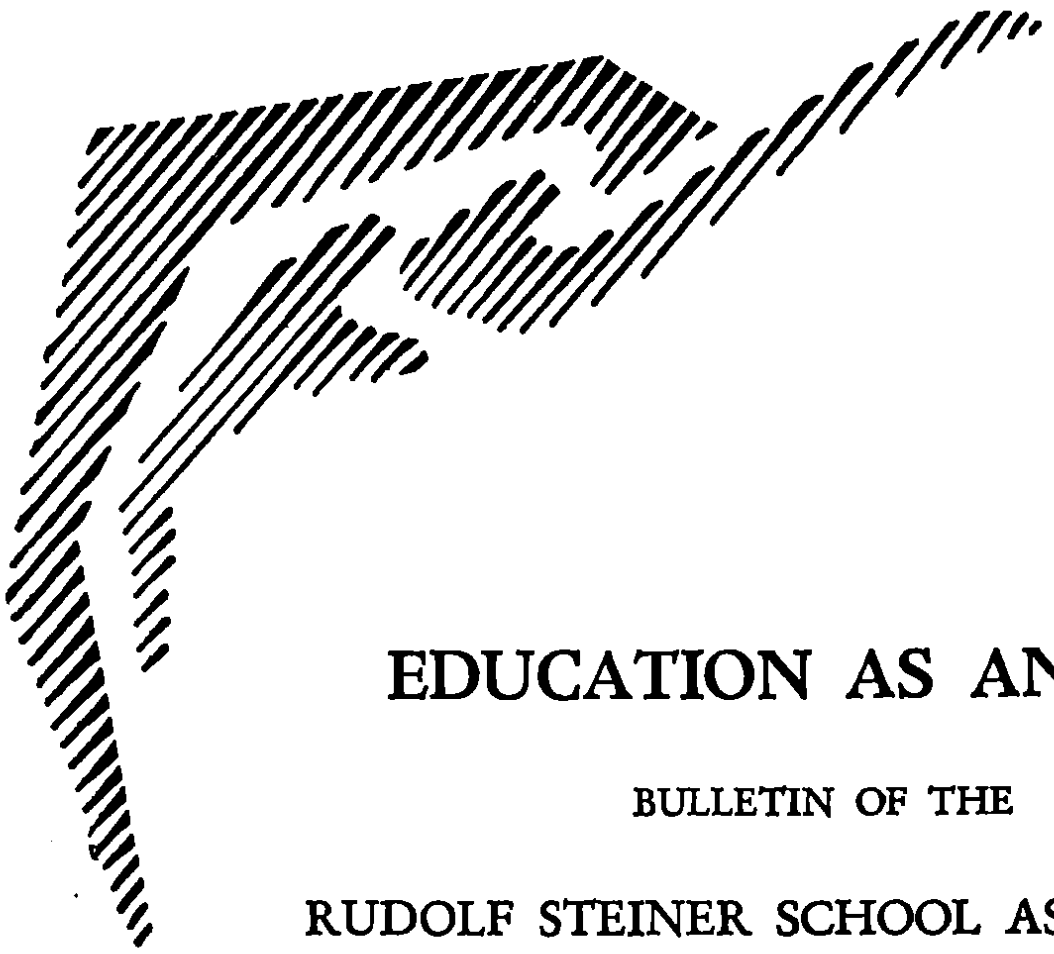

EDUCATION AS AN ART

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THE LIVING WORLD OF PLANTS (*Continued*)

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THE APPLE TREE*

The apple tree is our most important fruit tree. Through the work of man it has become as we find it today in garden and in field; nature alone would leave it at the stage where it produces no edible fruit. The wild apple — or Crab Apple tree, as it is called — has fruits that are very small, with an extraordinary acrid taste.

The apple tree is also a flowering tree. When it is in full leaf it shows its relationship to the rose. The apple blossom is very similar to the wild rose, although smaller. Each has five pink petals, and a five-pointed green calyx, and there are many other similar markings. The five-pointed star, which the rose blossom carries within herself, appears only in the fruit of the apple — in the core. It can be seen when an apple is cut through crosswise.

*The description of the linden tree has been omitted here.

Rose and apple tree are the parents of a plant family. The rosebush, which produces an especially beautiful flower, is the mother; the apple tree, which excels in the formation of fruit, is the father. The strawberry is the child of this plant family.

But the apple tree has other relatives, of whom only the fruit trees — the pear, cherry, plum, peach and apricot, quince and medlar — need to be mentioned here. The raspberry and blackberry are closer to the rose in their resemblance, for they grow like a rosebush and have tough thorns.

An important difference between the rose and the apple blossom lies in this — that the rose, although so fragrant and delicately colored, produces no nectar. Strange as it may seem, the bees visit the roses only to extract from them their very nourishing pollen.

It is different with the apple blossom. It gives nectar in abundance, showing that the apple tree — in spite of other similarities — is richer in sap than the rose. Otherwise it could not produce its fruit.

If the leaves of the rose are compared with those of the apple tree, still further contrasts appear. The rose leaves are compound, while those of the apple tree are simple. The rose, which puts all of her strength into her beauty, gives special care to the forming of her green leaves. She is an artist in the true sense of the word; and man, who has succeeded in producing hundreds of varieties of the flower, has had easy work, for the rose has willingly aided him in his purposes.

The apple tree has also been cultivated for many centuries. But it would have been contradicting its nature to have changed it to a plant especially beautiful. The apple tree sees its task in honest fruitfulness and wishes to be useful. Man has succeeded in bringing forth as many strains of apples as of roses. Both plants are unthinkable without man, and belong to him as much as do the domestic animals. The rose refreshes the soul; the apple, the body.

It is clear at a glance that the apple tree would like to make everything as simple as possible. Its leaves are, indeed, strong and healthy, but they have no very elaborate form. The trunk is short, the crown wider than it is high, giving the tree the appearance of being smaller than lindens, ashes, or beeches. It must surely be intensely penetrated by the juices of the fruitful earth, since it bears these somewhat acrid fruits.

Even the bark of the apple tree is of a fruity nature. This fact is known, for instance, to the jack rabbits, which sometimes become destructive to these trees in winter. They come at night into the orchards and gnaw the juicy and very delicious bark of the young fruit trees. But you do not have to be a jack rabbit to find out that the branches of an apple tree are fruity, for the sprouts upon which the flower-buds stand are called "fruit wood".

The apple tree has two life-periods. The first is the blossoming time. This tree is able to bloom so early because the flower-buds have been prepared the year before. When the apple tree flowers, it is more than ever like the rose. To be sure, the rose cannot bloom until later in the year, since it has no trunk — only woody branches. It must, therefore, first let its shoots grow, their beautiful leaves take form; whereas the apple tree can begin at once with the flowers.

If the apple tree had leaves to match its flowers, they would have to be rose leaves. But the leaves of the apple remain unformed and unfold only when the flowers have fallen, and so belong — not to the blossoms, but to the apples. This is the reason why they are so simple. With the unfolding of the leaves, the second life-period of the apple tree begins.

The apple blossom has an inferior ovary. It begins to swell as soon as the blossoming time is past, but even on the ripe apple you can see the tip of the calyx, as well as what remains of the stamens. This is called the "blossom" of the fruit. Since the calyx is buried in the flower-stem, the apple must really be regarded as a fleshy and savory piece of the stalk.

Unceasingly the earth sends her growing forces into the apple tree. But this alone is not sufficient; for the earth and the sun must work together in each apple tree.

In spring it is enough if the sun only enchants the blossoms forth upon the branches. But if the apples are to swell and grow larger, the sun must penetrate further. It shines in the spring only from without, but in the summer it must warm the earth-force itself, so that the earth can begin to drive the fruits outward.

Fruits are like drops suspended upon trees and bushes — drops formed by the sun-filled earth. Most drop-like in shape is the pear. But you can also regard the apple in this way. It is spherical since it has swollen from the center out. In spots it looks as if it were about to burst.

So the apple tree shows quite plainly the interplay of sun and earth. Naturally the sun, then, must ripen the fruits by shining sufficiently upon them and warming them through and through. They must become rosy-cheeked.

If you have once grasped the truth that the fruit of the apple tree is formed by the earth, then you also know why the apple has always been regarded as a kind of picture of the earth itself.

The man who eats an apple consumes a little world.

RANKS IN THE KINGDOM OF THE PLANTS

Not all plants are able to bring their development to completion. Many are to be considered as in preliminary stages of plant fulfillment, for they have not yet developed all their parts, or else cannot yet rightly separate them.

Such imperfect plants are called the Lower Plants, for they are often small and grow down near the ground; as, for example, the mosses and the ferns.

A very important step forward in plant structure occurs when, for instance, true flowers are developed for the first time. A plant which has root, stem, leaves, and flowers distinctly formed is called a Higher Plant.

It is especially important to understand why there occur not only Higher Plants, but also those which can be considered only as parts of the ordinary fully developed plant. The cause of these various stages of development is that the sun works together with the earth in different ways.

So we become acquainted with the ranks of the plant kingdom.

MUSHROOMS AND FUNGI

It is no wonder that the sun does not trouble itself with the mushrooms and fungi, for they grow mostly in the shade of the woods and hardly come out of the ground as a plant should. Indeed, it would be impossible to set out a mushroom in the garden as one would a green plant. It could not take root there at all. The green plants reach out with their roots to the rocks; for out of broken-down rock earth-soil has arisen, meadow land and garden land, even loam and clay. The sun loves in a special way those plants which can grow in a mineral soil. It is able to give them the fullest leaves and the most beautiful stems and blossoms. Now you can easily see why mushrooms and fungi do not quite belong among the special favorites of the sun. They grow, as you know, in places where the sun penetrates only with difficulty; in fact, they have no need of the sun for their growth, and you can cultivate them — for example, the Agaric — in absolute darkness.

If you look carefully at the ground in which mushrooms and fungi grow, you will observe that they appear only in places where the remnants of dead plant-parts are decaying. The mushroom cannot flourish in a pure, mineral soil, but prefers one which is still half living. Mushrooms and fungi have a much easier life than do green plants. Often, too, you find them growing on dead tree trunks.

Only when a mushroom is pulled out of its soft mother-soil does one notice that it is joined to a pale network of threads. These threads grow rampantly in the musty soil, like roots. They often branch out in a circular form from a center, and from time to time send up mushrooms. Large mushroom circles of this kind are often found in the woods, and are called "fairy rings".

Actually the plants to which the mushrooms belong have not yet risen above the ground. For this reason mushrooms and fungi have no leaves. In the case of the apple tree the earth itself has formed an outgrowth — so to speak — and leaves, flowers and fruit are high up in the light. But with the mushroom and fungi neither the earth nor the sun has made any special effort. So, one might say, in the case of the mushroom, the whole tree, with trunk and leaf-covered branches, is still mostly in the ground — still merged with the soil.

Only the fruits and blossoms of these plants jut out of the ground; such is the nature of mushrooms and fungi. A single warm night suffices for them to pop up in abundance. Need one wonder that many are poisonous — since they do not allow the sun to shine through.

Some mushrooms — as, for example, the Puffball — are almost spherical or egg-shaped. You may liken them to fruit. Others have a stalk and a cap. All are fleshy, and the single fact that many are edible — if they are not sharp to the taste or poisonous — proves — they must be a kind of fruit.

Some mushrooms — as, for exampe, the Chantrelle (Cantharellus) — look almost like a calyx. The mushrooms are, in fact, at the same time both flowers and fruits. They are too happy-go-lucky to behave as the higher plants, whose flowers come before the fruits. The mushrooms has the fruit already within the flower — or, you might say, the fruit has taken on a flower-form.

But the manifold coloring of mushrooms and fungi does not originate from the sun. That is why they have such an uncanny look. They are the children — not of the sun, but rather of the moon. Not a single one smells like a flower. Some, to be sure, have a pleasing, spicy aroma; but others, like Stink Horn, infect the whole neighborhood with the odor of carrion.

Mushrooms and fungi cannot properly make a distinction between pollen and seeds. If you place a mushroom cap on a piece of paper, you can see next day the design of the gill-pattern upon it. If it was a Gill Mushroom, like the Fly Agaric or the Honey Mushroom (Yellow Armillaria), then you see the delicate gill-plates raying out from the center; for a very fine, dark colored dust has fallen out of the lining. In the case of the tube-bearing fungi (Yellow Boletus, Birch Agaric) the inner lining of the cap is perforated with countless seams; the lining of the Hedgehog Mushrooms (Clavaria), on the other hand, is decorated with many little pegs. In some fungi — for example the Coral Fungi and the Goat's Beard — the fine dust forms simply on the surface. The interior of the Puffballs breaks down into dark colored powder. If you step upon them, they burst asunder and a cloud of spores rises into the air.

If the mushroom spores fall to the moist ground, new mushroom threads sprout forth as if each spore were a tiny seed. So the spore of the mushroom is called pollen. It serves to propagate the plant, although it is as fine as flower-pollen.

So you see that, in the case of mushrooms and fungi, not only are flowers and fruit identical, but pollen and seeds are likewise one and the same.

But you must not forget the most important fact! The flowers of the higher plants open up towards the heaven and take the sunlight into themselves. They have actually been formed out of the sunlight. Mushrooms, on the other hand — creations of the darkness — open downwards towards the dark earth and keep themselves closed on top, by means of the cap.

Mushrooms and fungi are the flowers and fruits of the sunless earth. What corresponds in them to the pollen, is not borne by the sun-filled air, but strives downward toward the moist, dark soil. No insect has any interest in mushrooms and fungi. Flies and beetles, at best, come and seek the sticky slime. Since the flesh of the mushroom is spongy, it is easily consumed by maggots.

Comparing mushrooms and fungi with other plants, one finds them somewhat like babies. They can do almost nothing. They can form neither green leaves nor stems — not even roots. They are quite unskillful and awkward. Babies cannot yet stand up; neither can the mushrooms get a foothold on the solid earth, since they have no roots. So they are unable to stand erect by means of their stems.

Babies can, at best, only drink, sleep and grow. Mushrooms can suck up nourishment from their mother-earth and likewise grow extraordinarily fast. They mix together everything possible — for example, flowers and fruit.

In babies the soul-light is not yet kindled and so they, too, have learned almost nothing. Mushrooms and fungi must grow without the outer sunlight, which gives other plants their stems and leaves. For this reason they, too, have learned almost nothing.

A little school girl once said: "It is because the mushrooms are babies that so many of them, too, have milk inside them".

INDIVIDUAL POEMS FOR CHILDREN

I remember that, as a child of seven or eight, I asked for a prayer that I might say each night. I had heard some of my friends say that they had one, and I, too, wanted such a verse. I was given a sentence which held the highest moral thoughts but it contained no pictures and had no rhythm. I found it extremely dull and said it only two or three times. Three or four years later, while rummaging through some old papers which had belonged to a Great Aunt, I came across a poem which I recognized immediately as what I had been looking for. I never told anyone about it until long afterwards, but I said it over to myself every night — sometimes more than once — for several years. Its pictures and rhythm were simple, but each time I repeated the words the pictures became more vivid and awoke feelings which delighted me and made me feel happy and at home in the world, while the singing lilt of the rhythm held and reassured me. The poem itself was simple and of no greatness. Its value lay largely in that I felt it to be my very own, and that I could call forth from it an ever-unfolding experience which satisfied me more deeply each time I repeated it.

Many teachers have made individual verses for the children whom they teach. I have heard that in the original Waldorf School some teachers gave a new poem to each child at the end of every year and wrote it into his final report. Others have had the children continue their poems over several years' time. Children look forward eagerly to receiving such poems which they know were made for them alone, and love to recite them during the morning exercises. This can be done in various ways. One way of introducing such a verse is to have the whole class recite it for a few mornings running until they almost know it by heart and then call up the child for whom it is intended. Very often the class has already recognized which child this is to be. In the younger grades, when there is more time for such things, three children can say their own verses, one after the other, rotating in such a manner that each one can recite for three mornings in succession — this will give them time to grow sufficiently familiar with the poems — and then become part of an audience which knows almost all the verses by heart. Frequently, when a child forgets some part of his verse, another child can prompt him.

They all listen, too, with great interest to the manner in which the poem is delivered. This is the best possible opportunity for a teacher to work with the speech of the children, for it is easiest to do this when the words and content are already thoroughly familiar. One can gradually guide the voice to become deeper and fuller, take on color and variety, and help make the enunciation clearer. The children learn to stand quietly and face the others with dignity and naturalness. Their confidence grows as they know more exactly what they must do. If the teacher shows them quite definitely how to form their speech, they can fill this form with their own inner feelings with fire and confidence. They develop the natural poise which comes about when inner experience and outer expression are one. If, however, as they recite, they are merely told to be expressive or are only encouraged to express certain feelings without knowing how to do so, they become painfully embarassed and self-conscious or grow into little "show-offs".

There are many ways in which verses can be chosen or made. One can find maxims from the history period which the class is studying, or can

choose from literature poems which seem especially suited to each child's nature. But if the teacher writes a verse especially for a particular girl or boy, the child may be far more pleased and satisfied, though the verse be quite simple and imperfect, than with the greatest lines from literature.

When making up the verses, the teacher will often have two pictures in mind — or, rather, at heart. One will be the picture of all that the child holds potentially in its nature: the wonderful being he can become and that often hovers in a glance or a smile. The other picture is that of the limitations and onesidednesses which prevent the first picture from becoming more of a reality.

In the two following poems the teacher made an attempt to start with the elements of the child's nature as he was and lead over into what they might become, as one would try to lead a plant from leaf to blossom. The first poem was written for a lovely little girl who was in danger of becoming too formed, too self-enclosed, finished and critical, too dried out. Yet one knew that she was able to make the most beautiful pages and drawings in her notebooks. A rare beauty lay within her and glowed from her brown eyes set in a pale, sometimes dissatisfied little face.

The second poem was written during our Third Grade Bible period for a boy of a directly opposite nature. He was full of over-abundant forces of body and imagination which spilled over into outrageous behavior and into dramatic stories which had only the merest foothold in reality. He loved the watery element and in the first grade had delighted in slopping his painting water about, pouring it into his shoes and poking holes in his soggy paper. He loved the world of glorious chaos, color and abounding life and found the exactitude of arithmetic and adult truth excruciatingly, or sometimes amusingly dull. How was one to give him an incentive towards this world which it was such a lark to evade? He was a boy of not a little profoundness of perception, and had taken the most enthusiastic part in our detailed study of the days of creation.

The first child needed to expand all her powers of feeling and imagination; the second to focus and concentrate them.

I found a little seed one night,
Its tiny head was brown and bright.
I could not break its hard, sharp shell.
What was inside no one could tell.

The soft rain fell, and sunlight lay
Upon the little seed all day.
She let its warmth soak through and through
Her loving heart until she grew
Into a wond'rous, glowing tree
With blossoms beautiful to see.

Out of chaos came the earth,
And the stars sang at its birth,
And the gods brought forth the day,
The heavy waters fell away.
And at last there was pure air
And light and crystals shining there.

So from chaos, joy and cloud
May I grow too,
Like a pure, strong crystal,
Selfless, clear and true!

The next poem was written for a little elfin girl who was constantly whirling and twirling her pretty skirts, and chattering in a high, sharp little voice. She was at first incapable of settling down to any kind of work or of any sort of consideration for other children. Yet she had an ardent

love of nature and everyone was fond of her because of her doll-like beauty and sprite-like charm. One longed to see her develop, as she did, truly warm and human qualities.

The poem following this one was for a handsome boy whose direct gaze and decisive bearing made him loved and admired by all, even by those whom he bullied. Nothing was so stirring as the fiery intentness with which he outran his classmates or the irresistable explosions of his tempers. He bit his nails to the quick and dug a hole almost through his desk. He was sometimes cruel and scornful, yet nothing was so engaging or touching as to watch his tender delight and wonder when playing with a baby.

In all the beauty of the world
Shall I be just a little elf —
Or shall I surely find myself?

When I am still,
Then I will.

And when I do a loving deed
Then I plant a magic seed.
And when I work with all my might
It kindles in my life a light.

A soldier in battle
Is daring in danger,
Forgetful of failure
And fearless in fighting.
With courage he conquers
All evil and envy.
He scorns in his strength
To do hurt or do harm.
His heart burns to help
The weak or the woeful.
But mightiest he
Who in joy or disaster
Over his own self
Makes himself master!

The last poem was made for a particularly harmonious, loving and admired little girl, one of those rare children who seldom harbor in their hearts a critical thought of an adult, yet she, of all the children, was the first to stand up against the fierce, fiery boy, described above, when he became a bully. She was able in almost every sphere except in that of expressing herself aloud. Here a certain shyness kept her from volunteering as often as she might have in class. Therefore it seemed necessary to appeal to a virtue she especially admired, that of courage, so that she might not find it too difficult to recite, in front of the class, a verse which referred to inner qualities. She did recite it and with a distinctive clarity and quiet fire. The poem sought to bring to consciousness and confirm the qualities of her own nature.

May my courage, like a sword,
Swing out and flash its fire abroad,
And make my heart be like the sun
Giving warmth to everyone.
May my thoughts be like sunlight
Making all they touch more bright —
So bright they see the very best
In all things that around me rests
In friends, in rocks, in beasts and trees.
My gratefulness to all of these
Shall be like many tiny seeds
That blossom into loving deeds.

—Christy Barnes