthocyanidin found in these apples. Sunshine causes the anthocyanidin to grow and as a result the side facing the sun gradually turns a lovely red. However, not every apple has two colours. Some apples,like huangxiangjiao apple for instance, are a yellow colour all over and never turn red, even in the sunshine.

34. Is the Lotus Root Just the Root of the Lotus?

The lotus root, though growing in the mud of a pond as roots of water plants do, is not really the root of the lotus. A real root is not divided into sections as the lotus root is. In fact, the lotus root is the stem of the lotus flower. At its section joints grow many long strings: the strings stretching down- wards develop into the real roots of the lotus, while those growing upwards, the stems. On the tops of the stems, leaves sprout and pink or white flowers bloom. When the flowers wither, soft seedpods are revealed. Each seedpod contains a dozen seeds. Breaking the pod you can get the seeds. As the seeds are difficult to sprout, instead of planting seeds, farmers like to plant lotus roots that are small,about as thick as a finger. After planting,

the top sections are nourished and grow thick and long. Finally they develop into the ordinary-size lotus roots we can buy at the market.

35. Why Do Plants Have Different Sized Leaves?

The sizes of leaves are closely corrected to the plant's environment. The leaf size of the tropical coconut tree or oil palm is very big, about three to five metres long and one metre wide. The longer its size, the more nutrients the leave can absorb from the sunshine The leaf size of the plants growing in a cold and dry climate generally speak ing is small For instance the leaf diameter of paulownia is only 30 centimetres while the leaf size of an apple tree or poplar is as big as the palm of a hand The leaves of cactus sacsaoul and Chinese ephedra have declined to the size of a thorn or a needle point as a result they depend on their green trunks for making nutrients The small sized leaves have their advantages—they can pro tect the trees from wind and storm and prevent moisture from evaporating.

36. Are There Any Stinging Plants?

We all know that the stings of bees and scorpions cause sharp pain, but do you know there is a plant that can sting too? It is called nettle which has many sharp thorns on its stems and leaves. The thorns are hollow just like a tube, and filled with poisonous liquid. If you happen to touch them you will immediately feel unbearable pain as if you were stung by a bee or scorpion. Because of this these thorns are called "stinging hair". They cause sharp pain when their poisonous liquid gets into the skin. If you are stung you will find many red spots appear, but if you don't touch them they won't cause you any problem The nettle grows thorns just to protect itself.

37. Are There Any Plants That Swallow Insects?

There are -500 species of plants that swallow insects in the world, and China has 30. These plants are very sensitive. Take common nepenthes for example. At the tip of its leaf there is a bag from which a sweet liquid is emitted. The bag has a cover and when an insect climbs in to taste the liquid, the cover closes and the insect is melted and absorbed. These plants live mainly on insects, not on the nutrients absorbed from earth.

38. Where Does Pollen Come From?

Pollen is collected from flowers. Each flower has stamens and

pistils and on the tip of stamen filament there is an anther containing pollen. When the pollen is ripe it breaks and the pollen When the pollen is ripe it breaks and the pollen escapes The pollen is like powder but differs in colour for different plants Rape willow and sunflower pollens are yellow those of Chinese sorghum and maize light yellow those of Chinese milk vetch orange red and those of broad bean dark purple.

39. Why Is Pollen Nourishing?

Plants are propagated by their fruit or seeds. To ensure an abundant supply of fruits and seed nutrients are concentrated at the propa-gating organ, the flower. Pollen found in the flower is the source of nutrients which in-clude protein, fat, grains and vitamins. These are all essential nutrients for people, too. You can get more amino ac-id from 50 gram of pollen than from 2.50 gram. of beef or eggs, so if you eat up to 20 gram. of pollen per day or have processed pollen food regularly you will feel stronger, and more energetic.

40. Why Do Some Flowers Smell Sweet and Other Do Not?

When you enter a garden full of fresh flowers, you may smell fragrances of various kinds, for instance, the scents of lilac, rose and Chinese rose. However, not every flower has a fragrance; generally speaking, the flowers whose pollens are disseminated by insects smell sweet while those disseminated by wind do not. The fragrance comes from the aromatics produced by a special kind of cell, which only fragrant flowers have. Though the scents are different from the types of aromatics, they can all attract insects. As for the flowers which have no such cells, t do not have a fragrance.

41. Is It All Right to Smell Flowers with Your Nose Touching Them?

Many flowers smell sweet. They are so lovely that children like to take a close, deep breath with their noses touching them. If so, they might breathe in pollens, or even bacteria or small @s. Some people may be allergic to pollens, so they should not smell them in such a way.

42. Are Some Plants Really Poisonous?

Some flowers are poisonous, therefore you may look at them, but you should not touch them. Some plants have a white liquid which looks

like milk in their stems and leaves. If the liquid sticks to your skin, the skin may turn red and become swollen and if the liquid gets into your eyes, you might go blind. Some plants bear bright red fruits that look just like ordinary juicy, sweet fruits, but if you take a bite you might feel thirsty and be unable to speak properly because your tongue has became numb. Other plants have poisonous flowers and leaves. If you eat them by mistake, you may develop a stomachache and become dizzy, or develop difficul-ty in breathing, or your heart might function abnormally.On the other hand the poisonous liquid can keep away aphids, red spiders and other injurious insects. As a result these plants grow luxuriantly, with beautiful flowers, and people like to an[them.

43. Why Does Rain Decrease the Taste of Melons and Fruits in Their Mature Period?

Melons and fruits maturing in a summer when there is much rain taste less sweet. How can that be? Besides water, the other major ingredient in a melon or fruit is sugar. The taste is closely related to the quantity of sugar: the more sugar, the tastier it is. However, the quantity of sugar can only be produced by leaves, with the help of sunshine, so plenty of sunshine means plenty of sugar. The surplus sugar will be preserved in the melons and fruits. If there are many rainy and cloudy days during the maturation period, the plants will not get enough sunshine to produce sugar and therefore they will taste less sweet.

44. Why Is It Better to Peel Fruit Before Eating?

During their growth melons and fruits are often attacked by harmful insects and - To kill the and cure the diseases, it is a general practice to sprinkle farm chemicals on them. However, some chemicals win remain on the fruits or melons even after rain and after they have been washed in water many times If we eat unpeeled fruit surely we swallow the remaining chemicals together with the fruit Eventually this is harmful therefore before eating fruit you should wash it clean or better still peel off the skin.

45. Why Do Some Long-Stored Fruits Smell Like Wine?

Some fruits that contain plenty of sugar such as apricot, peach, grape, apple and pear, smell like wine if they are kept for quite a long time. Although these fruits have left the trees, they are still alive and need air. How- ever, as their skin is thick and coated with

something like wax, it is hard for the oxygen in the air to get into the fruits. This means the fruits have to find another way to get oxygen. So, when the temperature is high enough, the fruits turn their sugar into oxy-gen which creates alcohol-hence the smell of wine.

46. Why Does Peanut Fruit Grow in the Earth?

Many plants bear fruit just where flowers have bloomed. As for the peanut plant you can see its vines crowded with little yellow flowers, but you can never find any fruit on them. This is because it bears its fruit in the earth. When the vines grow little flowers bloom on them and each one has a purple stem linked to the ovary. The stems grow fast and push the ovaries into the earth when they touch the ground. The ovaries will turn into peanut fruit which will be ripe after 40 days in the earth.

47. Why Does a Cut Apple Turn Brown?

Once it has been cut an apple trial grad-ually turn brown at the part w ere it cut Some people believe that the change is caused by touching the knife. In fact this is not true because it also happens when the apple is bitten. The real reason is due to two sub- stances called phenol and phenotic fer-ment in the apple cell. Before cutting,the phenol and phenotic ferment cannot meet so the colour of the apple does not change at all. However, after cutting, the two substances, meet and undergo a of changes, as a result the cut section grad ually turns brown.

48. What Are the Advantages of Planting Trees?

Leaves release a large amount of oxygen and absorb carbon dioxide and other gases and so help to purify the air. Besides they also evaporate moisture, making the environment moist and cool, which is why it is much cooler in the shadow of a tree in summer. Trees also help to beautify the environment, reduce noise and keep the sand in check. By planting trees around your house you can have clean and quiet surroundings. What's more, timber is used for many things including building houses, bridges and making furniture. Therefore, we should protect saplings and young trees to make sure they grow well.

49. Why Do Plants Moisture?

A plant absorbs water constantly from the earth and evaporates nearly 99 percent of it into the air. The absorbed moisture carries

nutrients to every part of a plant. When the moisture goes up to the leaves, it evaporates into the air, re- leasing heat from the leaves, especially under the scorching sun. In this way evaporation prevents the leaves from being burned. This cycle of constant evaporation and absorption of water is very helpful to plants.

50. How Long Can a Plant Live?

The life span of plants varies, but generally speaking herbs can live from several months to over a dozen years. The "short-life chrysanthe-mum" growing in desert perhaps has the shortest fife span of only a few weeks. As it is dry and has very little rain in desert, so whenever it does rain the plants begin to grow extremely fast, blooming and yielding in a short period. The fast growth makes it possible to resist and survive the coming dryness. Woody plants have longer life spans. The vine for instance can live for 80 to -100 years; the jujube tree. for 100 to 200 years; the orange for 200 to 300 years; the China fir for 1,000 years; the cypress for 3,000 years and the redberry juniper for over 3,000 years. In Africa a dragon dracaena has already lived for over 8 000 years.

51. Why Can't Some Seeds Sprout?

People are eager to see seeds sprout after sowing but some of them will never do so There are many reasons for this-per-haps some of them have been preserved too long some may have been damaged by in hers may not have well de-veloped embryos. Sometimes, even if new and well-developed seeds are sown, they do not sprout immediately. That is be-cause the seeds need a period of dormancy which may be several weeks for some seeds, two or three years for others, or even longer.

52. Are All Bacteria Harmful?

Speaking of bacteria you might automatical-ly hate them ,thinking they are all harmful.It is true that bacteria make trouble every- where. They can turn fresh vegetables rotten and if food is contaminated you will get dysentery. However, there are quite a num- ber of bacteria that are helpful. For instance, some bacteria can help to make vinegar and monosodium glutamate. Even m our large intestine there are many helpful bacteria, which work there endlessly to produce vit- amins for us. There are others, which can turn animal bodies, stools, plant leaves and branches into nutrients needed by plants. If there were not bacteria, what would the world look like? A mess. Therefore, it is not true that all bacteria are harmful.

53. Is Kelp Plant Leaf?

Kelp is a rudimentary plant growing in the shallow sea. Its lower part splits into false roots and at the end of the roots there are suckers that fix the kelp onto rocks at the sea bottom. These false roots, do not absorb water or nutrients. At the top of the roots a little stem sticks out on which grows a flat and wide blade like a leaf. The blade is thick in the middle and fairly thin at its edge. Scientists believe that it is not really a leaf but a leaf-like substance. The blade contains chlorophyll ,aid a large amount of phycoxanthin, which enables it to produce nutrients at the bottom of sea where there is little or no sunshine. The kelp looks dark brown due to the physcoan-thin.

54. Why Are Some Radishes Black Inside?

Radishes are crisp and tasty, but some of them are black or hollow inside. The black is caused most probably by black-rot disease. This disease can affect the leaves, and the actual radishes: the leaves develop black spots and black veins and the radishes turn black inside, then become hollow and lose their good taste. Radishes may also become black inside if they are stored in a place without enough oxygen. To protect radishes from this dis-ease, their seeds should be soaked in a chemical solution before sowing, and the radishes should be kept in a place with enough oxygen and appropriate humidity after harvesting.

55. Why Can Jujube Trees Stand Arid Climates?

The jujube tree, an ordinary fruit tree, can withstand both cold and arid climates. A four to five years old tree might have a root of four to six metres horizontally or two to three metres vertically. Also, the surface of leaves is such that it can prevent more moisture from evaporating. In a dry summer, when the leaves of an apple tree, vine, popular or willow droop in the heat of the sun, the jujube tree may grow as usual. Therefore, jujube trees growing around houses or in the fields can still bear sweet and crisp fruits even without water-ing.

56. Why Do Some Trees Have a Burl?

Leaves produce nutrients needed by the tree for its growth, blossoms and fruit. The mutrients are then carried through vessels in the bark to every part of the tree. If the bark is cut, the vessels at the cut are broken. As a result the nutrients pile up at the site

of the damage and eventually it becomes a burl Damaged bark will certainly affect the conveying of nutrients serious damage might cause the a tree. Therefore, we should protect trees being damaged.

57. Are There Any Trees that Are Not Afraid of Burning?

Trees can generally bum easily, but there are some that are harder to bum than others. A kind of tree that grows in Southern China is called coral holly, or"fire-prevention tree" or Frenchilex. The coral holly leaves are thick, Luxu- riant and dark green all year round. People like the tree because of its elegant shape and its special features, such as its ability to prevent noise or dust from passing through if several are planted in a row. As its leaves do not contain oil substance, it is not easy to bum. Actually, it is a good fire-prevention plant. Besides the coral holly, are some palms that are also difficult to burn. Even if they are burned, too serious they can still sprout and grow again.

58. Why Do Plants of the Same Species Vary in Height?

In different environments plants of the same species can grow to varying heights. Why is this possible? The wheat, maize or millet sown in fertile and moist land grows high and stur-dy, while those sown at the same time, but in arid and infertile land are short and sparse. A tree growing alone can get sufficient sunshine and stretch out its branches more widely than a tree growing in a crowded wood. When trees of the same species grow together in a forest, the only way to get sufficient sunshine is to grow fall. This means trees growing in a forest are taller than those of the same species growing in a sparse field. Generally speaking, trees growing on mountains are thinner and shorter than trees growing on a plain, because the smaller size can withstand strong wind, which occurs more frequently in the mountains.

59. Why Is It Necessary to Water Plants on Time?

As people need to drink water, crops, flowers, herbs and trees also need water too. Without water they will wither and die. Roots absorb water from the earth, and the water goes to leaves through stems. in leaves most of the moisture turns to water vapour and passes through stomas into the air continuously. Thus the cycle of moisture absorption and evaporation is established. If you do not water according to a regular schedule the absorbed moisture will store up, and the leaves will turn yellow and droop.

60. Do All Flowers Have a Fragrance?

As mentioned before, not all flowers have a fragrance. Some flowers even en-tit an unpleasant smell. For instance, if you crumple a cordate houttuynia, it smells like fish. When odours like this spread into the air, they can protect plants from attack by certain insects. On the other hand, the smell of some flowers can attract certain insects, which will then carry pollen to female flowers, enabling the plants to bear rich fruits.

61. Can Plants Be Propagated from Leaves?

Plants are propagated by different means -potatoes commonly by stem tubers, lo-tus by lotus roots, willows by branches. There are others, which, with proper mois-ture and temperature, are propagated by planting their leaves in sandy earth, such as begonia. Now scientists have succeeded in propagating pines by planting pine needles in sand.

62. Why Do Flowers Have Different Colours?

Different flowers are different colours be-cause their petal cells contain specific "chem-ical dyes", namely pigment. Under certain conditions the pigments change colour. Take anthocyanidin for instance, it can become red, blue and purple. When petals contain enough carotene, they will look yellow, orange and dark brown. Green petals mainly contain chlorophyll. Petals of white flowers have no pig-ments, but are full of air bubbles. If you flatten the bubbles by squeezing the petals, they will become transparent.

63. How Is Pollen Collected?

Pollen is the favourite food of bees, particularly the pollens of maize, sor-ghum, rape, sunflower, willow, linden, chaste tree and Chinese milk vetch. The pollens we eat are collected by bees. When bees collect pollens, they add some honey and saliva to mold it into bigger balls. A square-mesh collecter is put at the entrance of beehives and when the bees go through it into the hive, the pollens are scraped off their legs and into the collecter. The collected pollens will be dried and finally pro-cessed into medicine or a nutritious bev-erage.

64. Sunshine Can Dry Clothes, So Why Can't It Dry Herbs?

Wet clothes dry in sunshine because the moisture in them evaporates gradually into the air under the heat of sunshine. Flowers and herbs

are living plants. In the sunshine the m can also go through stomas into the air. Why then they don't dry out? 7 The reason is the vessels of flower's and herb's roots supply moisture constantly to the leaves. However, if the roots are damaged or the earth is dry, flowers and herbs Will and wither.

65. Why Do Some Persimmons Taste Astringent?

Some persimmons can be eaten as soon as they are ripe. However, there is another kind of persimmon that tastes astringent. This kind of persimmon contains tannic acid. When you peel the persimmon with an iron knife, you will find the cut turns dark brown. This is caused by the tannic acid. If you take a bite, your mouth will feel puckery. Persimmons like this should be eaten after the acid has been removed. To eliminate the puckery taste is quite simple--put the persimmons in a rice container and seal it. After a few days you can eat them. Another way is to put them in water at 40 ° to 50°C and cover the water container and leave it for only one day; or you may lay persimmons in an empty jar and sprinkle some spirit on them and jar for two or three days.

66. Why Does Heavy Rain Bring a Good Harvest of Pears?

Pear trees can grow thick and tall and enjoy a long life. Some of them can even live for 200 to 300 years and still bear. 500 to 1000 kg of fruit. The heaviest weight of fruit an old pear tree can bear is 3,000 kg. As pear trees are thick and tall and bear a heavy yield of fruit, they need plenty of water. Therefore, it is important to keep the land watered and fertilized all the time from blossom to yield. When an orchard is waterlogged, the leaves of peaches and apricots may turn yellow or wither, however, the pear trees will flourish because their well-developed roots absorb much more water for their needs. As a result they grow more luxuriant and yield big, sweet and juicy fruit. So there is a saying: a year means a good harvest of pears."

67. Why Do Bananas Have No Seeds?

Bananas are a favourite fruit with many people. You may notice that all fruits have seeds, but bananas have none. This is because the pollens on banana stamens are not well developed and without proper pollination the plant cannot bear fruit with seeds. Sometimes, when you bite a banana, you may find some brown dots in the centre, these dots are actually degenerated "seeds". The bananas we eat now are cultivated from wild bananas. The wild plants originally did bear fruit with hard seeds, but some of them, without being pollinated, bear

seedless fruit. People liked the seedless ones and so over a long period of cultivation the new variety of seedless banana has come into being.

68. Why Do the Roots of Leguminous Plants Have Swellings?

If you pull a bean plant from the earth, you can see many round swellings oil the roots. In fact all the roots of leguminous plants, such as broad bean, pea and peanut plants, have such swellings. If you squeeze one, a purple-red liquid comes out. The swelling is called a root nodule and it contains countless ;iodine bacteria. The bacteria catch nitrogen plants to produce and the plants provide the bacteria with moisture and nutrients for their existance. Thus the plants and bacteria each other for life.