

The beautiful is as useful as the useful.—*Victor Hugo.*

BIRDS AND ALL NATURE



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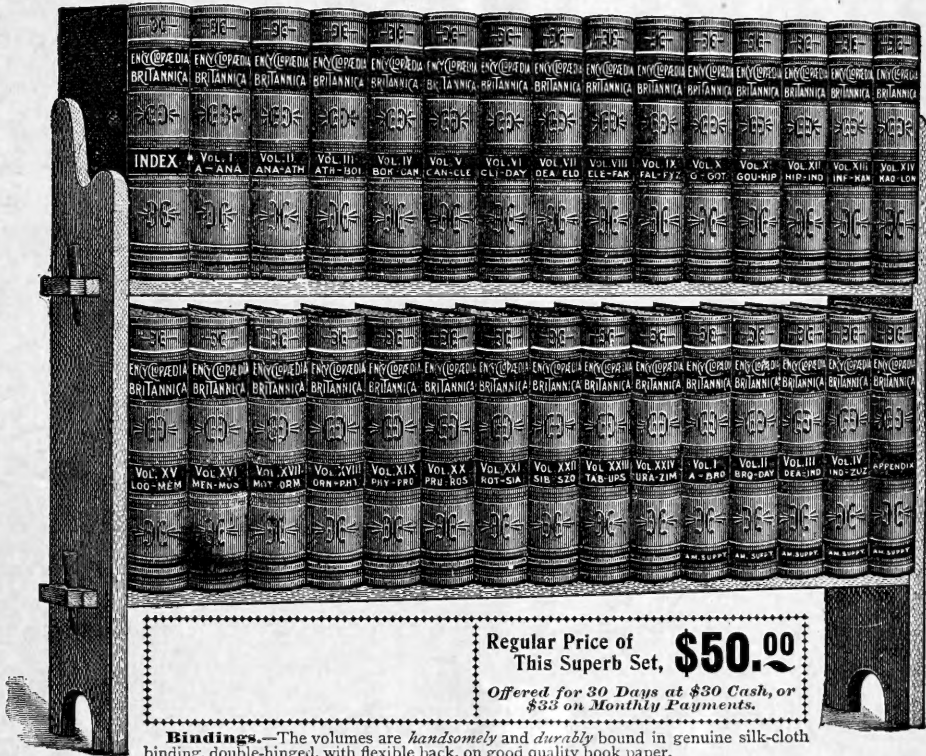
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BIRDS AND ALL NATURE.

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VOL. V.

APRIL, 1899.

No. 4

THE NUTMEG.

(*Myristica fragrans* Hauthrryn.)

DR. ALBERT SCHNEIDER.

Northwestern University School of Pharmacy.

Dum: A gilt nutmeg.

Biron: A lemon.

Long: Stuck with cloves.

—*Shakespeare, "Love's Labor Lost," V., 2.*

THE nutmeg is the spice obtained from a medium-sized evergreen tree reaching a height of from twenty-five to forty feet. This tree is dioecious, that is the male flowers and the female flowers are borne upon different plants. The male flower consists of a column of from six to ten stamens enclosed by a pale yellow tubular perianth. The female flowers occur singly, in twos or threes, in the axils of the leaves; they also have a pale yellow perianth. The ovary has a single seed which finally matures into the nutmeg and mace. The mature seed is about one and one-fourth inches long and somewhat less in transverse diameter, so that it is somewhat oval in outline. It is almost entirely enveloped by a fringed scarlet covering known as arillus or arillode (mace). The entire fruit, nut, mace, and all, is about the size of a walnut and like that nut has a thick outer covering, the pericarp, which is fibrous and attains a thickness of about half an inch. At maturity the pericarp splits in halves from the top to the base or point of attachment. The leaves of the nutmeg tree are simple, entire, and comparatively large.

The English word nutmeg and the apparently wholly different German

Muskatnuss, are etymologically similar. The "meg" of nutmeg is said to be derived from the old English "muge," which is from the Latin "muscus," meaning musk, in reference to the odor. "Muskat" of the German name is also derived from "muscus" and "nuss" means nut, so we have in both instances "musk nut." The arillus was named *Muscatenbluome* (nutmeg flower) by the early Dutch because of its bright red color.

It is generally believed that nutmeg and mace were not used in ancient times. Martius maintains that the word *macis* mentioned in a comedy by Plautus (260-180 B. C.) refers to mace. Flückiger, however, is inclined to believe that this word refers to the bark of some tree of India, as the word is frequently used in that sense by noted writers, as Scribonius, Largus, Dioscorides, Galenus, Plinius, and others. About 800 or 900 A. D., the Arabian physicians were familiar with nutmeg and were instrumental in introducing it into western countries. The Europeans first used nutmegs in church ceremonies as incense. Previous to 1200 nutmegs were quite expensive, but soon became cheaper as the plant was more and more extensively cultivated. About 1214 they found their way into pharmacy and began to be used among cosmetics.

Hildegard described nutmegs in 1150, and Albertus Magnus (1193-1280) described the tree and fruit. Not until about 1500 did European writers learn the home of the nutmeg. Ludovico Barthema designates the island Banda as its habitat.

The Portuguese monopolized the spice trade, including nutmegs, for a time, but as stated in a previous paper they were driven out by the Dutch, who regulated the nutmeg trade as they did the clove trade. That is, they destroyed all nutmeg trees not under the control of the government and burned all nutmegs which could not be sold. The government nutmeg plantations were in charge of army officials and worked by slaves. In 1769 the French succeeded in transplanting the nutmeg to the Isle de France. From 1796 to 1802 the spice islands were under the control of the English, who transplanted the nutmeg to Bencoolen, Penang, and, later, to Singapore. In 1860 the Singapore plantations were destroyed by a disease of the tree. The nutmeg is now cultivated in the Philippines, West Indies, South America, and other tropical islands and countries. The botanic gardens have been largely instrumental in extending nutmeg cultivation in the tropical English possessions. Besides *Myristica fragrans* there are several other species which are found useful. *M. Otoba* of the U. S. of Colombia yields an edible article known as Santa Fé nutmeg. The seeds of the tropical *M. sebifera* (tallow nutmeg) yield a fixed oil or fat used in making soap and candles. This oil is also known as American nutmeg oil.

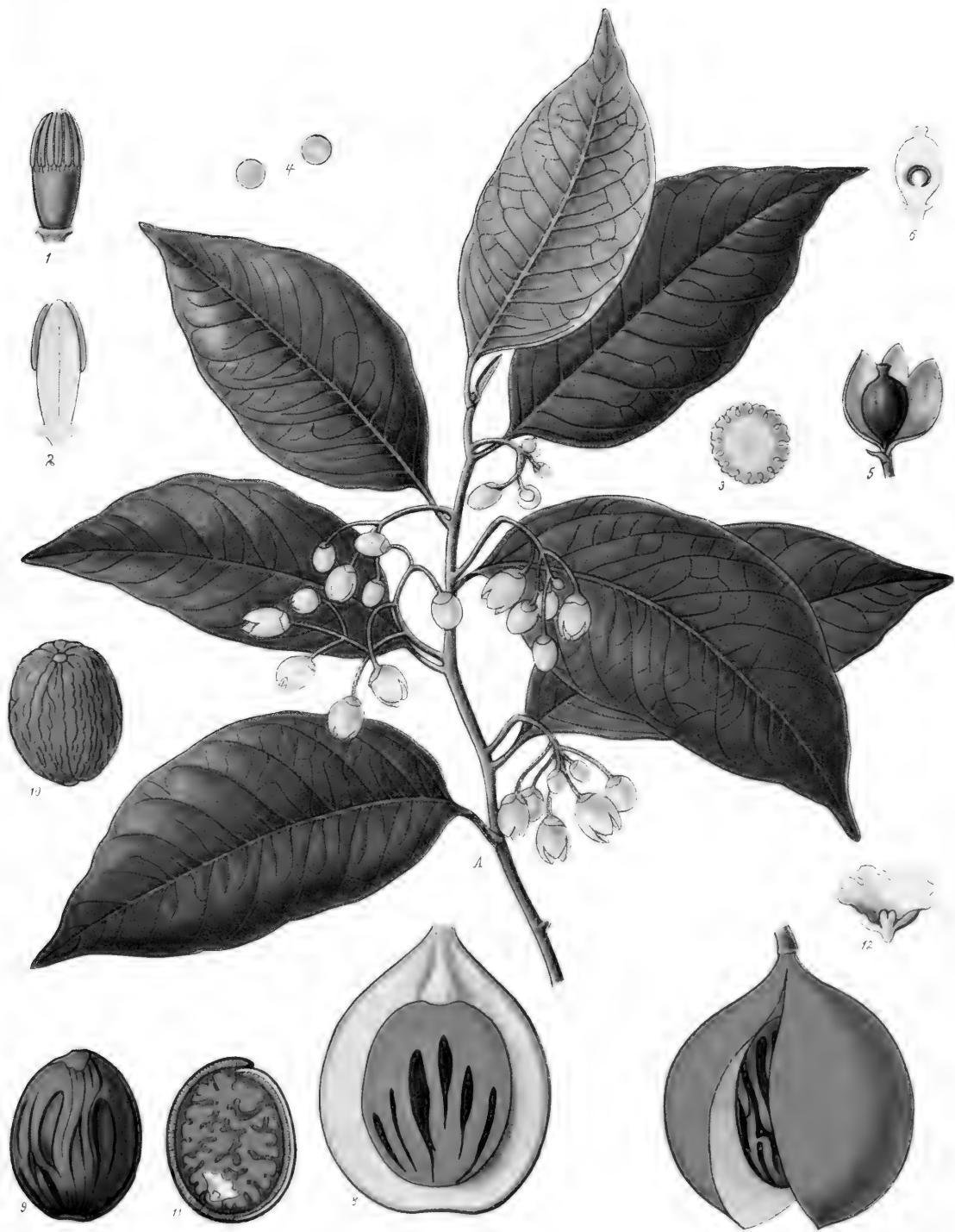
The trees are produced from seeds. After sprouting the plants are transferred to pots, in which they are kept until ready for the nutmeg plantation. Transferring from the pots to the soil must be done carefully, as any considerable injury to the terminal rootlets kills the plants. A rich, loamy soil with considerable moisture is required for the favorable and rapid growth of the plants. They thrive best in river valleys, from sea-level to 300 and 400 feet or even to an elevation of 2,000 feet. The trees are usually planted twenty-five or thirty feet apart, in pro-

tected situations, so as to shelter them from strong winds and excessive sunlight.

The trees do not yield a crop until about the ninth year and continue productive for seventy or eighty years. Each tree yields on an average about ten pounds of nutmegs and about one pound of mace annually. If the trees are well cared for and the soil well fertilized, the yield is much greater, even tenfold.

As already stated the nutmeg plant is dioecious. A seed may therefore develop into a male or female plant; if a male plant it will of course not produce nutmegs. The only way to learn whether it is one or the other is to wait until the first flowers are formed during the fifth or sixth year. The planter does, however, not sit by and wait; he simply grafts the young shoots with branches of the female tree. Some male trees, about one to twenty female trees, are allowed to mature in order that pollination, by insects, may be possible, as without pollination and subsequent fertilization the seed could not develop.

The tree bears fruit all the year round, so that nutmegs may be collected at all times. It is, however, customary to collect two principal crops, one during October, November, and December, and another during April, May, and June. The nuts are picked by hand or gathered by means of long hooks and the thick pericarp removed. The red arillus is also carefully removed and flattened between blocks of wood so as to reduce the danger of breaking as much as possible. Mace and nuts are then dried separately. The nuts are placed upon hurdles for several weeks until the kernels, nutmegs, rattle inside of the thin, tasteless, and odorless hard shell. This shell is now carefully broken and removed; the worm-eaten nutmegs are thrown away and the sound ones are rolled in powdered lime and again dried for several weeks. Generally the drying is done over a smoldering fire so that the nuts are really smoke dried. For shipment they are packed in air-tight boxes which have been smoked and dusted with lime on the inside. Liming gives the nuts a



peculiar mottled appearance and tends to destroy parasites which may be present.

Mace loses its carmine color upon drying and becomes reddish-brown and very brittle. It has an odor and taste similar to those of the nut, but is more delicately aromatic. Wild or Bombay mace is obtained from *Myristica fatua* and is frequently used to adulterate the true mace or Banda mace. The nuts of *M. fatua* are longer than those of *M. fragrans* and are therefore designated as long nutmegs; the term "male nutmegs" applied to them is incorrect. The long nutmeg is greatly inferior to the true nutmeg, or round nutmeg as it is sometimes called.

Banda supplies by far the most nutmegs at the present time. Penang nutmegs are of excellent quality and are always placed upon the market unlimed, but they are frequently limed subsequently in foreign ports and markets. Singapore nutmegs are usually unlimed. Nutmegs are generally designated by the name of the country from which they are obtained, as Dutch or Batavian, Sumatra, Penang, Singapore, Java, and Banda nutmegs.

There are a number of so-called nutmegs which are derived from plants not even remotely related to *Myristica*. Ackawai, Camara, or Camaru nutmeg is the nut of a tree growing in Guiana highly valued as a cure for colic and dysentery. American, Jamaica, Mexican, or Calabash nutmeg is the spicy seed of *Monodora Myristica*. Brazilian nutmeg is the seed of *Cryptocarya moschata*, which serves as a very inferior substitute for nutmeg. California nutmeg is the fruit of a conifer (*Torreya*), which resembles nutmeg so closely in appearance that it has been supposed that *Myristica fragrans* was a native of California. This fruit has, however, a very camphoraceous odor. Clove or Madagascar nutmeg is the fruit of *Ravensara aromatica*, a tree native in Madagascar. Peruvian nutmeg is the seed of *Laurelia sempervirens*.

The nutmeg has a peculiar mottled appearance, ranging from grayish brown to light gray or white in the limed article, the depressions and grooves holding the lime while the

ridges and elevations are free from it. In Shakespeare's Henry V. the Duke of Orleans, in speaking of the dauphin's dapple-gray horse, says: "He's of the color of nutmeg." The taste of nutmeg is peculiarly aromatic, pungent, and somewhat bitter.

The principal use of nutmeg is that of a spice, although not so commonly employed or so well liked as some other spices. It contains a fat which forms the nutmeg butter; this is an unctuous solid substance of an orange-brown or yellowish-brown color, with the odor and taste of nutmeg. This fat is used as a stimulating application in rheumatism, sprains, and paralysis. Nutmegs also contain some volatile oil, which is said to be poisonous; at least some persons are very susceptible to the effects of the volatile oil of nutmeg. In this connection it might be stated that the frequent and long-continued use of spices is injurious, producing dyspepsia, functional heart trouble, and nervousness, and seems to have a special action upon the liver, causing an excessive development of connective tissue and a reduction in the functional activity of the liver cells. "Nutmeg liver" is a condition resulting from passive venous congestion of that organ, and refers to its mottled or nutmeggy appearance only.

Mace is comparatively rich in volatile oil. Nutmeg and mace are both extensively employed as condiments. They are frequently given in the form of a powder to stimulate and aid digestion. Nutmeg flavor consists of nutmeg, oil of nutmeg, and alcohol. Mace-ale is ale sweetened and spiced with mace.

It is stated that whole nutmegs have been adulterated with wooden imitations. Connecticut is known as the Wooden Nutmeg State because it is facetiously said that such nutmegs were manufactured there.

Description of plate:

A, branch with staminate flowers; 1, stamens magnified; 2, longitudinal view of stamens; 3, transverse section of stamens; 4, pollen-grains; 5, pistillate flower; 6, pistil; 7, fruit; 8, half of pericarp removed; 9, nut with arillus (mace); 10, nut without mace; 11, nut in longitudinal section; 12, embryo.

AN ABANDONED HOME.

ELANORA KINSLEY MARBLE.

“WELL,” said Jenny Sparrow one fine day in April, as she fluttered from bough to bough in a maple tree near my study-window, “spring is advancing and already the housewives are bustling about busy from morning till night. Such fetching and carrying of grass and straw and feathers! Mamma concluded to build a new house this spring but papa said the old homestead would do, with new furnishings. Papa always has his way; he’s such a tyrant. I’m a fortunate creature that I have no such cares, I’m sure. Mamma says I may as well sing and fly high while youth and beauty last, for my troubles will begin soon enough. Troubles! The idea of my having trouble! Old people must croak, I suppose, and would really be disappointed if their children failed to experience the trials they have.

“I often wonder if papa strutted and bowed and swelled himself out as my suitors do, when he courted mamma. Now he does nothing but scold, and I never make an unusually fine toilet but he shakes his head, and lectures mamma on the sin of idleness and vanity. I’m not vain, I’m sure. I only feel strong and happy, and when I’m challenged by a neighbor’s sons and their ugly sisters for a long flight or graceful curve, I would be a silly creature indeed if I didn’t display my accomplishments to good advantage.

“There, now, is the son of our nearest neighbor twittering on that roof opposite and trying to attract my attention. He prides himself on being a direct descendant of one of the sparrows first imported into this country from England, so we call him Mr. Britisher. He has the most affected way of turning his head on one side and glancing at me. I can’t help admiring his engaging manners, though, and there is a certain boldness in his address which the rest of my admirers lack, much to their disadvantage. He’s going to fly over here presently, I know by the way he is strutting about and

fluttering his wings. Talk about the vanity of my sex! Gracious! He is priding himself now on the manner in which his toes turn out, and the beauty of his plumage, and how much broader is that black ring about his throat than those on some of his neighbors. Here he comes. I’ll pretend to be looking another way.

“Ah, is that you, Mr. Britisher? How you startled me. Yes, ’tis a lovely day. After the storms of winter, the warm sunshine is a blessing to us little creatures who live under the eaves.”

“True, Miss Jenny, true. But with companionship even the storms of winter can be borne cheerfully. Don’t you agree with me that a loving home is a very desirable thing?”

“Oh, Mr. Britisher, how you talk! Have your parents been away from home, that you are so lonesome?”

“You know they have not, Miss Jenny. You know full well that I was not speaking of *that* kind of companionship. Permit me to sit beside you on that bough, for I have that to say which I desire shall not be overheard. The leaves even seem to have ears at this season of the year, and do a deal of whispering about the numerous courtships which they hear and see going on.”

“True, very true, Mr. Britisher,” returned Miss Jenny, making room for him beside her on the limb. “There is a great amount of gossip going on just now in bird-land, I understand. Why, only the other day I heard—but ah—there is Mrs. Cowbird skulking below us, and no meaner bird flies, I think, than she. Fancy her laying her eggs in another bird’s nest, because she is too lazy to make one of her own! A tramp bird must do a great deal of gossiping, so be careful what you say.”

“She is not nearly such a mischief-maker as Mr. Blue Jay,” replied Mr. Britisher, “nor half so impertinent. I heard him chattering with Mr. Blackbird the other day and he said all sparrows were alike to him. Fancy it! A field sparrow, vesper sparrow, swamp

sparrow, white-throated sparrow, yellow-winged sparrow, fox sparrow, and dear knows how many other common American sparrows, the same to him as a blue-blooded English one. Why, my ancestors lived under the roof of Windsor Castle, and flew over the head of Queen Victoria many, many a time."

"You don't say?" returned Miss Jenny, very much impressed. "Why, you are a member of the royal family, you may say. Our family, I have heard mother tell, always made their home in the city—London proper, you know, right under the eaves of the Bank of England. But come, that is not what you flew over here to say, surely," demurely casting her eyes upon the ground.

"How charmingly you coquette with me," said Mr. Britisher, moving closer to her on the limb. "Have you not seen for weeks past that I have had no thoughts for any girl-sparrow but you, Miss Jenny?"

"La, Mr. Britisher, I really have had so much attention from your sex this spring that I——"

"But none of them have been so devoted as I," interrupted her companion. "Think of the many delicious morsels I have laid at your feet, and all I ask in return is——"

"What?" cooly asked Miss Jenny, pretending she was about to fly away.

"This little hand," stooping and pecking her dainty claws with his bill. "Will you be my wife, Miss Jenny, the queen of my heart and home?"

"The queen of your heart and home," repeated Miss Jenny. "That sounds very nice, indeed. But when one gets married, my mamma says, then one's troubles begin."

"No, no, my dear one. Your husband will hold it his dearest privilege to guard you from every care. Life will be one long dream of bliss for us both. Say you will be mine."

"Well, I suppose I may as well say yes. Mamma says girls must be settled in life some time, and I am sure I fancy you infinitely more than any of the young sparrows hereabouts. So you can ask papa and—there, there! You will twist my bill off, and Mr. Woodpecker over there, I am sure is watch-

ing us. Really you put me in such a flutter with your fervor. There, you naughty boy; you mustn't any more. My! I am so nervous. I'll fly home now and quiet my nerves with a nap. I'm off. By-by."

The courtship was brief, as is the custom with our feathered friends, and so the wedding took place in a few days. The bride received the blessing of her parents for a dot and the groom a shrug of the shoulders and the comforting assurance from his father that he was a "n inny" and not aware when he was well off.

All went merry as a marriage bell for a season, Mr. Britisher twittering daily in soft low tones his prettiest love songs and his spouse listening in proud complacency as she oiled her feathers and curled them prettily with her bill.

"O," she said one day, when making a call upon a neighbor, "I'm quite the happiest creature in the world. *Such* a husband, and how he dotes on me! I had no idea I was such a piece of perfection, really. I wish all my friends were as well and happily mated. Those who have no such prospects are to be pitied indeed. Ah! you needn't bridle that way, Miss Brownie, for I had no particular individual in mind when I made that remark, believe me. Well, I must cut my visit short, for hubby will be looking for me, and he grows *so* impatient when I am out of his sight a moment. By-by. Run in and see us, do, all of you. We are stopping, you know, with papa and mamma for awhile."

"Did you ever see such a vain, silly thing?" said the mother of a large brood of very homely sparrows. "If my girls had no more sense than she, I'd strip every feather off 'em and keep 'em at home, I would!"

"She makes me sick," said a pert young thing in the group. "*Perfection* indeed! Why, when she laughs I'm always uneasy for fear her face will disappear down her throat. Such a mouth!"

"Hubby," mimicked another, "I thought I should collapse when she said that with her sickening simper."

"Well, well," smilingly said an old

mother sparrow, "she'll sing another song before long. I predict she'll be a shiftless sort of a thing when it comes to housekeeping. Mr. Britisher will repent him of his bargain ere many days, mark my words! Dearie," turning to her only daughter, "sing that dear little note you learned of Mr. Lark for the company. Thank heaven," stroking her darling's ugly feathers, "I have my precious child still with me. She is not in a hurry to leave her poor mamma, is she?"

Many sly winks and smiles were exchanged among the matron's friends at this remark, for "dearie" had chirped that little note many summers and winters, and many a snare had mother and daughter set to entrap the sons of more than one lady sparrow there.

"My dear," said Mr. Britisher the very next morning, "we must begin to build a nest and make a home like other people. I think we may as well begin to-day."

"Build our nest?" responded Mrs. B. "Well, do as you think best, my dear. I intend to make a few calls to-day, so you may as well employ your time whilst I am away. I presume some of your folks will help you."

"I suppose nothing of the sort," replied Mr. B., curtly. "Do you think you are to do nothing but make calls from morning till night? I chose you for a helpmate, madam, and not a figurehead, let me tell you, and the sooner you settle down to your duties the better it will be for us both."

"Duties?" retorted Mrs. B., "the idea! Who was it that promised me that if I would marry him I should not have a care in the world?"

"Oh, all lovers say such things," replied Mr. B., with a contemptuous laugh. "They expect their lady-loves to have better sense than to believe them."

"Better sense than to believe them!" repeated Mrs. B., angrily. "So you admit your sex are all gay deceivers, do you? Oh, dear," tears coursing down her pretty feathered cheeks, "that I should be brought to this! Woe is me, woe is me!"

Mr. Britisher immediately flew to her side, and by caresses and fond words endeavored to tranquillize his

spouse, for what husband can look upon the first tears of his bride and not upbraid himself for bringing a cloud over the heaven of her smiles?

Mrs. B. flew and hopped about with her wonted gaiety the remainder of the day, whilst Mr. B.'s preoccupation and downcast air was the cause of much comment and many wise "I told you so's," among the old lady-birds of the neighborhood.

The subject of nest-building was, of course, next day resumed; but Mrs. B. proved as indifferent and indisposed to participate in the labor as ever.

"Very well," said Mr. B., at last, resolutely disregarding her tears, "you will do as other wives do or else return to your mother. When a sparrow marries he expects his mate to do her share in making a home, and rearing a family. There is something to do in this world, madame, besides rollicking, singing, and visiting from post to pillar. Indeed, it is a wild scramble we have to make for a living, and you can no longer expect me to be furnishing you with tid-bits and insects out of season, while you gossip and idle your time away. You will have to-day to decide upon the matter," and off Mr. Britisher flew, with a heavy frown upon his face.

"Oh! I wish I had never been born," wailed Mrs. B., as the gentle wind stirred the leaves and swayed the branch upon which she was perched. "Already I begin to experience the troubles which old folks talk about. Oh, dear! Oh, dear! I'll fly over to mother and tell her how shamefully Mr. B. is treating me. I won't stand it, there! Gracious! there is that meddling Mr. Blue Jay sneaking around as usual. He has heard me sobbing, I'm afraid, and all the neighbors will be gossiping before night of our affairs. There! how cheerily I sang when I flew off! He will think my sobs were a new song, perhaps. To think that I should be making believe I'm happy already. Happy! I shall never be happy again. My heart is broken. Mother will give Mr. Britisher a piece of her mind, I hope, and let him know I was never brought up to work, much less to be any man's slave."

(To be concluded.)



FROM 'ILL. U.S. ACAD. SCIENCES.

AMERICAN BARN OWL.
1/2 LIFE-SIZE.

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NATURE STUDY PUB. CO., CHICAGO.

THE AMERICAN BARN OWL.

(*Strix pratincola*).

LYNDS JONES.

OUR barn owl belongs to the tropical and warm temperate genus *Strix*, which is scattered widely over the greater part of the earth in the tropical and subtropical parts of both hemispheres, and scatteringly into the temperate zones. In Europe one species is common as far north as the British Isles, while our own bird is found as far north as southern New England in the East, Ontario, Michigan, Wisconsin, and southern Minnesota in the interior, and Oregon and Washington on the Pacific coast. It is hardly common anywhere except in the extreme southwestern part of the United States, where it is the most abundant owl in California. It is rare or casual north of about the fortieth parallel. But two specimens have been brought to the Oberlin College Museum in twenty years, one of which was found dead in a barn a mile east of Oberlin in December of 1898.

The barn owl is the most nocturnal of all our owls, although he can see perfectly in the brightest day. Not until twilight does he issue from his secure hiding-place to do battle with the farm and orchard pests. Then he may be seen sailing noiselessly over orchard and meadow in quest of any mischievous rodent that may be menacing the farmer's prospects. He seems to single out intelligently the ones that do the most injury, destroying large numbers of pouched gophers and other annoying and destructive creatures, asking only in return to be left in peace in his hiding-place. The farmer certainly has no better friend than this owl, for he destroys poultry only when driven to it by the direst necessity. In the East, his food consists largely of rats and mice; in some parts of the South the cotton rat is the chief diet; while in the West he feeds principally upon the gopher (*Thomomys talpoides bulbivorus*) and the California ground squirrel (*Spermophilus grammurus beecheyi*), according to Prof. B. W.

Evermann. It seems pretty certain that fish are sometimes captured and eaten.

This owl undoubtedly breeds, though sparingly, in all suitable localities wherever it is found, and probably migrates more or less in the northern part of its range. In Europe it nests in old ruins, towers, and abutments of bridges, but our American species finds few such places, so he resorts to hollow trees, caves, crevices in rocks, and banks, and even to burrows in the level ground, as we find to be the case in parts of the West. The burrows are undoubtedly the deserted burrows of some other animal. In the eastern parts of the country the owls frequently nest in buildings. It is well known that a pair occupied one of the towers of the Smithsonian building in the city of Washington in 1890, raising a brood of seven young. It is stated that the period of incubation is from three to three and a half weeks, and that brooding begins with the deposit of the first egg; thus there may be fresh eggs and young in the same nest. This accounts for the long period of incubation.

The eggs are pure white, usually from four to seven in number, rarely twelve. They are rather longer in proportion than those of the other owls—in about the proportion of 1.30x1.70. But the average size is variously given by the various authors.

It seems a little curious that there should be such a marked difference between the hawks and owls as regards nest material. They belong to the same order of birds, and yet the hawks build their own nests, collecting the material and arranging it much after the fashion of higher birds, while the owls make practically no nest, at the most collecting a little material and scattering it about with little regard for arrangement. But the difficulty disappears when we realize that the owls have probably always nested in hollows which require no nest material, while

the hawks, if they ever nested in hollows, have long ceased to do so, building their nests among the branches of trees, where a relatively large amount of material is necessary. The few species of hawks which now nest in hollows have gone back to that method after a long period of open nesting and have retained the nest material even here where it seems unnecessary.

The monkey-like appearance of this owl, emphasized by his tawny color and screeching voice, gives him a decidedly uncanny appearance. His plumage is unusually soft and fluffy, but is too thin to enable him to withstand the rigors of a northern winter. Curiously enough, the feathers on the back of his tarsus grow up instead of down, giving that part of his plumage a rather ungroomed appearance. One

edge of his middle toe-nail is toothed like a comb.

During the nesting season only a single pair can be found in a place, but at other times the species is more or less gregarious in the regions in which it is numerous. Often a dozen individuals may be found in a company. The extreme seclusiveness of the birds during the day makes it very difficult to find them, and they are undoubtedly more numerous than generally reported, and are likely to be present in many places where their presence is not now suspected. They seek the darkest and most secluded corner possible and remain quiet all day. Their noiseless flight might easily be mistaken for that of the whippoorwill. Let us hope that the good qualities of this owl will be fully recognized before his hiding-place is discovered.

A SPRINGTIME.

One knows the spring is coming;
There are birds; the fields are green;
There is balm in the sunlight and moon-
light,

A dew in the twilights between.

But ever there is a silence,
A rapture great and dumb,
That day when the doubt is ended,
And at last the spring is come.

Behold the wonder, O silence!
Strange as if wrought in a night,—
The waited and lingering glory,
The world-old fresh delight!

O blossoms that hang like winter,
Drifted upon the trees,
O birds that sing in the blossoms,
O blossom-haunting bees,—

O green leaves on the branches,
O shadowy dark below,
O cool of the aisles of orchards,
Woods that the wild flowers know,—

O air of gold and perfume,
Wind, breathing sweet, and sun,
O sky of perfect azure—
Day, Heaven and Earth in one!

Let me draw near thy secret,
And in thy deep heart see
How fared, in doubt and dreaming,
The spring that is come in me.

For my soul is held in silence,
A rapture, great and dumb,—
For the mystery that lingered,
The glory that is come!

—*W. D. Howells.*

THE KANGAROO.

C. C. M.

THE Kangaroos are regarded as among the most remarkable of mammals. Everything about them is extraordinary; their movements and their attitudes when at rest, the way they seek their food, their reproduction, their development, and their mental qualities. Twenty and thirty years ago, it is said, the visitor to Australia could see more Kangaroos to the square mile than there are jack rabbits to-day, and it was literally impossible to avoid the countless flocks that swarmed over the whole island. Walsh says that, with a good rifle, he could take a position on a rock and shoot all day long, until tired of the monotony of the slaughter, or until some "old man" kangaroo became desperate at his killing and decided to turn the table upon him. In those days men were paid liberally by the sheepowners to kill off the kangaroos, and it is stated that one hunter would kill several hundred a day, and one man is known to have cleared \$4,500, free of living expenses, in a single year. The visitor to Australia to-day discovers a decided change in many ways, but not more so than in the comparative scarcity of this animal. He may reside on the island for a month or two and not see one kangaroo. There are still large numbers of them, but they must be hunted up and their favorite feeding-places located by guides. The shepherders caused the creatures to be destroyed in such numbers before they became of any commercial value that they are now rarely found outside of the "bush." About three hundred miles back from the coast thousands can still be found. The country abounds in straggling bushes, with very few tall trees or woods to obstruct travel; but the bushes, while in the open country, are tall enough to make good hiding-places for the marsupials. They feed on the grass, roots, and leaves, and when startled by a hunter, leap over the bushes as easily as a rabbit jumps over the tufts of grass.

The hind legs of the kangaroo are

powerful weapons. One long claw, hard as bone or steel, and sharp as a knife at the point, gives the kangaroo an implement, says a writer in the *Scientific American*, that can kill a man or beast with one blow. The front paws are not so strong, but an old fellow has strength enough in them to seize a dog and hold him under the water until dead. On land they will seize an enemy and hold him until the hind claws can cut him nearly in two. They are also good boxers, and when the natives attempt to kill them with clubs they dodge the implements with all the skill of a professional pugilist, and unless the man is an expert he may get the worst of the encounter. Quite a number of hunters have been severely injured, and some killed, by attempting to corner a wounded kangaroo when enraged by a bullet wound. The fleetest horse cannot keep pace with any of the larger kangaroos, but with a little tact the hunters are enabled to capture them whenever they are sighted. When the creatures are once started on a run, they will not swerve from their course, but continue straight onward, leaping over bushes, rocks, and all ordinary obstacles. The hunters generally station themselves in the line that the animals are most likely to pursue, and then wait until the dogs or the rest of the party start them up.

The ordinary gait of the kangaroo, which it assumes principally when grazing, is a heavy, awkward hobble. It supports its fore feet on the ground and then pushes the hinder legs on between them. While doing so it must also support itself on its tail, as else it could not lift its long hinder legs high enough to render such movements possible. But it remains in this position no longer than is absolutely necessary. Whenever it has plucked some favorite plant, it assumes the erect position to consume it. In their sleep the smaller species adopt a position similar to that of a hare in its form. Closely crouched to the ground, they squat down on all fours, the tail being

extended at length behind the body. This position enables them to take flight instantly.

The kangaroo leaps only on its hinder legs, but its bounds surpass those of any other animal in length. It presses its fore limbs tightly against the chest, stretches the tail straight out backwards, thrusts the long and slender hind legs against the ground with all the force of the powerful thigh muscles, and darts like an arrow through the air in a low curve. The leaps follow in immediate succession, and each is at least nine feet, but the larger species cover, not infrequently, from twenty to thirty-three feet at a bound, the height of each leap being from six to ten feet. Few hounds can keep pace with a kangaroo.

The kangaroo rarely gives birth to more than one young at a time. When the young one is born the mother takes it up with her mouth, opens the pouch with both fore feet, and attaches the little creature to the breast. Twelve hours after birth it has a length of only a little over one and one-fifth inches. Its eyes are closed, its ears and nostrils are only indicated, the limbs yet unformed. There is not the slightest resemblance between it and the mother. For nearly eight months it is nourished exclusively in the pouch. A considerable time after it first peeps out of the pouch the young one occasionally leaves its refuge and roams about near its mother, but for a long time it flees back to the pouch whenever it apprehends any danger. It approaches its mother with long bounds and dives

headlong into the half-open pouch of the quietly sitting female.

Numerous methods are employed to exterminate the animals; they are shot with fire-arms or coursed to death by hounds, and that for very wantonness, for the slain bodies are left to rot in the woods. "That is the reason," says an anonymous writer, "why the kangaroos are already exterminated in the environs of all larger cities and settlements; and if this savage chase is permitted to continue, it will not be long ere they will be numbered among the rarer animals in the interior also."

The kangaroo readily resigns itself to confinement, and is easily maintained on hay, green fodder, turnips, grain, bread, and similar articles of food. It does not require a specially warm shelter in winter and breeds readily if given proper care. At present it is more rarely seen in confinement in Europe and America than when it was more numerous and easier to capture in its native country. With good treatment it survives a long time; specimens have lived in Europe from ten to twenty-five years.

The kangaroos are very dull in intellect, even sheep being far superior to them in this respect. Anything out of the accustomed order confuses them, for they are not capable of a rapid comprehension of new surroundings. Every impression they receive becomes clear to them only gradually. Brehm says a captive kangaroo becomes used to man in general, but expresses doubt whether it discriminates between its keeper and other people.

INVITATION TO THE REDBREAST.

Sweet bird, whom the winter constrains—

And seldom another it can—

To seek a retreat—while he reigns

In the well-shelter'd dwellings of man,

Who never can seem to intrude,

Though in all places equally free,

Come, oft as the season is rude,

Thou art sure to be welcome to me.

At sight of the first feeble ray,

That pierces the clouds of the east,

To inveigle thee every day

My windows shall show thee a feast.

For, taught by experience, I know

Thee mindful of benefit long;

And that, thankful for all I bestow,

Thou wilt pay me with many a song.

Then, soon as the swell of the buds

Bespeaks the renewal of spring,

Fly hence, if thou wilt, to the woods,

Or where it shall please thee to sing:

And shouldst thou, compell'd by a frost,

Come again to my window or door,

Doubt not an affectionate host,

Only pay, as thou pay'dst me before.

Thus music must needs be confest

To flow from a fountain above;

Else how should it work in the breast

Unchangeable friendship and love?

And who on the globe can be found,

Save your generation and ours,

That can be delighted by sound,

Or boasts any musical powers?—*Cowper.*



FROM GULAMBE, ALAN SCHLEGEL

KANGAROO,
L. LUTHERSIZO

TOPHILBERT HARRIS,
MATELIE ST. YVES, L. CHAGASO



FEATHERS.

W. E. WATT.

A splendid young blackbird built in a tree;
A spruce little fellow as ever could be;
His bill was so yellow, his feathers so black,
So long was his tail, and so glossy his back,
That good Mrs. B., who sat hatching her eggs,
And only just left them to stretch her poor legs,
And pick for a minute the worm she preferred,
Thought there never was seen such a beautiful bird.

—D. M. Mulock.

Oh! Nature's noblest gift—my gray-goose quill!
Slave of my thoughts, obedient to my will,
Torn from thy parent bird to form a pen,
The mighty instrument of little men!

—Byron.

FEATHERS have played an important part in the history of mankind. Henry of Navarre won the battle of Ivry after electrifying his men with the following words: "Fellow soldiers, you are Frenchmen; behold the enemy! If you lose sight of your ensigns, rally round my plume; you will always find it on the high road to honor!"

No doubt the templars carried the hearts of many with them in the crusades more effectually because their waving plumes gave them a picturesqueness which inspired brave men with courage and pious ones with holy zeal.

Savages delight in adorning themselves with feathers, and civilized women have found their charms enhanced by the placing of feathers against fair skins until the close of the nineteenth century finds a social struggle raging through fear that the demands of fashion may yet destroy from the face of the earth its sweetest songsters and its most beautifully plumed creatures.

Fans of feathers are admired the world over. In warm countries huge fans or screens made of beautiful feathers are often carried to shade royalty. In great processions the Pope is followed by bearers of magnificent fans of ostrich plumes. In the Sandwich Islands for a long time the enthroning of a new king was made gorgeous by his wearing a garment of many thousands of feathers; but recently, as if in preparation for a union with the United States, this state gar-

ment was buried with the king and the ceremony became simpler.

The noblest use to which feathers have been adapted has been in the production of writing instruments. The antiquity of the pen, regarded as a feather, is shown in the proof recently set forth by the philologists. *Penna* is the Latin for feather; farther back an instrument for flying is called *patna*; the Sanskrit which became *penna* in the Latin tongue became *phathra* in the mouths of the Teutonic peoples. So the English language, which is formed from both Latin and Teutonic elements, possesses two words, *pen*, and *feather*, which were one in their origin, have been widely separated during the ages, and now are united, but in such a way that only under the microscope of comparative grammar are we able to discover that they have the same blood in their veins.

Although the people living in warm countries wrote with the reed, the Chinese with a brush, and we have learned to fashion steel so it will do the work to better advantage, yet the feather has been a mighty agency in the civilization of the world.

Every teacher used to consider it one of the essentials of his equipment to possess a good penknife and know how to use it in making or mending pens for his pupils. Quills were first carefully cleansed from all oily or fatty matter and then dried. A gentle heat was applied to secure the brittleness which made it possible to split the pen point without spoiling the quill.

In Russia and in Holland quills were dipped in boiling alum-water or diluted nitric acid and then dried and clarified in a bath of hot sand. Goose quills were most used, turkey quills were prized by many, and swan quills were considered the best of all. Pens well made from swan quills often sold as high as four guineas a thousand, while goose quill pens were to be had at twenty shillings. For fine writing, crow-quills were considered best, and pen-and-ink drawings were generally produced with the black-plumed article.

In 1832, to supplement the domestic products in the manufacture of pens, 33,668,000 quills were imported into England. The trade has not been entirely killed by the advent of the steel pen, for there are yet among us representatives of the people of the olden time who delight in the pretty little squeak of the quill pen as it assists them in their literary labors.

Man early learned to rob the birds of their coverings, not only for adornment, but also for warmth. Feather beds were once reckoned as evidences of wealth. Modern science has pointed out the unhealthful condition of a bed made soft and gaseous with feathers. Few beds are now found of this sort among the better-informed people of America, but the traveler in the northern countries of Europe not only has to sleep on feathers but also under them. The down coverlet is as essential to a Danish bed as is clean linen.

The newest palace of the German emperor is furnished in accordance with the Teutonic idea, and the visitor to the palace at Strasburg, when his majesty is not there, is shown his royal bed room with its single bed and double featherings.

Downy feathers grow most abundantly on birds inhabiting cold regions. Many young birds have an abundance of downy feathers when first hatched. In some cases it is well formed before the egg is broken, firmly enclosed in a tight roll of membrane to keep it dry. On exposure to the air the membrane bursts and the down wraps the nestling in a comfortable coat.

The stronger feather sometimes grows out of the same place as the downy one in such a way that it pushes out the down to the outside of the plumage and the bird appears to have his underwear outside his overcoat.

The best eider-down is so light that three-quarters of an ounce of it will fill a large hat. It is so elastic that two or three pounds may be compressed into a ball that may be held in the hand.

Some feathers have a second shaft growing out of the end of the quill so as to form a double feather, and in rare instances there are two of these growths from one quill, making a triple feather.

Birds are warmer blooded than other animals. What is a dangerous fever temperature in the blood of man, is natural and ordinary in a bird. As birds fly rapidly, they could not live if they were perspiring creatures because they would lose heat so fast. Feathers protect them from the sudden changes of temperature and loss of heat and strength.

Feathers are important to the bird to fly with; but even for this purpose they are not absolutely necessary. There are forms of animals that fly, as the bat does, with their skin to beat the air. There were once on the earth many more skin-flying animals than there are to-day.

Feathers are modifications of the scarf-skin. Wherever the skin is exposed to sun, wind, or water it is modified in some way to contribute to the well-being of the animal. The many forms of feathers make a most fascinating study.

A peculiar thing about them is that they are not vascular. Vascular means full of vessels. Almost everything that grows is vascular. It has tubes to carry in new material and little sacs or large ones to store substance for new growths. But dermal appendages, the forms that grow out of the scarf-skin and are modifications of it, are not vascular. Take a feather two feet long, and examine it to see how the feather material was carried from the beginning of the quill to the tip. You find no veins and no circulation. Yet feathers grow and their growth is quite

mysterious and not understood by the wisest people.

The material of a feather consists of cells that push each other out to their destination. They change their forms as they travel along, and their colors and degrees of hardness change with their going. They are composed of about the same stuff that makes horns and hoofs. Your finger nail is like a feather in its growth and composition. It is mostly albumen with some lime in it. Albumen is the substance which makes the white of eggs.

When the Mexican motmot trims his two tail feathers with his beak, he merely makes diamond cut diamond. The material of the cutting instrument is the same as that of the thing cut, only somewhat harder.

When you consider how a feather grows by pushing out its cells you must wonder at the intelligence which guides the cells to change their nature so as to form the quill, the shaft, the after-shaft, the barb, the barbules, and the little hooks which hold them together. More than this is the cause for admira-

tion seen in the regular change of pigment contained in the cells, so the feather shall have its beautiful colors and accurate markings.

Along with the materials of the feather is carried a little oil which turns the water from the duck's back and gives the feather its gloss. It is thought by some that the fading of feathers in museums where mounted specimens are exposed to the action of light is largely due to the loss of this delicate oil. No enterprising Yankee has come forward yet with a patent for restoring this oil and giving back to the thousands of musty and dusty skins in our museums their original brilliancy.

Every one wonders at the way feathers keep their shape instead of getting hopelessly ruffled. The little hooks which hold the barbules together are exceedingly strong and flexible. They will yield and bend, but never break. Even when torn apart from their hold they can grasp again so as to restore the injured feather to its former shape.

VISION AND SCENT OF VULTURES.

REV. R. T. NICHOL.

To the Editor of Birds and All Nature:

SIR: Are you not mistaken in the assertion in your October number that vultures, carrion-crows, etc., have such near scent that they can detect carcasses and offal at a very great distance?

I was under the impression that Wilson* had decided this forever, and proved conclusively that their apparently miraculous power of discovering their proper food, was due to keenness of vision, and not of the sense of smell.

The following extracts may be new to some and interesting to all of your

readers: Under the head "*Vultur aura*, Turkey Vulture," etc., I find:

"Observations on the supposed power which vultures such as the turkey vulture, are said to possess of scenting carrion at a great distance.

"It has always appeared to us unaccountable that birds of prey, as vultures, could scent carcasses at such immense distances, as they are said to do. We were led to call in question the accuracy of this opinion, on recollecting the observations of some travelers, who have remarked birds of prey directing their course towards dead animals floating in the rivers in India, where the wind blows steadily from one point of the compass for months in succession. It was not easy to conceive that the effluvium from a putrid carcass in the water, could proceed in direct opposition to the current of air,

*When I said "Wilson" above I find I was slightly mistaken. I remembered reading it long ago in the first edition I possessed of this writer's works—the little four-volume set edited by Prof. Jameson for "Constable's Miscellany," Edinburgh, 1831, and taking down the book now, which I have not opened for years, I find the passages in question (Vol. iv, pp. 245 *et seq.*) form part of an appendix drawn from Richardson and Swainson's "Northern Zoology," and that the real authority is Audubon.

and affect the olfactory nerves of birds at so many miles distant. We were disposed to believe that these birds were directed towards the carrion rather by the sense of seeing than by that of smelling. This opinion is confirmed by the following observations of our friend Audubon, communicated to us by him some time ago for our *Philosophical Journal*."

Here follows at length Audubon's communication, from which I extract the following passages:

"My *First Experiment* was as follows: I procured a skin of our common deer, entire to the hoofs, and stuffed it carefully with dried grass until filled rather above the natural size,—suffered the whole to become perfectly dry and as hard as leather—took it to the middle of a large open field, and laid it down upon its back with the legs up and apart, as if the animal were dead and putrid. I then retired about a few hundred yards, and in the lapse of some minutes a vulture coursing around the field, tolerably high, espied the skin, sailed directly towards it, and alighted within a few yards of it. I ran immediately, covered by a large tree, until within about forty yards, and from that place could spy the bird with ease. He approached the skin, looked at it without apparent suspicion, raised his tail and voided itself freely (as you well know all birds of prey in a wild state generally do before feeding), then approaching the eyes, that were here solid globes of hard, dried, and painted clay, attacked first one and then the other, with, however, no farther advantage than that of disarranging them. This part was abandoned; the bird walked to the other extremity of the pretended animal, and there, with much exertion, tore the stitches apart, until much fodder and hay were pulled out; but no flesh could the bird find or smell; he was intent on finding some where none existed, and, after reiterated efforts, all useless, he took flight, coursed round the field, when, suddenly turning and falling, I saw him kill a small garter snake and swallow it in an instant. The vulture rose again, sailed about, and passed several

times quite low over the stuffed deer-skin, as if loth to abandon so good-looking a prey.

"Judge of my feelings when I plainly saw that the vulture, which could not discover through its extraordinary sense of smell that no flesh, either fresh or putrid, existed about that skin, could at a glance see a snake scarcely as large as a man's finger, alive, and destitute, of odor, hundreds of yards distant. I concluded that, at all events, his ocular powers were much better than his sense of smell.

"*Second Experiment*.—I had a large dead hog hauled some distance from the house and put into a ravine, about twenty feet deeper than the surface of the earth around it, narrow and winding much, filled with briars and high cane. In this I made the negroes conceal the hog, by binding cane over it, until I thought it would puzzle either buzzards, carrion-crows, or any other birds to see it, and left it for two days. This was early in the month of July, when, in this latitude, a body becomes putrid and extremely fetid in a short time. I saw from time to time many vultures, in search of food, sail over the field and ravine in all directions, but none discovered the carcass, although during this time several dogs had visited it and fed plentifully on it. I tried to go near it, but the smell was so insufferable when within thirty yards of it that I abandoned it, and the remnants were entirely destroyed at last through natural decay.

"I then took a young pig, put a knife through its neck, and made it bleed on the earth and grass about the same, and, having covered it closely with leaves, also watched the result. The vultures saw the fresh blood, alighted about it, followed it down into the ravine, discovered by the blood of the pig, and devoured it, when yet quite fresh, within my sight."

He pursues the subject at some length, recounting other experiments; but these, were they not even given on the authority of Audubon—*clarum et venerabile nomen*—seem to me to be conclusive.

22 Irving place, New York



HOARY BAT.
 $\frac{1}{2}$ Life-size.

FROM COL. CH. ACAD. SCIENCES.

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NATURE STUDY PUB. CO., CHICAGO

THE HOARY BAT.

C. C. M.

A VERY singular animal is the bat, and seems to belong to several classes and orders. The specimen we present here (*Atalapha cinerea*) is very rare in this part of the country, and was taken in Lincoln Park, Chicago. It flies through the air like a bird and, possessing mammæ like the quadrupeds, suckles its young. The double jaw is provided with three kinds of teeth. With the canines and incisors it tears its prey like carnivorous animals, and with the molars or grinders it cracks nuts like rodents, which it resembles in the narrow, oval form of its head. An imperfect quadruped when on the ground, it drags itself along, embarrassed by the mantle of its wings, which fold up around its legs like an umbrella when closed. When it undertakes to fly it does so in an awkward manner. It first crawls painfully along, and with great difficulty extends its long fingers, spreading out the membrane which covers and binds them together. The ungainly creature then quickly flaps its broad wings, tough as leather, but thin and transparent; a bird without plumage, it now flies abroad in pursuit of insects—nocturnal like itself—or in search of ripe fruit, to which some species are particularly destructive.

None of the bats like to raise themselves into the air from a perfectly level surface, and, therefore, use all their endeavors to climb to some elevated spot, from whence they may launch themselves into the air. They climb with great ease and rapidity, being able to hitch their sharp and curved claws into the least roughness that may present itself, and can thus ascend a perpendicular wall with perfect ease and security. In so doing they crawl backward, raising their bodies against the tree or wall which they desire to scale, and drawing themselves up by the alternate use of the hinder feet. When they have attained a moderate height, they are able to fling themselves easily into the air and to take immediate flight. They have the power of rising at once from the ground, but always

prefer to let themselves fall from some elevated spot. One reason why bats take their repose suspended by their hind feet is said to be that they are then in the most favorable position for taking to the air. There may be, and probably are, other reasons for the curious reversed attitude. Even among the birds examples are found of a similar mode of repose. Members of the genus *Colinus*, an African group of birds, sleep suspended like the bats, clinging with their feet and hanging with their heads downward. But these birds cannot assume this attitude for the purpose of taking flight, as their wings are used as readily as those of most other feathered creatures, and, therefore, there must be other reasons to account for the strange attitude.

The more closely we approach the torrid zone, it is said, the greater is the number of bats and the richer their variety. The South is the native country of the majority of wing-handed animals. Even in Italy, Greece, and Spain, the number of bats is surprising. There, according to Brehm, who studied them industriously, as evening draws nigh they come out of their nooks and corners not by hundreds but by thousands. Out of every house, every old stone wall, every rocky hollow they flutter, as if a great army were preparing for a parade, and the entire horizon is literally filled with them. The swarms of bats one sees in a hot country are astonishing. They darken the sky. Everywhere there is a living and moving mass flying through the trees or gardens and groves. Through the streets of the town, through houses and rooms flits the moving train. Hundreds are constantly appearing and disappearing and one is always surrounded by a hovering swarm.

A feature of the wings of bats, is a highly elastic skin. The outer layer is constantly kept pliable by anointing with an oily liquid, secreted by glands in the animal's face. The structure of the hair is also remarkable, as each thread presents under the microscope a screw-like appearance.

THE COMING OF SPRING.

E. E. BENTON.

NO ONE perhaps ever lived who excelled Henry D. Thoreau as a general observer of nature.

He patiently and with minute care examined both animate and inanimate creation, and wrote down an accurate account of his observations, noting particularly the effects produced by the changes in the seasons. He worked diligently to discover the first sign of spring, with results not wholly satisfactory. In one place he asks: "What is the earliest sign of spring? The motions of worms and insects? The flow of sap in trees and the swelling of buds? Do not the insects awake with the flow of the sap? Bluebirds, etc., probably do not come till the insects come out. Or are there earlier signs in the water, the tortoises, frogs, etc.?"

He found that whenever there was a warm spell during the winter some forms of vegetation, particularly the grasses and water plants, would begin to grow, and some would even bloom in favorable locations, as the skunk cabbage. He did not fully settle the question as to what would begin to grow first in the spring, whether it was the catkins of the swamp willow or the stems and leaves of the equisetum in the pool, or something else.

A list of the most striking phenomena observed by Thoreau in early spring is given below, and is extracted from his journals, written when he lived near Boston, during the years 1840 to 1860. In each case the earliest date mentioned by Thoreau is given, there being a difference of about a month between the earliest and latest spring. Many of these phenomena and the order in which they occur are common to a large extent of country, including the eastern and northern central states. Thus, the skunk cabbage is the first flower in all this region. A few notes are added, showing variations.

February 21—Sap of the red maple flowing. This was in 1857. It does

not usually flow until the second week in March.

February 23—Yellow-spotted tortoise seen.

February 24—The bluebird, "angel of the spring," arrives; also the song-sparrow. The *phebe* or spring note of the chickadee, a winter bird, heard.

"The bluebird and song-sparrow sing immediately on their arrival, and hence deserve to enjoy some preëminence. They give expression to the joy which the season inspires, but the robin and blackbird only peep and *tchuck* at first, commonly, and the lark is silent and flitting. The bluebird at once fills the air with his sweet warbling, and the song-sparrow, from the top of a rail, pours forth his most joyous strain."

March 1—The catkins of the willow and aspen appear to have started to grow.

March 2—The caltha, or cowslip, found growing in water.

The skunk cabbage in bloom in warm, moist grounds.

March 5—The red maple and elm buds expanded.

The spring note of the nut-hatch heard: *To-what, what, what, what, what*, rapidly repeated, instead of the usual *quah quah* of this winter bird.

March 6—The gyrinus (water-bug) seen in the brook.

First blackbird seen.

Green sprouts of the sassafras, hazel, blueberry, and swamp-pink found.

March 7—Fuzzy gnats in the air.

First robins.

Spring note of the shrike heard, probably silent during the winter.

March 8—Willow buds expanded. Sap flowing in the white pine.

Flock of grackles seen.

Radical leaves of the golden-rods and asters in water, growing decidedly.

March 9—Ducks seen.

March 10—Poplar and willow catkins started; also equisetum (horsetail), saxifrage, and probably other water plants. The butter-cup found growing.

Shimmering in the air noticed, caused by evaporation; water in the brooks, "clear, placid, and silvery," both phenomena of spring.

March 12—Poplar catkins in bloom.

First meadow-lark seen.

March 14—Wild geese seen.

Fox-colored sparrows seen.

March 15—Grass growing in water.

Wood, or croaking frog heard; "the earliest voice of the liquid pools."

March 16—The first phebe bird heard. Gulls and sheldrakes seen.

March 17—Grass green on south bank-sides.

The first flicker and red-wing seen; also a striped squirrel; also some kind of fly.

March 18—The skunk cabbage, in moist grounds, abundantly in bloom, attracting the first honey-bees, who, directed by a wonderful instinct, leave their homes and wing their way, perhaps for miles, to find this first flower. This seems all the more remarkable when it is considered that the honey-bee is an introduced, not a native insect.

March 19—The first shiners seen in the brook.

March 20—Pussy-willow catkins in full bloom.

"The tree-sparrow is perhaps the sweetest and most melodious warbler at present."

"The fishes are going up the brooks as they open."

March 21—The garden chickweed in bloom.

The ground-squirrel's first chirrup heard, a sure sign, according to some old worthies, of decided spring weather.

The hyla, or tree-frog, begins to peep.

"The woods are comparatively silent. Not yet the woodland birds, except (perhaps the woodpecker, so far as it migrates) only the orchard and river birds have arrived."

March 23—The white maple in bloom and the aspen nearly so; the alders are generally in full bloom. "The crimson-starred flowers of the hazel begin to peep out."

March 24—Shore-larks seen.

March 28—Buff-edged butterflies seen.

March 31—The small red butterfly seen.

April 5—Swallows appear, pewee heard, and snipe seen.

April 6—Crowslips nearly in bloom.

April 7—Gold-finches seen; also the purple finch.

April 8—Pine warbler seen.

The epigæa (trailing arbutus) nearly in bloom. "The earliest peculiarly *woodland, herbaceous flowers are epigæa, anemone, thalictrum (or meadow rue), and, by the first of May, the violet."

*NOTE.—Further to the west and extending at least to Wisconsin, the following list of early woodland flowers may take the place of the above, blooming in the order given: Erigenia (or harbinger of spring), hepatica, bloodroot, and dog-tooth violet, or perhaps the dicentra (Dutchman's breeches) may come before the last.

The skunk cabbage, which is not a woodland flower, and therefore not included in the above list, is the first flower probably in all New England and the northern states.

April 9—†Crowslips (not a woodland flower) in bloom, "the first conspicuous herbaceous flower, for that of the skunk cabbage is concealed in its spathe."

†NOTE.—In the West several conspicuous flowers, particularly the pretty hepatica, precede the crowslip.

THE NASHVILLE WARBLER.

(*Helminthophila rubricapilla*.)

LYNDS JONES.

THE Nashville warbler is common during the migrations in many parts of the country, but seems to be scarce or entirely wanting locally. Thus, in Lorain county, Ohio, as well as in Poweshiek county, Iowa, it is

always one of the [commonest warblers during the first and second weeks of May, and again during the second and third weeks of September, while it is not reported from Wayne county, Ohio, by Mr. Harry C. Oberholser in his

"List of the Birds of Wayne county, Ohio." There are other instances of its rarity or absence from restricted localities. Its range extends from the Atlantic ocean west to eastern Nebraska, and north into Labrador and the fur countries, occasionally wandering even to Greenland. It winters in the tropics south of the United States.

In the northward migration it reaches Texas about the third week in April and Manitoba near the end of the first week in May, thus passing completely across the country in about three weeks. A careful computation proves that the average rate at which this warbler traveled across the country, in the spring of 1885, was nearly forty miles a day. A single year, however, might show a considerable departure from the normal rate of migration. This instance is given to show any who may not be familiar with the phenomena of bird migration that small birds, at least, do not perform their whole migration in a single flight, but rest a good deal by the way.

The migrating Nashville warblers, in my experience, prefer the outskirts of the larger woods, but may be found anywhere in the smaller woods, preferring the middle branches, rarely ascending to the tree-tops, not seldom gleaning near the ground in the underbrush, or even among the leaves on the ground. They are by no means confined to the woods, but glean as boldly and sing as cheerfully among the fruit and shade trees in town, but they are more numerous in the woods.

The song has been compared to that of the chestnut-sided warbler and the chipping sparrow combined. To my ear the Nashville warbler's song is enough unlike the song of any other bird to be easily recognized after a single hearing. Rev. J. H. Langille's rendering: "*Ke tsee, ke tsee, ke tsee, chip ee, chip ee, chip ee, chip,*" is a close approximation, but seems somewhat lacking in the true expression of the first part of the song. My note book renders it thus: "*K tsip, k tsip, k tsip, k tsip, chip ee, chip ee, chip ee, chip.*" The first part of the song is thus

halting, with a considerable pause between the phrases, while the last part is uttered more rapidly and with little effort. This song, issuing from the trees in every direction, is always closely associated in the writer's mind with the early morning hours, the dripping trees and the sweet incense of the flower-decked woods and bursting buds.

While feeding, these warblers often gather into groups of a dozen or twenty individuals, and may be associated with other species, thus forming a considerable company. The warbler student is familiar with the waves of warblers and other small birds which range through the woods, now appearing in a bewildering flutter of a hundred wings, now disappearing in their eager quest for a lunch of insects.

The breeding-range of this warbler extends as far south as Connecticut in the East, and Michigan and Minnesota, if not northern Iowa in the West, and north to the limit of its range. In common with the other members of this genus, the Nashville warbler nests on the ground, usually in a spot well protected by dried grasses and other litter of the previous year's growth, often in a tangle of shrubs, ferns and bushes. The nest is sometimes sunk flush with the surface, and is composed of grasses, mosses, pine needles, strips of bark and leaves, lined with finer material of the same sort and with hair-like rootlets, the composition varying with the locality. The eggs are pure white or creamy-white, marked with spots and dots of reddish-brown and the usual lilac shell-markings, which are grouped more or less around the larger end. They are four or five in number, and average about .61 x .48 of an inch.

The spring males may readily be recognized in the bush by their small size, by the bright yellow underparts, by their ashy heads and back, and by their habit of feeding in the middle branches of the trees down to the underbrush. The concealed rufous spot on the crown, from which the bird takes its scientific specific name, can rarely be seen in the live bird, no doubt chiefly because the bird is perpetually above you.



FROM COL. CHI. ACAD. SCIENCES.

NASHVILLE WARBLER.
Life-size.

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NATURE STUDY PUB. CO., CHICAGO.

CHIEF SIMON POKAGON.

C. C. MARBLE.

Gather him to his grave again,
And solemnly and softly lay
Beneath the verdure of the plain,
The warrior's scattered bones away.

—Bryant.

THE subject of this brief sketch died, January —, 1899, at an advanced age. He was a full-blood Indian, and a hereditary chief of the Pottowattomies. As author of "The Red Man's Greeting," a booklet made of white birch bark and entitled by the late Prof. Swing, "The Red Man's Book of Lamentations," he has been called the "Red-skin poet, bard, and Longfellow of his race." He himself said that his object in having the book printed on the bark of the white birch tree was out of loyalty to his people, and "gratitude to the Great Spirit, who in his wisdom provided for our use for untold generations this remarkable tree with manifold bark used by us instead of paper, being of greater value to us as it could not be injured by sun or water." Out of the bark of this wonderful tree were made hats, caps, and dishes for domestic use, "while our maidens tied with it the knot that sealed their marriage vow." Wigwams were made of it, as well as large canoes that out-rode the violent storms on lake and sea. It was also used for light and fuel at the Indian war councils and spirit dances. Originally the shores of the northern lakes and streams were fringed with it and evergreen, and the "white charmingly contrasted with the green mirrored from the water was indeed beautiful, but like the red man, this tree is vanishing from our forests." He quotes the sad truth:

"Alas for us! Our day is o'er,
Our fires are out from shore to shore;
No more for us the wild deer bounds—
The plow is on our hunting grounds.
The pale-man's sail skims o'er the floods;
Our pleasant springs are dry;
Our children look, by power oppressed,
Beyond the mountains of the west—
Our children go—to die."

The dedication of the little book is characteristic of the grateful apprecia-

tion of a man of lofty spirit, who was acquainted with the history and traditions of his race. It is: "To the memory of William Penn, Roger Williams, the late lamented Helen Hunt Jackson, and many others now in heaven, who conceived that noble spirit of justice which recognizes the brotherhood of the red man, and to all others now living defenders of our race, I most gratefully dedicate this tribute of the forest."

Chief Pokagon's father sold the site of Chicago and the surrounding country to the United States in 1833 for three cents an acre. Chief Simon was the first red man to visit Mr. Lincoln after his inauguration as president. In a letter written home at the time, he said: "I have met Lincoln, the great chief; he is very tall, has a sad face, but he is a good man; I saw it in his eyes and felt it in his hand-grasp. He will help us get payment for Chicago land." Soon after this visit to Washington a payment of \$39,000 was made by the government.

In 1874 he visited President Grant, of whom he said: "I expected he would put on military importance, but he treated me kindly, gave me a cigar, and we smoked the pipe of peace together."

In 1893 the chief secured judgment against the United States for over \$100,000, which still remained due on the sale of Chicago land by his father. This judgment was paid and the money divided pro rata among members of the tribe, who soon dissipated it, however, and became as great a charge upon the chief as ever.

Pokagon was honored on Chicago Day at the World's Fair by first ringing the new Bell of Liberty and speaking in behalf of his race to the greatest multitude, it is believed, ever assembled in one inclosure. After his

speech, "Glory Hallelujah" was sung before the bell for the first time on the fair grounds. The little book, "The Red Man's Greeting," above referred to, was prepared for this occasion and read for the first time. It was well received, and many papers referred to it in terms of extravagance. It was undoubtedly full of eloquence characteristic of the aborigines.

Chief Pokagon's contributions to bird literature have been numerous and original. That he was a lover of nature is manifest through all his writings. And he was a humane man, like Johnny Applesseed, after quoting:

"An inadvertant step may crush the snail
That crawls at evening in the public path;
But he that hath humanity, forewarn'd,
Will tread aside, and let the reptile live."

"In early life," he says, "I was deeply mortified as I witnessd the grand old forests of Michigan, under whose shades my forefathers lived and died, falling before the cyclone of civilization as before the prairie fire. In those days I traveled thousands of miles along our winding trails, through the wild solitude of the unbroken forest, listening to the song of the woodland birds, as they poured forth their melodies from the thick foliage above and about me. Very seldom now do I catch one familiar note from those early warblers of the woods. They have all passed away, but with feelings of the deepest gratitude I now listen to the songs of other birds which have come with the advance of civilization. They are with us all about our homes and, like the wild-wood birds which our fathers used to hold their breath to hear, they sing in concert, without pride, without envy, without jealousy—alike in forest and field; alike before the wigwam and the castle; alike for savage and for sage; alike for beggar and for prince; alike for chief and for king."

Writing of the wild goose, he says: "I begged my father to try and catch me a pair of these birds alive, that I might raise a flock of them. He finally promised me he would try, and

made me pledge myself to kindly care for them. He made me a stockade park to put them in, enclosing one-half acre of land. One corner ran into the lake, so as to furnish plenty of water for the prospective captives. He then made a brush box, three feet square, trimming it with rice straw from the lake and left it at the water's edge for future use. He then waded into the lake where geese were in the habit of feeding, finding the water nowhere above his chin. On the following morning a flock was seen feeding in the lake. We went quietly to the shore; father placed the box over his head and waded carefully into the water. Soon I could see only the box; it appeared to be floating and drifted by the wind toward the geese. At length it moved in among the great birds. I held my breath, fearing they would fly away. Soon I saw one disappear, then another, both sinking like lead into the water. Not a sound could I hear. The rice box began to slowly drift back. On nearing the shore father emerged from it with a live goose under each arm. They seemed the most beautiful creatures I had ever seen." The young chief in three years raised a fine flock of geese, which, he says, he treated as prisoners of war, and was as kind to as a mother to her children. He taught them to eat corn from his hand and each one to recognize a name given to it. After the first year he gave them their liberty, except in fall and spring, when they were determined to migrate. If he let them out with wings clipped, so they could not fly, they would start on the journey afoot for the south or northland according to the time of year.

It is believed that the old chief left behind him many interesting manuscripts. One of thirty thousand words is known to the present writer. It is autobiographical and historical of the Pottowattomie tribe of Indians, and will doubtless be printed, sooner or later, if not on white birch bark, then on good white paper.

NATURE AT FIRST HAND.

When beauty, blushing, from her bed
Arose to bathe in morning dew,
The sun, just lifting up his head,
The vision saw and back withdrew
Behind a cloud, with edges red:
"Till beauty," then he coyly said,
"Shall veil her peerless form divine
I may not let my glory shine."

C. C. M.

AS TO the pleasures derived from pursuing the science of ornithology in nature's interminable range, there are delights the field ornithologist experiences quite unknown to his stay-at-home namesake. For instance, what a thrill of pride courses through him as he clings to the topmost branches of the tallest pine tree, making himself acquainted with the rude cradle of the sparrow-hawk; or when examining the beautiful and richly marked eggs of the windhover, laid bare and nestless in the magpie's old abode, some sixty feet or more in the branches of a towering oak. When, if ever, do our closet naturalists inspect these lovely objects in their elevated cradle? Again, how elated the field naturalist will feel when, after hours of patient watching, he gets a sight of a troop of timid jays, or the woodpecker, busy in his search for food on some noble tree! How elated when, scaling the cliff's rugged side in search of sea birds' eggs, or tramping over the wild and barren moor, he flushes the snipe or ring ousel from its heathery bed, or startles the curlew from its meal in the fathomless marsh! We might enlarge upon this subject *ad infinitum*, but to a field naturalist these pleasures are well known, and to the closet personage uncared for. Suffice it to say, that he who takes nature for his tutor will experience delights indescribable from every animate and inanimate object of the universe; from the tiny blade of grass to the largest forest tree—the tiniest living atom, seemingly without form or purpose, to its gigantic relation of much higher development. The pages of nature's mighty book are unrolled to the view of every man who cares to haunt her sanctuaries. The doctrine it teaches is universal, preg-

nant with truth, endless in extent, eternal in duration, and full of the widest variety. Upon the earth it is illustrated by endless forms beautiful and grand, and in the trackless ether above, the stars and suns and moons gild its immortal pages.—*Rural Bird-Life in England.*

The aspects of nature change ceaselessly, by day and by night, through the seasons of the year, with every difference in latitude and longitude; and endless are the profusion and variety of the results which illustrate the operation of her laws. But, let the productions of different climes and countries be never so unlike, she works by the same methods; the spirit of her teachings never changes; nature herself is always the same, and the same wholesome, satisfying lessons are to be learned in the contemplation of any of her works. We may change our skies, but not our minds, in crossing the sea to gain a glimpse of that bird-life which finds its exact counterpart in our own woods and fields, at the very threshold of our own homes.—*Coues.*

The boy was right, in a certain sense, when he said that he knew nature when she passed. Alone, he had hunted much in the woods day and night. He knew the tall trees that were the coons' castles, and the high hills of the 'possum's rambles. He had a quick eye for the smooth holes where the squirrels hid or the leafy hammocks where they dozed the heated hours away. The tangles where the bob-whites would stand and sun themselves stood out to him at a glance, and when the ruffed grouse drummed he knew his perch and the screens to dodge behind as he crept up on him.—*Baskett.*

THE QUAILS' QUADRILLE.

BY MRS. A. S. HARDY.

ONE who loves the birds and is so much in sympathy with them as to make it appear sometimes that they have taken her into their "order," had a charming glimpse, a few years ago, of a covey of quails in one of their frolics. She described it as follows:

"I never hear the call of 'Ah, Bob White!' or catch a glimpse of those shy little vocalists, that I do not think of how I once surprised them in the prettiest dance I ever saw. I had heard of the games and the frolics of birds and have often watched them with delight, but I never saw any bird-play that interested me as this, that seemed like a quadrille of a little company of quails.

"They were holding their pretty carnival at the side of a country road along which I was slowly strolling, and I came in sight of them so quietly as to be for a time unobserved, although they had two little sentinels posted—one at each end of the company.

"Between these bright-eyed little watchers, always on the alert, a dozen or more birds were tip-toeing in a square. Every motion was with all the grace and harmony which are nature's own. At some little bird-signal which I didn't see, two birds advanced from diagonal corners of the square, each bird tripping along with short, airy and graceful steps, something like what we imagine characterized the old-time 'minuet.' Each bird, as the partners came near each other, bobbed its head in a graceful little bow, and both tripped back as they came to their places in the square. Immediately the birds from the two other corners advanced with the same airy grace, the same

short, quick, and tripping steps, saluting and retreating as the others had done.

"A wagon driven along the road disturbed the band of dancers, who scudded away under leaves, through the fence, into the deep grass of the field beyond. When the team had passed out of sight and the ball-room was again their own, back came the pretty revelers stealthily, their brown heads uplifted as their bright eyes scanned the landscape. Seeing no intruder, they again took their places the same as before and began again the same quadrille—advancing, meeting, bowing, and retreating.

"It was the prettiest and most graceful little 'society affair' you can imagine! There was no music—no song that I could hear—yet every little bird in every turn and step while the dance was on, moved as to a measured harmony

"Did the birds keep 'time—time, in a sort of runic rhyme' to melody in their hearts, or to a symphony, I could not hear, but which goes up incessantly like a hymn of praise from nature's great orchestra? I longed to know.

"In my delight and desire to learn more of the bewitching bird-play, I half forgot I was a clumsy woman, and an unconscious movement betrayed my presence. The little sentinel nearest me quickly lifted his brown head, and spying me gave his signal—how, I could not guess, for not a sound was uttered; but all the dancers stretched their little necks an instant and sped away. In a moment the ground was cleared and the dancers came not back."



PRESENTED BY LOUIS G. KUNZE.

ENGLISH GRAPES.
 $\frac{2}{3}$ Life-size.

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THE GRAPE.

C. C. M.

THE name grape is from the French *grappe*, a bunch of grapes; from the same root as *gripe* or *grab*, to grasp. It is one of the most valuable fruits, not only because of its use in the manufacture of wine, and is the source also from which brandy, vinegar, and tartaric acid are obtained, but because, both in a fresh and dried state, it forms not a mere article of luxury, but a great part of the food of the inhabitants of some countries.

The cultivation of the vine was introduced into England by the Romans, and of late years its cultivation has much increased in gardens, on the walls of suburban villas and of cottages, but chiefly for the sake of the fresh fruit, although wine is also made in small quantities for domestic use.

The first attempt at the culture of the vine in the United States for wine-making was in Florida in 1564; and another was made by the British colonist in 1620. In Delaware wine was made from native grapes as early as 1648. In 1683 William Penn engaged in the cultivation of the vine near Philadelphia, but with only partial success. In 1825 the Catawba vine, a native of North Carolina, came into prominence; and it was afterward cultivated extensively near Cincinnati by Nicholas Longworth, who has been called the father of this culture in the United States. In 1858 the entire production of Catawba wine in Ohio amounted to 400,000 gallons. In the states east of

the Rocky mountains the greatest extent of territory in vineyards occurs in Ohio, New York, Missouri, Pennsylvania, Illinois, Iowa, and Kansas, but at present they exist in nearly every state in the Union. Of all of the states, however, California is the most important for vine-growing. The vineyards were first cultivated there during the middle of the last century, the first grape planted being the Los Angeles, which was the only one grown till 1820.

The cultivation of the vine varies much in different countries. In the vineries of Britain the vines are carefully trained in various ways so as most completely to cover the walls and trellises and to turn the whole available space to the utmost account. The luxuriant growth of the plant renders the frequent application of the pruning-knife necessary during the summer. The bunches of grapes are generally thinned out with great care, in order that finer fruit may be produced. By such means, and the aid of artificial heat, grapes are produced equal to those of the most favored climates, and the vine attains to a large size and a great age. The famous vine at Hampton Court has a stem more than a foot in circumference, one branch measuring one hundred and fourteen feet in length, and has produced in one season two thousand two hundred bunches of grapes, weighing on an average one pound each, or in all about a ton.

About 250 years ago Dr. Power attributed the fly's locomotive power to "a furry kind of substance like little sponges with which she hath lined the soles of her feet, which substance is also repleated with a whitish viscous liquor, which she can at pleasure squeeze out, and so sodder and beglue herself to the place she walks on, which otherwise her gravity would hinder, especially when she walks in those inverted positions." Scientific men

refused to believe this explanation, and taught that the bottom of a fly's foot resembled the leather sucker used by boys to lift stones, and that this formation enabled it to move back downwards. However it has been proved that Dr. Power was right in every point but the sticky nature of the liquid that exudes from the fly's foot. This substance is not sticky, and the attachment which it causes is brought about by capillary attraction.

PROSE POEMS OF IVAN TURGENIEF.

I DREAMED that I stepped into a vast, subterranean, highly arched hall. A brilliant light illuminated it. In the middle of this hall was seated the majestic figure of a woman, clothed in a green robe that fell in many folds around her. Her head rested upon her hand; she seemed to be sunk in deep meditation. Instantly I comprehended that this woman must be nature herself, and a sudden feeling of respectful terror stole into my awed soul. I approached the woman, and, saluting her with reverence, said:

"O mother of us all, on what dost thou meditate? Thinkest thou, perchance, on the future fate of humanity, or of the path along which mankind must journey in order to attain the highest possible perfection—the highest happiness?"

The woman slowly turned her dark, threatening eyes upon me. Her lips moved and, in a tremendous, metallic voice she replied:

"I was pondering how to bestow greater strength upon the muscles of the flea's legs, so that it may more rapidly escape from its enemies. The balance between attack and flight is deranged; it must be readjusted."

"What!" I answered, "is that thy only meditation? Are not we, mankind, thy best-loved and most precious children?"

The woman slightly bent her brows and replied: "All living creatures are my children; I cherish all equally, and annihilate all without distinction."

"But Virtue, Reason, Justice!" I faltered.

"Those are human words," replied the brazen voice. "I know neither good nor evil. Reason to me is no law. And what is justice? I gave thee life; I take it from thee and give it unto others; worms and men are all the same to me. . . . And thou must

maintain thyself meanwhile, and leave me in peace."

I would have replied, but the earth quaked and trembled, and I awoke.

I was returning from hunting, and walking along an avenue of the garden, my dog running in front of me.

Suddenly he took shorter steps, and began to steal along as though tracking game.

I looked along the avenue, and saw a young sparrow, with yellow about its beak and down on its head. It had fallen out of the nest (the wind was violently shaking the birch trees in the avenue) and sat unable to move, helplessly flapping its half-grown wings.

My dog was slowly approaching it, when, suddenly darting from a tree close by, an old dark-throated sparrow fell like a stone right before his nose, and all ruffled up, terrified, with despairing and pitiful chirps, it flung itself twice towards the open jaws of shining teeth. It sprang to save; it cast itself before its nestling, but all its tiny body was shaking with terror; its note was harsh and strange. Swooning with fear, it offered itself up!

What a huge monster must the dog have seemed to it! And yet it could not stay on its high branch out of danger. . . . A force stronger than its will flung it down.

My Tresor stood still, drew back. . . . Clearly he, too, recognized this force.

I hastened to call off the disconcerted dog, and went away full of reverence.

Yes; do not laugh. I felt reverence for that tiny heroic bird for its impulse of love.

Love, I thought, is stronger than death or the fear of death. Only by it, by love, life holds together and advances.

THE BLUEBIRD.

Soft warbling note
From azure throat,
Float on the gentle air, of spring;
To my quick ear
It doth appear
The sweetest of the birds that sing.

—C. C. M.

A bit of heaven itself.—*Spofford.*

The bluebird carries the sky on his back.—*Thoreau.*

Winged lute that we call a bluebird.
—*Rexford.*

The bluebird is the color-bearer of the spring brigade.—*Wright.*

A wise bluebird
Puts in his little heavenly word.
—*Lanier.*

The bluebird, shifting his light load of song
From post to post along the cheerless fence.
—*Lowell.*

It is his gentle, high-bred manner and not his azure coat which makes the bluebird.—*Torrey.*

How can we fail to regard its azure except as a fragment from the blue of the summer noonday arch?—*Silloway.*

The bluebird always bears the national colors—red, white, and blue—and in its habits is a model of civilized bird-life.—*Dr. Cooper.*

At the first flash of vernal sun among the bare boughs of his old home he hies northward to greet it with his song, and seems, unlike the oriole, to help nature make the spring.—*Baskett.*

As he sits on a branch lifting his wings there is an elusive charm about his sad, quivering *tru-al-ly, tru-al-ly*. Ignoring our presence, he seems preoccupied with unfathomable thoughts of field and sky.—*Merriam.*

And yonder bluebird, with the earth tinge on his breast and the sky tinge on his back, did he come down out of heaven on that bright March morning when he told us so softly and plaintively that if we pleased, spring had come?—*Burroughs.*

He is "true blue," which is as rare a color among birds as it is among flowers. He is the banner-bearer of bird-land also, and loyally floats the tricolor from our trees and telegraph wires; for, besides being blue, is he not also red and white?—*Coues.*

THE FIRST BLUEBIRD.

Jest rain and snow! and rain again!
And dribble! drip! and blow!
Then snow! and thaw! and slush! and then
Some more rain and snow!

This morning I was 'most afeared
To wake up—when, I jing!
I seen the sun shine out and heard
The first bluebird of spring!

Mother she'd raised the winder some,
And in acrost the orchard come,
Soft as an angel's wing,
A breezy, treesy, beesy hum,
Too sweet fer anything!

The winter's shroud was rent apart—
The sun burst forth in glee—
And when *that bluebird* sung, my heart
Hopped out o' bed with me!

—*Riley.*

THE KIT FOX.

C. C. M.

ONE of the smallest of the foxes is the kit fox (*Vulpes velox*), sometimes called the swift fox and also the burrowing fox, getting the latter name for the ability and rapidity with which it digs the holes in the ground in which it lives. It is an inhabitant of the northwestern states and of the western Canadian provinces, covering the region from southeastern Nebraska northwest to British Columbia. Its length is about twenty inches, exclusive of the tail, which is about twelve inches long. The overhair is fine, the back is a pure gray, the sides yellow, and the under parts white. The ears are small and covered with hair and the soles are also hairy. The kit fox is much smaller in size than either the gray or red fox, but has proportionately longer limbs than either of them.

Reynard, of all animals, in spite of the fact that he is accepted as the emblem of cunning, slyness, deceit, and mischief, is praised by proverb and tradition, and the greatest of German poets, Goethe, made him the subject of an epic. Pechuel-Loesche says:

"The fox of tradition and poetry and the fox in real life are really two very different animals. Whoever observes him with an unprejudiced mind fails to discover any extraordinary degree of that much-praised presence of mind, cleverness, cunning, and practical sense, or even an unusually keen development of the senses. In my opinion he is by no means superior in his endowments to other beasts of prey, especially the wolf. The most that can be truly said in his praise is to admit that, when he is pursued, he knows how to adapt himself to the surrounding circumstances, but scarcely more so than other sagacious animals. Like many other animals, including the harmless species, some old foxes may have their wits unusually sharpened by experience, but every huntsman who has had much to do with foxes will ad-

mit that there are a great many which are not ingenious, and some which may even be called stupid, and this refers not only to young, inexperienced foxes, but also to many old ones. The fox is a rascal and knows his trade, because he has to make a living somehow. He is impudent, but only when driven by hunger or when he has to provide for his little family; and in bad plights he shows neither presence of mind nor deliberation, but loses his head completely. He is caught in clumsy traps, and this even repeatedly. In the open country he allows a sled to approach him within gunshot; he permits himself to be surrounded in a hunt in spite of the noise and shots, instead of wisely taking to his heels; in short, this animal, which is more relentlessly pursued than any other inhabitant of the woods, still has not learned to see through all the tricks of men and shape his actions accordingly."

All of which may be literally true, nevertheless Reynard is the hero of a hundred stories and pictures and he will continue to be regarded as a remarkably clever and interesting animal.

The coat of the fox corresponds closely to his surroundings. Those species living on plains and deserts show the similarity of their color with that of the ground; the southern fox differs considerably from the northern and the fox of the mountains from that of the plains.

The fox usually selects his home in deep hollows, between rocks covered with branches, or between roots of trees. Whenever he can avoid doing so he does not dig a burrow himself, but establishes himself in some old, deserted badger's hole, or shares it with the badger in spite of the latter's objections. If it is possible, the fox excavates his burrows in mountain walls, so that the conduits lead upwards, without running close to the surface. In his prowlings he regards his security as paramount to every other considera-



SWIFT FOX,
1/2 Late size.

COVER OF THE
NATIONAL GEOGRAPHIC MAGAZINE

1904. VOL. XXXI. P. 100.



tion, according to fox hunters. He is suspicious, and only the pangs of hunger can goad him into reckless actions. Then he becomes bold. Once a fox, which was being hunted by hounds and had twice heard the shot whizzing by, seized a sick hare in his flight and carried it with him a considerable distance. Another was surrounded in a field; he came out, attacked a wounded hare, killed it before the eyes of the huntsmen, rapidly buried it in the snow, and then fled directly through the line formed by the sportsmen.

Litters of young foxes are born about the end of April or the beginning of May. Their number varies between three and twelve.

Lenz had a tame female fox which he received just as she was beginning to eat solid food, but had already become so vicious and so much addicted to biting that she always growled when eating her favorite food and bit right and left into straw and wood, even when nobody was disturbing her. Kind treatment soon made her so tame that she would allow him to take a freshly-killed rabbit out of her bloody mouth and insert his fingers instead. Even when grown up she liked to play with him, was demonstrative in her joy when he visited her,

wagged her tail, whined, and jumped around. She was just as much pleased to see a stranger, and she distinguished strangers at a distance of fifty paces, when they were turning the corner of the house, and with loud cries would invite them to come up to her, an honor which she never accorded either to him or his brother, who usually fed her, probably because she knew they would do so anyway.

Reynard has been known to attack and kill young calves and lambs, and if the seashore is near will revel in oysters and shellfish. A group of rabbits are feeding in a clover-patch. He'll crawl along, nibbling the juicy flowers until near enough to make a grab. He'll stalk a bird, with his hind legs dragging behind him, until near enough to spring. How farmers dread his inroads in the poultry yard! Fasten the yard up tight and he will burrow a winding passage into the ground beneath and suddenly appear among the drowsy chickens and stupid geese, whose shrill and alarmed cries arouse the farmer from his bed to sally forth, finding all safe. Then the fox will sneak back and pack away with the plumpest pullet or the fattest goose.

AMONG ANIMALS.

The deer really weeps, its eyes being provided with lachrymal glands.

Ants have brains larger in proportion to the size of their bodies than any other living creature.

There are three varieties of the dog that never bark—the Australian dog, the Egyptian shepherd dog and the "lion-headed" dog of Tibet.

The insect known as the water boatman has a regular pair of oars, his legs being used as such. He swims on his back, as in this position there is less resistance to his progress.

Seventeen parcels of ants' eggs from Russia, weighing 550 pounds, were sold in Berlin recently for 20 cents a pound.

The peacock is now kept entirely, it would seem, for ornament—for the or-

nement of garden terraces (among old-fashioned and trim-kept yew hedges he is specially in place)—in his living state, and for various æsthetic uses to which his brilliant plumage and hundred-eyed tailfeathers are put when he is dead or moulting. But we seldom eat him now, though he used to figure with the boar's head, the swan and the baron of beef on those boards which were beloved by our forefathers, more valiant trenchermen than ourselves. Yet young peahen is uncommonly good eating, even now, at the end of the nineteenth century, and in the craze that some people have for new birds—Argus pheasants, Reeve's pheasants, golden pheasants and what not—to stock their coverts, it is a wonder that some one has not tried a sprinkling of peacocks.

SPRING FASHIONS.

ELLA GILBERT IVES.

EVEN in birddom some of the styles come from Paris, where the *rouge gorge* smartens up his red waistcoat as regularly as the spring comes round. Our staid American robin tries to follow suit, though he never can equal his old-world models. Even the English red-breast excels him in beauty and song. I must tell the truth, as an honest reporter, though I am not a bit English, and would not exchange our *Merula migratoria* for a nightingale; for beauty is but feather-deep, and when our robin shines up his yellow bill—a spring fashion of his own—the song that comes from it is dearer than the pot of gold at the end of the rainbow. That little relative of his whom our forefathers called the “blue robin,” has the same rufous color in his waistcoat, though it stops so short it always seems as if the stuff must have given out. No Parisian or London dandy set the style for his lovely coat. If ever a fashion came down from heaven, that did; and it came to the fresh, new world and stopped here. No blue-coats perch on the rails in old England; perhaps because there is never clear sky enough to spare for a bird’s back. We have so much on this continent, that half a dozen birds dress in the celestial hue; some of them, like the jay, all the year round.

But indigo bunting, whose summer coat and vest seem interwoven of blue sky and a thunder cloud, and then dipped in a sea-wave of foamy green, is not so lavish of his beauty. His plain wife and children, who dress almost like common sparrows, have only shreds and patches of blue in their attire, and indigo *pater* puts on the same dull shade for his winter overcoat. But in spring, what a spruce old beau he is!—and how he does like to show off in the tasseled oaks! So beautiful is his changeable silk that one half suspects him of borrowing from the peacock’s wardrobe. A grain of that lordly fowl’s disposition may

have mixed with the dye; for if there is a pointed spruce tree near, indigo is sure to perch on the tip-top and sing until you look at him. Still, he loves beauty for beauty’s sake, and is not really vain like the tanager.

That gorgeous bird actually sings, “*Here pretty, pretty here!*” with variations, as if all loveliness focused in his feathers. He arrives just when the tender young foliage of May will half veil his vivid scarlet coat; and as it is less dependent on light than the indigo’s, he does not affect tree-tops, but perches under a spray of golden oak leaves or the delicate green of an elm, and shines like a live coal in a bed of leaves. If he were a British trooper he could not be more resplendent in scarlet and black. Tanager is uniformed first for conquest, then for guard duty. He wears his bright trappings during courting and nesting time, and the rest of the year doffs his scarlet and wears olive-green like that of his modest mate. He still carries black wings and tail; however, to mark his sex.

So does gay little goldfinch, bird of winsome ways and a happy heart. He, too, dresses up for courting; and how do you think he does it? All winter long he has worn an olive-brown coat, as subdued as any finch’s needs to be; but when the willows begin to hint at the fashionable spring color, and the spice bush breathes its name, and the dandelions print the news on the grass, and the forsythia emblazons it on every lawn, and the sunset sky is a great bulletin board to announce it—then this dainty bird peels off his dull winter overcoat, each tiny feather dropping a tip, and lo! underneath a garb that a Chinese Chang might covet. To match his wings and tail, he puts on a black cap, and then you never saw a more perfect “glass of fashion and mold of form”—at least that is Mme. Goldfinch’s opinion.

“*No dis-pu-ting a-bout tastes!*” chirps chipping sparrow. He prefers a dress of sober tints and thinks nothing so

durable as gray and black and brown. Though not a slave to fashion, he does freshen up a bit in the spring and puts on a new cap of chestnut, not to be too old foggyish. But he believes in wearing courting clothes all the year round. Young chippies put on striped bibs until they are out of the nursery, but the old folks like a plain shirt front.

No such notion has the barn swallow. He believes in family equality, even in the matter of clothes; and having been born in a pretty and becoming suit, wears it all the time. When the cinquefoil fingers the grass, you may look for his swallow-tailed coat in the air; and if the April sun strikes its steel-blue broadcloth, and discloses the bright chestnut muffler and the pale-tinted vest, you will rejoice that old fashions prevail in swallow-land. These swift-flying birds have something higher to think about than changing their clothes.

It seems otherwise with some birds of the meadow. That gay dandy, the bobolink, for instance, lays himself out to make a sensation in the breast of his fair one. When he started on his southern trip last autumn, he wore a traveling-suit of buff and brown, not unlike Mistress Bobolink's and the little Links'. No doubt he knew the danger lurking in the reeds of Pennsylvania and the rice-fields of Carolina, and hoped to escape observation while fattening there. In the spring, if fortunate enough to have escaped the gunner, he flies back to his northern home, "dressed to kill," in human phrase, happily not, in bird language. Robert o'Lincoln is a funny fellow disguised as a bishop. Richard Steele, the rollicking horse-guardsman, posing as a Christian hero, is a human parallel. With a black vest buttoned to the throat, a black cap and choker, bobolink's front is as solemn as the endman's at a minstrel show. But what a coat! Buff, white and black in eccentric combination; and at the nape of the neck, a yellow posy, that deepens with the buttercups and fades almost as soon. Bobby is original, but he conforms to taste, and introduces no discordant color-tone into his field of buttercups and clover. In his ecstatic

flight he seems to have caught a field flower on his back; and if a golden-hearted daisy were to speak, surely it would be in such a joyous tongue.

A red, red rose never blooms in a clover meadow, and the grosbeak does not go there for his chief spring adornment. Red roses do bloom all the year, though none so lovely as the rose of June; and so the grosbeak wears his distinctive flower at his throat the round year, but it is loveliest in early summer. I do not know a prettier fashion—do you?—for human kind or bird, than a flower over the heart. I fancy that a voice is sweeter when a breast is thus adorned. If ever the rich passion of a red, red rose finds expression, it is in the caressing, exultant love-song of the rose-breasted grosbeak. The one who inspires it looks like an overgrown sparrow; but grosbeak knows the difference, if you do not. If that wise parent should ever be in doubt as to his own son, who always favors the mother at the start, he has but to lift up the youngster's wings, and the rose-red lining will show at once that he is no common sparrow.

That pretty fashion of a contrast in linings is not confined to the grosbeak. The flicker, too, has his wings delicately lined with—a scrap of sunset sky. I do not know whether he found his material there or lower down in a marsh of marigolds; but when he flies over your head into the elm tree and plies his trade, you will see that he is fitly named, golden-winged woodpecker. He makes no fuss over his spring clothes. A fresh red tie, which, oddly enough, he wears on the back of his neck, a retinting of his bright lining, a new gloss on his spotted vest and striped coat, and his toilet is made. Madame Flicker is so like her spouse that you would be puzzled to tell them apart, but for his black mustache.

The flicker fashion of dressing alike may come from advanced notions of equality; whatever its source, the purple finch is of another mind. He sacrifices much, almost his own identity, to love of variety; and yet he is never purple. His name simply perpetuates a blunder for which no excuse can be offered. Pokeberry is his prevailing

hue, but so variously is it intermingled with brown at different times and seasons and ages, that scarcely two finches look alike. The mother-bird wears the protective colors of the sparrow, while young males seem to be of doubtful mind which parent to copy; and so a purple finch family presents diversity of attire puzzling to a novice.

But why, pray, should a bird family wear a uniform, as if a charity school or a foundling hospital? The gay little warblers are not institutional to that degree. An example of their originality is redstart—another misnamed bird. He wears the colors of Princeton College, or rather, the college wears his; and a lordly male privilege it is, in both cases. His mate contents herself with pale yellow and gray, while the young male waits three years before putting on his father's coat. The first year he wears his mother's dress; the second, a motley betwixt and between; the third, he is a tree "*can-delita*," or little torch, lighting up his winter home in a Cuban forest, and bringing Spanish fashions to New England with the May blossoms.

When dame nature in the spring
For her annual opening
Has her doors and windows washed by April
showers;
When the sun has turned the key,

And the loosened buds are free
To come out and pile the shelving rocks with
flowers;

When the maple wreathes her head
With a posy-garland red,
And the grass-blade sticks a feather in his
cap;

When the tassels trim the birch,
And the oak-tree in the lurch
Hurries up to get some fringes for his wrap;

When the willow's yellow sheen
And the meadow's emerald green
Are the fashionable colors of the day;
When the bank its pledges old
Pays in dandelion gold,
And horse-chestnut folds its baby hands to
pray—

Then from Cuba and the isles
Where a tropic sun beguiles,
And from lands beyond the Caribbean sea,
Every dainty warbler flocks
With a tiny music-box
And a trunk of pretty feathers duty-free.

And in colors manifold,
Orange, scarlet, blue, and gold,
Green and yellow, black, and brown and
grays galore,
They will thread the forest aisles
With the very latest styles,
And a tune a piece to open up the score.

But they do not care to part
With their decorative art,
Which must always have the background of
a tree;
And will surely bring a curse
To a grasping mind or purse,
Since God loves the birds as well as you and
me.

BIRDS THAT DO NOT SING.

SINGING is applied to birds in the same sense that it is to human beings—the utterance of musical notes. Every person makes vocal sounds of some kind, but many persons never attempt to sing. So it is with birds. The eagle screams, the owl hoots, the wild goose honks, the crow caws, but none of these discordant sounds can be called singing.

With the poet, the singing of birds means merry, light-hearted joyousness, and most of us are poetic enough to view it in the same way. Birds sing most in the spring and the early summer, those happiest seasons of the year, while employed in nest-building and in rearing their young. Many of our musical singers are silent all the rest of the year; at least they utter only low chirpings.

Outside of what are properly classed as song birds there are many species that never pretend to sing; in fact, these far outnumber the musicians. They include the water birds of every kind, both swimmers and waders; all the birds of prey, eagles, hawks, owls, and vultures; and all the gallinaceous tribes, comprising pheasants, partridges, turkeys, and chickens. The gobble of the turkey cock, the defiant crow of the "bob-white," are none of them true singing; yet it is quite probable that all of these sounds are uttered with precisely similar motives to those that inspire the sweet warbling of the song-sparrow, the clear whistle of the robin, or the thrilling music of the wood-thrush.—*Philadelphia Times*.



CHICAGO COLORTYPE CO., CHIC. & NEW YORK.

HYACINTH
Life-size

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THE HYACINTH.

I sometimes think that never blows so red
The rose as where some buried Cæsar bled;
That every hyacinth the garden wears
Dropt in her lap from some once lovely head.

—Omar Khayyam.

HYACINTH, also called Jacinth, is said to be "supreme amongst the flowers of spring." It was in cultivation before 1597, and is therefore not a new favorite. Gerard, at the above date, records the existence of six varieties. Rea, in 1676, mentions several single and double varieties as being then in English gardens, and Justice, in 1754, describes upwards of fifty single-flowered varieties, and nearly one hundred double-flowered ones, as a selection of the best from the catalogues of two then celebrated Dutch growers. One of the Dutch sorts, called *La Reine de Femmes*, is said to have produced from thirty-four to thirty-eight flowers in a spike, and on its first appearance to have sold for fifty guilders a bulb. Others sold for even larger sums. Justice relates that he himself raised several very valuable double-flowered kinds from seeds, which many of the sorts he describes are noted for producing freely.

It is said that the original of the cultivated hyacinth (*Hyacinthus orientalis*) is by comparison an insignificant plant, bearing on a spike only a few small, narrow-lobed, wash, blue flowers. So great has been the improvement effected by the florists that the modern hyacinth would hardly be recognized as the descendant of the type above referred to, the spikes being long and dense, composed of a large number of flowers; the spikes not infrequently measure six or seven inches in length and from seven to nine inches in circumference, with the flowers closely set on from bottom to top. Of late years much improvement has been effected in the size of the individual flowers and the breadth of their recurving lobes, as well as in securing increased brilliancy and depth of color. The names of hyacinths are now almost legion, and of all colors, carmine red, dark blue, lilac-pink, blu-

ish white, indigo-blue, silvery-pink, rose, yellow, snow-white, azure-blue. The bulbs of the hyacinths are said to be as near perfection as can be; and if set early in well-prepared soil, free from all hard substances, given plenty of room, and mulched with leaves and trash, which should be removed in the spring, they will be even more beautiful than any description can indicate. When potted for winter bloom in the house, good soil, drainage, and space must be given to them and they must be kept moist and cool, as well as in the dark while forming roots preparatory to blooming. After they are ready to bloom they do best in rooms having a southern exposure, as they will need only the warmth of the sunlight to perfect them. The hyacinth does not tolerate gas and artificial heat.

There is a pretty legend connected with the hyacinth. Hyacinthus was a mythological figure associated with the hyacinthia, a festival celebrated by the Spartans in honor of Apollo of Amyclæ, whose primitive image, standing on a throne, is described by Pausanias. The legend is to the effect that Hyacinthus, a beautiful youth beloved by the god, was accidentally killed by him with a discus. From his blood sprang a dark-colored flower called after him hyacinth, on whose petals is the word "alas." The myth is one of the many popular representations of the beautiful spring vegetation slain by the hot sun of summer. The sister of Hyacinthus is Polyboca, the much-nourishing fertility of the rich Amyclæan valley; while his brother is Cynortas, the rising of the dog (the hot) star. But with the death of the spring is united the idea of its certain resuscitation in a new year. The festival took place on the three hottest days of summer, and its rites were a mixture of mourning and rejoicing.

C. C. M.

A QUARREL BETWEEN JENNY WREN AND THE FLY-CATCHERS.

C. L. GRUBER,

State Normal School, Kutztown, Pa.

FOR a number of years a crested flycatcher has built his nest in a hole in an apple tree in my yard, about twenty feet from a house constructed for the habitation of the wrens. Jenny usually showed no animosity toward her neighbor; but one spring, while nest-building was in progress, she suddenly seemed to have decided that the flycatcher's abode was in too close proximity to her own domicile and deliberately invaded the flycatcher's domains and dumped the materials of his nest on the walk beneath the tree. When the flycatcher returned the air was filled with his protests, while the wren saucily and defiantly answered him from the roof of her own dwelling. The flycatcher immediately proceeded to build anew, but before he had fairly commenced, the pugnacious wren made another raid and despoiled his nest again. This happened a third time; then the flycatcher and his mate took turns in watching and building. While one went out in search of building material the other remained on guard just inside the door. The situation now became exceedingly interesting, and at times ludicrous. Jenny Wren is a born fighter, and can whip most birds twice her size, but she seemed to consider the flycatcher more than a match for her. The first few times after the flycatcher made it his business to stay on guard, the wren would fly boldly to the opening, but would flee just as precipitately on the appearance of the enemy from the inside. After each retreat there was a great deal of threatening, scolding, and parleying, and Jenny several times

seemed fairly beside herself with rage, while the flycatcher coolly whistled his challenge on the other side of the line of neutrality. The wren now adopted different strategy. She flew to the tree from a point where the flycatcher could not see her, then hurried along the limb in which the flycatcher lay concealed and circled around the hole, all the time endeavoring to take a peep on the inside without herself being observed, in the vain hope that her enemy might not be at home. Suddenly there would be a flutter of wings and a brown streak through the air, followed by another as the flycatcher, shot like a bullet from the opening in the tree; but the active marauder was safely hidden amid the grapevines, and the baffled flycatcher returned to his picket line, hurling back epithets and telling Jenny that he would surely catch her next time. In this manner the strife continued for several days. Then a truce seemed to have been arranged. Certainly the flycatcher was still on guard, but the wrens went about their work and did not molest the flycatchers except at long intervals. I thought the flycatchers had conquered; but one morning when I came out, there on the walk were three broken, brown-penciled eggs, nest, snakeskin, and all. The flycatcher had put too much trust in the wren's unconcernedness, and came back to find himself once more without a nest. But Jenny seemed to have desired only one more stroke of revenge, and the flycatchers finally succeeded in raising their family in front of the home of Jenny Wren.

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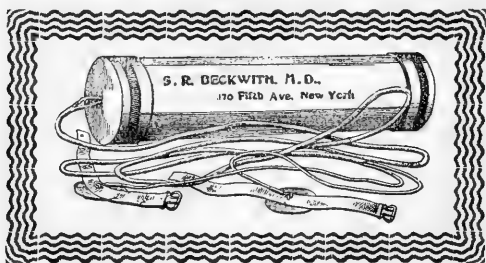
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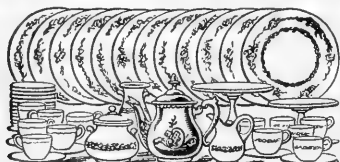


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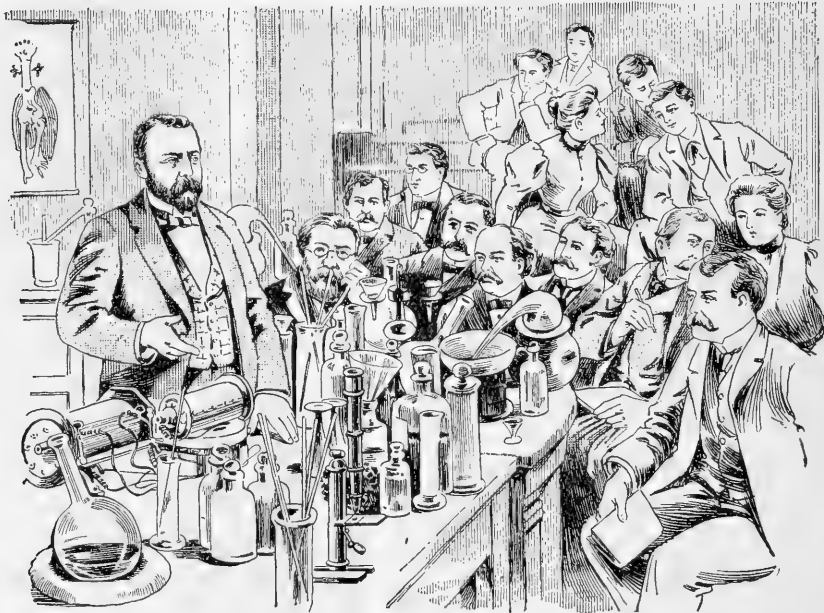
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