

The YOUTH'S INSTRUCTOR

Vol. LXII

May 19, 1914

No. 20



ARCHIMEDES ABSORBED IN SCIENTIFIC PROBLEMS AS HIS NATIVE CITY, SYRACUSE, IS
TAKEN BY THE ROMANS, AND HE HIMSELF SLAIN BY THE SOLDIERS

Forestry Telephones

THE telephone has been made to play an important part in the prevention of forest fires. Here and there are seen one of the phones, attached to a tree, in Arizona; it is a part of the system employed by the United Forestry Service. By a carefully drawn map of each forest reserve, and a series of signal towers and stations advantageously placed, the lookouts are enabled to locate a fire accurately, and by telephone and heliograph to direct the rangers to the precise spot without loss of time.

Millions of feet of timber that otherwise would have been destroyed have been saved to the country; and to the telephone system is largely due the greatly increased area of devastated forest.—*Young People's Weekly*.

Two Ways to Measure the Height of a Tree

SHUT yourself up like a jackknife, making your hips the hinge; and, placing your head between your knees, and your back to the tree, sight to the top of the tree. At a distance just equal to the height of the tree, you will see the top of the tree, and no higher. To get this location is easy, and then all that is left to do to ascertain the height of the tree is to pace off your distance from the tree. This is the German forester's method of measuring the height of trees.

Another Method

On a bright day measure the shadow of the tree whose height you wish to learn; then measure the height of the shadow of some other vertical object, as the fence post. As the shadow of the post is to the real height of the post, so is the shadow of the tree to its real height.

Hustling the Busy Bee

AN American who can make the busy bee hustle has a clear title to Yankee smartness. There is one in the San Joaquin Valley, California. When the southern orchards have gone out of bloom, his bees are transported from orange groves to alfalfa fields and sagebrush. As early as the month of April the apiarist, having stored one crop of excellent honey, goes after the summer gathering, to be garnered from the queen of Western honey flowers, the alfalfa clover. After a box-car journey the bees are set to work in their new field of labor two hundred miles from the pastures of the previous day.

By moving the hives north and south as the various honey-foods mature and fade, this up-to-date apiarist keeps his bees constantly at work. His "little busy bees improve the shining hour" all the year round, winter and summer alike.—*The Independent*.

Plating Aluminum

"IN a recent communication to the *Academie des Sciences*, Monsieur Le Chatelier says that he has succeeded in plating aluminum with nickel. That is a welcome achievement, for, except for its dull surface, aluminum, which is adapted to many purposes, would be much more extensively used. According to the *Engineer*, Monsieur Le Chatelier scours the aluminum in a bath of hydrochloric acid in which is a certain amount of iron. During the bath the iron is precipitated, and forms on the surface of the aluminum in a network of fine lines. When the metal is thus overlaid with iron, he places it in a nickel bath, with the result that the nickel becomes, so to speak, entangled in the meshes, and remains firmly in place. The process is based wholly upon a physical action, but may solve a problem that has long baffled metallurgists."

A Great Lake of Soda

THE spectacular rivalry of the Leblanc and Solvay soda processes has just been eclipsed by the development of an enormous lake of natural soda in British East Africa. The deposit is almost inexhaustible, and is to be had for the digging. Lake Magadi is really not a lake at all, but a solid chunk of soda crystals covered with a little water in the short rainy season. This water is so slight in amount as not to interfere with the successful working of the deposit. In fact, natives have dug out the soda for years without respect to the season, and, curiously, they use it as a washing soda.

A promising feature of the lake is its habit of slowly filling up all holes with soda deposited from the strong liquors, so that the same spots may be reworked many times. A rough examination showed that the soda cake is at least nine feet thick, probably more, and with its thirty square miles of area must show fully 200,000,000 tons in plain sight.

A company capitalized at \$5,000,000 was formed in 1910 to exploit Magadi Lake, and at once began to build a one-hundred-mile railway to reach the Uganda Railroad. The company expects to ship one thousand tons daily, and has arranged to build a plant at the lake to prepare the soda properly for the market. The lake now looks like a block of pink marble colored by some impurities, probably iron, which must be removed. It may be that the large amount of water chemically combined in the solid crystals will be removed by drying, in order to save freight rates.—*The Independent*.



"WELCOME, SPRING!"

THERE is no load that will break a man down so quickly and so surely as a load of revenge. The man who tries to get even with others has few opportunities of gratifying his hatred, but he is all the time corroding himself.—*W. J. Bryan*.

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VOL. LXII

TAKOMA PARK STATION, WASHINGTON, D. C., MAY 19, 1914

NO. 20



Roadside Flowers

We are the roadside flowers,
Straying from garden grounds;
Lovers of idle hours,
Breakers of ordered bounds.

If only the earth will feed us,
If only the wind be kind,
We blossom for those who need us,
The stragglers left behind.

And lo, the Lord of the garden,
He makes his sun to rise,
And his rain to fall like pardon
On our dusty paradise.

On us he has laid the duty —
The task of the wandering breed —
To better the world with beauty,
Wherever the way may lead.

Who shall inquire of the season,
Or question the wind where it blows?
We blossom and ask no reason,
The Lord of the garden knows.

— Bliss Carman, in *Ladies' Home Journal*.

"Silent Voices"

GREATER than the greatest teachers which this world has ever produced are the silent teachers which God has ordained. The mightiest voices to which man has ever listened and by which man's heart and mind have ever been stirred, are the silent voices.

Nature has neither speech nor language; her voice is not heard. Sun, moon, and stars, mountain and valley, flower and tree, alike are silent. "Day unto day uttereth speech, and night unto night sheweth knowledge. There is no speech nor language, where their voice is not heard. Their line is gone out through all the earth, and their words to the end of the world." Ps. 19: 2-4.

The ocean may roar, the wind may sigh, the birds may sing, but they have no articulate voice; no key has ever been found to their language; yet nature's sound has gone forth through all lands, and her words to the end of the world. Everywhere men have heard

and have *felt* her meaning. To the Persian, the sun spoke so clearly that it became the object of his adoration; to the Greek, earth and ocean, sun and moon, seemed alive with divine presence; and to many a savage, earth has been so eloquent that he invested it with divine significance, and offered it, in his rude way, divine honors. If nature has thus drawn men in every land to worship, if she has moved the hearts of some of the noblest of the race to rapture, then, silent though she is, she surely speaks; and though she utters no word, her meaning is real.

As David beheld above those Bethlehem hills a God of infinite love, as Moses discerned God's handwriting on the Arabian plains and mountains, and as the child Jesus learned of his Father's love from the hillsides of Nazareth, so we may learn today. And if nature is ever to be to us what it was to these, we must not be content to understand her mere alphabet by manuals of geology, botany, or physics, but by opening our hearts to her deeper revelations, and regarding with deepest adoration the mysteries she contains. "Nature will never bear her witness save to hearts that love her."

The wise men of the East, while studying the starry heavens, beheld the glory of the Creator, and by following the star as an outward sign, and by listening to that silent voice which spoke to the soul within, they were guided to the feet of the infant Jesus.

To proclaim the greatest event of all time, the second coming of Christ, God has chosen the silent language of the sun, moon, and stars.

As it has been said of nature, so it may be said of the conscience, it has neither speech nor language, its voice is not heard. Sometimes, it is true, it is so aroused that it clothes its commands in words; and, as we lean to the evil, cries with majestic voice, "Thou shalt not!" or, as we shrink back from the good, with tones of entreaty declares, "This do, and thou shalt live!"

God's voice more often is a silent one. It is not heard with the ear, but felt in the heart, an altogether higher and nobler realm for the divine.

An impression on the heart is a finer mode of communication than a sound falling on the outward ear. "The ear is but the porch of the temple; the heart is the temple itself. Which is the nobler, the messenger who delivers his message at the door, or the friend who enters and holds fellowship within the house?"

The deepest things are felt, not heard; the noblest truths reach us by a voice that is both still and small. The sculptor's calm, cold marble is the very image of silence, and yet it sometimes speaks more powerfully than the orator's lips.

"A rough, wicked sailor came to see a picture of Christ which was exhibited in one of the art galleries in Canada. He entered the room at the time of day when there were no others there; and paying his money to the woman who sat near the door, he came and stood for a moment, looking at the canvas as if he would just glance at it and then go away. But as he looked, he could not turn. He stood there with eyes fixed on that central figure of majesty and love. In a few moments he took off his hat and let it fall to the floor: In a few minutes more he sat down upon a seat and

picked up a book that described the picture, and began to read; and every few seconds his eyes would turn toward the canvas and toward the figure of Christ. Presently he lifted his hand and wiped away some tears. Still he sat; five, ten, fifteen, sixty minutes went by; and still the man sat there as if he could not stir. No sound was heard, no audible voice fell upon his ear; but a voice more eloquent and more powerful than words was speaking to his soul.

"At last he rose, and coming softly and reverently toward the door, he hesitated to take one last look, and said to the woman who sat there: 'Madam, I am a rough, wicked sailor; I have never believed in Christ; I have never used his name except in an oath: but my Christian mother begged me today, before I went back to sea, to go and look at the picture of Christ. I have come, and as I have looked at that form and that face, I have thought that some man must have believed in him. I am going out from this time to be a believer in Jesus Christ.'"

We may not all be able to produce such a picture upon the canvas; but in our lives we may allow just such a picture to be painted, and even more eloquent and far-reaching will be the results. Character, though silent, is one of the mightiest forces in the world. "All the books written and all the sermons preached cannot take the place of a holy life." For men will judge and men will believe, not by what we say, but by what we are.

The cheerful countenance and happy disposition tell us of the peace and joy within the heart, and are as indispensable to the moral world as the sunshine is to the physical world. Thoughtfulness for others, modesty, and self-respect are the qualities which reveal to us a true lady or gentleman.

Great natures are recognized by their lowliness and simplicity. "It is the full heads of wheat that bend down, the empty ones that stand up."

True, to exhibit such qualities may cost us something; but light comes only at the cost of that which produces it. Burning comes before shining. And we shall be of little use to others without cost to ourselves.

The atheist who spent a few days with the saintly Fenelon said: "If I stay here any longer, I shall become a Christian in spite of myself." Fenelon had used no words of controversy or solicitation. It was but the quiet, convincing argument of a holy life.

"I tried to be a skeptic when I was a young man," said Cecil, "but my mother's life was too much for me."

Men may legislate, they may cause our lips and our pens to grow silent; but the character, the life, though silent, speaks, and by many will be heard and understood.

Let us learn to listen to the silent voices. Nature in all her beauty and eloquence is waiting to teach us; conscience is forever uttering her notes of warning; and character is no less insistent in her tones. And having heard these voices, let us go forth to make the little spot in which we live more bright, the souls whom we meet more noble; and throughout eternity heaven will be more sweet.

MARY BARRETT.

To the Edge of Tibet for Lilies

Hunts Plants at the Ends of the Earth

E. H. WILSON, a modest American plant hunter, has gone two thousand miles into the Mongolian hinterland, to the very edge of Tibet,—gone quietly, with only a band of coolies to carry his luggage,—and has

come back with new and wonderful flowers which will make his name remembered as long as flowers are grown.

Mr. Wilson is the most audacious, the most persistent, and the most successful plant hunter the world has ever known. He has discovered and brought back no less than two thousand new plants, the greater part of which are entirely hardy in this country. This is a record which has never been even approached before. Fourteen hundred of these plants were the fruits of one expedition to the far west of China. Probably no foreigner knows that part of China better than he. Certainly he ought to know something about it, for he spent eleven of the best years of his life there. Eleven fruitful years they were, and crowded with happenings worth telling about. The trouble with Wilson is that you cannot get him to talk, or at least about himself.

It is a shame for any man to bottle up so many good stories, just because he figured in them.

There is the time, for example, when he broke both legs on the mountain side just after he had discovered a wonderful lily, which he knew instinctively would grow as well in America as in China if it were given a chance. He was feeling very happy over this discovery as he worked his way down the steep incline, but his joy was cut cruelly short when a great boulder



CHINESE LILIES

came chasing after him and refused to be dodged. When his coolies picked him up, his legs were dangling. Both were fractured.

Three days' journey away was a native town, with a missionary station and missionary doctors. For three days, therefore, his coolies carried him, intermittently conscious, over the rough trails. For sixteen weeks he remained in the missionary town while his legs mended. All this time, though, he was thinking of those lilies back in the mountains, and when he could walk without groaning, back he went in search of them. Wonderful lilies they were, blooming by the thousands there on the mountain sides. The flowers were white, suffused with pink and with a rare shade of canary yellow at the center. The jasmine-like perfume which they emitted filled the air, delicate and sweet, not like the heavy fragrance of most lilies.

So certain was Mr. Wilson that these lilies would thrive in the United States that he gathered ten thousand bulbs, loaded them on the backs of coolies, and started with them for the coast. Six months elapsed from the time they were dug in China until they were planted in New England, but hundreds of them bloomed last summer. Its name, *Lilium Myriophyllum*, is the only point against the lily's widespread popularity; but it is being called the Incandescent lily. The flower has been honored in remarkable ways, and at the International Flower Show in New York it was awarded a gold medal as the finest new plant in cultivation.

Plant hunting is not a business for soft-bodied men. It involves great hardships, long separation from friends and family, and danger to life and limb. The plant hunter must be a thoroughgoing naturalist and botanist. He must know practically every plant under

cultivation in civilized lands. Otherwise he will spend time and labor on those which have already been introduced. Mr. Wilson's familiarity with plants is marvelous. It is estimated that he can name from thirty to forty thousand. When he says a variety is new, he is not likely to be wrong. Probably no other living man is on speaking terms with so many flowers, native and foreign.

No one who has discussed plants with Mr. Wilson can doubt his scientific attainments. Born in England and trained at the famous gardens of Kew, he has made of plants and flowers a lifetime study. It would take too much space to give a list of even the more important plants from foreign lands which he has established in this country. Many of them came from regions never before explored, and among them are strangely beautiful vines and shrubs. In the mountains of western China, for instance, Mr. Wilson found plant life never before looked upon by the eyes of a white man. He is loyal to the Chinese, for China gave him his rarest treasures. Now he is off on another expedition to southern Japan, and he will doubtless return with many treasures, and more adventures — to suppress. — *The Independent*.

Spring Night

In the wondrous star-sown night,
In the first sweet warmth of spring,
I lie awake and listen
To hear the glad earth sing.

I hear the brook in the wood
Murmuring, as it goes,
The song of the happy journey
Only the wise heart knows.

I hear the brachian note
Of the tree-frog under the hill,
And the clear and watery treble
Of his brother's silvery shrill.

And then I wander away
Through the mighty forest of sleep,
To follow the fairy music
To the shore of an endless deep.

— *Bliss Carman, in Washington Post.*

A Washington Fruit Farm

THE West is famous for its production of fruit. This has been made possible by the methods of irrigation which have been introduced into the otherwise arid regions. Although oranges and other semitropical fruits are not grown in the State of Washington as in California, yet many of the so-called California fruits are produced in abundance there, especially in the eastern part. Whether in the Yakima valley, the region of Spokane, or in the Walla Walla valley, it is much the same. A fruit farm in the latter section, typical of the best farms of the State, consists of several thousand acres, of which more than one thousand five hundred acres are in fruit trees, the rest being used for the growing of hay, vegetables, and smaller crops.

These large fruit farms operate packing houses in order that the fruit may be shipped in the best possible condition while fresh. This makes possible the display of fresh fruits — the many varieties of sweet cherries of all colors, "California" blue plums, peach plums, nectarines, apricots, Hungarian prunes, peaches, apples, pears, and many other fruits — in the markets of the Eastern cities. From the packing house of the one fruit farm which I shall describe, from four to eight carloads of fruit are shipped daily during the busy part of the season to different parts of the United States, and even to such places as Liverpool and cities on the European continent.

Almost as far as one can see in any direction are trees planted in perfectly straight rows. The trees are not allowed to become very old; for as soon as their productiveness begins to slacken, they are uprooted and replaced by younger trees. Whole sections of the orchard are filled with trees of as nearly the same size and shape as trimming and pruning can make them, and in the spring when in bloom they present a beautiful appearance. The pure white of the plum and cherry trees blends with the delicately tinged pink of the apple and the deep pink of the peach trees. When budding, the temperature must be closely watched. With a quarter of a million or more trees to care for, this means considerable work, but thousands of dollars are saved by taking proper precautions. Thermometers are located in various parts of the orchards, which, as soon as the temperature falls to the danger point, automatically ring an electric bell centrally located. This is a signal for smudges to be lighted to keep off the frost.

To one who has been used to buying "California" blue plums "two for a nickel," it may seem queer to see men from the country drive up to the scales with a load of Italian prunes (for that is the real name) and have them weighed as a farmer would weigh a load of hay. But that is the method packing houses use in buying their fruit; they buy it by the ton. They not only pack the fruit which they have grown, but buy large quantities from the small farmers around them.

The busiest packing season is in August and September. Then not only plums and prunes but apples, pears, and peaches are packed. The packing house is a long, narrow building, two stories high, with platforms and railway tracks on either side. It resembles a warehouse in most particulars, with its sliding doors and many windows.

On entering at the front, we see at either side and in a double row down the center, between two and three hundred girls working at their benches. At the call of "Prunes, please," men carry the fruit to them as it has come from the trees. The girls arrange the fruit according to size, in baskets, and "top off" with the best prunes. These square baskets are placed four in a crate, and after the packing boss has inspected the work and given the packer credit for it by punching a ticket, the crates are carried to the nailers, who put on the covers. As soon as this is done, a boy stamps the name, size, and quality of the fruit on the crates, and they are then ready to be taken to the cars.

Apples and pears are generally wrapped in tissue paper and placed in layers in their boxes. These boxes are much larger than the prune crates, and of different shape.

Cherries are packed in shallow crates about twelve by twenty-four inches. The first layer of cherries is carefully arranged in neat rows. The fruit must be of the same size and of the best quality. The box is then filled, and the bottom of the box put on. When the top is removed, the pleasing appearance is seen as in the stores.

But where do the girls get all the crates they use? At several different places in the building are chutes down which crates come as fast as others are taken away by the packers. Upstairs, men are kept busy making the crates, and it generally keeps one boy busy to tend two chutes, putting down the crates which the nailers have made.

Every day the switch engine from the city brings out several iced refrigerator cars, and places them on each side of the packing house. Then the loaders truck

the crates of fruit into the cars and arrange them in tiers, nailing thin strips of wood across the ends to hold them in place. As soon as the car is filled, it is sealed; and in the evening the switch engine comes and starts the fruit on its journey. It is taken to some wholesale house in Chicago, New York, Philadelphia, or other city of the East, and then the retailer sells it to the public.

FLOYD W. SMITH.

Beavers at Work

THERE is one field of labor in which, though the union of workers is complete, there is never any strike. No walking delegate is needed in a lodge of beavers, for where communism prevails there are no "employers" and no "employed." Beavers are proverbially industrious. "To work like a beaver" has become a byword. They have skill to plan and to carry on their work. Their enterprises have attracted the attention of naturalists, and one of them, Mr. Enos A. Mills, has written an interesting book, "In Beaver



TWO INDUSTRIOUS BEAVERS

World," devoted to the life and doings of these animals. From that book these paragraphs are taken:—

"At times upward of forty of them were in sight. Although there was a general cooperation, yet each one appeared to do his part without orders or direction. Again and again a group of workers completed a task, and without pause silently moved off, and began another. Everything appeared to go on mechanically. It produced a strange feeling to see so many workers doing so many kinds of work effectively and automatically.

"Again and again I listened for the superintendent's voice; constantly I watched to see the overseer among them; but I listened and watched in vain. Yet I feel that some of the patriarchal fellows must have carried in their minds a general plan of the work, and that during its progress orders and directions that I could not comprehend were given from time to time.

"The work was at its height a little before midday. Nowadays it is rare for a beaver to work in daylight. Men and guns have prevented daylight workers from leaving descendants. These beavers not only worked but played by day. One morning, for more than an hour, there was a general frolic, in which the entire population appeared to take part.

"They raced, dived, crowded in general mix-ups,

whacked the water with their tails, wrestled, and dived again. There were two or three play centers, but the play went on without intermission; and as their positions constantly changed, the merrymakers splashed water all over the main pond before they calmed down and returned to work in silence.

"I gave most attention to the harvesters, which felled the aspens and moved them, bodily or in sections, by land and water, to the harvest piles. One tree on the shore of the pond, which they felled into the water, was eight inches in diameter and fifteen feet high. Without having even a limb cut off, it was floated down to the nearest harvest pile. Another, about the same size, which the beavers felled about fifty feet from the water, they cut into four sections, and removed its branches; then a single beaver would take a branch in his teeth, drag it to the water, and swim with it to a harvest pile.

"Four beavers united to transport the largest section to the water. They pushed with forepaws, with breasts, and with hips. Plainly, it was too heavy for them. They paused. 'Now they will go for help,' I said to myself, 'and I shall find out which is the boss.' But, to my astonishment, one of them began to gnaw the piece in two, and two more began to clear a narrow way to the water; the fourth set himself to cutting down another aspen."—*Youth's Companion*.

A Vision of Spring

I CAUGHT a whiff of arbutus today

While passing down the dusty city street,
Impatient of its clamor. On my way

There came to me a fragrance, strange and sweet,
And all the noise and din and ceaseless whirr

And noisome odors of the bustling crowd
Were hushed; for in a moment came the stir

Of breezes, nodding flowers, and drifting cloud.
Like chime of bells rang out the thrush's song;

I heard the scarlet tanager's shrill cry;

Above me soared an eagle, swift and strong;

I saw the forest break, and let the sky

Look down upon its secret, fairy dells,

Where, pouring over rocks and trunks downthrown,

The trailing windflowers ring their elfin bells,

Faint sounds, to our dull sense as fragrance known."

Today I heard a robin sing, and O,

The sunlit vision in those melodies!

The murmuring, rustling river whispered low

Its joyous hope to the bent, listening trees.

The misty foliage of the willows old

Showed flush of youth again at April's kiss,

Though shivering still in dread of winter's cold,

And doubtful of the coming summer's bliss.

The lady birch, whom all the storms and blasts

And shock of wintry tempest could not shake

From out her quiet gentleness, at last

Made trustful by the song, began to make

Concessions to the spring; a filmy green

Half hid, half showed her silvery boughs, and blent

With mauve and pink and pallid golden sheen,

The maple buds a note of scarlet lent.

Today I saw a spray of apple bloom

Bright gleaming in a path of dusty gold

Just where a sunbeam cleft the squalid gloom,

Then straightway summer sunshine did unfold

Pictures of spreading trees in orchards fair,

And fences sagging under flower-crowned vine:

Nests in the boughs and bird song everywhere;

Goldfinch and bobolink in rapture fine

Poured forth their music in the perfumed air,

And little children laughed and played with glee,

Kissed by the loitering breeze on forehead bare,

Singing and shouting in sheer ecstasy.

If man must build the city, brick and stone,

And filled with strain and stress my life must be,

Yet in the crowd I still may be alone

And live again the spring in memory.

—Mrs. Newell Dwight Hillis, in the *Independent*.

The Career of a Great Teacher, Louis Agassiz

EDMUND C. JAEGER

TO the men who have widened the boundaries of human knowledge," says Dr. David Starr Jordan, "we owe a debt which we can repay only by a friendly remembrance of the work these men have done." In this fact and in the desire to incite others to lives of nobler endeavor, you will find my reasons for telling you the story of Louis Agassiz. In his youth Agassiz had said he wished to be "a good citizen and a good son, beloved by those who knew him." He became all this, and also the greatest teacher of natural history of his time.



LOUIS AGASSIZ

Louis Agassiz was born in Motier, Switzerland, in 1807, the same year which marked the birth of that radiant luminary of the literary world, Henry W. Longfellow, and these two men so akin in age later became the closest of friends. Those opening years of the nineteenth century, 1800-10, gave birth to a remarkable group of persons, both literary and scientific. There were Asa Gray, Abraham Lincoln, Charles Goodyear, Henry Guyot, David Owen, Theodore Parker, Elizabeth Browning, John Greenleaf Whittier, Alfred Tennyson, Edgar Allan Poe, Thomas Babington Macaulay, Victor Hugo, Oliver Wendell Holmes, Nathaniel Hawthorne, Ralph Waldo Emerson, Alexandre Dumas, and Bulwer-Lytton. If you go back ten years into the eighteenth century, you find the birthdays of a group of men equally great,—Thomas Arnold, Samuel F. B. Morse, Isaac Lea, Edward Hitchcock, Joseph Henry, William Cullen Bryant, Thomas Carlyle, Percy B. Shelley, and Heinrich Heine.

It was the observation of a great student that the best interpreters of nature have been reared in country places where they could early read the pages of the wonderful lesson book of the outdoors. Louis Agassiz, no exception, was born and grew up on the borders of Lake Morat, one of those charming valley lakes of Switzerland about whose margin the mighty Alps soar heavenward, gleaming with the snows of eternal winter.

Agassiz's early life was influenced by the strong mental guidance and care of noble, high-minded, and godly parents, who through the exercise of forceful character and unusual fidelity to elevated ideals of life, left an impression on their son which could never be effaced. The great English statistician Galton found the men who have attained eminence as scientists invariably the sons of noble mothers. Mrs. Agassiz was a woman of sincere piety and refinement, and endowed with good mental capacity, whose power she exercised in every good work. Agassiz's father was a minister. So were the fathers of Oliver Wendell Holmes, Edward Everett Hale, John Hancock, Ralph Waldo Emerson, Eugene Field, Henry Ward Beecher, James Russell Lowell, and Francis Parkman.

The passion which the youthful Agassiz early mani-

festated for observing and collecting natural objects greatly pleased his parents, and they allowed him the privilege of roaming the fields with his young companions, who with him delighted in making collections of toads, bugs, mice, and any other creatures which they might catch and rear.

"And Nature, the old nurse, took
The child upon her knee,
Saying, 'Here is a storybook
Thy Father hath written for
thee.'

"Come wander with me,' she
said,
'Into regions yet untrod,
And read what is still unread
In the manuscripts of God.'

"And he wandered away and
away
With Nature, the dear old
nurse,
Who sang to him night and
day
The rhymes of the universe.

"And whenever the way seemed long,
Or his heart began to fail,
She would sing a more wonderful song
Or tell a more marvelous tale."

—Longfellow.

Agassiz was especially fond of collecting fishes, and the little basin in the rear yard, built to catch the waters of a bubbling spring, was turned into an aquarium that his intellectual curiosity might be satisfied with the constant companionship of his finny friends.

It was impossible for a mind such as his to be satisfied with mediocrity in intellectual attainment. Agassiz early set himself to the accumulation of a vast store of miscellaneous information; he would know everything. The quickness of his mind to learn, and the ability of his hand at mechanical execution, are often spoken of. Once, upon the occasion of a visit of the itinerant tailor and shoemaker who annually came to the home and remained a member of the family while he made up the year's supply of clothing and shoes, Louis surprised his little sister, to her great delight, by making her a miniature pair of shoes for her doll, after the exact pattern of the cobbler's model.

The industry of the boy was prodigious. He was always busy at something; now helping his parents in the field, then again taking long journeys into the open. In speaking of these tramps, his biographer says that he thought nothing of walking twenty miles in a day as he threaded the intricate mazes of his mountain home or climbed the steepest acclivities in search of some new specimen of which a report had been conveyed to him. It was long the ambition of the young naturalist to familiarize himself with the scientific name of every known living creature. The long Latin names were one after another committed to memory with untiring zeal, and great volumes of manuscript containing the names of all the animals and plants were accumulated; but after he had progressed with his self-chosen task to a considerable length, he saw that this learning of names was really a great waste of time, and that it would be much wiser and saner to learn to arrange and name creatures in order according to their family relations, as Linnæus had

done with the plants. So, unregretfully dropping his famous accumulation of names, he began all over again to classify the animals after his new system, with as much zeal as he had before learned their names.

His room at home was fast becoming a veritable museum. He had in it over fifty live birds at one time. Every shelf and corner was crowded with specimens. Had Agassiz anything but an extraordinarily patient mother, he never could have maintained so varied a collection. We can well imagine the perplexity presented to Mrs. Agassiz's mind when dusting and cleaning day came each week, and all these specimens had to be moved. But we never hear of her uttering one word of complaint. She was one of those remarkable mothers who know just how to bring up a boy. She knew it was ever profitable and best to encourage the natural bent of the mind as long as it tended upward.

At ten years of age, Agassiz was sent to a college for boys at Bienne. Though the rules were strict and the hours long, he tells us that he enjoyed his work very much, and he always spoke affectionately of his teacher, Mr. Rickey. More and more he became devoted to the study of the sciences, and the summer vacations were filled with excursions and collecting trips.

The father desired that Louis should prepare himself for commercial life, feeling that it would offer him an opportunity to earn a comfortable living; but young Agassiz was too enraptured with the study of the sciences to think of such a career. His studies in anatomy and zoology had turned his mind toward medicine, and at seventeen he entered the medical school at Zurich. His brother Auguste accompanied him, and the two boys, "so happy and so poor," struggled on together for their education. Their parents being poor, books were not plentiful; but this did not deter the young naturalists from building up a library. What they could not buy they could copy, and many hours were spent by Agassiz and his brother copying bulky volumes that they might have the information they contained for their own.

Agassiz said, in after years: "My inability to buy books was, perhaps, not so great a misfortune as it seemed to me; at least it saved me from too great dependence on written authority. I spent all my time in dissecting animals and in studying human anatomy. I was always surrounded by pets, and had at this time some forty birds flying about my study with no other home than a large pine tree in the corner. I still remember my grief when a visitor, entering suddenly, caught one of my little favorites between the floor and the door, and he was killed before I could extricate him."

After two years at Zurich the brothers parted, Louis going to the university at Heidelberg, and Auguste entering the commercial school at Neuchâtel. It was while Agassiz was at Heidelberg that he met Alexander Braun and Karl Schimper, who became his lifelong friends, and who persuaded him that he should go to Munich for further study. Here, under the celebrated Martius, Döllinger, and Schelling, he devoted himself to the study of natural history, keeping up his studies in medicine out of deference to the wishes of his parents, who saw in natural history no chance for a living.

While at Munich, Agassiz met many men of genius who were not slow in recognizing his worth, and it was not long until his room was the center of a group of about twenty young naturalists who eagerly met with him to discuss scientific questions. Their meeting

place was known as "The Little Academy." "The room was small and so filled with specimens, seat and floor, that visitors not only had to stand up, but sometimes could not move around, while the walls were covered with sketches of all kinds of animals, and with their skeletons and grinning skulls, to the possible terror of the landlady." From this room came many future noted scientists, and here they received their first training. Why do not more young men of our day recognize the pleasure and value of such meetings, and group themselves into little study clubs for mutual edification?

Agassiz, so taken up with his work, could not understand how young men about him could elaborately waste their time in enervating pleasures. "The ordinary frivolities of life did not enter into his composition, not that he was not full of life and fond of sports, but he seems to have been gifted with that rare faculty in the young of looking ahead. He planned his career, and was working up to it with a sagacity that was almost abnormal."

"Perhaps no feature of Agassiz's early life," says his biographer, "has attracted so much attention among laymen as his thoroughly religious feeling and attitude, and this never changed. He possessed it all through life; and in the great intellectual conflicts in which he became engaged in later years, his religious nature was always a dominant factor to be counted with. We find this cropping out in his student life. His home training, the influence of his mother, and the traditions of his family—were strong within him; and the 'rare comet of the Heidelberg horizon,' as Braun describes him at this time, was a student with strong religious proclivities that could never be overcome by even the jokes of his more or less jovial companions."

(To be concluded)

The Greatest of Volcanic Eruptions

IN one of the volcanic islands of the East Indies between Sumatra and Java, there occurred in the summer of 1883 the most serious volcanic eruption known to history, that of Krakatua (Krä-kä-tu'-ä). A succession of explosions for two days blew away about one half of the island mountain, brought the neighboring seas and lands to total darkness, impeding the sailing of ships by the ash that fell on the sea, and gave forth reports which were heard in Bangkok, in the Philippine Islands, in Australia, and more than two thousand miles to the westward in the Indian Ocean. Dust fell on ships sixteen thousand miles away; and the ascending dust, caught in the upper air currents and carried twice around the world, gave rise to a succession of widely distributed brilliant sunsets in the following winter and spring, and the entire effect was not lost for three years.

A cubic mile of rock material was hurled into the air. The Mississippi, with its strenuous effort to fill up the Gulf of Mexico by its annual deposit of silt and mud, has not in two hundred and fifty years, it is estimated, accomplished so great a feat as Krakatua did in its brief but terrific eruption. Thirty thousand lives were destroyed by this outburst of volcanic force, which also caused one half the waters of the earth to vibrate with wave motion. On neighboring shores waves rolled to the height of sixty or seventy feet.

IF men wish to be held in esteem, they must associate with those only who are estimable.—*La Bruyere.*

Revelations of the Microscope

THE human eye is one of the most marvelous of God's creations, and yet it can see but a few things. There are millions of stars that the telescope and the photographic plate reveal that no unaided eye has ever beheld.

There are colors that the delicate instruments of the physicist detect, but they are not discerned by the eye alone. There are the molecules, atoms, and electrons composing all forms of matter; but the eye sees none of them. There are electromagnetic waves that wireless instruments capture and cause to disclose messages, but the eye cannot see them. There are hundreds of thousands of wonderfully constructed breathing pores that the microscope reveals on the stems and leaves of plants, but the eye is not acute enough to see them. There are marvelously varied and interesting pollen grains in the flowers, but to the human eye they are all alike. There are millions of oxygen carriers running to and fro in our blood, but the eye discerns them not. So there are in every fresh-water pond, as well as in the ocean, a great variety of interesting organisms invisible to the eye. Among these are the innumerable varieties of protozoans. Some one has said that "of all departments of microscopic research the most fascinating and the most popular is that which deals with what is known by the generic name of 'pond life.'"

Gently lift a lily pad from the lake, and scrape the water from its lower surface onto a glass slide. Explore this miniature pond carefully with a high-power microscope, and you will discover so many marvelously beautiful and interesting protozoans, or one-celled animals, that you will ever after be an ardent admirer of "pond life."

First the lively paramecium, or slipper animalcule, which can under certain conditions be observed by the unaided eye, but which practically is invisible, insists on being seen; and you want to see it, for it is one of the most common and interesting of the ciliated infusoria. The cilia are fine protoplasmic threads resembling in appearance, not in structure, fine hairs. These move freely in the water, and propel the little animal at a wondrous speed. The water in a vase of flowers usually harbors whole armies of the paramecia, so numerous sometimes as to give the water a milky appearance. Fig. 22 in the accompanying il-

lustration somewhat resembles in general shape the paramecium.

In Fig. 2 the euglena is shown. Instead of having cilia, it has only one long cilium, called a flagellum or whip.

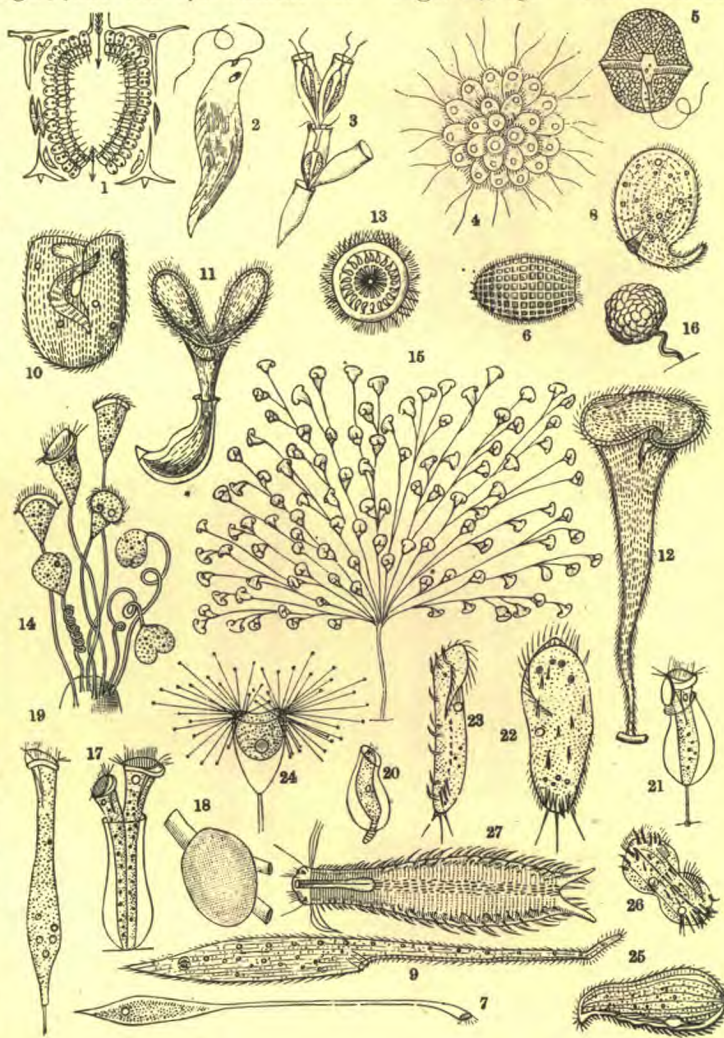
Fig. 4 is a spherical colony of zooids, each of which has two flagella. With these it rolls itself through the water in a fascinating manner. But perhaps no fresh-water specimen is more interesting than the tree-like vorticella, or bell animalcule. This is a colony of animals, and each section contracts independently. See Figs. 14, 15. "Down the stem runs a muscular fiber,

and on the least shock the fiber contracts and draws the stem into a beautiful spiral, while the cilia are drawn in, and the zooid assumes the appearance of a ball at the end of a watch spring. An exquisite sight is a colony of Vorticellæ, for these actions are always going on, as, for example, when one member of the family touches another, which is quite sufficient to provoke the contraction.

"Many compound tree-like forms of Vorticella are known, one of which, *Carchesium* (Fig. 15), may serve as a type of all. In the case of this organism, the colony contracts in sections on a moderate shock; in the second, *Zoothamnium*, as a whole; while in *Epistylis* the stalks are rigid, and the individuals contract singly. When the shock is violent, the appearance presented by the two former is that shown in

Fig. 16." Figs. 11, 17, 20, are characterized by a transparent case within which the animal retreats on the approach of an enemy. Fig. 7 shows the trachelocerca, with its long, flexible neck. This the animal keeps in constant motion from side to side as it swims along. The head has a fringe of cilia.

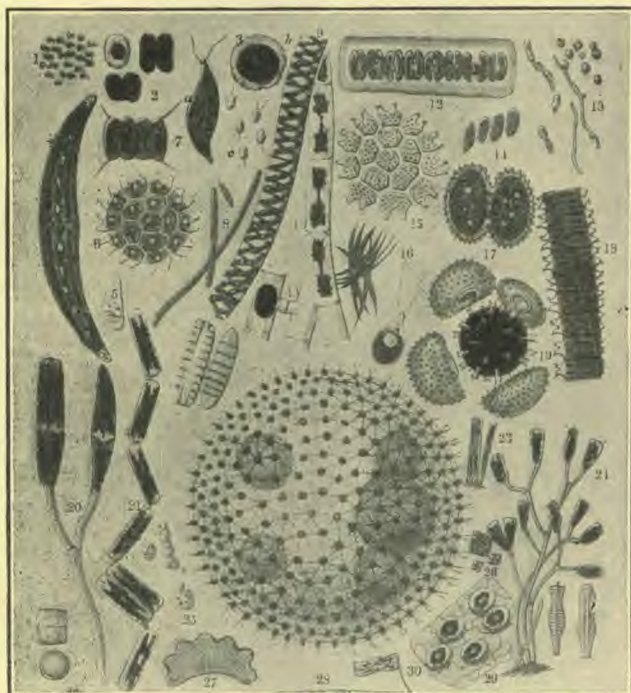
The plant world hides quite as many wonders from the human eye as does the animal kingdom. The bacteria that are accountable for most of our contagious diseases are invisible plants. Besides these there are in our ponds innumerable microscopic plants of intense interest to the nature lover; among these are the desmids, diatoms, and oscillaria. The desmids are minute one-celled plants of a bright green color that have the power of slow self-movement in the water. They are affected by light, and move toward it. The diatoms are much like the desmids, but have a silicious or glass-like shell for a covering. This case usually consists of two valves united to each other by means



INTERESTING SPECIMENS FOUND IN OUR PONDS

of two embracing rings or girdles. These cases are covered with fine marks or lines. There are ten thousand known species of diatoms.

The volvox globator is an interesting organism that was classified at one time as a plant, then as an animal,



DESMIDS, DIATOMS, AND VOLVOX, THE LARGEST SPECIMEN

then as a plant. Now scientists seem to have given it a permanent place in the vegetable kingdom. It consists of a hollow sphere, consisting of a pellucid material, studded at regular intervals with minute green spots, perhaps as many as twelve thousand. From each of the spots project two long flagella or whips; so that the entire surface of the sphere is beset with these lashing filaments, thus enabling the volvox to spin like a top, roll over and over in its onward motion, or glide smoothly through the water. Protoplasmic threads connect each cell with those that surround it.

If you have not already made friends with the intensely fascinating microscopic one-celled plants and animals of our fresh-water ponds, you have missed much pleasure and knowledge. 'Tis very true that now we see through a glass darkly; but we shall hope that to the immortalized eye there will be open all of earth's hidden beauties.

Floating on Water With and Without Aid

In the waters of the Dead Sea, in Palestine, a bather can lie on the surface in perfect ease and comfort without making the slightest effort to keep afloat, since the water contains about six times as much salt as the water of the ocean, and is so dense that the body floats only half submerged. A bather may float readily on the surface of the Great Salt Lake in Utah, but on the Dead Sea he can do nothing else but float, and an expert diver can scarcely reach a depth of six feet. Through the buoyancy of a special type of suit recently invented in France and made of tissue cloth, a bather may float in fresh water. The inventor of this suit claims that it is both unsinkable and waterproof, and that it is therefore particularly suitable for use by airmen, steamer passengers, and motor boat enthusiasts.

Rose-Blooming Blackberry

AN interesting experiment has been made by a resident of Tropico, California, in the budding of a rose to a blackberry bush. Following the budding process, the bush grew rapidly, and last summer it bloomed profusely. As a result of the experiment a new flower has been evolved, whose blossom is white, with irregular leaves shooting out from the center, like the carnation. The foliage and stems of the plant retain the appearance of the blackberry bush. It is odd to note that in spite of many crosses successfully made by botanists, but relatively few new fruits have been created for consumption.—*Technical World*.

Flying Race Around the World

PREPARATIONS are under way for a flying race around the world, to start from the exposition grounds at San Francisco in May, 1915, and to end at the same place within ninety days from the time of starting. The flight is to be an international contest, with a prize of about \$300,000 awaiting the airman who completes the journey in the shortest time. The route shown on the map was adopted with the idea of keeping the fliers over land as much as possible. It has a total length of 22,760 miles, and is to be followed in an easterly direction. The most dangerous section of the route is considered to be the steppes of Siberia, and the Russian government will be asked to station troops along this section to give aid to the airmen. All parts of the route that lie over the sea will be patrolled by cruisers.

The longest over-sea flight will be from Cape Farewell, Greenland, to Reykjavik, Iceland, a distance of 670 miles. Twenty-six control stations equipped with supplies and facilities for making repairs will be es-



ROUTE OF THE PROPOSED AERIAL FLIGHT

tablished at intervals around the world. At each of these controls each airman must check in and have his machine marked with an official stamp. The Fédération Aéronautique Internationale will supervise the contest.—*Popular Mechanics*.

Protect the Birds

THE birds are our friends. They were made for our pleasure and profit, by their life and not by their death. The first thing of importance in bird lore at the present time is that all birds must be protected, or we shall be without birds; for a few years ago careful investigation was made of bird life, and there was found to have been during the fifteen years previous to the investigation a decrease of bird life, a general average decrease of forty-six per cent.

In 1903 there was pending in the courts the case of the people of the State of New York against two men of New York City, to enforce a payment of fines amounting to \$1,168.315 for having in their possession, contrary to law, in a cold storage warehouse certain dead birds, out of season. When the game wardens searched the premises of the defendants, it is stated that they found the following appalling mass of birds:—

| | |
|---------------------|---------------|
| 8,058 snow buntings | 7,560 grouse |
| 7,067 sandpipers | 4,385 quail |
| 5,218 plovers | 1,756 ducks |
| 7,003 snipe | 288 bobolinks |
| 788 yellowlegs | 96 woodcocks |



GRAFTING TOOL WHICH ELIMINATES DAMAGE TO THE BARK

A farmer has designed a tool for use in tree grafting, by which scientific grafts can be obtained without expert assistance. Specially devised tongs and a knife are operated by levers so that the bark is cut cleanly, preventing tearing and shredding. The splitting knife is adjusted so that it cuts a straight line between the cuts made by the tongs. The scions are then put in place, the knife removed, and the wax applied. A very high percentage of perfect grafts is possible with this improved appliance.

While within the past decade much has been done to conserve our bird life, yet it is still being ruthlessly destroyed.

Not wealth, but the ability to meet difficult conditions, is the measure of a man.



Nests

THE habit of nesting is best developed in birds. Yet many birds do not make nests; some, like many sea birds, lay their eggs on the bare ground, and others merely collect together a rough heap of material so as to shelter slightly the sitting hen. Again, the harvest mouse and the squirrel among mammals; the stickle-



backs among fishes; ants, bees, and wasps among insects, all build nests. Among birds the instinct is best developed among the passerine forms; and the weavers, tailor birds, and humming birds all construct nests of special beauty and complexity. As a general rule, in birds the character, material, and situation of the nest show great constancy for the species, though some birds do not hesitate to appropriate the nest of another species, while other birds show a great range of variation in regard to the situation and material of the nest. In birds the object of the nest is merely to serve as a convenient place for incubation; but among other animals the nest frequently serves, in addition, as a habitation. In such cases the nest tends to become overrun with vermin—as are usually, indeed, the beautiful nests of birds. The more intelligent forms, like the apes, seem to get over this difficulty by frequently abandoning the old habitation for a new one. It is perhaps in part this difficulty which leads the squirrel to construct two nests—a summer one, in which the young are reared, and a winter one, where hibernation is carried on.—*Encyclopedia.*

Little Brook

LITTLE brook, how full of glee
Seems your rippling melody;
Like some gay-toned jubilee,
As you pass o'er stone, by tree,
Singing brook.

Like a child you dance and play,
From daybreak to break of day,
And for rest you never stay,
But you frolic all the way,
Playing brook.

Verdant is the course you tread.
Would of us it might be said
That the pathway which we tread
Bloomed as thine because we sped
'Long its way.

So, then, sing as on you go;
Playing, laughing as you flow
Over stones, a-winding so,
Making verdant things that grow
'Long your way.

Teach us to let laughter ring
Over places rough; to sing,—
Rippling over everything,—
And to e'er a blessing bring
Where we go.

WALTER J. PAULSON.

The Gift of the Birds



My earliest experience with a bird took place when I was so small that it is among my first distinct memories. I found a woodpecker lying on the grass under a cherry tree. Now I cannot remember the time when I did not try to work out for myself anything that puzzled me. I picked up the bird, and thought deeply. Others of his kind were sailing through the air; why was this one lying limp and helpless on the ground? He ought to fly away; so I spread his wings and tossed him into space. He fell to the ground.

I thought that perhaps the little fellow could not fly because he was hungry. I carried him into the garden, pried open his beak, and stuffed him with green gooseberries, the only things I could reach.

Again I launched the bird on wing; again he fell. I had noticed that other birds flew from trees and high places; so I carried this one upstairs and started him from a window, with no better result. I went downstairs, picked up the bird, and sat on the front step, at the point of tears. My father came out, and I began asking questions. That morning I learned a new word—"dead." I had not known "dead" before.

"I don't think you would like to be shot," I said, "because you were hungry and ate some cherries."

A Business Proposal

My father explained that he did not permit robins, orioles, or any bird of song to be killed, but that woodpeckers were not musical, and that they took a great deal of fruit. Then I made my first business proposal: "If you will make the boys stop shooting woodpeckers, I won't eat another cherry. They may have all mine." My father said that it was a bargain.

I never noticed before that cherries were so big, so ripe, so tempting; and it seemed to me that all our family, helpers, and friends spent most of their time offering me cherries. The cook almost broke my heart by presenting me with a beautiful little cherry pie. I could not say a word, but tears came to my eyes. I backed away, gripping my hands tight together behind me, in order to keep from taking the pie. Right there my mother intervened. She said she had decided that there were cherries enough for all of us, and for all the birds besides; so I got the pie.

Then for two or three years I loved and protected the birds as best I could; I cared more for them and for being outdoors among them than for dolls and indoor play.

I won the title of "bird woman" one bright morning in summer. As I was crossing the orchard, I heard the sharp crack of a rifle, and saw a big bird swirling to earth, and my father hurrying toward him. My bare feet made no sound as I ran after my father.

A large chicken hawk was sitting back on his tail, with one wing extended, broken and bleeding; in the bird's eyes was a pitiful look of pain, fear, and defiance. My father swung the rifle; as the butt came whirling round, I sprang forward and sheltered the bird with my body. The gun whizzed past my head so close that the rush of air struck my face. My father dragged me away from the bird.

"Are you mad?" he cried. "I barely missed braining you!"

"I'd rather you had," I said, panting, "than to have you strike a bird when his eyes are like that! O



father, please don't kill him! He never can fly again! Give him to me! Please!"

"Keep back! He will tear your face!"

Then for the first time in my life, I contradicted my father. "He won't! He knows me! He knows I wouldn't hurt him. O, please give him to me!"

I went back to the bird and laid my hand on him. The hawk huddled against me for protection. In a choice between a towering man who threatened with a rifle, and a little child who offered shelter, is it any wonder that the bird preferred the child?

My father was amazed. "I don't understand you, child," he said. "Keep the bird, if you think you can!"

After my father had gone, and the hawk had begun to revive from the pain, he was not so friendly as I had hoped he would be. In fact, he showed signs of wanting to scratch and bite me. I did not know how to begin taming him. My first thought was that he should be in a shady place, and that he should have something to perch upon. I found a long stick, and by dint of patient maneuvering, drove the hawk to the woodhouse, where he climbed to the highest part of the corded wood. There he sat sullenly for the remainder of the day.

The next morning I went to the woodshed very early. I thought that the hawk, after a day and a night with a broken wing, and without food or drink, would surely allow me to care for him. I approached cautiously with a basin of water; as I went close, the bird drew back into the corner. I knew he must be suffering dreadfully. I had always heard that wounded soldiers were frantic for water, so I patiently held the basin out; at last the hawk thrust in his beak and drank. Then I offered him some scraped meat; finally he took some from the end of a long stick.

Flies began to cluster over the broken wing, and I knew that would not do. So with one clip of the sheep shears I cut the skin and muscle that held the broken wing tip. The bird screamed, but did not touch me. Then I poured cold water over the hurt wing until the wound was clean. From that moment the hawk ceased to threaten me. I believe he knew I was relieving the pain.

Then I went into the house, and asked my mother if she had something in her medicine chest that would heal the bird's wound and keep away the flies. She had, and as she measured out a white powder for me, she said, "What a little bird woman you are!"

How I Doctored the Birds

In two weeks the hawk was as well as he ever could be. He would take food from my fingers, and allow me to do anything with him I chose. Soon I became known as the birds' friend; every unfortunate bird that was caught in a reaper, wounded by an animal, or hurt in any way was brought to me. No one taught me how to care for them. I watched each different kind closely, and when one of that family came to me, I tried to do what seemed to be the right thing. I think I doctored those birds very much as my mother treated our hurts and bruises.



A Wonderful Gift

Early the following spring my father called me to him, and asked me whether I should like to have, as a gift, the most beautiful thing ever made by man. Of course I should! He told me he had something far finer and more precious than anything man ever had or ever could make: a gift straight from the hands of the Creator. Then he formally presented me with all the birds of every description that made their home on his land. He gave me, for my very own, the birds, with their flashing color, their thrilling song, their free, wild flight, their wonderful nests, their beautiful eggs, their queer little babies.

Such is the innate greed of human nature that, even while he was speaking, I began to take a mental inventory of *my property*. Now I owned the humming birds, dressed in green satin, with ruby jewels at their throats. And I owned the plucky little brown wren that tucked in his tail and sang to his mate for an hour in a driving rain from the top of the pump. The green warbler nesting in the wild rose beside the porch and the song sparrow in the ground cedar were mine. The bluebirds, with their breasts of earth's brown and their backs of heaven's blue, and the robin, whose rain song my father loved more than the notes of any other bird, belonged to me.

The flaming cardinal and his Quaker mate that kept house on a flat spruce limb within ten feet of our front door; two black silk birds—that lived in the top branches of the same tree; the orioles, spilling notes of molten sweetness, as they shot like rays of sunshine to the chestnuts across the road; down by the creek, a blood-red tanager that made a brilliant spot of color when he swept across the blue of the calamus beds—all of these were mine.

And I owned the phoebes in the marvelous nest under the roof of the pigpen, and the indigo finches in the privet bush at the foot of the garden, and the swallows and the martins under the eaves of the barn; the catbirds, kingbirds, robins, and jays of the orchard.

Mine, too, was the slender, delicately colored cuckoo, with his never-failing predictions of rain; one of my first thoughts was to hope that a storm would come soon, so that I might say, "Hear my cuckoo calling for rain!"

The funny little stilt-legged killdeer, the hawks that hung motionless in the sky, and all the owls, from the



great horned hooter of the big woods, to the smallest little red screecher of the orchard, were mine. Did any father ever give his daughter a more wonderful gift?

All that day I sought out my new treasures. No queen on her throne ever felt so rich and proud as the little girl who owned every bird on her father's farm. I had always loved, protected, and doctored the birds; but I had never realized that they were so wonderful; for in the hour in which they became *my personal property*, every one of them took on new beauty.

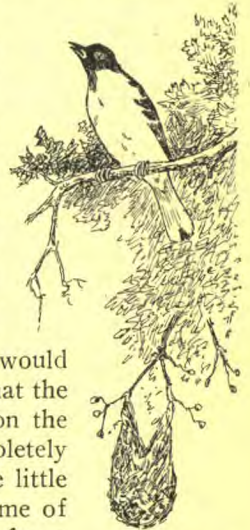
But ownership brought its cares. An extra sense of watchfulness came to me at once. My first act was to coax my mother to give me an old teaspoon. The green warbler, when stepping into her nest, had pierced the thin shell of one of the eggs. If that broken egg were not removed, it would spoil the others; and since I was afraid to put my fingers into the nest, I got the spoon, and kept it for similar emergencies.

Life became an endless round of watching for cats, snakes, and squirrels; crows and jays were never to be trusted near young birds. When my first inventory was completed, I had sixty nests; it was a long, tedious task to make friends with the builders of each of them. I would approach the nest very slowly, imitating the cry of the bird; and I would leave near the nest a little food that the bird liked. Thus I gradually won the confidence of the birds so completely that I could touch many of those little mothers while they brooded. Some of them would look at me steadily for a long time, and then, with a quick peck, would snatch a worm or berry that I held in my fingers.

In those days I honestly thought I had to help feed the baby birds. Half my breakfast went into my apron pocket for the birds, and I searched the bushes for bugs, dug worms from the earth, and gathered berries and fruit. I carried grain from the bins in the barn, pounded it with the hammer, and soaked it soft for the young birds. No mother was ever more careful with the food for her child. I fed those babies only a bite at a time, and never a morsel until I first knew that it was of the kind that their mothers gave them.

Before the nesting season was over, the birds allowed me to take wonderful familiarities with them. I fed crickets to brooding killdeers, worms to young cuckoos, drops of diluted honey to humming birds. Scores of warblers, phoebes, sparrows, and finches swarmed all over me, and perched indiscriminately on my head, shoulders, and hands as I helped feed their babies.

When father decided that I should go away to school, I stoutly rebelled, and only capitulated when he said I might take the most precious of my pets with me to the city. So I left the farm in company with nine birds, none smaller than a grosbeak, that I had taken from nests and raised. I had to arrange my day so that I could have an hour in which to change sand, boil bathtubs, and prepare food for my birds.



My special pet on the farm was a brown thrush that I had named Peter. My brother had found him helpless beside a country road, and had brought him to me. The little bird was half starved, and in a few minutes opened his bill for food; soon we were great friends. Peter grew to be a strong, fine bird, with a remarkably sweet song. One warm summer night I left him, on my father's advice, on the veranda. That was a mistake. Either a screech owl or a rat attacked him, and broke one wing at the tip. In the morning Peter hopped from his open door, and showed me his wing; we did what we could to comfort each other. I doctored the thrush as in childhood I had doctored the hawk; the wing soon healed, but Peter never could fly again. Always before he had had the freedom of the premises. Now he had to ride on my shoulder in the orchard, or hop after me on foot. In one particular apple tree, I had a perch where lessons were learned just a little easier than in school; while I studied, Peter hopped from branch to branch of the tree. One day, under the pressure of an especially difficult Latin translation, I forgot to take Peter with me to the apple tree; a maid in the house saw that the little fellow was fretting to be out with me, and opened the door. I heard his chirp, knew he was coming, and climbed down as fast as I could; but before I could reach him, a cat darted from under a shed and caught him. Powerless to aid my little pet, I heard his last pitiful call. With one exception, Peter was the brightest and the most affectionate of all the birds I ever raised.—*Gene Stratton-Porter, in Youth's Companion.*

Consecration

DEAR Lord, I take
My cross and make
Thy life my guide.
To self I'm dead,
From sin I've fled;
And by thy side
In faith and love
And works to prove,
I will abide.

—C. F. Yoder.



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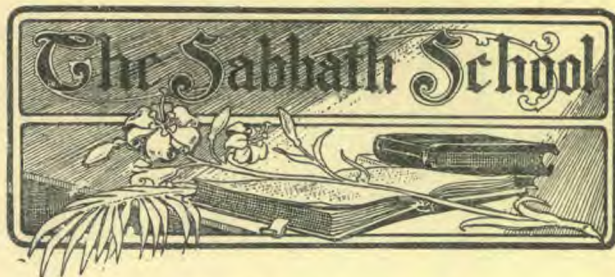
Senior Society Study for Sabbath, May 30

Suggestive Program

LET each society prepare its own program for this Sabbath. Standard of Attainment texts: John 14: 1-3; Rev. 21: 16-21.

Junior Society Study for Week Ending May 30

LEADER'S NOTE.—As stated before, every society arranges its own program for today. Plan to give your local work special impetus. If any desire to have a memorial service, as mentioned last week, they can find material for biographies of pioneer workers in "Great Second Advent Movement," "Life Sketches," etc. In some societies it would be a splendid plan to have a Reading Course Day. The last assignments appeared in the INSTRUCTOR of April 28. A few book reviews may be given, or part of the hour may be spent in answering orally the review questions on the different books in the Junior Course. How many Juniors in your society will get gift books this year? Three certificates mean a gift book. You can take the back courses any time.



IX — David Anointed

(May 30)

LESSON SCRIPTURE: 1 Samuel 16.

LESSON HELP: "Patriarchs and Prophets," pages 637-642.

MEMORY VERSE: "The Lord seeth not as man seeth; for man looketh on the outward appearance, but the Lord looketh on the heart." 1 Sam. 16: 7.

Questions

1. Although Samuel never came to see Saul again, how did he feel toward him? 1 Sam. 15: 35, 11. How did the Lord regard the matter? Note 1. What sort of man did the Lord desire to take Saul's place? 1 Sam. 13: 14; note 2. What direction did the Lord give Samuel? 1 Sam. 16: 1. Whose son was the new king? Who was his father's grandmother? Ruth 4: 13-17.

2. On what dangerous mission was Samuel sent? What precaution was he to take? Whom was he to invite to the sacrifice? How was Samuel to know which one to anoint? 1 Sam. 16: 1-3. How many sons had Jesse? 1 Sam. 17: 12.

3. How did Samuel's coming affect the elders of the town? What did they ask? How did Samuel reply? 1 Sam. 16: 4, 5.

4. When Jesse and his sons had come, what did Samuel say to himself about Eliab? How did this agree with the Lord's thoughts concerning him? Where was he not to look? Why was it not safe to regard only the outward appearance? Where does the Lord look? Verses 6, 7.

5. How many sons did Jesse cause to pass before Samuel? What did the Lord say of every one of them? What question did Samuel then ask? How did Jesse reply? Describe Jesse's youngest son. Although he was the youngest, what did the Lord say of him? Verses 8-12.

6. With what did Samuel anoint David? With what did the Lord anoint him from that day? Verse 13; note 3.

7. With what did Samuel anoint Saul? 1 Sam. 10: 1. With what did the Lord immediately anoint him? Verse 6. Of what, then, does the anointing with oil seem to be a symbol? Note 3.

8. What departed from Saul? When the Holy Spirit departed, what spirit necessarily took his place? 1 Sam. 16: 14; note 4.

9. What did Saul's servants advise him to do? How did he take this advice? Who was providentially recommended to him? Name the different things for which he was recommended. Verses 15-18. Which one of all do you consider the best? How old was David at this time? Note 5. How must he have spent his leisure time?

10. What message was sent to Jesse of Bethlehem? How did Jesse respond? How was Saul impressed with David? What office did he give him? What word was sent to his father? Verses 19-22. Why

does the arrangement by which David came to live at the royal court seem providential? Why was it of great advantage to him?

11. What power did David's music have over the evil spirit? On what instrument did he play? Verse 23. Where have we a collection of David's songs? By what beautiful name is he known even to this day? 2 Sam. 23:1, last part. Which one of his psalms do you like especially well? Suppose David had not practiced faithfully and cultivated this talent of his?

Notes

1. "God's repentance is not like man's repentance. . . . Man's repentance implies a change of mind. God's repentance implies a change of circumstances and relations. Man may change his relation to God by complying with the conditions upon which he may be brought into the divine favor, or he may, by his own action, place himself outside the favoring condition; but the Lord is the same 'yesterday, and today, and forever.' Saul's disobedience changed his relation to God; but the conditions of acceptance with God were unaltered,—God's requirements were still the same; for with him there 'is no variableness, neither shadow of turning.'"—*"Patriarchs and Prophets," page 630.*

2. "Not one who was faultless in character, but who, instead of trusting to himself, would rely upon God, and be guided by his Spirit; who, when he sinned, would submit to reproof and correction."—*Id., page 636.*

3. "'Then Samuel took the horn of oil, and anointed him in the midst of [from among] his brethren; and the Spirit of the Lord came upon David from that day forward.' . . . Samuel had not made known his errand, even to the family of Jesse, and the ceremony of anointing David had been performed in secret. It was an intimation to the youth of the high destiny awaiting him, that amid all the varied experiences and perils of his coming years, this knowledge might inspire him to be true to the purpose of God to be accomplished by his life."—*Id., page 641.*

"And the Spirit of Jehovah came mightily upon David."—*Revised Version.*

4. "Those that drive the Holy Spirit away from them do of course become a prey to the evil spirit. If God and his grace do not rule us, sin and Satan will have possession of us. The devil, by the divine permission, troubled and terrified Saul."—*Matthew Henry.*

5. "It is computed that David was now about twenty years old."—*Id.*

IX — Helping the Weak; Glorifying God

(May 30)

Daily-Study Outline

| | | |
|-------|----------------------------------------|------------------------------|
| Sun. | An example in self-denial | Questions 1-4; notes 1, 2 |
| Mon. | Purpose of the Scriptures; unity | Questions 5-8; notes 3, 4 |
| Tue. | Glorifying God; the ministry of Christ | Questions 9-13 |
| Wed. | Other prophecies; a blessed experience | Questions 14, 15; notes 5, 6 |
| Thur. | Review of the lesson | |
| Fri. | Supplementary questions | |

LESSON SCRIPTURE: Rom. 15:1-13.

Questions

1. What ought the spiritually strong to do? What ought they not to do? Rom. 15:1.

2. What exhortation is given us? What is the end in view? Verse 2; note 1.

3. What example is given us in self-denial for others? Verse 3, first part. Compare Matt. 16:24.

4. What prophecy of Christ is quoted in support of this? Rom. 15:3, last part; Ps. 69:9; note 2.

5. What does the apostle declare concerning all the written scriptures? Rom. 15:4, first clause.

6. What is the great purpose for which they were written? Verse 4, last clause; note 3.

7. What prayerful exhortation does the apostle utter? Verse 5; note 4.

8. What will be the result of this unity? Verse 6.

9. What further exhortation does the apostle give? Verse 7.

10. For what was Jesus our Lord a minister to the Hebrews? Verse 8.

11. How much farther did his ministration reach? Verse 9, first part.

12. What scripture is quoted in proof of this? Verse 9, last part. Compare Ps. 18:49.

13. What other scripture is quoted to show that the good tidings must come to the Gentiles? Rom. 15:10. Compare Deut. 32:43.

14. What further prophecies of our Lord are quoted? Rom. 15:11, 12. Compare Ps. 117:1; Isa. 11:10. Note 5.

15. For what blessed experience in God's children does the apostle pray? Rom. 15:13; note 6.

Notes

1. "Please his neighbor:" Not to that neighbor's hurt, but to that neighbor's good. The Christian is to upbuild his neighbor. That is one of the purposes of the gift. Eph. 4:12. This is the law of God's kingdom, every one in his appointed place, every one working for all others, and each served by all, blessed by all. Only love can do this.

2. "It is written:" The words quoted from this psalm are addressed to the Father, not to man. But they show that Jesus, while doing the Father's work, bore in his own person all the reproaches that men had cast upon the Father. They show that Jesus pleased not himself.

3. "Through patience and comfort of the Scriptures:" Through the patience and the comfort which the Scriptures give, hope is born and confirmed in the hearts of the children of faith. "The expression 'whatsoever things were written aforetime' applies to the *whole ancient Scriptures* [the Old Testament], not to the prophetic parts only."—*Alford.*

4. Dwell on the clauses of the text,—the God of patience, the long-suffering God; the God "of consolation," the comforting God; "like-minded one toward another,"—to build one another up, not according to the world, or our own limited imperfect way, but "according to Christ Jesus." Then will God indeed be glorified.

5. The praise given to God shows how far his salvation extended, and it included both Jew and Gentile. It all centers in the Root, our blessed Lord.

6. "The God of hope:" The God of patience, or long-suffering, is also the God of hope, the One from whom all our hopes spring, in whom they all center. The inspired prayer is God's promise to the child of faith. He will fill the believer with all joy and peace, that hope may abound. The power through which this is accomplished is that of the Holy Spirit.

Supplementary Questions for Home Study

What are some of the promises made to the fathers? How many things do they include? See Gen. 12:2, 3; 13:14, 15; 17:1-8; 22:16-18; Rom. 4:13; Acts 24:14, 15; Heb. 11:8-16; Gal. 3:29.

ELDER E. R. POTTER writes from Vernon, British Columbia:—

"Having been invited to come here recently to engage in ministerial work, I am trying to lay a foundation for the work by first getting acquainted with the ministers and leaders in the temperance work, through the *INSTRUCTOR Temperance Annual* and through the *Protestant Magazine*. I am finding this one of the most satisfactory and the most pleasant means of forming a friendly acquaintance with these leaders."

How easy it is for one benevolent being to diffuse pleasure around him; and how truly is a kind heart a foundation of gladness, making everything in its vicinity to freshen into smiles.—*W. Irving.*

A YOUNG girl in Philadelphia has added during the last few months seventy-five boys and girls to the Sunday school to which she belongs.

The Youth's Instructor

ISSUED TUESDAYS BY THE

REVIEW AND HERALD PUBLISHING ASSN.,

TAKOMA PARK STATION, WASHINGTON, D. C.

FANNIE DICKERSON CHASE

EDITOR

Subscription Rates

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Entered as second-class matter, August 14, 1903, at the post-office at Washington, D. C., under the act of Congress of March 3, 1879.

"Pincha da Coconut"

A CARTOON appeared recently in a daily paper, representing an Italian standing by his little box fruit stand and saying: "If you must pincha da fruit, pincha da coconut,"—a unique way of giving persons who seem to take no thought for that which is another's, a gentle hint to refrain from unnecessarily damaging stock by ruthless handling.

We wish all careless fruit pinchers, together with the unnecessary "tasters," or samplers of fruit, confectionery, cookies, and nuts, might be persuaded to forego a habit that brings little pleasure to themselves, but considerable discomfort to the owner of the goods in question. When one finds oneself about to despoil another's stock unnecessarily, a wholesome thing to do is to forego altogether the depredation, or to follow the modest suggestion of the Italian fruit vender: "If you must pincha da fruit, pincha da coconut."

God Wants You

"God wants you." This message was flashed under the Atlantic Ocean a few months ago. It was the message the Swiss Student Movement cabled to the great Student Volunteer Convention in Kansas City. It was an appeal to each one of the six thousand earnest young men and women gathered there from the colleges and universities in this country. It was much more than that; it was an echo of the call from the very courts of heaven to every Christian young man and woman. It is a direct appeal to you. *God wants you* to follow in the footsteps of his Son in the work of saving this lost world. *God wants you* to be a fisher of men and women around you. *God wants you* to make soul winning your *first business*.

Yes, God wants you to be a soul winner, for there is no more effective method of working for others, and there is no time to lose in this our last and only chance to save those about us that are going down to ruin. The lighthouse does splendid service for the ship aiming for the deep channel in the harbor, but it never can take the place of the coast guard of trained life-savers; even so, while the service of the pulpit is great indeed and never can be computed, it does not eliminate the necessity of personal work. Personal effort saturates the work of the successful evangelist.

Humanity is bound together with strong cords of personal influence, and we cannot candidly ignore the fact that no man liveth to himself. Each is still his

brother's keeper. Then, is not the Christian who fails to work for the salvation of others and to wield a saving influence among his associates, as verily "cutting the rope" as did the Alpine traveler who, as the last strand was severed, saw those who had been bound to him hurled down the precipice to destruction? Jesus never made the salvation of lost humanity a secondary business. Neither should we. Heaven places a high price on the sinner, and it is because of this value that a shipwreck in life is so terrible.

Vassar, who was deeply interested in personal work, once spoke to a fashionable lady about her soul. When she related this incident to her husband, he wondered why she did not tell the stranger that it was none of his business; but she replied, "If you had seen the expression of his face, and heard his earnest words, you would have thought it was his business." It is the Christian's business to save souls, and God wants you to make it your business, your first business.

Every Christian's life should demonstrate the saving power of the gospel; it should be a living reminder that probation is short, that the Christian life brings to one more true joy than the world can give, and that the spiritual value of a single soul is greater than the riches of this world. But only as the Word of God becomes a part of the Christian's life, can his life reveal the power of God to men. The Christian must have the purity of life which prohibits compromising with known sin. He must through prayer keep an unbroken connection with Heaven, and through Bible study learn how God has guided others; and, prompted by love and sympathy, he must study human nature that he may acquire tact in dealing with men. What intense earnestness would then characterize personal work, and what marvelous results would testify to the power of the personal touch!

The personal work done is a fairly good thermometer of any Missionary Volunteer Society. It is an essential in the program of every Missionary Volunteer. Let us ask ourselves what kind of personal work we are doing. Let us pray for a greater burden for souls and for a deeper realization of God's love for sinners. Through self-surrender let us daily get away from ourselves, and come in close contact with God. Then, filled with the love that "never faileth," but always succeeds, let us labor unceasingly for the salvation of those about us. God wants you to strive earnestly to save at least one person during 1914. May he count on having all there is of you for this soul-winning work?

"Ye who yearn to tell the heathen
Of a Saviour's love and claim,
And in ears that never heard it
Speak the Saviour's precious name,
Know that there are those much nearer,
Whom kind words, in tender tones,
Yet might win as sheaves for Jesus;
There is mission work at home."

MATILDA ERICKSON.

THE field missionary agent for Ontario says the conference plans to have bands of student canvassers take the Temperance INSTRUCTOR to the different towns where local option campaigns are on, and give it as wide a circulation as possible in such places.

THERE are now in these United States, according to Senator Du Bois, four States where neither a representative nor a senator to the national Congress can be elected without the consent of the head of the Mormon Church, Joseph Smith.