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BIRDS AND ALL NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. VII. MARCH, 1900. NO. 3.

CONTENTS.

THE ENGLISH SPARROW.

F. S. PIXLEY.

You may talk about th' nightingale, th' thrush 'r medder lark,
'R any other singin' bird that came from Noah's ark;
But of all feathered things thet fly, from turkey-buzzard down,
Give me the little sparrer, with his modest coat o' brown.

I'll admit that in th' springtime, when th' trees 're gettin' green,
When again th' robin red-breast 'nd th' bluebird first 're seen;
When the bobolink 'nd blackbird from th' southland reappear,
'Nd the crow comes back t' show us that th' spring is really here—

I'll admit that in the *springtime*, when the groves with music ring,
Natur' handicaps th' sparrer; he was never taught to sing;
But he sounds th' Maker's praises in his meek 'nd lowly way;
'Nd tho' other birds come back at times, *he* never goes away.

There's a cert'in sort o' people thet, when th' skies 're bright,
Will hang around 'nd talk about their friendship day 'nd night;
But if things cloudy up a bit 'nd fortune seems t' frown,
They're sure t' be th' first t' kick a feller when he's down.

So when the summer skies 're bright it's easy 'nough t' sing;
But when it's cold 'nd rains 'r snows it's quite a diff'rent thing.
In autumn, when th' nippin' frosts drive other birds away,
Th' sparrer is th' only one with nerve enough t' stay.

'Nd even in midwinter, when th' trees 're brown 'nd bare,
'Nd th' frosty flakes 're fallin' thro' th' bitter bitin' air,
Th' sparrer still is with us—t' cheer us when we're glum,
Fer his presence is a prophecy of better days t' come.

Th' sparrer's never idle, fer he has t' work his way;
You'll always find him hustlin' long before th' break o' day.
He's plucky, patient, cheerful, 'nd he seems t' say t' man,
"I know I'm very little, but I do th' best I can."

What more can you 'nd I do than t' always do our best?
Are we any more deservin' than th' "little British pest?"
So, when you talk of "feathered kings" you'd better save a crown
Fer the honest little sparrer, with his modest coat o' brown.

THE PEACOCK.

With pendant train and rustling wings,
Aloft the gorgeous peacock springs;
And he, the bird of hundred dyes,
Whose plumes the dames of Ava prize.
—*Bishop Heber.*

IT WAS a saying among the ancients, "As beautiful as is the peacock among birds, so is the tiger among quadrupeds." The birds are of many varieties, some white, others with crests; that of Thibet being considered the most beautiful of the feathered creation. The first specimens were brought to Europe from the East Indies, and they are still found in flocks in a wild state in the islands of Java and Ceylon. The common people of Italy describe it as having the plumage of an angel, the voice of a devil and the intestines of a thief. In the days of king Solomon his navies imported from the East apes and peacocks, and Ælian relates they were brought into Greece from some barbarous country, and that a male and a female were valued at a hundred and fifty dollars of our money. It is said also that when Alexander was in India he saw them flying wild on the banks of the river Hyarotis, and was so struck with their beauty that he imposed a fine on all who should slay or disturb them. The Greeks were so much taken with the beauty of this bird, when first brought among them, that it was shown for money, and many came to Athens from surrounding countries to see it. It was esteemed a delicacy at the tables of the rich and great and the birds were fatted for the feasts of the luxurious. Hortensius, the orator, was the first to serve them at an entertainment at Rome, and they were spoken of as the first of viands. Barley is its favorite food, but as it is a proud and fickle bird there is scarce any food it will at all times like. It lays waste the labors of the gardener, roots up the choicest seeds, and nips favorite flowers in the bud. He requires five females to attend him, often more. The peahen is compelled to hide her nest from him that he may not disturb her sitting. She seldom lays above a dozen eggs, which are generally hatched about the beginning of November. Though the peafowls invariably roost in trees, yet they make their nests on the ground, and ordinarily on a bank raised above the common level. The nest consists of leaves and small sticks. From January to the end of March, when the corn is standing, the flesh is juicy and tender, but during the dry season, when the birds feed on the seeds of weeds and insects, it becomes dry and muscular.

In some parts of India peacocks are extremely common, flocking together in bands of thirty and forty in number, covering the trees with their splendid plumage and filling the air with their dissonant voices. Captain Williamson mentions that he saw at least twelve or fifteen hundred from where he stood.

Peacocks are very jealous of all quadrupeds, especially of dogs. When they are discovered in a tree situated on a plain, if a dog is loose and hunts near it, the birds will rarely move but will show extreme uneasiness. One of these birds in the north of Ireland was a curious mixture of cruelty and fun. He had four mates but he killed them all successively by pecking them to death, for what cause no one could ascertain. Even his own offspring shared the same fate, until his owner placed the peafowl's eggs under a sitting hen and forced her to hatch the eggs and care for the young. His great amusement was to frighten the chickens. There were two iron troughs in which the food for the chickens was placed daily. No sooner had they gathered about them, when the peacock would erect his train, rattle his quills together with that peculiar rustling sound that is so characteristic of these birds, and march slowly toward them. The poor little chicks would slowly back away from the troughs as the peacock advanced, not wishing to lose sight of the food yet not daring to remain in defiance of their persecutor. By degrees he got them all into a corner, [Pg 101] crouching together and trembling when he would overshadow them with his train, place the ends of the feathers against the wall so as to cover them, rattle his quills, in order to frighten them, and then strut off proud of the trick he had played. He did not care for the food which he left untouched.

FROM COL. F. NUSSBAUMER & SON.
A. W. MUMFORD, PUBLISHER, CHICAGO.

PEACOCK.
⅛ Life-size.

The peacock's disposition is as variable as that of many other creatures, some being mild and good-tempered, while others are morose and jealous in the extreme. His train, though popularly called his tail, is in reality composed of the upper tail coverts, which are enormously lengthened and finished at their extremities with broad, rounded webs, or with spear-shaped ends. The tail feathers are of a grayish brown color seven or eight inches in length, and can only be seen when the train is erected, that being its appointed task. The female is much smaller than her mate and not nearly so handsome, the train being almost wanting, and the color ashy brown, with the exception of the throat and neck, which are green.

The peacock lives about twenty years and the beautiful variegated plumage of the male's train appears about the third year after birth.

THE SONG OF THE LARK.

ADA M. GRIGGS.

The peasant girl, her feet all bare,
With her rustic grace, has a noble air.

She's queen of the stubble-field and she,
In mind, is free as the lark is free.

Her thought, above all meaner things,
Is soaring with the lark that sings.

No hampered child of the city streets,
Who bows his head whomsoe'er he meets,

Who toils for a pittance with little rest,
But should envy the freedom in this breast.

She's the child of nature; vice does not lure;
She's clothed upon with a life that's pure.

The wholesomeness of her atmosphere
Does more for man than his logic drear.

Who delves in books' philosophic lore,
Sees nature's problems—but little more.

'Tis God's own child who has eyes to see
What is closed to the eye of philosophy.

The artist who dabbles with color and brush
Sees but the reflection of nature's flush.

The skilled musician knows not pure tone;
He hears but the resonance of his own.

'Tis the peasant girl, as she hurries along,
Who hears the lark's good morning song.

She hears it with gladness; her heart is gay;
All nature greets her in festal array.

The lark makes her world a world of song
His notes in her heart sing her whole life long.

She's the true musician, artist and seer;
She looks upon nature with vision clear.

The lark brings her day without shade or sorrow,
And crowns each day with a sweet tomorrow.

He gives a joy only nature can,
A boon sent down from heaven to man.

O little lark, sing on! sing on!
The country dark new life will don.
The tones thou'lt hurl from thy tiny heart
Peace will unfurl and new joy impart.

THE HERALD OF SPRING.

CHARLES E. JENNEY.

Before the snow flies
A bit of Summer skies
  Comes flitting down
  Through Winter's frown
To cheer up waiting eyes.

ONE gray February day, when dirty patches of snow are still lingering on the north side of rocks and walls, as you gaze across a dreary landscape, you espy a bit of bright color on the bar-post that brightens up your spirit. 'Tis the first bluebird, and that means that spring is coming. His cheery little ditty seems to say, "Spring is coming, spring is coming, spring is here." He has been farther south during the winter, for he seldom stays in Massachusetts in December and January and he thinks it a little chilly just now, for his feathers are all fluffed up around him so that he looks like an animated dumpling.

He has come back to locate his nest site—to see first if the old nest hole of past years is suitable, for he is a great home-lover, and, if not, to select a new one.

In March you will see the bluebirds often investigating rotten bar-posts, hollow cedars, old woodpecker holes, and decayed apple-tree stumps. And in the latter part of the month the females are with them.

Then one April day Mr. Bluebird sings always from a limb of a certain apple-tree, and down in the trunk, in an abandoned woodpecker's hole, are four pretty light blue eggs.

Every old orchard has its family of bluebirds, and they come back to the same nest every year until something happens to scare them away from it. A rotten bar-post or fence rail is a promising site also, and they peck out a hole with their short bills and round it out quite as neatly as that feathered carpenter, the woodpecker. When they get in a little ways you may see the chips flying out of the aperture, though no worker is in sight, and when it is almost done every now and then a blue head will pop out with a beak full of loose wood, which is tossed away. Then a few clean chips are left and the bird's own soft down lines the home.

Often they will make use of wooden boxes set on poles or placed in the trees for their benefit. They are very quiet, peaceful birds, so the entrance to their homes should never be much larger than their own small bodies require for admittance.

The scrubby cedars that grow along the New England coast make excellent nooks and corners for the bluebird's home and the berries provide him with food late in the season. I have even found a pair nesting in a cedar grove on the extreme end of a rocky point exposed to the full force of the southeast storms that sweep up Buzzard's bay. Usually, however, they prefer the green fields and orchards of further inland.

One pair for five or six years nested in a hollow about twelve inches deep formed in the crotch where a cedar tree branched into two parts. It could not have been a comfortable or well-chosen home, for it was open to the weather at the top and it would seem as if it must be flooded in a heavy rain-storm. But it was only abandoned by the birds when it had become known to every boy and egg collector in the village as the hereditary estate of this family.

During April and May the bluebird is everywhere visible and audible, but in midsummer he is not so often seen. He is essentially a bird of the spring with us. His familiar contemporaries are the catbird and the robin, but he is the earliest in the year of them all. Sometimes, though not often, he stops all winter with us, and his red breast warms the winter landscape which it dares to challenge.

[Pg 103]

See him dash from that old fence post after a mouthful of flies or gnats; or hopping from twig to twig in the cedar tree, selecting the choicest of the spicy berries. Sometimes he will venture in among the crowd of talkative sparrows that are harvesting the crumbs in your dooryard, but if they dispute his right he keeps away. The piece of suet hung in the tree near the bird-box, however, is his own, and he views the intruding buntings and trespassing jays from his front porch or dormer window with much indignation.

However, he says very little, uses no bad language like that of the jay, and soon regains the sereneness of temper natural to him. And we like him all the better for it, for, although it is not nice to be imposed upon and we like to see offenders get their deserts, the one who takes life cheerfully and uncomplainingly overlooks or forgets the wrongs he cannot right is the one we like to have as a friend.

MARCH.

It is the first day of March,
  Each minute sweeter than before;
The red-breast sings from the tall larch
  That stands beside the door.

There is a blessing in the air,
  Which seems a sense of joy to yield
To the bare trees, and mountains bare,
  And grass in the green field.

Love, now a universal birth,
  From heart to heart is stealing,
From earth to man, from man to earth;
  It is the hour of feeling.

One moment now may give us more
  Than fifty years of reason;
Our minds shall drink at every pore
  The spirit of the season.

—*Wordsworth.*

TAMING BIRDS.

GUY STEALEY.

BUT very few of the boys and girls who watch the many species of our birds flit about in the summer time and who listen in delight to their singing, know that by expending a little time and patience they can make these sweet songsters quite tame. I do not mean that the birds are to be caught and confined; I never could bear to see a bird in captivity, and indeed most wild ones will live but a brief time when so served, but that they can be made gentle in their natural state. Where I live, in the Rocky Mountains, there are countless numbers of birds throughout the spring and summer months and, being a great lover of them, I have naturally observed their habits closely. Trusting, therefore, that some of the boys and girls who entertain the affection for them that I do, will see these lines, I venture to give some of my experiences along the path of bird-life.

[Pg 104]

Some five years ago I constructed several miniature cottages, with verandas, chimneys and all, and placed them on the fences around our garden. The first season two pairs of wrens selected and occupied two of them; a third was chosen by a pair of bluebirds, and the fourth left vacant. Wrens, as you all know, are never much afraid of anyone, but bluebirds are inclined to be shy. After a short time, however, the pair I spoke of would alight within a few feet of where I was weeding vegetables, and soon came to know that where the ground was freshly turned, there were to be found the most worms. Before the summer was over the wrens and bluebirds and I were the firmest of friends. Daily they ran and hopped and peeped under the plants and flowers. And besides giving me their companionship they did a vast amount of good in the garden by keeping it clear of bugs and worms. It was astonishing the number of these they carried to their little ones.

But time stops not, and finally there came cold and frosty nights that warned my little friends, now comprising three families, that the day of their departure for warmer lands was drawing near; and soon I was all alone.

Every year since then has been a repetition of this first, only that I have more houses around now and consequently more tenants. I firmly believe too, that the first three couples still return to their old homes, for the same houses are taken by the wrens every spring and the same one by the bluebirds.

During the winter also, I sometimes have a few bird pets, though they are others than snow birds. The latter I have never been able to make friends with. When the weather is severe I often try to feed them, but with poor success, as they are always very wild. The pets I have reference to are bluejays and campbirds, or as they are more usually called, camp-robbers. Both species stay here the year around.

Last winter I had a laughable time with them. Shortly after the first snow I noticed a pair of camp-robbers—they seem to go in pairs both summer and winter—around our meat-house. If you have never seen them you cannot know what comical birds they are, so solemn and innocent appearing, yet when it comes to stealing—well, they are the greatest and boldest thieves you can find. If they are about and you chance to have anything eatable around and turn your back for a moment you are pretty sure to find it gone when you look again. I remember while camping one fall, of seeing one of them dart down from a tree and take a slice of meat right out of the frying-pan on the fire! But it was too hot to hold long, and Mr. Camp-robber was obliged to relinquish his dainty dinner before reaching his perch again. Arriving there he sat for a long while, looking down at me with a wry face.

But I am digressing, and must get back to my story of the camp-robbers and the meat-house.

A few days after I first saw them, I went in the house to cut some meat for dinner; while there one of the robbers alighted on a bench placed at the side of the door, and stood peeping in. I cut a small piece of meat and tossed it on the step and in a second he had pounced on it and was away. Everyday, from that time on, just at noon, the pair of them would be watching for me, and I made it a rule to put some small pieces of meat or bread on the steps at that hour of the day. As soon as I retreated a little way they would secure them and fly off.

After they had been with me about a month, a bluejay happened along one day, and seeing them at their meal, invited himself to partake of part of it. The camp-robbers seemed somewhat angry at this, but did not venture to remonstrate. The next day there were two bluejays and by the end of a week I had two camp-robbers and seven bluejays looking to me for their daily dinners.

I fed the whole company all winter and when spring came the camp-robbers would almost take food from my hands; in fact they seemed to look to me for protection, when eating, from the bluejays, who were rather overbearing and wanted more than their share.

Whether they will visit me this winter I know not, but I *do* know that I should be glad to see them again.

FROM COL. F. F. SPREYNE.
A. W. MUMFORD, PUBLISHER, CHICAGO.

WILLOW PTARMIGAN.
½ Life-size.

THE WILLOW PTARMIGAN.

(*Lagopus lagopus.*)

C. C. M.

IT has been claimed by some ornithologists that this species of grouse is not to be found in this country, but it is now well established that it may be found in northern portions of New Hampshire and northern New York. In summer it is distributed throughout Arctic America. It breeds abundantly in the valleys of the Rocky Mountains on the Barren Grounds and along the Arctic coasts. Davie, who is probably the best authority we have, says that the winter dress of this beautiful bird is snow white, with the central tail feathers black, tipped with white. In summer the head and neck are yellowish red, back black, barred rather finely with yellowish brown and chestnut, although the most of the wings and under parts remain white as in winter. Large numbers of the willow ptarmigan are said in the winter to shelter in willow thickets and dwarf birches on the banks of lakes and rivers, where they feed on the buds of the smaller shrubs which form their principal food at that season. Their favorite resorts in day time are barren, sandy tracts of land, but they pass the nights in holes in the snow. When pursued by sportsmen or birds of prey they dive in the loose snow and work their way beneath its surface.

Nests of this species have been found in the Anderson River region early in June and as late as June 24. Others have been found on the banks of the Swan River as late as June 27. One nest was observed July 10 which contained ten perfectly fresh eggs, and another set of eggs was examined July 22, the contents of which were slightly developed. The nests were mere depressions in the ground, lined with leaves, hay, and a few feathers from the birds themselves. These birds often occupy the same nest in successive seasons. Ten eggs are usually laid, though the female is said to lay as many as sixteen. The eggs have a ground color varying from yellowish buff to deep chestnut-brown, more or less sprinkled, speckled, spotted, or marbled with rich brown or black. The average size is 1.78 by 1.25.

Hallock says that the various species of ptarmigan are all Alpine birds, and are only found in the North and on the highest mountain ranges. They are to be distinguished from all other members of the grouse family by the dense feathering of the tarsus and toes, by turning white in winter and by the possession of only fourteen tail feathers. The bill is very stout and the tail always black. The length of the ptarmigan is about sixteen inches. It is a most delicious article of food, whether roasted, stewed, or in white soups. It is said that visitors to Newfoundland assert that the flavor of a plump partridge, well cooked, is unsurpassed in richness and delicacy. A brace of them in season weigh from three to three and a half pounds. On the first of September they are in prime condition, after feeding on the wild partridge berry and cranberry, their favorite food.

When on the wing it is said the scarlet tips over the eyes of the male bird glisten like rubies. The cock exposes himself fearlessly, when in danger, to save the lives of his offspring. He tumbles along the ground a few yards in advance of the dogs, rolling there in order to decoy the sportsman from the brood which the hen is anxiously calling into the thicket. No more touching instance of paternal affection could be witnessed, or more touching proof among the lower creation of self-sacrifice, prompted by love. The poor, feeble bird would almost attack dogs and men in his efforts to save his children.

At times, in some districts, the ptarmigan is so tame that it can be killed with a stick, and at others so wild that it will not allow the sportsman to approach within gun shot.

ANIMAL PETS IN SCHOOL.

A WISE old man down in Boston says animal pets should be kept in public schools to teach children kindness to the weak. The jokesters are already at work deriding one of the best thoughts anybody has had about education for a long time because it seems, and possibly is, impracticable. They call it a reversal of the Mary's lamb doctrine, and suggest the propriety of letting the children throw paper wads to teach them accuracy and precision.

Despite both its doubtful practicability and the jester's little fling, Dr. Edward Everett Hale's proposition is not only founded on a right theory, but reflects the very way in which nature, says the *Chicago Journal*, first taught the great lesson of altruism and love.

Most of our scientists and some of our religious teachers nowadays believe that man ascended from the beasts. If he did, the first kindness, the first unselfishness, the first compassion for the helpless, and gentleness toward the weak, that were ever in the world, the first things that ever differentiated man from brute, were taught to the parents of the race in exactly the way Dr. Hale would have them taught to its children.

There never was any human love until there was human helplessness. There never was any mother-love or father-love until children began to be born that were feeble.

In some of the lower orders of life the young can take care of themselves as soon as they are born. There is no reason why anything should "care for" them, so nothing does. There is no affection for them nor from them nor among them.

Love was first excited by something that needed care and kindness. A couple of shaggy savages, animals that didn't know enough to love each other yet, felt something "akin to pity" for an ugly baby with a gorilla chin and no forehead, and resolved to do something not for themselves, but for the hideous infant, and not because they were proud of its prettiness and wanted to keep it for a plaything, but because it so obviously needed to have something done for it.

That, the scientists tell us, was the beginning of unselfishness, the beginning of care for others, the origin of affection and altruism, the genesis of humanity, the promise of the destiny of man. The baby was the animal pet that got into the schoolhouse with the children of the early world and taught the first lesson of love. On its mighty weakness hung most of those powerful and wonderful forces that have lifted brutehood into manhood.

Heredity does a great deal, but most of the lesson has to be taught over to every individual, and it is a more important one than geography or grammar. Humanity's happiness and further progress depend on the thoroughness with which it learns the lesson, not of arithmetic or spelling, but of altruism.

Children are cruel. But they have hereditary instincts of kindness for the weak that would develop the sooner into love for their fellows if they had something helpless to exercise them on. When a big, hulking, selfish boy begins to take a protecting interest in a little yellow dog he is unconsciously teaching himself the greatest lesson he can ever learn. Trotting around in that woolly hide, dodging stones, fleeing to him for protection from the poundman, getting lost, and kicked, starved, and hurt, is the beginning of the boy's unselfishness and the man's altruism, and it is not funny, but sad, that the schoolhouse door must shut it out so that the reluctant master may the better give his attention to the mysteries of commercial arithmetic and the art of skinning his fellow-man by means of "brokerage," "discount," and "compound interest."

Dr. Hale may never see animal pets in the schools, but he has been in the world a long time, and knows what humanity needs.

BAILEY'S DICTIONARY.

C. C. MARBLE.

THIS may be called the age of dictionary making. All philological scholarship seems to culminate in historic derivation. Without referring invidiously to cultivated foreign languages, each of which has many such monuments of elaborate, accurate, and patient research, it may be said with confidence that the English language is unrivaled in its lexicographers, who at the close of the nineteenth century have completed works which only a few decades ago were not thought of as possible. Dr. Johnson prepared his unabridged dictionary in seven years "with little assistance from the great," an achievement which at the time excited wonder and admiration, though insignificant indeed in comparison with present performances. And yet there may be some doubt about the comparatively greater usefulness to the general reader of the bulky volumes of the modern publishers. In illustration the reader might find an analysis of one of the oldest English dictionaries an interesting example.

For several years I have had at hand "An Universal Etymological English Dictionary and Interpreter of Hard Words," by N. Bailey, 1747. On almost all occasions when I have needed to consult a dictionary I have found it satisfactory, some of its learning, on account of its very quaintnesses and contemporaneous character, being better adapted to a particular definition than modern directness. Perhaps its greatest defect is the absence from it of scientific terms, of which, however, there were very few at that time.

The introduction is exceedingly learned and the causes of change in language are discussed with much ingenuity. Many examples of Saxon antiquities are given, one of which, the Lord's prayer, written about A. D. 900, by Alfred, Bishop of Durham, we may quote, from which "it doth appear," says Bailey, "that the English Saxon Language, of which the Normans despoiled us in great Part, had its beauties, was significant and emphatical, and preferable to what they imposed upon us." Here is the prayer:

"Our Father which art in Heavens, be hallowed thine name; come thine Kingdom; be thy will so as in Heavens and in Earth. Our Loaf supersubstantial give us to-day, and forgive us Debts our so we forgive Debts ours, and do not lead us into Temptation, but deliver us from Evil."

The introduction is in Latin. Greek, Hebrew, and Saxon characters are used in the definitions. Bailey defines the meanings of proverbs with far more particularity than is necessary, perhaps, and yet a small volume could be made up of these curious "common or old pithy sayings," as he defines them, many of which are obsolete or unknown to the readers of the present day. Instance:

"As sure as God's in Gloucestershire." This proverb is said to have its rise, on account that there were more rich and mitred abbeys in that than in any two shires of England beside; but some, from William of Malmsbury, refer it to the fruitfulness of it in religion, in that it is said to have returned the seed of the gospel with the increase of an hundred fold. And "Good wine needs no bush." This proverb intimates that virtue is valuable for itself, and that internal goodness stands in need of no external flourishes or ornaments; and so we say "A good face needs no band."

One other, a short one: "All goes down gutter lane." This is applied to those who spend all in drunkenness and gluttony, alluding to the Latin word gutter, which signifies the throat.

Not a few of these proverbs, with their explanations, occupy whole pages of the dictionary, and where they are traced to the Greeks or the Hebrews the original characters are brought into use as incontestable evidence of their authenticity. Definitions are numerous of words which, while perfectly legitimate and of Saxon origin and of common usage in the age of Elizabeth, are omitted at the present day from lexicons in deference to the prevalence of a more delicate taste. [Pg 110]

The book contains about one thousand pages, is printed in a style little dissimilar to present unabridged dictionaries, and must have been of prodigious assistance to the author's successors. He does not deprecate the labors of his predecessors, whom he acknowledges to have saved him much trouble, but he claims to have omitted their redundancies in order to make room to supply their deficiencies to the extent of several thousand words, "in no English dictionary before extant," and that he is the first who attempted an etymological part.

This very important contribution to English literature—far more important then than any similar performance could be now—is, strange to say, nowhere mentioned in what is regarded as the best history of English literature. And just here the remark might be appropriately made that omissions of this kind in standard literary histories and cyclopædias go far to call in question the qualifications of the editors. A word may be overlooked or forgotten, but a scholar who has contributed substantially to the growth and enrichment of a great language deserves a better fate.

STELLER'S JAY.

(*Cyanocitta stelleri.*)

The jay is a jovial bird—Heigh-ho!
He chatters all day
In a frolicsome way
With the murmuring breezes that blow—Heigh-ho!

Hear him noisily call
From the redwood tree tall
To his mate in the opposite tree—Heigh-ho!
Saying, "How do you do?"
As his topknot of blue
Is raised as polite as can be—Heigh-ho!

Oh, impudent jay,
With your plumage so gay,
And your manners so jaunty and free—Heigh-ho!
How little you guessed,
When you robbed the wren's nest,
That any stray fellow would see—Heigh-ho!

THIS is an abundant and interesting cousin of the bluejay and is found along the Pacific coast from northern California northward. It is a very common resident of Oregon, is noisy, bold, and dashing. The nest of this bird is built in firs and other trees and in bushes, ten to twenty feet from the ground. It is bulky and made of large sticks and twigs, generally put together with mud, and lined with fine, dry grasses and hair. The eggs are three to five, pale green or bluish green, speckled with olive-brown, with an average size of 1.28×.85. There seems no doubt that many jays have been observed robbing nests of other birds, but thousands have been seen that were not so engaged. It has been shown that animal matter comprises only about twenty-five per cent. of the bird's diet.

[Pg 111]

FROM COL. F. KAEMPFER. A. W. MUMFORD, PUBLISHER, CHICAGO.

STELLER'S JAY. ½ Life-size.

[Pg 113]

LINEN FABRICS.

W. E. WATT, A. M.

WE HAD just taken that delightful ride down the rapids of the St. Lawrence, and experienced the thrill of mingled pleasure and fear which everyone has at the moment when the vessel is dashing at a furious rate directly towards a great rock, and we were sure that someone had made a mistake for once, and no power could save us from being dashed in pieces, when a sudden whirling current of the stream picked the ship out of the way of the rock and carried her safely through the boiling foam into a place of comparative safety.

As we stood among the seagoing shipping of the port of Montreal we could easily understand why there should be such a great city there. We took but little stock in what had been said of the great business enterprise of the early settlers of that town and how they built up the place till it became a great seaport and an important commercial center. No doubt they were able and enterprising men, but Montreal was made by nature the greatest and most important seaport of Canada by the peaceful deep river and its formidable rapids. Since no ships can sail up those rapids the boats that came from Europe and all over the earth were obliged to tie up there and discharge their cargoes.

Wherever there is a ledge of rock to stop the coming up of vessels from the sea there is always an important town to receive what those ships bring and to distribute it over the country round about.

We went aboard a ship that had just come in from France loaded with cases of wines. As the wines were being carried ashore at some of the gangways loads of something else were being brought aboard at others. This stuff was done up in sacks longer than a man and very heavy. It took several men to handle a sack. They were so careless about it that we wondered that they did not fear breaking the contents of the sacks. Then we wondered more what sort of stuff could be shipped to Europe in such sacks and in such great quantities. We inquired; and it took some little time to make the inquiry, for the men who did the work spoke something that sounded like French, but our school French did not suit them. We could find no one at hand who spoke English. We learned that the sacks contained oilcake.

Linen has been woven since records of what man has done have been kept. Some historians claim that cotton is the oldest fabric, and give instances of old records of its use in India and China. Others claim woolen goods to be the oldest, and yet others claim the honor for linen. Whoever looks into the matter extensively will be inclined to give the credit to whichever fabric he studies most, but it is likely that the figleaf will be credited with the greatest age as a fabric by most people.

The seed of flax is ground fine, either roasted or raw, and placed under heavy hydraulic pressure. This brings out the oil, which is a very important article called linseed oil. The cake is valuable for feeding cattle and the oil is used in all kinds of painting where the painted surface has to stand against the weather. Most of the flax raised in America is cultivated for the seed mainly. In Ohio three pecks of seed are sown to the acre and from six to twelve bushels are harvested. There is also a ton or two of straw to the acre, which is used at the rope-walks and paper-mills. Linen paper is peculiarly valuable.

The mummies of Egypt were swathed in linen, and much of this cloth is now in an excellent state of preservation although at least four thousand years have sped since its manufacture. While Joseph was in bondage cloth was woven which is still in existence.

There was once some question as to whether certain mummy cloth was of cotton or linen. But that has been definitely settled by the use of powerful lenses. The microscope shows that a fiber of cotton is flat and curly like a ribbon somewhat crinkled, and, like a fine ribbon, has a beautiful [Pg 114] border which differs from the rest of the fiber. A fiber of flax has a glassy luster and is not flat like cotton, but rather like an extremely fine bamboo rod, cylindrical and jointed. When these facts were learned regarding the two fibers the cloth under suspicion was placed under the glass and showed unmistakably that it was round, transparent, and jointed. So there could no longer be any doubt that the ancient coverings of the dead in Egypt were all of linen with no mixture of cotton even when cotton was well-known.

The dead could not be buried in cerements of wool because there was a strict law against it, the wool being supposed to invite worms. The remarkable preservation of the cloth is largely due to the fact that it was well smeared with wax and asphaltum. But the fibers of flax resist decay to such an extent that in the ordinary process of preparing flax for spinning it is moistened and left exposed to such an extent that if it were as easy to decay as cotton it would become rotten before the time for spinning.

The earliest records of the business of preparing this useful fabric are those of the Egyptians as cut in stone on their ancient monuments. In their hieroglyphics and illustrations they have left us a complete representation of all their arts, and the processes of gathering flax, rotting off the bark and coatings of the fibers, cleaning the material by striking with clubs or whipping it against stones, straightening the fibers, twisting them into threads, and weaving cloth, are all beautifully pictured and described.

When William the Conqueror invaded England his wife Matilda made a record of the principal

events of his life by embroidering upon a linen strip twenty inches wide and two hundred and fourteen feet long figures of the men, boats, animals, weapons, and other interesting objects, using woolen thread and depicting all with great clearness and accuracy. The Bishop of Odo assisted her husband at the battle of Hastings, and in remembrance of his kindness Matilda presented the work to the cathedral of Bayeaux. It is now preserved in the public library of that city.

Two hundred years ago there were spinning schools in Germany. The teacher sat with a wand in her hand and tapped the children near her when they lapsed into idleness, and when she noticed any of those at some distance from her not at work she rang a little bell for an attendant to enter and take the offenders out of the room for the purpose of punishment.

The old Dutch settlers in New York made what was called linsey-woolsey. This was a sort of cloth made with linen warp filled in with woolen woof. It was better than all-wool goods because it held its shape better and was stronger. This material was much worn by the early inhabitants of America, Abraham Lincoln being one of those who were well-satisfied with home-made garments of this fabric. Irving, in his "Knickerbocker's History of New York," claimed that some of the Dutchmen whose names ended in broeck were so-called because of some peculiarity pertaining to their breeches. For instance, Tenbroeck took his name from the rare distinction of his possessing and wearing at the same time ten pairs of linsey-woolsey breeches.

When people began to show their prosperity by purchasing cloth made up more beautifully than the product of the homestead loom they had to endure the remarks of others who affected to despise the man who was so extravagant as to care to dress in "store cloth." So recent is the use of this old-fashioned material that we find in one of Louisa Alcott's essays to girls the statement that "Modesty is as sweet in linsey-woolsey as in linen."

The greatest country in the world for the production of linen of the best quality is Ireland. Flax there reaches a height often exceeding two feet and the soil and climate seem to be the very best for maturing the fiber and manipulating it when gathered. In traveling through the country I saw a great deal of what at first glance seemed to be some sort of grain lying on the ground spoiling in the rain. I soon realized that this was flax and that it was left out on the ground purposely to give the pulp and bark a chance to rot away from the fiber. [Pg 115]

Dew-retting is letting the flax lie in the heavy dews of Ireland till the work is done. Soil on which flax is raised is rapidly made poor unless the richness that is taken from it in the flax is restored to it in some way. Most of this richness is in the seed and the part of the stalk that is removed in the retting. Where this gets back to the soil there is little else to be added. Sometimes the flax is retted in small pools and the water saved to put upon the ground, though the flax is more discolored by this process than where the work is done in running water. Recently steam heat and vapor have been used to soften the stalks, and then the air pump draws the pulp away from the fiber, so that what once took several weeks to do is now done in a few hours. By the old process the fiber was sometimes left stacked dry for years with constant improvement in quality.

The Irish people, who are so proud of their island, point with additional pride to what some of their linen towns have done. As we were riding past the little village of Bessbrook a clergyman took pains to point out to us the evidences of thrift. He said that town lacked three p's that are very troublesome to other towns all over the world. They were the pawnshop, the public house, and the police. The good character of the people made these entirely unnecessary for their town. But these good qualities are not universal there, for in some of the larger places intemperance is remarkably bad.

We saw the work in all its stages at Belfast. Queen Victoria gets her table linen from that city, and we saw several pieces in the loom that had the royal arms upon them. To get the finest fabric the fiber is kept moist in both spinning and weaving. Nothing can be more beautiful than the silky, transparent stuffs made there. Dry spinning is done where a coarse and heavy grade of goods is desired. American visitors in Ireland, especially the gentlemen, plan to bring home as large a quantity of linen collars, cuffs, and handkerchiefs as the customs officers will allow to pass at New York free of duty.

The finest linen goods are called lawns, and this name is a modification of the French word *linon*, which sounds much like lawn when spoken properly. The French make many fine articles from all sorts of fibers, and seem to have recovered from the blow to their industries which came on the revocation of the Edict of Nantes. Some writers claim that nearly half a million skilled workers in fabrics left that country in the years around 1688.

While the battle of Waterloo was raging near Brussels and the people of rank were so strongly affected by the thunder of the guns of all Europe there were thousands of women, young and old, in that city and within hearing of the great contest who kept right on with their work, making laces. They knew somebody would win the day, and there would be a market for all sorts of finery, and the linen laces of Belgium were of much importance to society. There are many kinds of laces made in Brussels, but the kind you most see as you pass along the streets is that being made on little cushions by women sitting before their shops and houses with one eye upon their work and the other on those who are passing, hoping to get an American to pay a large price for something that he thinks he has seen made. It is not an unheard-of thing for an American to buy of one of these attractive lace-makers lace that came from the machines of Nottingham, England, for machine-made lace is much cheaper than that made by hand.

Pillow lace was probably invented by Barbara Uttmann, in the middle of the sixteenth century. She lived in St. Annaberg, Germany, and was a woman of great natural ability. She was highly honored by the Saxons, who state with pride that when she died, at the age of sixty, she had seen sixty-four of her own children and grand-children.

Point lace of the old sort was the highest form of needle art. Holy men of old gave their lives to architecture, believing they could give glory to God by work in stone beautifully carved and set in the walls of monasteries and cathedrals; so it happened that in the thirteenth century the works of their hands reached the highest point in architecture. So beautiful is their work even now that those who have studied the subject but little know the date of a building when they see its windows. But a century later the nuns had done something of the same sort. They had produced from the fine fibers of flax marvelous designs of fleecy lace fabrics that were the wonder of Christendom. Their art was buried with them. A point lace is made to-day, but it is far from the excellence of the original work, which was a constant prayer of those who gave their lives to the making of it.

A Yankee boy of twenty, Erastus Bigelow, thought it would be a good thing to try to invent a way of making coachlace by machinery. In forty days he was producing lace at three cents a yard which had cost twenty-two cents. Then he invented a loom for ingrain carpets; this made eight yards a day instead of three that the looms of the time made. In making Brussels carpet he made his chief triumph. Seven yards a day was considered a good day's work, but he made a machine that produced twenty-five yards of much better quality in the same time. He received one hundred thousand dollars for his patents. The body of Brussels carpet is built on a foundation of linen.

THE SYCAMORE WARBLER.

BELLE P. DRURY.

THE last winter was one of unusual severity in the south, as well as elsewhere. The cold continued until rather late in the spring and caused the death of numbers of birds that came north too soon. One day the last of March a sycamore warbler flew in at the open door of a cottage in the Indian Territory. It settled familiarly on the dining-table, picking up crumbs from the cloth. It seemed cold and almost famished, having arrived too early from its winter haunts in Mexico or Guatemala. After satisfying its hunger it flew about the room, and presently, instead of flying out, it dashed its breast against a mirror and dropped to the floor, quite dead. The blow could scarcely have caused death except for the bird's exhausted condition. I picked up the wee creature to examine its pretty coat. How dainty each ash-gray feather! Some were tipped and some marked with white. The throat had a tinge of yellow; then two colors giving the extra names of "white-browed" and "yellow-throated" warbler. This bird frequents marshy lands where sycamore trees flourish. It loves to build its nest in the topmost boughs, safe from all enemies. Here the male, screened from view, sings his song, which resembles that of the indigo bunting, but with a different modulation. When the days became warm I often saw a happy pair of them, busy, I supposed, in building, but the nests were too high for inspection.

[Pg 118]

FROM COL. F. NUSSBAUMER & SON. A. W. MUMFORD, PUBLISHER, CHICAGO.

RUDDY DUCK.
½ Life-size.

[Pg 119]

THE RUDDY DUCK.

(*Erismatura rubida.*)

FEW, if any, ducks have so many popular names as this species, which is known as spine-tailed, heavy-tailed, quill-tail coot, stiff-tail, bristle-tail, sleepy-duck, sleepy coot, fool-duck, deaf-duck, shot-pouch, daub-duck, stubble-and-twist, booly-coot, blather scoot, hickory-head, greaser, paddy, noddy, paddy-whack, dinkey, hard-tack, etc., according to the locality or the particular individual who is asked to name the species. It has characteristics which justify the use of any one or all of these names. Its range is the whole of North America, which extends south to Guatemala and Colombia, Cuba and other West Indian islands. Probably no North American duck has so extensive a breeding-range as the present species, since it breeds as far south as Guatemala, perhaps even farther; as far north as Great Stone Lake, York Factory, and other localities in the sub-Arctic portions of the continent, and from the Atlantic to the Pacific. According to Professor Cook it winters from southern Illinois southward. This duck seems to be equally fond of salt, brackish, and fresh water. In the Southern states it is found in great flocks. Its flight is rapid, with a whirring sound, occasioned by the concave form of the wings. It rises from the water with considerable difficulty, being obliged to assist itself with its broad webbed feet, and for that purpose to run on the surface for several yards. From the ground, however, it can spring up at once. It swims with ease and grace, is expert at diving, and when wounded, often escapes in this way, hiding in the grass if there is any accessible. The locality usually selected for a nest is some deep, sluggish stream, lake, or pond, and the nests are always built close to the water's edge, being composed of reeds, dry rushes, and grass. The structure is often made so that it will float, similar to a grebe's nest. It is asserted that this bird prefers the abandoned nests of coots for nesting purposes to those constructed by itself. The eggs appear large for the size of the bird; they are grayish white, oval in shape, with a finely granulated surface; sizes range from 2.35 to 2.50 long by 1.70 to 1.80 broad. Audubon says that the adult female in summer presents the same characteristics as the male. He describes the male one year old as having a similar white patch on the side of the head; upper part of head and hind neck dull blackish brown; throat and sides of neck, lower part of the neck dull reddish brown waved with dusky; upper parts as in the adult but of a duller tint, lower parts of a grayish white.

WINGS.

Wings that flutter in sunny air;
Wings that dive and dip and dare;
Wings of the humming-bird flashing by;
Wings of the lark in the purple sky;
Wings of the eagle aloft, aloof;
Wings of the pigeon upon the roof;
Wings of the storm-bird, swift and free,
With wild winds sweeping across the sea—
Often and often a voice in me sings—
Oh for the freedom, the freedom of wings!

—*Mary F. Butts.*

I KNOW NOT WHY.

I lift mine eyes against the sky,
The clouds are weeping—so am I;
I lift mine eyes again on high,
The sun is smiling—so am I.
Why do I smile? Why do I weep?
I do not know, it lies so deep.
I hear the winds of autumn sigh.
They break my heart, they make me cry.
I hear the birds of lovely spring,
My hopes revive, I help them sing.
Why do I sing? Why do I cry?
It lies so deep I know not why.

—*Morris Rosenfeld.*

THE BRAVE BOAR.

ELLA F. MOSBY.

"Upstairs, downstairs,
And in my lady's chamber,"

THE French chronicles of the reign of Francis I. tell the following wonderful story of a boar hunt: "'Twas in a grand forest that stretched for miles around a castle—an old-fashioned castle of ramparts and towers, of wide halls and winding stairways.

Oliver, the twelve-year old son of the master of the castle, had set his heart on going with his father to hunt the wild boar with the gentlemen of the neighborhood. The forest was the home of a great many wild creatures, great and small. Squirrels and hares lived there; wide-antlered stags and timid does with their young fawns beside them, foxes, boars that feasted on the black acorns and chestnuts that covered the ground, and fierce gray wolves, seen chiefly in winter. The boars were the fiercest of all, even the sows would fight for their young ones, and there was one old boar who was by this time quite famous for his courage, his cunning and his great age. He was called Pique-Mort, which means death-thrust, because he had in his savage onslaughts fatally wounded so many men, horses and dogs.

"Oliver's father had ordered the great hunt against this very old warrior, who, by the way, had grown so shrewd that he could not always be roused from his secret lair even by the beaters and prickers who went ahead of the hunters. But he surely would appear to-day. The forest was ringing with horns and bugles, the neighing of horses, the baying of noble hounds, the hallooing and joyous clamor of the sportsmen.

"Oliver was well prepared for the occasion. Old Bertrand had taught him all the calls and recalls on bugle and horn, had trained him to thrust with the long boar-spear, and to use the short, thick sword kept for the last when the brute was near, and the big boar-hounds Vite-Vite, and the others, turned and obeyed his voice when it rang out in its clear, boyish treble. Most important of all, his mother had consented to his going.

"But alas, and alas! when the morning dawned fair and sweet, poor Oliver was racked with grievous pain and burning with fever! The chase swept away with shout and cry and bugle-blast, and Oliver barely heeded it or turned his head when his father called back: 'We'll bring old Pique-Mort home with us.' However, by the afternoon the fever had slackened, and the pain abated, and Oliver lay white and weak on his couch, and with piteous tears on his cheeks over the mischance that had held him fast at home. He turned his face to the wall in a burst of passionate grief as they heard, at first far off, and then nearer and nearer, the excited yelps of the dogs, then the trampling of horses, the hoarse cries of the men, and oh, the bugle!—note of 'La Mort!' which meant victory over the famous boar!

"'Oliver,' said his mother tenderly,—and then all at once came a sound at which both started, and threw their arms about each other. In the hall below, up the stairs, came a heavy creature, panting, snorting, and the furious Pique-Mort suddenly burst upon their amazed vision! Sinister and savage did he look, the little, round greedy eyes red with rage, the bristles standing up like a cuirass, the sharp and cruel tusks ready for assault, and foam and blood churned at their base into a streaked froth by his heat and anger. He was within the chamber. Oliver's arm dropped nerveless at his side, and his frightened eyes sought vainly for any weapon.

"The mother had a quicker wit, and stooping down, she seized with both arms a large Eastern rug, and threw it over the beast's head, blinding him for the while, as well as blunting the thrust [Pg 121] of the terrible tusks. As he struggled desperately in its smothering and heavy folds, the whole following—dogs, men and the master at their head, were up the stairs also, and the death-stroke was quickly given. It was the end of the veteran of so many chases in morass and thicket—Pique-Mort was dead.

"After a moment's half-stupefied stare, the lord of the castle broke forth:

"'Well, my boy, you were at the finish after all.' The dogs could not be held off their old foe, and the brave boar was furious at their baiting, and so broke away. My lady, you have the glory, and Oliver his wish.'

"Old Bertrand stroked his grizzled beard.

"'Twas a gallant brute,' he said. 'Had he been a man they would have styled him *hero*. He had a high courage and loved freedom well.'"

We have grown since those rough days into more compassion for animals, but even yet we are not altogether just to their side of the question, to the recognition of their right to life and its joys as their merciful Creator has given it to them.

GETTING ACQUAINTED WITH THE TEACHER.

JESSIE P. WHITAKER.

IN the summer of 1897, wandering in the woods of Pigeon Cove, on the outer point of Cape Ann, the prolonged call of a bird often came to my ears, which aroused my curiosity. I was not then much acquainted with birds, but was beginning to "take notice" and usually carried my field glass on my walks, and if I saw or heard a bird unfamiliar to me, tried to look him up in my books. I had with me "Our Common Birds and How to Know Them," by John B. Grant; also Florence Merriam's "Birds Through an Opera Glass"—very good books to aid beginners in identifying birds. The call of which I speak was so marked and so often repeated that I eagerly searched for the bird, but could not get a glimpse of him, nor even locate the sound accurately.

I soon perceived, however, that it was a regular chant, increasing in an even crescendo, vibrating through the woods. I remembered reading descriptions of such a call in the books, and soon found my bird to be the oven-bird, golden-crowned thrush, or teacher bird.

But why "teacher" bird?

I was constantly asking this question, for to my ears the sound always came as *ti-chee, ti-chee, ti-chee*, with accent always on the final syllable. By no exercise of the imagination could I make it sound like "teacher." Never during that summer nor during the two succeeding summers have I heard these birds at Pigeon Cove say "teacher."

The little brown walker kept out of my sight very persistently during that first summer, but in September, walking in the woods near Star Lake in the Adirondacks, I had a good, near view of two little olive-green birds walking on some low branches. Their white speckled breasts proclaimed them thrushes, while the beautiful crown of brownish orange inclosed in lines of black, plainly marked them the "golden-crowned." Often as I have seen the bird since, his golden crown has never appeared as conspicuous as it did on that September day by the mountain lake. But I had to go to Skaneateles Lake in central New York to hear him say "teacher." On a May morning in in 1899, sitting on a mountain side overlooking this beautiful sheet of water, the chant of a bird came vibrating through the woods to my ears, *teach-ah, teach-ah, teach-ah, teach-ah, teach-ah* very distinctly. [Pg 122]

Accent clearly on the first syllable this time.

Ah! Mr. Burroughs, at last I have found your little "teacher."

Will anyone tell me *why* this bird with olive back and speckled, thrush-like breast, is placed in the family *Mniotiltidæ*, or wood warblers, instead of with the *Turdidæ*, or thrushes? And why is the "water thrush" also classed with wood warblers, when his olive back and speckled breast make him seem almost a twin brother to the oven bird, while both are so unlike other members of the warbler family, and so much resemble the true thrushes? It was at Glen Haven, beside a mountain brook tumbling down into Skaneateles Lake that I had my first and only view of a water thrush.

His clear song, repeatedly ringing out above the noisy music of the brook, kept luring me onward and upward over the rough banks, till at length I saw the little walker peering about among the stones for his food. Another bird closely resembling the thrushes and bearing the name, yet placed in *another family*, is the brown thrasher, or thrush. I look in my book for his classification. Family *Troglodytidæ*! I can scarcely believe my eyes! Can any one give me any earthly reason *why* the ornithologists in their wisdom have seen fit to place this bird, with his reddish brown back, speckled breast and beautiful thrush-like song, in the same family with catbirds and wrens? Truly the mysteries of ornithology are past my comprehension.

To return to our "teacher." My acquaintance with him has not yet advanced to the stage of finding him "at home" in his dwelling. As Neltje Blanchan says, "it is only by a happy accident" that one might "discover the little ball of earth raised above the ground, but concealed by leaves and twigs and resembling a Dutch oven, which gives the bird its name of oven-bird." Last summer at Pigeon Cove the warning cries of a mother-bird led me to suspect a nest, but I failed to find it. The brood had evidently left their home, for a sudden loud outcry from the mother-bird startled me as the little thrushes scurried out of the path from almost under my feet, while Madame Thrush fluttered about with a pretense of a broken wing to distract my attention. Her "trailing" was quite effective, for by the time I had turned my attention from her performance to the babies, they were quite out of sight.

FROM COL. F. NUSSBAUMER & SON. A. W. MUMFORD, PUBLISHER, CHICAGO.

MUSKRAT.
⅓ Life-size.

THE MUSKRAT.

(*Fiber Zibethicus.*)

THAT part of North America which is included between the thirtieth and sixtieth parallels of north latitude is the home of this species of muskrat, which is the most numerous of the family. It is most plentiful in Alaska and Canada, which are so rich in lakes and rivers. It is described as a large water mole, with a long tail, broad hind paws, a blunt snout, and short, hair-covered ears, which may be closed to exclude water. The fur is close, smooth, soft, and lustrous, the woolly under fur being extremely delicate, fine, and short; the outer coat has a strong luster, and is double the length of the former. Adult males attain a total length of twenty-three inches, the tail occupying about half of this. Grassy banks of large lakes or wide, slowly flowing streams and swamps are its favorite haunts, though it is frequently seen about large ponds, grown with reeds and aquatic plants, where it erects a permanent home and dwells either in small colonies or communities of considerable numbers. The mode of life of a muskrat is in many respects like that of the beaver, for which reason the Indians call the two animals brothers, and affirm that the beaver is the older and more intelligent of the two. The burrows of the muskrat consist of plain underground chambers, with several tunnels, all terminating under water, or of strongholds above ground. These are of a round or dome shape, stand on a heap of mud, and rise above the surface of the water. They are lined with reeds, reed grass, and sedge, cemented with mud; the interior of the "lodge" contains a single chamber from sixteen to twenty-four inches in diameter. A tunnel which opens beneath the water leads to it. In winter it lines its chambers softly with water lilies, leaves, grasses, and reeds, providing for ventilation by loosely covering the center of the dome-shaped roof with plants, which admit a sufficient quantity of fresh air and let the vitiated air out. As long as the pond or swamp does not freeze to the very bottom it is said to lead a highly comfortable existence in its warm habitation, which is often protected by a covering of snow. Some observers say that the food of the muskrat consists almost wholly of aquatic plants, but Audubon saw captive muskrats which were very fond of mussels. They are very lively, playful creatures when in the water. On a calm night many of them may be seen in a mill-pond or some other sequestered pool, "disporting themselves, crossing and recrossing in every direction, leaving long, glittering ripples in their wake as they swim, while others stand for a few moments on little tufts of grass, stones, or logs, from which they can reach their food floating on the water; others sit on the banks of the pond and then plunge one after the other into water like frogs."

[Pg 125]

From three to six young are born in a burrow. If caught young they are easily tamed, and are of an equable and gentle disposition. Although some people dislike the fur on account of the odor of musk which clings to it for a long time, it is often used for trimming clothing or in the manufacture of collars and cuffs, especially in America and China. The best pelts are deprived of the long outer fur, dyed a dark brown color and used as a trimming which resembles sealskin. The animal is caught in traps baited with apples. The Indians know exactly which "lodges" are inhabited; they only eat the flesh, as the odor does not seem to be disagreeable to them.

"NOT A SPARROW FALLETH."

GRANVILLE OSBORNE.

NO traveler in Palestine, the land of sacred memories, will need an introduction to the sparrows. They are as tame, troublesome, vivacious, and impertinent, as their numerous progeny across the seas. They chirp and twitter, asserting their rights of possession in places where they are not welcome, industriously building their nests in every available nook and corner, and defending them fearlessly against every feathered encroacher. They stop up the stove-pipes and water-gutters with their rubbish, build nests in the windows, and under the eaves of the roofs, and have not the least reverence for any place or thing. You see them perching on the loftiest spires of the Holy City, flitting in and out of minaret and tower, wherever an opening invites them to a place of security and shelter for rearing their young. They nest in great numbers in the bushes on the banks of the River Jordan, and band together in defending their nests against the rooks and crows that infest the cane-brakes north of Lake Hulah. They live [Pg 126] on terms of great amity and friendliness with the beautiful "wŭr-war" or bee-eater, which burrows in the soft earth-banks near the out-go of the Jordan, from the Lake of Galilee. The nests of sparrow and "wŭr-war" are so numerous and easy to reach that one might easily gather a peck of their tiny eggs, and unfledged nestlings, with mother-bird and all, could they be of use. But the Mosaic Law has a precept especially intended to protect the "birds of the air." In one portion of the inspired text he writes: "If a bird's nest chances to be before thee in the way, in any tree, or on the ground, whether they be young ones or eggs, and the dam sitting upon the young, or upon the eggs, thou shalt not molest the dam with the young, that it may be well with thee, and that thou mayest prolong thy days." You will notice how clear is the precept by which we are forbidden to molest these nests. We *must* not, the biblical law says, and to the obedient is the promised blessing of prosperity and long life, with contrary calamities clearly implied to those who transgress. In its meaning this precept includes all birds, and was intended, like many other prohibitory commands, to cultivate sentiments of humanity and habits of gentleness. And so it is that in Bible lands the sparrow is more numerous, and less liable to destruction, than in our own streets, fields and parks, where every bird of this species is an object of contempt, and often lured to its death, with countless thousands of victims, unsuspecting and easily taken like himself.

They flit over the "field of the Shepherds," and build nests in the "cave of the Nativity." They cover the fields of wild oats by thousands, and chirp and twitter on the hillside where "Ruth went down to glean." A colony will be found in every old tree on the Mount of Olives, and even in the "garden of Gethsemane," they nest in perfect security above the heads of the black-robed attendants, who are on terms of great familiarity with them. The first reference to the sparrow in the Bible is an allusion to this habit of the fearless bird in building its nest in the most sacred places. It recalls the sad and pathetic period in David's life, when he fled from Jerusalem pursued by the army of his son Absalom, "who sought his throne and life." Afar from Jerusalem, and the temple courts, where he led the people in their devotions, his heart longed for the peace and holy calm, to be found only within their sacred enclosures, and he says: "A day in thy courts is better than a thousand." "My soul longeth for thy courts." "The sparrow hath found a nest for herself where she may lay her young, even thine altars." Thus he, the great King David, wished for the rest and peace enjoyed by the humble birds which he had observed so often, ministering to their young about the holy altar itself. Again, when Absalom falls in battle, and word is brought David, in the sadness of his lament, "O, Absalom, my son, my son!" He compares himself to the tiny, despised bird, saying: "I watch and am as a sparrow, alone upon the housetop." He had, no doubt, often seen the sparrow, when one had lost its mate, sitting on the housetop alone, and lamenting hour after hour its sad bereavement. So again the *sparrow* is honored above its fellows, and its affectionate devotion immortalized. But a "Greater than David," has drawn from this humblest one of the feathered tribe, a lesson of trust which has touched tenderly, in all ages since, the heart of every seeker after truth. "Not a sparrow falleth" is a sentence that comes very close to the human heart. "Not a sparrow falleth to the ground without your Father. Not one of them is forgotten of Him. Fear not, therefore. *Ye* are of more value than many sparrows."

"Not a sparrow falleth,"
  How sweet the words and true
"Without your Father's notice,"
  Who careth still for you;
O tiny bird, so trustful,
  Teach me such trust as thine,
That so the wondrous lesson
  I may possess as mine.

THE TREATING OF WHITEY.

BERTHA SEAVEY SAUNIER.

HIS coat was thin—so thin that his skin showed through in patches. And the skin was thin—so thin that the bones almost pricked through in a mute appeal to the public.

He walked the streets until his four little feet dragged with weariness and he often sat down upon his haunches to rest.

When he stopped people noticed him and many turned as they went past, watching him—he was so pitiable a sight.

"Mangy dog," somebody said, but he was more than that. He was lost and he was starving. He was so needy that he had forsaken his alley haunts and had come up to the boulevards where was greater prosperity, sunshine, cleanliness, and perhaps love toward man and beast.

In his walks he chanced near the lake and paced the viaduct that leads out upon the pier. He even went on the pier and looked down into the dark water as many despairing men and women have looked. It seemed easy to fall in, but he turned back and walked away. He had learned that if he kept moving the police and guards did not poke at him with their clubs.

In crossing Michigan avenue he had to watch his chances, for the rubber tires of the carriages made no warning sound on the asphalt. And then he came to Wabash—the noise of the elevated and surface trains, and of the trucks and drays was so confusing that he had need of more care than ever. At length he reached State street and sat down to rest.

Lizzie and Mattie were there before him. They, too, were acquainted with alley ways, though they were not personally acquainted with Whitey. Evidently they had found nourishment there that Whitey had missed, for Lizzie was decidedly fat and Mattie was fairly presentable.

Lizzie wore a faded worsted skirt poorly joined to a cotton shirt-waist with a green silk belt. Her short, fair hair was curled and tied with a green ribbon and her airy straw hat was bright with flowers. Other little girls of better fortunes had worn the things and had extracted their freshness and much of their beauty. But Lizzie felt quite dressed up beside her friend who wore only a simple calico gown and plain straw hat. She led Mattie from window to window, pointing out precious articles and rare jewels, quite as if she had purse connections with them.

The girls glanced at Whitey as he passed.

"Poor little dog!" Mattie said.

"Yes," returned Lizzie, "I should think the policeman would shoot him."

"Why?" queried Mattie in surprise.

"Oh, he's so bad off."

Whitey was moving slowly. He was rested and he thought to go on.

Somebody in a confectionery store noticed the girls.

"Mamma, I do believe that's my old belt that I threw in the rags one day, for there's the cross I made on it at school with ink."

"Nonsense," said the lady.

"And, oh, mamma, look at the poor dog!"

Of all the people who were passing four at least were interested in Whitey. Alley and avenue—but the alley folks first forgot him. They went back to their diamonds.

Whitey's troubles had made him meek and humble. He did not at this time expect anything and he was out of hopes and plans. He did not observe any whisperings at the portals of the big store nor see the wonder on the face of the porter. What he did see presently was a round pasteboard box that the porter set down under his very nose. It was torn a little at one side and what was in the box began to melt and run down to the pavement.

Whitey moved his ears a little at the sight. It actually looked eatable. He doubted if it was, but he put out his tongue and touched it.

When Lizzie and Mattie turned again they stood amazed. People were looking amused as they passed and many a heart was made glad and light. One could read it in their faces. An unusual kindness is a love-flash that makes life sweeter to all who get it in their eyes. [Pg 128]

"I'll bet there's a quart there," said Mattie.

"No, there ain't nuther. I guess a sick dog couldn't eat a hull quart of ice cream—it's jest a pint."

"Look how he licks it up. My! I'll bet it's good!"

"He's a gulpin' to beat the band," returned Lizzie.

"He never hed it before, *I'll* bet."

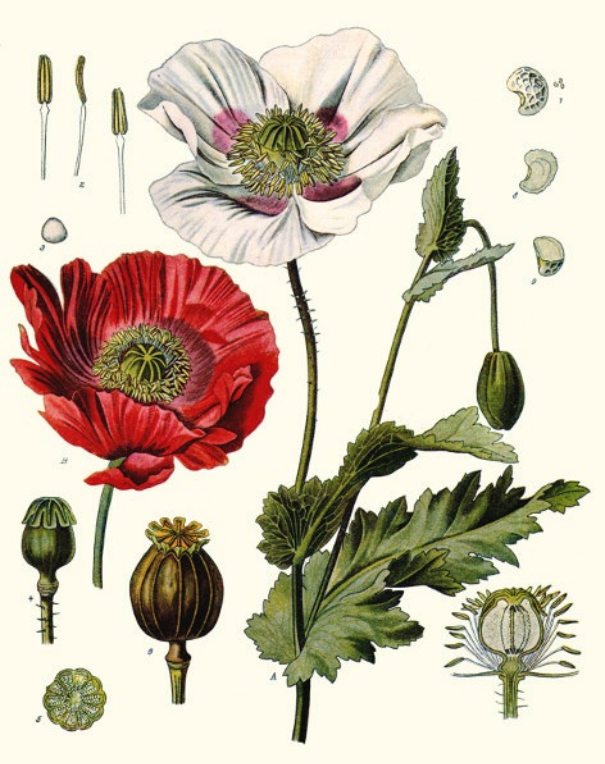
"Or you nuther, Mattie Black."

"You can't talk much," answered Mattie.

By this time Whitey had cleared up his spread pretty thoroughly. Not a drop lingered in the circle at the bottom of the box and the pavement was dry.

Whitey walked over to the side of the building and lay down in the sun. He put his nose between his paws. His body was as thin and forlorn as ever, but away at the tip of his pink, shabby tail was a little, short-lived wag. It was the language of gratitude and hope. It had been absent for days—ever since he was lost. The little girl who had caused it was riding home in her carriage, but the alley folks took note of it and they were appeased. They no longer envied the dog.

As for Whitey, the rich cream worked its work. As he lay in the sun he felt new hopes and plans revive. Of a sudden he remembered a bakery where he had chanced to get some plate scrapings. He would go again. And go he did. His body and his hopes were alike nourished with his recent treat. Whitey actually walked over to the bakery alley with a decided and prolonged wag to his tail. The ice cream had placed it there. It really made the turning point for better times for Whitey.



FROM KŒHLER'S MEDICINAL-PFLANZEN.

POPPY.

CHICAGO: A. W. MUMFORD, PUBLISHER.

DESCRIPTION OF PLATE.—*A*, flowering plant, white variety; *B*, flower of red variety; 1 pistil and stamens; 2, stamen; 3, pollen grains; 4 and 5, pistil; 6, ripe capsule; 7, 8, 9, seed.

THE POPPY.

(*Papaver somniferum L.*)

DR. ALBERT SCHNEIDER,
Northwestern University School of Pharmacy.

Sleep hath forsook and given me o'er
To death's benumbing opium as my only cure.
—*Milton, S. A. l. 630.*

THE opium-yielding plant or poppy is an herb about three feet in height; stem of a pale green color covered with a bloom. Branches are spreading, with large, simple, lobed or incised leaves. The flowers are solitary, few in number, quite large and showy. The four large petals are white or a pale pink color in the wild-growing plants. The fruit is a large capsule, one to three inches in diameter, of a depressed globular form. The seeds are small and very numerous, filling the compartments of the capsule. In spite of the general attractiveness of the plant, the size of the flowers and the delicate coloring of its petals, it is not a favorite at close range because of a heavy, nauseating odor which emanates from all parts of the plant, the flowers in particular. The petals furthermore have only a very temporary existence, dropping off at the slightest touch.

The wild ancestor of our familiar garden poppy is supposed to be a native of Corsica, Cyprus, and the Peloponnesian islands. At the present time it is extensively cultivated everywhere, both as an ornamental plant and for its seeds, pods, and yield of opium. It has proven a great nuisance as a weed in the grain fields of England, India, and other countries—something like mustard in the oat fields of the central states. There are a number of forms or varieties of the cultivated poppy. The [Pg 131] red poppy, corn poppy, or rose poppy (*Papaver Rhoeas*) is very abundant in southern and central Europe and in western Asia. It has deep red or scarlet petals and is a very showy plant. The long headed poppy (*P. dubium*) has smaller flowers of a lighter red color and elongated capsules, hence the name. The Oriental poppy (*P. orientale*) has very large, deep red flowers on a tall flower-stalk.

Various plants belonging to other genera of the poppy-family (*Papaveraceæ*) are designated as poppy. The California poppy (*Eschscholzia Californica*) is a very common garden plant. It has showy yellow flowers and much divided leaves. Horn poppy (*Glaucium luteum*) is a rather small seaside plant, with long curved pods and solitary yellow flowers. The Mexican prickly poppy (*Argemone Mexicana*) is widely distributed. The pods and leaves are prickly, flowers yellow or white; the seeds yield an oil which is used as a cathartic. Spatling or frothy poppy (*Silene inflata*) is so-called because when punctured by insects or otherwise it emits a spittle-like froth. Tree poppy (*Dendromecon rigidum*) is a shrub six to eight feet high, with large, bright yellow flowers. Welsh poppy (*Mecanopsis cambrica*), a plant found in the wooded and rocky parts of western Europe, has sulphur-yellow flowers and is cultivated for ornament.

The use and cultivation of the poppy dates from very remote times. The plant was well known in the time of the eminent Greek poet Homer, who speaks of the poppy juice as a dispeller of sorrows (Odyssey, IV. l. 220). According to Plinius the word poppy (*Papaver*) is derived from *papa*, meaning pap, the standard food of infants, because poppy juice was added to it for the purpose of inducing sleep. The ending *ver* is from *verum*, meaning true; that is, this food was the true sleep-producing substance. Opium, the inspissated juice of the poppy pods, was apparently not known in the time of Hippocrates, only the freshly expressed juice being used. It is through Diocles Karystius (350 B. C.) that we obtain the first detailed information regarding the use of opium. Nicandros (150 B. C.) refers to the dangerous effects produced by this drug. Scribonius Largus, Dioscorides, Celsus, and Plinius gave us the first reports regarding the origin, production, and adulteration of opium. Plinius mentions the method of incising the capsules. The Arabians are said to have introduced opium into India. It appeared in Europe during the middle ages, but was apparently in little demand. It was much more favorably received in the Orient. In 1500 it constituted one of the most important export articles of Calcutta. India supplied China with large quantities of opium, at first only for medicinal purposes. It is said that the Chinese acquired the habit of smoking opium about the middle of the seventeenth century, and since then it has ever been the favorite manner of consuming it.

The poppy is cultivated in temperate and tropical countries. The opium yield of plants grown in temperate climates is, however, much less than that of the subtropical and tropical countries, though the quality is about the same. There are large poppy plantations in India, China, Asia Minor, Persia, and Turkey. As already indicated, the white-flowered variety is quite generally cultivated because it yields the most opium.

The plants are grown from seed, and it is customary, in tropical countries, to sow several crops each season to insure against failure and that collecting may be less interrupted. Plants of the spring sowing flower in July. The pods do not all mature at the same time; this, coupled with the sowing of several crops at intervals of four to six months, makes the work of collecting almost continuous. Before the pods are fully developed they are incised horizontally or vertically with a knife. Generally a special knife with two and three parallel blades is used. The blades of the knife are repeatedly moistened with saliva to prevent the poppy juice from adhering to them. The [Pg 132] incisions must not extend through the walls of the capsule, as some of the juice would escape into

the interior and be lost. As soon as the incisions are made a milky sap exudes, which gradually thickens, due to the evaporation of moisture, and becomes darker in color. The following day the sticky, now dark-brown juice, is scraped off and smeared on a poppy leaf held in the left hand; more and more juice is added until a goodly sized lump is collected. These sticky, ill-smelling masses of opium are now placed in a shaded place to dry. The entire process of incising and collecting as carried on by the Orientals is exceedingly uncleanly. To the nasty habit of moistening the knife-blade with saliva is supplemented the filth of unwashed hands and the sand and dirt of the poppy leaves, which are added from time to time to form a new support for the juice as it is removed from the knife. In scraping the gum considerable epidermal tissue is also included. Each lump of gum opium contains therefore a mixture of spittle, the filth of dirty hands, poppy leaves, sand, and dust. In addition to that many collectors adulterate the gum opium with a great variety of substances. Dioscorides mentions the fact that even in those remote times adulteration of opium was practiced, such substances as lard, syrup, juice of lactuca, and glaucium being added. Modern collectors and dealers adulterate opium with sand, pebbles, clay, lead, flour, starch, licorice, chicory, gum arabic and other gums, figs, pounded poppy capsules, an excessive quantity of poppy leaves and other leaves, etc. After collecting and drying the peasants carry the gum opium to the market-places, where they are met by the buyers and merchants, who inspect the wares and fix a price very advantageous to themselves.

The present trade in opium is something enormous, especially in India, China, and Asia Minor. To the credit of the Chinese and the discredit of the English it must be said that in 1793 the former strenuously objected to the introduction of opium traffic by the latter. This opposition by the Chinese government culminated in the "Opium War," which led to the treaty of Nanking in 1842, giving the English the authority to introduce opium into China as a staple article of commerce. The reason that Chinese officials objected to the introduction of opium was because they recognized the fact that the inhabitants very readily acquired the habit of smoking opium. In spite of the most severe government edicts the habit spread very rapidly after the treaty referred to.

Gum opium contains active principles (alkaloids), to which it owes its peculiar stimulating, soporific, and pain-relieving powers. Of these alkaloids, of which there are about nineteen, morphine and codeine are undoubtedly the most important. The properties of gum opium represent therefore the collective properties of all of the alkaloids and are similar to the properties of the predominating alkaloids just mentioned.

Physicians generally agree that opium is the most important of medicines. Properly used it is certainly a great boon to mankind, for which there is no substitute, but, like all great blessings, it has its abuses. It is the most effective remedy for the relief of pains and spasms of all kinds. It will produce calm and sleep where everything else has failed. It finds a use in all diseases and ailments accompanied by severe pain, in delirium, rheumatic and neuralgic troubles, in dysentery, etc. It may be applied externally to abraded surfaces, to ulcers and inflamed tissues for the relief of pain. The value of opium does not lie so much in its direct curative powers as in its sedative and quieting effects upon diseased organs, which tends to hasten or bring about the healing or recuperating process. In some diseases the physician refrains from giving opium, as in fully developed pneumonia, since the quieting effect would diminish the efforts on the part of the patient to get rid of the inflammatory products accumulating in the air vesicles and finer bronchial tubes. In fact, the soothing effect is too often mistaken for a curative effect and the patient is neglected. The Roman habit of feeding children pap mixed with poppy juice was a pernicious one. Many modern mothers give their sick and crying infants "soothing syrups," most, if not all, of which contain opium in some form, as tincture of opium and paregoric. Too often the poor, overworked mother, who cannot afford to consult a physician, will purchase a bottle of "soothing syrup" or "cough remedy" for her child because she knows it produces a quieting effect, which is mistaken for a cure, when in reality the incipient symptoms are only masked. Only a reliable physician should be permitted to prescribe opium in any form.

[Pg 133]

The harm done through the use of opium by the ignorant, abetted by the "inventors," manufacturers and sellers of the "soothing syrups" and "cough remedies," is insignificant as compared with the harm resulting from the opium habit, which is acquired in various ways. For instance, a patient learns that the opium given him relieves pain and produces a feeling of well-being; hence, even after recovering, he returns to the use of the solace of his sickness when he suffers mental or physical pain, and in time the habit is acquired. The scholar knowing its properties makes use of it to deaden pain and to dispel imaginary or real mental troubles. Any and all classes may acquire the opium habit, but the majority of opium-eaters are from the lower and middle classes. As with other vices, the predisposing cause is a lack of moral stamina. Women are more addicted to the habit than men. After the habit is once established it is practically impossible to break away from it.

Under the influence of the narcotic the opium-eater becomes mentally active, hilarious, and even brilliant. Thoughts flow easily and freely. In time the patient loses all sense of moral obligation; he boasts and lies apparently without the least trouble of conscience. As soon as the effects of the drug pass away he becomes gloomy, morose, despondent, and he will resort to any measure to obtain a fresh supply. The dose of the drug must be increased continually, until finally quantities are taken which would prove fatal to several persons not addicted to its use.

Opium victims take the narcotic in various ways. The Chinese and Orientals in general prefer to smoke the crude opium in special pipes. Europeans and Americans usually take it internally in the form of the tincture or laudanum, paregoric or the powder of the sulphate of morphine or

codeine. Frequently a solution of morphine is injected under the skin by means of a hypodermic syringe. No matter how it is taken the effects are about the same.

The treatment of the opium habit consists principally in the gradual withdrawal of the supply of the drug and strengthening the weakened system by proper exercise and diet, but, as indicated, the habit, if once fully established, is very difficult to cure. While, as stated, most of the opium-eaters belong to the poorer and middle classes, there are a number from the wealthy idle classes and not a few from professional classes who are slaves to the habit. The brilliant and gifted De Quincey was addicted to this habit and recorded his experience in his "Confessions of an Opium-Eater."

The capsules and seeds of the opium plant are also used. The capsules are collected at maturity, but while yet green, usually during the month of July. They are broken and dried in a shaded, well-ventilated place, and finally in a moderately warm place; they are then broken in still smaller pieces, the seeds shaken out and the capsule fragments placed in well-sealed glass or tin receivers. The seeds, which are known as maw seeds, are collected at maturity and placed in wooden boxes. The seeds yield an oil which is used much like sweet oil; artists also use it in mixing colors.

THE PRIMROSE.

PROF. WILLIAM KERR HIGLEY,
Secretary of The Chicago Academy of Sciences.

What can the blessed spring restore
  More gladdening than your charms?
Bringing the memory once more
  Of lovely fields and farms!

Of thickets, breezes, birds, and flowers
  Of life's unfolding prime;
Of thoughts as cloudless as the hours;
  Of souls without a crime.

—*Mary Howitt.*

AMONG the many beautiful blossoms to be found in the field, the forest, or the garden probably none have served to inspire the poet more than the primrose and its near relative, the English cowslip. Someone has said that "no flowers typify the beautiful more strongly than those of the primrose which, though showy, are delicate and seem inclined to retire to the shade of the plant's leaves."

These plants belong to the Primrose family (*Primulaceæ*) which includes twenty-eight genera and over three-hundred and fifty species. Nearly all are natives of the Northern hemisphere, some being found as far north as Greenland (the Greenland primrose). Some of the species are Alpine, and a few are found in the southern portions of South America and Africa. One of the most interesting wild species of this family is the shooting star or American cowslip, which grows abundantly on the prairies of the Eastern portion of the United States. Dr. Erasmus Darwin tells us that "the uncommon beauty of this flower occasioned Linnæus to give it the name *Dodecatheon*, signifiying the twelve heathen gods."

The family as a whole seems to have no economic value of importance and are of use to man simply to beautify his surroundings. Many of the species are very interesting to the scientific observer, for the structure of their flowers is such that they are peculiarly adapted for cross-fertilization. This character has made it possible for the floriculturist to produce many of the beautiful forms that are found in cultivation. The generic name of the primrose is *Primula* from the diminutive of the Latin word *Primus*, meaning first. The blossoming of the plants in the early spring led Linnæus to give them this name. It is said that their name was also applied, during the middle ages, to the European daisy (*Bellis perennis*).

This genus, *Primula*, is the type of the family and contains about one hundred and fifty species from which have been produced, both in nature and under cultivation, many hybrid forms, one investigator claiming to have found more than twenty in the Alps alone. The species are found distributed throughout the cooler regions of Europe and Asia and a few are natives of North America.

The common or English primrose (*Primula vulgaris*), by careful culture, produces a wonderful number of variations. The wild forms produce only yellow single flowers while from those under cultivation are developed numerous varieties, both single and double, which vary greatly in color —red, pink, white, purple, and many shades of each.

The cowslip primrose (*Primula veris*) is also a native of England. The flowers are yellow and nodding, and the plants emit a strong odor of anise.

The Himalaya Mountains are probably more rich in beautiful and interesting species and varieties than any other locality. Here is found the most beautiful of all the primroses, the delicate rose-colored form (*Primula rosea.*)

This species of primrose should not be confounded with the evening primrose, of which there are about twenty species, all American. The yellow flowers of the latter appear in the summer, opening at night, the thin and delicate petals withering the next day.

CHICAGO:
A. W. MUMFORD,
PUBLISHER.

PRIMROSE.
6/7 Life-size.

THE EGRET'S YOUNG.

ELIZA WOODWORTH.

Beside a quiet stream the egrets build,
And, friendly, crowd their nests of wattled sticks
In clustered trees, then patient keep unchilled
Their sea-blue eggs, and hear the first faint pricks

Against the shells; and soon each wistful brood
Beneath the mother's breast will doze or wake;
And soon each parent pair will wing with food
From waded shallows brown, and marsh and brake.

Between the flights they rest and tranquil look
Far down the glade from boughs or dusky nests,
And see the deer that wend beside the brook,
And partridge coveys, with their freckled breasts.

Oh, lives like sunny hours! Oh, peaceful glade,
Where glow the early flowers! What hunters steal
Along the stream, with rifles softly laid
At hand, while slips the skiff on noiseless keel?

The shots half-blind the air with curling haze,
And from his lookout perch the watcher falls;
The nested mother lifts her head to gaze,
And wounded, flutters down with hollow calls.

And, bleeding prone, perchance she mourns her young,
And hears, as far away, their startled cries,
And longs for pleasant haunts she lived among,
While in an anguished dream she slowly dies.

From off the gentle head they cut the crest,
They loose the wedding [1] plumes which veil the wings
And rend the beauty-tuft from out the breast—
Then each a mangled body downward flings.

The dimmed white forms strew all the blossomed ground,
While clustered trees but bear the wailing young;
Their plaintive little voices shrilling, sound
From swiftly chilling nests, once gayly swung.

Unfathered broods! In vain with hunger-calls
They grieve through woeful hours the helpless air;
Unmothered nests! How cold the darkness falls
On harmless, tender heads, uncovered there.

They live the painful night and feebly stir
At dawn; with famine shine the golden eyes;
They gape their mouths and seem to hear the whir
Of mother-wings speed past through empty skies.

And no more piteous sight the sun may see
Than where those parent birds lie dead; nor wakes
A sadder tone than the forsaken plea
Of famished broods that o'er their silence breaks.

Fainter and fainter sink the whispered cries,
As wanes the life and creeps the deadly chill,
Till wings are numb, and closed the hungry eyes,
While droop the downy heads, *and all is still*.

[1] The wedding plumes, which are esteemed the most valuable of all, are worn by the birds only during brooding time. Hence the special reason for hunting egrets at that season.

SPONGES.

A SPONGE when brought to the surface by the diver is a fleshy-looking substance covered with a firm skin whose openings appear and disappear at intervals. When the diver cuts it the interior looks like raw meat with numerous canals and cavities. The first thing they do is to remove the flesh, and this must be done at once, since otherwise putrefaction would set in, which would destroy the elasticity. This leaves merely the skeleton of the animal which has to be further cleansed before it is ready for the market.

The skeleton is nearly related in structure to silk, and this helped to settle the ancient dispute as to whether sponges were animal or vegetable. Their stationary life gave reason to the belief in their vegetable nature, while they multiply, like plants, by overgrowth and budding. They puzzled scientists for centuries, and one authority regarded them as worms' nests. In reality the sponge is a colony of little animals called polyps which occupy a sort of apartment house together, rearing families just as other animals do.

The surface of a sponge is covered with little holes, as you have observed, that are larger at the top than at the bottom, while the whole mass contains a system of channels. When the animal is alive water is kept flowing constantly through these channels by means of minute, hair-like appendages, which the little polyps agitate. The water thus drawn in brings with it the food.

The finest sponges come from Tripoli, and along the shores of the Mediterranean, the possessions of Turkey being the best field, the Spanish, French, and Italian coasts being, strange to say, devoid of them. The coarser kinds of sponges are found in the West Indies and off the Florida coast, none of the finest grade existing in American waters. The average value of Florida sponges is 80 cents a pound, while those from the Turkey coast are often worth as much as $50 a pound. There are many sponge beds along the coast of Florida, at well-protected places fenced in with natural fortifications and dams. They are carefully watched until reaching maturity, and are finer than those living wild in the sea.

After three years the sponges are ready for harvest. The choicest then, the full-grown ones, are pulled up, the others being left to reproduce until of larger size. Every year the value of a sponge farm increases, and enormous crops are yielded. It is easy to gather sponges here, for the water is clear and they are easily raised with a pole or tongs.

It is not so in Tripoli, however. There the work has to be done by divers, and as the fisheries have been so well worked, it is necessary for the divers to go deeper and deeper for them every year. Only the most desperate men are willing to undertake the task, notwithstanding they are paid ten times the usual wage paid to men in that country. Out of 600 divers employed, 150 to 200 die each season, either from asphyxiation, paralysis, or cuts from their knives. The diver in Tripoli seldom has diving-bells or suits such as are used in Europe and America. He goes down into the ocean, sometimes to the depth of 100 fathoms, taking with him a flat piece of stone of a triangular shape, with a hole drilled through one of its corners. A cord from the boat is attached to this stone and he uses it to guide him. Upon reaching the growing sponges he tears them off the rocks or cuts them with a sharp knife, places them under his arms, and then pulls at the rope, which gives the signal to the men in the boat to haul him up. The work is said to be done not so well by means of a diving-bell, the utmost care being necessary that the delicate organisms should not be torn. Sponges obtained by dragging are torn and sell for low prices. Those secured at such risk are the best and are used by surgeons in delicate operations. They do not grow as rapidly in the Mediterranean as in our water, an ordinary bath sponge, measuring about a foot in diameter, being ten years old.—*E. K. M.*

COMMON MINERALS AND VALUABLE ORES.

IV.—COPPER AND LEAD ORES.

THEO. F. BROOKINS, B. S.

THE first metal that was employed by man is copper. It is probable that prehistoric man made use of the metal in its native condition only, as no knowledge of metallurgy would be essential in preparing it for use from that condition. Copper implements have been found in the lake dwellings of Switzerland, and bronze, an alloy of copper and tin, is mentioned in the writings of Homeric times.

Cuprum, the origin of our English word copper, is derived from cyprium, which refers to the occurrence of the metal in especial abundance on the island of Cyprus, the main source of the metal during the epochs of early alchemy. In the Hebrew scriptures copper is termed Nehósheth (from nahásh, meaning to glisten) which is translated by Χαλκος and by Aes in the Vulgate. Later *Aes cyprium* was the special designation, which was finally shortened to *cyprium*, as indicated above. Thus we see that our present term represents in no sense the characteristic of the metal at first so noticeable.

Native copper scarcely needs a description. Its occurrence in the free state provides an interesting subject of conjecture. Briefly stated, the question of origin is whether the copper was set free by the decomposition of silicates or was in the form of a sulphide in the rock. The chief region of occurrence of native copper is the Lake Superior district. Here are found occasionally large masses of copper, which, strange as it seems, are practically valueless if too heavy to transport, since they cannot be divided without great difficulty. Of the world's total output of copper in 1897, 399,250 long tons [2], a single mine of the Lake Superior region, the famous Calumet and Hecla, produced 40,350 long tons.

Montana is now the first copper producing state in the United States. The state contains the largest mining camp in the world, located in the town of Butte. In 1897 the mines of Montana produced 102,800 long tons of copper. The ore chalcocite, sometimes called copper glance, has a metallic luster, often tarnished green or blue. It is commonly lead-gray and rather soft. Its streak is a blackish lead-gray, Chalcopyrite, a sulphide of copper and iron combined, has already been mentioned under "Iron Minerals" (November issue of Birds and All Nature.) When copper is much in predominance the color of the ore is golden yellow. The streak is dark green. The mineral is harder than chalcocite, but less hard than pyrite, being easily scratched with a knife. Both chalcocite and chalcopyrite frequently occur in silver-bearing rocks.

A method of extracting copper from its ores, equally useful with regard to any of the ores, is known as the English process. The details of this are too elaborate and technical for consideration here. In brief, the process consists of six distinct parts—roasting the mixed ores, fusion of the roasted ores to produce coarse metal, roasting the coarse metal, fusion of the wasted coarse metal to produce what is known as white metal, roasting of the white metal to produce blister copper, i. e., copper filled with cavities, and finally the refining and toughening of the blister copper until marketable copper is yielded. The English method of copper smelting is classed among the so-called "dry" processes, in contradistinction from "wet" processes, or methods involving the use of solutions.

It may be of interest to know the importance of copper in that curious problem of ancient alchemy, the transmutation of metals. Metallic iron placed in certain solutions of unknown composition possessed the power to precipitate metallic copper. With all the wondrous faith in the problems of alchemy the phenomenon was interpreted as one of transmutation and the statement made that iron had been transformed into copper. [Pg 140]

Within the last few years a remarkable increase in the output of the copper mines of the world has been recorded. This is due mainly to the demand for copper on account of the great strides in electrical achievements during recent years. Yet there is no doubt that the world's supply is wholly adequate to meet demands on it for a long period to come. The high conductivity of copper renders it especially useful for conveying electric currents and its most important use at present is in electricity. However, it is also a common convenience in many arts. Its alloys are numerous, bronze and brass being the most common. Bronze is an alloy of copper and tin and brass of copper and zinc. The manufacturer of bronze bells finds opportunity for an interesting study of the alloy used in his product. The varying tones of bells are due to the different percentages of copper and tin used in the bell metal.

In locality and mode of occurrence lead is somewhat closely allied with copper, and the ores of lead and zinc are almost invariably associated. Hence a description of lead naturally follows that of copper and may also be understood as typical, so far as occurrence and mining methods are concerned, for that of zinc.

Lead occurs in nature chiefly in the forms of the sulphide, galenite or galena, the sulphate, anglesite and the carbonate, cerussite. Galena is lead-gray, quite soft, and frequently occurs in a coarsely crystalline condition, the crystals often being cubical. The luster is metallic, hence a superficial examination of a specimen might result in mistaking the mineral for the copper ore, chalcopyrite, already described. The streak will serve to identify any specimen, however, it being a lead-gray of much lighter shade than that of chalcocite. Anglesite and cerussite are far less

abundant than galena. The former varies from white through gray to yellow and has a resinous luster. Cerussite is white or gray, resembling anglesite, and has a brilliant, vitreous luster. Both minerals, like galena, are soft and easily scratched with a knife.

The ores of lead are widely distributed throughout the United States and it is difficult to assign boundaries to special districts. Galena occurs in small quantities—too small for profitable working—throughout the Appalachian region, and is found in paying quantities in what is known as the Missouri lead district. In the Colorado and other western mines the ore is found in silver-bearing veins. Were it not for the presence of silver in those veins the production of lead from them would probably practically cease, as the anglesite, the principal lead ore of the veins, does not occur in amount to pay for working the mines for that product alone.

White lead, used in paints, is the most important use of the metal. Painters prefer the product to zinc-white chiefly because it is much more opaque and possesses a much greater covering power. Much lead is made into pipes for conveying water. Pure lead is not used for the making of shot, but instead an alloy of lead and arsenic. Unlike pure lead, the alloy assumes a spherical form when dropped through the air. "Shot towers" are constructed to make use of this property in the manufacture of shot. The demands for lead have not been increased by recent extraordinary development of any of the arts employing the metal, hence the world's output of lead during the past decade has had a normal increase. For the year 1897 the total production of lead was 725,200 metric tons.

[2] The common short ton is 2,000 pounds; the long ton contains 2,240 pounds; the metric ton equals 2,204 pounds. It will be noted that statistics of the production of different metals frequently employ different tons as units.

[Pg 142]

CHICAGO:
A. W. MUMFORD,
PUBLISHER.

ORES.
Full size.

Chalcopyrite

Cerussite coating
Galenite

Galenite

Anglesite

Native Copper

Chalcocite

[Pg 143]

THE YOUNG NATURALIST.

BEES.—Honey is made from many substances. Not only do the flowers give up their nectar to the honey bees, but various other sources of sweets are visited by bees with profit. Clover honey is one of the most common kind, although it is all white clover honey, for the honey bee has too short a tongue to reach into the long tubes of the red clover which the bumble-bees are so fond of. Sweet-clover yields nectar which makes good honey. A dark variety of honey comes from the flowers of buckwheat, and the basswood tree which the German poets sing about, calling it by the name of linden, bears such a wealth of flowers which the honey bees like that it is swarmed day after day by so many bees that the tree seems to hum with pleasure. You can often hear the bees in a basswood tree before the tree itself is in view in the forest. Orange trees are also favorites with the honey-makers.

Broken fruits are often sucked by bees to get material for honey, and cider left in a dish where they can get at it will be visited by them. A mixture of almost any sweet liquid will attract honey bees, and they are so careless of its exact nature that they have been known to store up and make into honey substances that are not good for human beings to eat. One of the favorite forms of adulteration among those who keep bees for profit is to place glucose and water where they can get at it. They will readily fill their combs with this cheap material and seem to do very much more work in the course of a season by having placed within easy reach a mass of material that they do not have to work for.

Margaret Warner Morley, in her charming little book, "The Bee People," which has just come from the press of A. C. McClurg & Co., Chicago, tells how bees frequently make honey from "honey dew." This is a sweet and sticky substance that is found upon the upper side of all sorts of leaves in some localities and has caused a great deal of wonder as to where it comes from. The writer tells of the mountain children she saw in the Carolinas plucking these leaves and licking the honey-dew from them, enjoying their treat much as city children enjoy what they get at the candy store. She says the honey-dew is made by the little insects called ants' cows or aphides. The sweet liquid is thrown out from their bodies, and ants are so fond of it that some of them have been said to keep "cows" and take great care of them in order to enjoy the sweet they get from their bodies.

The aphides eat the juice of the leaves they rest on and change it into honey-dew. Resting on the under side of a leaf and feasting royally, they become so full that the honey-dew spurts from their bodies and showers the upper sides of the leaves below. Sometimes the insects are so thick upon the leaves of a magnolia tree that a shower of sweets comes down upon its lower leaves and the grass below. Trees and bushes shine with the dew, and when dust settles upon the sticky surfaces it is decidedly disagreeable.

Pliny, the first great naturalist, said he thought honey-dew was "the perspiration of the sky, the saliva of the stars, or the moisture deposited by the atmosphere while purging itself, corrupted by its admixture with the mists of the earth." Bees gather it and make it up into honey. Squirrels are fond of it, and gather the leaves one at a time, hold them up in their paws, and lick them with apparent relish.

There are so many truly wonderful things about bees which this talented writer has collected and told in simple language that her book is one of the most valuable of recent contributions to the libraries of those who enjoy the wonders of nature. Although written evidently for children it is of absorbing interest to adults, and furnishes a fund of material for conversation and observation which will make it very much in demand among teachers and parents.

The growth of the bee, the drones, the workers, and the queens, with all the details of their structure as revealed by the microscope, the making of their curious homes, their odd customs and habits, their strange enemies, and a thousand other interesting features, make the subject one of great interest, and we cannot sufficiently honor the memory of the blind naturalist, Huber, who found out more things about bees after he lost his sight than all the world ever knew of them before his time.

[Pg 144]

BAD GERMS.—In our bodies is constantly going on a great fight between germs of various sorts, if we are to believe those who know most on the subject. Microbes are all about within us, some of them apparently striving to do us good and others trying to kill us. In a few cases men of science have been able to find one kind of germ that will destroy another that is hurtful to the human system. By cultivating many sorts of germs together and separately they have come to know a great deal about what microbes like and what they cannot bear. The so-called poisons of diphtheria and typhoid fever have been recognized as having certain forms and characteristics, and a way of killing them off at wholesale has been found, and so we are not so much afraid of these diseases as we were before these discoveries were made. The germs of cholera and yellow fever are now well enough known to be controlled by sanitary measures, and the doctors are hot on the track of the bacillus of consumption. What relief the world will have when these germs are killed before they have had time to do their deadly work!

A DESERT LIGHT.—In Arizona there is an important well which stands in the desert where its presence would not readily be known, but for the fact that a light now swings from a tall cotton-wood pole so as to light travelers who are within several miles of it in the night. Before the lantern used to be hung there many people died when they might have reached its waters if they had only known how near and in which direction the well really was. Some have died horrible

deaths of thirst when only a short distance from its refreshing waters. In order to pass that point travelers have to carry large loads of water to quench their thirst until they reach this well. The number of gallons a company has means either life or death to all. Some time ago a German boy staggered up to the tanks shortly after dark. He had lain down expecting to die with thirst in despair of getting to water, when he saw the light of the cabin of the keeper of the well. So Joe Drew keeps his lantern up at night that others may see the signal from afar and come without delay to the waters.

MINER'S LUCK.—One of the most profitable mines in South America is the Penny mine in Bolivia. Penny was a run-away Scotchman from a man-o'-war who had nothing and hoped for nothing but to keep away from service on the sea. He did odd jobs about the country for awhile and was brought low with fever. He was faithfully nursed through the disease by a native woman who could not speak a word of English. Out of gratitude he married her and treated her well. She rewarded him by taking him into the mountains and showing him an old Spanish mine that had been hidden for years. He began working it and became a millionaire. With a fellow-workman by the name of Mackenzie he brought the mine into a good state of productiveness, and then left for the old country. Mackenzie was made superintendent of his mine, and Mackenzie's son went with Mr. and Mrs. Penny to Scotland. He arrayed his Indian wife in the most costly attire, and made his visit to Scotland memorable by his many acts of generosity. He adopted a nephew and insisted that both young men should take his name and become his heirs. He suddenly died and left his wealth all to his wife, with directions that the two sons should be amply provided for. Complications followed, and the Indian mother died under suspicious circumstances, while the boys contended for possession of the mines. With all the good fortune and excellent intentions of the father the two boys proved to be bad Pennies. They sold out their interests for $500,000 each and are now killing themselves with drink.

Transcriber's Note:

- Minor typographical errors have been corrected without note.
- Other correction: De-Quincy changed to De Quincey (page 133).
- Punctuation and spelling were made consistent when a predominant form was found in this book; otherwise they were not changed.
- Ambiguous hyphens at the ends of lines were retained.
- Mid-paragraph illustrations have been moved between paragraphs and some illustrations have been moved closer to the text that references them.
- The Contents table was added by the transcriber.

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