

VARIOUS

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SEPTEMBER

The golden-rod is yellow;
The corn is turning brown;
The trees in apple orchards
With fruit are bending down.

The gentian's bluest fringes
Are curling in the sun;
In dusty pods the milkweed
Its hidden silk has spun.

The sedges flaunt their harvest,
In every meadow nook;
And asters by the brook-side
Make asters in the brook.

From dewy lanes at morning
The grapes' sweet odors rise;
At noon the roads all flutter
With yellow butterflies.

By all these lovely tokens
September days are here,
With summer's best of weather,
And autumn's best of cheer.

Helen Hunt Jackson.

THE MALLOWS

A number of interesting plants are found grouped under the name of the Mallow Family (Malvaceae). They are the common Mallow, a weed of waysides and cultivated grounds; the Indian Mallow or Velvet-leaf, with its large velvety leaves and yellow flowers, a visitor from India which has escaped from cultivation and become a pest in corn and grain fields and waste places; the Musk Mallow, which has also escaped from our gardens; the Marsh-Mallow, the root of which abounds in a mucilage that is extensively used in the manufacture of confections; the Hollyhock of our gardens, which was originally a native of China and the beautiful Rose-Mallow of our illustration.

The Mallow Family includes about eight hundred species which are widely distributed in the temperate and tropical countries. The technical name is from a Greek word having reference to the soothing effect produced by many of the species, when applied to wounded surfaces.

All are herbs. Most of those found in the United States have been introduced from Europe and Asia. Only a very few are native, and no one of these is very common.

The flowers and fruits are all similar in structure to that of the common hollyhock.

The disk-like fruits of the common round leafed Mallow of our dooryards are often called "cheeses" by the children and are

frequently gathered and eaten by them. The cotton plant, one of our most important economic plants, is also closely related to the Mallow. The Cotton of commerce is the woolly hair of the seeds of this plant which is a native of nearly all tropical countries and is cultivated in temperate regions.

The beautiful Rose-Mallow has its home in the brackish marshes of the Atlantic sea coast. It is also occasionally found on the marshy borders of lakes and rivers of the interior.

The plants grow to the height of from three to eight feet. The leaves are egg-shaped and the lower ones are three-lobed. The under side of the leaves is covered with fine and soft whitish hairs.

The flowers, produced in August and September, are large, varying from four to eight inches in diameter, and may be solitary or clustered at the top of the stem. The color of the petals is usually a light rose-pink, but occasionally white, with or without crimson at their bases.

Neltje Blanchan in "Nature's Garden" speaks of this beautiful plant as follows:

"Stately ranks of these magnificent flowers, growing among the tall sedges and 'cat-tails' of the marshes, make the most insensate traveler exclaim at their amazing loveliness. To reach them one must don rubber boots and risk sudden seats in the slippery ooze; nevertheless, with spade in hand to give one support, it is well worth while to seek them out and dig up some roots to transplant to the garden. Here, strange to say, without salt

soil or more water than the average garden receives from showers and hose, this handsomest of our wild flowers soon makes itself delightfully at home under cultivation."

EAGLE LORE

CURIOUS STORIES OF THE OLD-TIME FAITH IN THE "KING OF THE FEATHERED TRIBES."

Birds were trusted, honored and made the symbols of wisdom and power in the old time, and they have not, at least in their emblematical signification, been neglected in modern times. The eagle, in particular, is exalted to a high and potential distinction. On the banner of a hundred States he is displayed as a conquering symbol and floats to-day over many a fair realm where Rome's imperial standard never penetrated.

The eagle has always been considered a royal bird, and was a favorite with the poets. They called him king of the air and made him bear the thunderbolts of Jove. Euripides tells us that "the birds in general are the messengers of the gods, but the eagle is king, and interpreter of the great deity Jupiter."

The eagle figures in the early legends of all people. When the ancient Aztecs, the mound-builders of the Mississippi Valley, were moving southward under Mexi, their king, their god, Vitziputzli, whose image was borne in a tabernacle made of reeds and placed in the center of the encampment whenever they halted, directed them to settle where they should find an

eagle sitting on a fig-tree growing out of a rock in a lake. After a series of wanderings and adventures that do not shrink from comparison with the most extravagant legends of the heroic ages of antiquity, they at last beheld perched on a shrub in the midst of the lake of Tenochtitlan a royal eagle with a serpent in his talons and his broad wings opened to the rising sun. They hailed the auspicious omen and laid the foundation of their capital by sinking piles into the shallows. This legend is commemorated by the device of the eagle and the cactus, which forms the arms of the modern Mexican Republic.

A goose, it is said, saved Rome once upon a time, but it was an eagle that directed the selection of the ancient Byzantium – now Constantinople – as the capital of the Eastern Empire. The site of ancient Troy had been settled upon by Constantine, and the engineers were engaged in surveying the plan of the city, when an eagle swooped down, seized the measuring line, flew away with it and dropped it at Byzantium. At any rate, this was the story told to the soldiers and marines, in order to reconcile them to the change of plan, which they might otherwise have deemed an unfavorable omen, though the splendid situation of the new capital and its long prosperity, prove how admirably sagacious was the choice of its founder.

In the reign of Ancus Martius, King of Rome, a wealthy man, whose name was Tarquin, came to that city from one of the Etruscan States. Sitting beside his wife in his chariot, as he approached the gates of Rome, an eagle, it is said, plucked his

cap from his head, flew up in the air, and then, returning, placed it on his head again. Not a few suspect that the eagle was a tame one and had been taught to perform this trick. If so, however, the apparent prodigy lost none of its effect in the popular belief, and Tarquin succeeded Ancus as King of Rome. The eagle's head on the Roman sceptre, and later on its standard, took its origin from this occurrence.

Plutarch, in his life of Theseus, relates that when Cymon was sent by the Athenians to procure the bones of that hero, who had long before been buried in Scyros, to reinter them in his former capital, he found great difficulty in ascertaining the burial place of the ancient monarch. While prosecuting his search, however, he chanced to observe an eagle that had alighted on a small elevation and was trying with his beak and claws to break the sod. Considering this a fortunate omen, they explored the place and discovered the coffin of a man of extraordinary size, with a lance of brass and a sword lying by it. These relics were conveyed to Athens amid great rejoicing, where they found a resting place in the famous temple of Theseus, whose ruins are still in existence.

The old historians state that the Greek poet Aeschylus lost his life through an eagle's mistaking his bald head for a rock and dropping a tortoise upon it in order to break the shell of his amphibious prey, but which broke, instead, the poet's skull. That an eagle, proverbially the keenest-sighted of created things, should mistake a man's head for a stone is absurd beyond the necessity of comment. The story is probably intended for an

allegory, showing how stupidity can overwhelm genius, or a dull criticism smash a lively poet.

In A. D. 431 there was war between the Emperor Theodosius II. and Genseric the Vandal, and Marcian, the general of the former, was taken prisoner. The unfortunate captive was doomed to death. At the place of execution an eagle alighted on his head and sat there some time undismayed by the tumult around it. Upon seeing this, and believing that the captive was destined for some exalted fortune, Genseric pardoned him and sent him home. About eighteen years afterwards Theodosius died, and, as his sister had married Marcian, the latter became Emperor of Constantinople.

During the wars between the Christians and the Moors, of Spain, a Spanish knight engaged in combat with a gigantic Moslem. The conflict remained undecided for a long time, but at last the Spaniard began to lose ground. At this juncture an eagle, swooping from above, flew into the face of the Moorish giant, and, taking advantage of this sudden and miraculous intervention, the Spanish champion plunged his sword into the heart of his antagonist, thus winning the battle.

Rudolph, count of Hapsburg, one morning was looking out of his castle window upon the surrounding country, and while thus engaged noticed an eagle circling strangely above a certain place in the forest. Taking some men at arms he proceeded to the spot, where he found a beautiful and high-born lady held captive by a band of robbers. He rescued her and afterwards married

her. When a new emperor was wanted in Germany he obtained the election through the influence of his wife's relatives. In this romantic fashion began the glory of the present reigning house of Austria.

I have alluded to the prominence of eagles in the arms of nations and individuals. The famous ensign of the Roman legions verified the text of Scripture when, in referring to the eagle, Job says: "Where the slain are there is she," for the Roman bird flew over nearly the whole known world and delighted in destruction and in threatening it. The Byzantine Caesars sported a double-headed eagle to indicate that they were lords of both the Eastern and the Western world. The Russians adopted the symbol from those princes. About four hundred years ago a lady, who claimed to be the heir of the Byzantine Emperor, married Ivan III., Czar of Russia, who, therefore, assumed the Greek arms, which may possibly be restored again to Constantinople by Russian arms.

The United States chose for her emblem the same imperial and triumphant bird. Some have considered it as not altogether an appropriate device for our republican government. Students of natural history have observed that the eagle is mean and cowardly. He lives, moreover, a life of rapine, plundering birds that are bolder and more industrious than himself. This is rather a bad character for our national bird.

The ancients would probably be horrified at such a criticism of their royal bird, and, after all, it is not surprising that they held him in such reverence. These people of the long ago had no

books nor newspapers, but they were proficient students in the book of nature. By them the birds were accounted prophets, and by their varied flights they foretold future events and regulated the movements and enterprises of nations.

We call the wisdom of birds instinct, but they considered it divine intelligence. Nor was it strange that they should take them for the interpreters of fate, seeing that in many things the birds were wiser than themselves, for they seemed to have a knowledge of the future that was denied to man.

We have some idea of how these people regarded the movements of the birds from one of the ancient Greek writers, who, in a play entitled "The Birds," makes them give the following account of themselves: "We point out to man the work of each season. When the crow takes his flight across the Mediterranean it is seed-time – time for the pilot to season his timber. The kite tells you when you ought to shear your sheep; the swallow shows you when you ought to sell your watch-coats, and buy light dresses for the summer. We birds are the hinge of everything you do. We regulate your merchandise, your eating and drinking, and your marriages."

This Greek play-writer probably voiced the sentiments of the majority of the people, who had implicit faith in what they called "the prophecies of the birds;" and it is not surprising that they endowed the eagle – the king of the feathered tribes – with almost supernatural wisdom.

Phebe Westcott Humphrey.

THE SNOWDROP'S PHILOSOPHY

"I should think you'd lose heart in this frosty air,"
Said a sparrow one day to a snowdrop fair.
"You're almost hidden down there in the snow,
And I see you shiver whene'er the winds blow.
If I were you I wouldn't bloom
If I couldn't grow with the roses in June.
What right have they any more than you,
To live in the summer when skies are blue
And bright with sunshine the whole long day?
They have it easy enough, I must say;
But you're so meekly quiet and white,
You're afraid to speak up when you have the right."

"But, my dear," said the snowdrop, "can't you see
That summer can do very well without me?
My place is to blossom right here in the snow,
No matter where the roses grow.
It's lovely to be a summer flower,
But I am content to do all in my power
To sweeten the gloom of this wintry day,
And be brave if the sky is so cold and gray.
I cannot be helpful by being sad;
I have my work and that makes me glad
To bloom my fairest and grow my best,

And let kind nature do all the rest."

Wildea Wood.

THE GLADNESS OF NATURE

Is this a time to be cloudy and sad,
When our mother Nature laughs around,
When even the deep blue heavens look glad,
And gladness breathes from the blossoming ground?

There are notes of joy from the hang-bird and wren,
And the gossip of swallows through all the sky;
The ground-squirrel gaily chirps by his den,
And the wilding-bee hums merrily by.

The clouds are at play in the azure space,
And their shadows at play on the bright green vale,
And here they stretch to frolic chase,
And there they roll on the easy gale.

There's a dance of leaves in that aspen bower;
There's a titter of winds in that beechen tree;
There's a smile on the fruit, and a smile on the flower,
And a laugh from the brook that runs to the sea.

And look at the broad-faced sun, how he smiles
On the dewy earth that smiles in his ray;
On the leaping waters and gay young isles —
Ay, look, and he'll smile thy gloom away!

William Cullen Bryant.

FLOWERS AND THEIR INVITED GUESTS

It must be taken for granted in this paper that the reader has such knowledge of the parts of the flower as could be obtained from the paper on "A Typical Flower," printed in the June number.

When flowers first appeared it became necessary to secure the transfer of the pollen grains to the stigmas. This was necessary in order that the ovule might be developed into a seed containing a young plant or embryo. At first the currents of air were selected as the agents of this pollen transfer, and the flowers were adapted to what is known as wind-pollination. As the wind is an inanimate agent any transfer by it is largely a matter of chance. In order to increase the chances of successful pollination it was necessary for pollen to be developed in enormous quantities, so that it might fall like rain. In this way stigmas would be reached, but at the same time an enormous amount of pollen would be wasted. The evergreens are good illustrations of wind-pollinated plants, and their showers of pollen are very familiar to those who live near pine forests. When these showers come down in unaccustomed regions they are often spoken of as "showers of sulphur," and the local newspapers are full of accounts of the mysterious substance.

In wind-pollinated plants not only must the pollen be excessively abundant, but it must also be very light and dry. Sometimes the buoyancy is increased by the development of wings on the pollen grains, as in the case of pines. This habit of pollination is found not only among the evergreens, but also among many important families of the higher plants, as in the ordinary forest trees, the grasses, etc.

When the higher forms appeared, however, flowers of a different character gave evidence that a new type of pollination was being devised. Instead of the old wasteful method, insects were called in to act as agents of the transfer. By securing an animate agent there is a definiteness in the pollination and a saving in pollen production which is quite in contrast with the wind method. It must not be supposed that all flowers have learned to use insects with equal skill, for many of them may be said to be clumsy in their arrangements. On the other hand, certain families have reached a high degree of organization in this regard, and arrange for insect visits with a skill and completeness of organization which is astonishing.

In order to secure visits from insects, so that pollination may be effected, flowers have been compelled to do several things. In the first place, they must provide an attractive food. This has taken two prominent forms, namely, nectar and pollen. There are insects, such as butterflies, which are not only attracted by the nectar, but whose mouth parts have only been adapted for sucking up a liquid. There are other insects, however, like the

bees, wasps, etc., which are able to take the more substantial pollen as food. Accordingly insects which visit flowers may be roughly divided into the two classes, nectar-feeders and pollen-feeders.

In the second place, the flower must notify the insect in some way that the food is present. This is done primarily by the odors which flowers give off. It must not be supposed that odors which are sensible to us are the only ones sensible to insects, for in general their sense of smell is far keener than ours. It is also probably true that the display of color, which is so conspicuously associated with flowers, is an attraction to insects, although this has become somewhat doubtful lately by the discovery that certain insects which were thought to be attracted by color have proved to be color blind. At present, however, we have no reason to suppose that color is not associated in some prominent way with the visits of insects.

It should be noticed, also, that two kinds of pollination are possible. The pollen may be transferred to the stigma of its own flower, or it may be carried to the stigma in some other flower, and this other flower may be some distance away. The former method may be called self-pollination, the latter cross-pollination. It seems evident that flowers in general have made every effort to secure cross-pollination. This would seem to imply that it is a better method for some reason, although we may not be able to explain why. Apparently, however, while flowers in general have tried to secure cross-pollination, they have not

entirely abandoned the chances of self-pollination, so that if one should fail the other may be used. In this way it will be found that a great many plants have two kinds of flowers, the ordinary showy kind, and in addition to them inconspicuous flowers which are never seen except by those acquainted with their presence. For example, in the common violet, in addition to those flowers with which everyone is familiar, others are developed which are concealed by the cluster of leaves, which never open, but which are able to produce very well developed seeds.

With nectar and pollen provided as food, and with odor and color notifying the insects of their presence, it remains to be noted that the suitable insects are those which fly. A creeping insect is of no avail in the work of pollination, since the pollen will be rubbed from its body as it crawls from one flower to the next. How the flowers ward off the visits of creeping insects, which are attracted as well as the flying ones to the food provided, will be described in a subsequent paper.

A good illustration of the workings of insect pollination may be found in the sweet pea, or in any member of the pea family. The flower has a rough resemblance to a butterfly, whose projecting body is represented by a structure like the keel of a boat. In this keel is a cluster of stamens, and also the pistil with its stigma at the top. While lying in this keel the stamens shed their pollen upon the style, which usually has hairs or some sticky surface to receive it. Accordingly the style bears the stigma on top and masses of pollen stuck to its sides below. An insect being

attracted to such a flower naturally lands upon the keel as upon a shelf, with its head toward the center of the flower, where the nectar is deposited. If the insect is heavy enough the weight of its body pushes down the keel, but the contained style is anchored, so that it seems to dart out, and strikes the insect's body, first with the stigma at the tip, and then glancing along rubs its side against the body of the insect. The insect flies away with pollen rubbed upon its body, and when it goes through the same performance at another flower, the new stigma strikes it first and gets some of the pollen, and then some more pollen is smeared on, and so the pollen is carried from one flower to the stigma of another flower. It is easy to see the effect of the weight of a heavy insect by pressing down the keel with a pencil, when the style will be seen to dart forth at the tip.

Perhaps one of the most common ways of securing pollination is that in which the pollen and stigma are not ready at the same time in the same flower. The pollen may be ready to shed, but the stigma is not ready to receive, or the reverse may be true. This would seem very effective in preventing self-pollination. Illustrations of this kind are exceedingly numerous, but perhaps as common a one as any is furnished by the great fireweed, *Epilobium*. It has a conspicuous purple flower, and if a patch of the plants be examined the flowers will be found in two conditions. In one set the cluster of stamens will be found projecting straight out from the flower, while the style with its stigma is turned back out of the way under the flower. In the

other set the stamens, having shed their pollen, are turned back behind the flower, while the style has straightened up, and the mature stigma holds the same position that the anthers did the day before. An insect, in visiting such a group, therefore, may fly straight towards a flower whose stamens are projecting and shedding, and its body will be dusted with the pollen. If it now flies to a flower which is a little older, whose stamens are out of the way, but whose style is projecting, its body carrying the pollen will strike the stigma. In this way the pollen is very effectively transferred from one flower to another.

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