

# THE YOUTH'S INSTRUCTOR

REMEMBER NOW THY CREATOR IN THE DAYS OF THY YOUTH

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## CHARACTER BUILDING

LORD, SAVE ME.

VICTORIOUS ONE, we take  
our eyes from thee,  
And only know the ra-  
ging of the sea,—  
The wild waves dashing,  
—and in doubt and  
fear,  
Sink mid the billows; yet  
thou, Lord, art near,  
And to the cry of dread,  
"I perish! save!"  
Thy hand is reached to  
lift us from the wave.

That word of thine,  
which faith found firm  
as rock,  
Doubt lost, and left us to  
the tempest's shock.  
With woe o'erwhelmed,  
we saw no heavenly  
light;  
The word that called us  
forth seemed made for  
blight.  
Yet in the soul's dread  
sorrow, thou wert  
there,  
To lift us from the bil-  
lows of despair.

Self-pride that we could  
walk triumphantly  
Lost us the solid path-  
way through the sea;  
That look behind, to note  
the eyes of men,  
Left us to waves no hu-  
man power could stem:  
The billows hid thee,  
though thy hand was  
near;  
Thy tender voice re-  
proved our doubt and  
fear.

O pride and doubt! foes  
of the soul, still ye  
Cause us to sink in life's  
tempestuous sea;  
But Christ can never fail.  
When we despair,  
He fainteth not: his great  
success is there;  
And to the cry, "I per-  
ish, Master! save!"  
His hand uplifts to walk  
with him the wave.

Soul, learn thy lesson.  
It is not in thee  
To walk in safety o'er  
life's troubled sea.

The storm will overwhelm without thy Lord,  
There is no solid pathway save his word.  
Why look behind? Why gaze upon the wave?  
Look to thy Saviour: he alone can save.

"WAYS are not scarce, nor chances few,  
For those who long God's work to do."

### DOERS OF THE WORD.

I.

CHRIST attaches great importance to the do-  
ing of the word, as well as to the hearing of it.  
Among those who listened to his teachings  
were some who found it easy to hear, but who

Lord, shall enter into the kingdom of heaven;  
but he that doeth the will of my Father which  
is in heaven. Many will say to me in that day,  
Lord, Lord, have we not prophesied in thy  
name? and in thy name have cast out devils?  
and in thy name done many wonderful works?  
And then will I profess unto them, I never knew  
you: depart from me,  
ye that work iniquity.

"Therefore who-  
soever heareth these  
sayings of mine, and  
doeth them, I will  
liken him unto a wise  
man, which built his  
house upon a rock:  
and the rain de-  
scended, and the  
floods came, and the  
winds blew, and beat  
upon that house; and  
it fell not: for it was  
founded upon a rock.  
And every one that  
heareth these sayings  
of mine, and doeth  
them not, shall be  
likened unto a fool-  
ish man, which built  
his house upon the  
sand: and the rain  
descended, and the  
floods came, and the  
winds blew, and beat  
upon that house; and  
it fell: and great was  
the fall of it."

As Christ spoke  
these words, he was  
walking near the sea-  
coast. About him  
were houses, some  
completed, others in  
the process of erec-  
tion, apparently in  
most desirable posi-  
tions. The disciples  
expressed their ad-  
miration of the wis-  
dom of the men who  
had chosen such  
beautiful and desira-  
ble locations; but  
these houses were  
built upon the sand.  
Still another house  
was built high upon  
an eminence, which  
would require hard



"LORD, SAVE ME!"

did not bring into their practical life the truths  
they heard. Christ sought to teach them that  
the divine word is not to be treated indiffer-  
ently, but that all who hear it are to be doers  
of it.

By a parable Christ warned his hearers:  
"Not every one that saith unto me, Lord,

climbing to reach. This house was built upon  
the rock.

Passing on some distance, Christ and his fol-  
lowers saw the place where a house had for-  
merly stood; but the ruins alone remained to  
tell the story. This house had been washed  
away by storm and tempest, while fierce winds



had not prevailed against the building whose foundation was riveted to the solid rock.

Christ used this instance to impress his lesson. He pointed to the house built high upon the rock, and then to the broken framework and debris about them, and showed the sure result of building upon a sandy foundation. He sought to convince his disciples of the lack of wisdom revealed by the man who built his house so insecurely. "Every one that heareth these sayings of mine," he said, "and doeth them, I will liken him unto a wise man, which built his house upon a rock: and the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fell not: for it was founded upon a rock. And every one that heareth these sayings of mine, and doeth them not, shall be likened unto a foolish man, which built his house upon the sand: and the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fell: and great was the fall of it."

Christ likened him who obeys the word of God to the man whom the world had many times denounced as foolish for placing himself in a place apparently so inaccessible. The greatest Teacher the world ever knew looked beneath the foundation, and showed the necessity of building securely, on the rock. Then when rain and tempest sweep down upon the building, it is found secure.

In the illustration we as well as the disciples have a profitable lesson to learn. The house which was apparently so difficult of access, but which had stood unmoved amid storm and tempest, illustrates the spiritual life of those who build upon the sure foundation.

MRS. E. G. WHITE.



#### AROUND NAPLES.

THERE are some interesting places around Naples, often overlooked in the natural desire to visit Vesuvius and the historic ruins of Pompeii; and it is of my visit to some of these that I will tell you.

On the north side of the city is a large mountain, pierced by two tunnels. One of these is mostly natural, and is used by goat-herds and the poorer classes; the other is for general traffic and passengers. Through this we passed one pleasant afternoon; and after an hour's drive through a beautiful country, descended into a valley, shaped like an immense bowl, three miles in diameter. Here we engaged a guide, and were conducted into a hot, ill-smelling cave, the site of the Emperor Nero's famous sulphur baths. There are several rooms, with parts of the ancient stone couches still remaining. In some places, steam hot enough to burn our fingers was issuing from crevices in the walls. This cave is in the crater of an extinct volcano.

A few yards from the baths we entered a small enclosure, and found ourselves before a tunnel extending into the side of the crater, and sloping downward. On our asking our guide if we were to enter this tunnel,—the Dog Grotto,—he said, to our horror, "Two minutes in there would kill you." At his bidding we followed him in until our shoulders were even with the first step, leaned over, and took one breath, which nearly strangled us. The effect was similar to what would be experienced by holding the face over the top of a base-burner, and inhaling the gas. As long as a lighted torch was held above the level of the first step, it burned; but as soon as it was placed below that level, the blaze was extinguished. Our guide then called a little dog, and in spite of our remonstrance, held it in the gas about fifteen seconds. At first it struggled, then its muscles relaxed; when brought out, it acted as if recovering from drunkenness.

Two miles away we found another crater, a little larger than the one first visited, and not

quite inactive. Although it is more than twenty miles from Vesuvius, it is claimed that when Vesuvius is comparatively quiet, this crater is active, and *vice versa*. In the crater is a lake of white sand, in the center of which is a hole about five feet in diameter, filled with boiling mud. As we approach, we feel a jar, and hear a hissing sound only a few feet under us. At one side of the crater is an opening from which issues hot steam. A man crawls in on his hands and knees, and brings us some sulphur so hot we can hardly hold it.

Leaving this place, we passed through a town and by the remains of an old estate, once the home of Cicero, soon reaching a third crater. In the center is a beautiful lake, on the edge of which are the ruins of an old temple, built in honor of Pluto. Walking along the side of the crater, we found ourselves in a lonely wood, and before what appeared to be a cave. Our guide lighted a torch, and started in, beckoning us to follow. We reluctantly did so, and soon were walking downward in a tunnel large enough for three to walk abreast. On we went; and when we began to look anxiously over our shoulders at the entrance, which had become but a speck in the distance, our guide said, "No fear, no fear." As we went on, the passage began to narrow; and finally we paused before a side-entrance, through which one could pass only with difficulty. Two men appeared in the passage, looking very large in the flickering light of the torches, and our guide told us to follow them. It was too late to turn back, so downward we went, until it seemed as if we must be in the very bowels of the earth. Suddenly the men ahead of us dropped into the water up to their waists, telling us to get on their shoulders. As there appeared to be no alternative, we complied; and they carried us a little distance to a room twenty feet square, standing us on a ledge of rock while they stood in the water. The ceiling and sides of the room were covered with hieroglyphics and some Greek characters. Mounted again on the shoulders of the men, we were carried into another room similar to the first; then by some winding, narrow passages we reached the main passage, breathing a sigh of relief when we stood once more in the open air.

On our way home we visited the tomb of Vergil, also the prison where the unnatural Nero confined his mother before she was murdered.

H. A. HENDERSON.

#### JUNE.

JUNE, with sunshine in her eyes,  
Passed her hand across the skies;  
Then, with archly smiling lips,  
Blew upon her finger-tips.  
Soon the air grew wondrous sweet,  
Overhead and under feet;  
Under feet and overhead  
Trooped the roses, white and red,—  
Trooped the roses, crimson, white,  
Pink and yellow, pale and bright,—  
Till they perfumed earth and air,—  
Roses, roses, everywhere!  
Wearied then, she shook her head,  
And the petals, white and red,—  
All the petals, crimson, white,  
Pink and yellow, pale and bright,—  
Fluttered slowly, softly down  
To the border of her gown.  
Half dismayed to see them fall,  
Quick she turned to leave them all;  
Looking back to say good-by,  
She met the warm glance of July.

—Selected.

#### BEARS IN DEATH GULCH.

IN the Yellowstone National Park is a ravine called Death Gulch, because it is evident that animals occasionally perish in it on account of the excessive quantity of carbonic acid in the air. In this respect it resembles the celebrated Dog Grotto near Naples. Both are in a volcanic region where active eruptions do not now occur, but where mephitic gases issue from the rocks, and settle in low places. A recent visitor to the Yellowstone Park reports having seen the carcasses of eight bears in Death Gulch.—*Youth's Companion*.



#### THE LAND OF "PRETTY SOON."

I KNOW a land where the streets are paved  
With the things we meant to achieve;  
It is walled with the money we meant to have saved,  
And the pleasures for which we grieve;  
And kind words unspoken, the promises broken,  
And many a coveted boon,  
Are stowed away there in that land somewhere,—  
The land of "Pretty Soon."

The road that leads to that mystic land  
Is strewn with pitiful wrecks,  
And the ships that have sailed for its shining strand  
Bear skeletons on their decks.  
It is farther at noon than it was at dawn,  
And farther at night than at noon:  
Oh, let us beware of that land down there,—  
The land of "Pretty Soon."

—Ella Wheeler Wilcox.

#### THE WORKERS THAT ARE NEEDED.

THE foolish pride and ambition that cause so many young men to push into the ranks of clerks, bookkeepers, stenographers, etc., instead of learning a trade, have brought about the result that these so-regarded "genteel" occupations are both overcrowded and underpaid. While this is true, the supply of skilled craftsmen seldom exceeds the demand; and a first-class mechanic is rarely without employment. The other day a young man, a mason, in this city refused an all-summer's job at twenty-four dollars a week, preferring to work for himself. Many a clerk and bookkeeper working for a third of this sum, or even less, would be benefited not only financially but physically by the change from a close office to some outdoor work.

Not long ago, says a writer in the *Well-spring*, a shrewd and wealthy business man, talking with a company of friends, declared that if he should insert in all the city papers an advertisement for a bookkeeper, a clerk, a machinist, and a dyer, at least fifty times as many bookkeepers as dyers would apply. His friends laughed at this statement, and the matter was put to the test, with the result, surprising to the business man himself, that six hundred bookkeepers, twenty carpenters, fourteen machinists, and four dyers answered the advertisement.

This true incident contains a moral so plain that it is not necessary to point it out, and one that the young man who is deciding what part he shall take in the world's work would do well to think about.

#### THIS IS HOW THEY RISE.

A YOUNG woman recently found employment in a queensware store. She immediately began a course of study, in her leisure moments, on glassware and china. She then read some recent works on the appointments of the table; and in a short time, by applying herself to her business, became the most valued employee in a large store.

In a millinery establishment the young woman who found time for reading a book or two on colors and their harmonious combination found her own taste greatly improved and her ability to please increased. She was soon a favorite with both employers and customers.

A young woman who, to earn an honorable living, went into a kitchen, and, instead of gossiping every evening, found time to read a few good books and household papers, was soon too valuable a housekeeper to be kept in a subordinate position in the kitchen. She knew how a table should look for a formal dinner, what dishes were in season, how to serve a meal, and something about food values.

Good sense and application will accomplish wonders.—*Womankind*.





## A FLOWER STORY.

**I**T was a pleasant May-day, not very long ago,—  
An overarching sky of blue, and tender green below,—  
When two small maids with spelling-books went tripping home from school,—  
A school where easy tasks were set, and pleasant was the rule.  
Two little maids with spelling-books; and as they homeward walked,  
They stopped to pick the dandelions, and happily they talked,—  
Till all at once both little maids the selfsame moment spied  
A very Prince of dandelions in all the countryside.  
He was a kingly dandelion, and stood up straight and tall,  
Of full a thousand dandelions, the fairest of them all.  
“‘Tis mine! ‘TIS MINE!” cried bonnie Belle, as on both quickly ran.  
“I saw it first, you selfish thing! Now—get it if you can!”  
As Mabel snatched the flower away, Belle’s tears began to flow—  
‘Tis queer what very little things will make a quarrel grow!  
Why, all about those tearful maids, a-shining in the grass,  
A thousand cheerful dandelions laughed but to see them pass.  
But when, victorious, in her hand, fair Mabel held the prize,  
Its wealth of shining color grew all tarnished in her eyes;  
And ‘neath her clear-eyed mother’s glance, possession brought a sting  
That made the princely dandelion a very hateful thing.  
What was the matter, Laughing Eyes, with the dandelion king,  
And why did he to Mabel’s heart no lasting pleasure bring?

A. B. C.

## MAKING HOME PEACEFUL.

## XXVII.

ON the morning of the second day of her illness, grandmother was so much worse that Mr. Beardsley insisted upon calling a doctor, who pronounced the case very serious. Mrs. Beardsley and Janet were kept busy all that day and the next, giving her medicine, and trying to do something to ease her sufferings; but she rapidly grew worse until it was plain that her mind was wandering. Grandpa Beardsley appeared to be continually in her thoughts. “James,” she would call, hoarsely, “James, see! your father wants a piece of toast. I’ll make him some. Poor old man! see how white he looks. Don’t—don’t—Ellen—Regie!—don’t speak so cross to him!” and then she would murmur, gently, “Saint of the Lord—poor old man!” Evidently grandmother was living over that never-to-be-forgotten day when the old deacon fell asleep.

At last, on the evening of the fifth day, she appeared to be sleeping quietly, and Mrs. Beardsley was trying to get a little rest, which she sadly needed. Suddenly, about midnight, grandmother’s shrill voice was heard calling in tones of anguish. Mrs. Beardsley hurried into the room, supposing her to be still delirious. In her agony, which appeared to be as much mental as physical, she raised herself up in her bed. Her small black eyes gleamed like balls of fire, and she flung her arms wildly above her head: “Ellen! Ellen!” she cried, “I’m going to die, and I ain’t ready! Where’s James?”

“Would you like to have me send for Elder Maynard, mother? Shall I send Janet?”

“No! no! I want James to pray for me, Ellen. He’s a Christian! Many’s the time he’s been kind to me when I’ve been wicked

an’ spiteful. Call James, Ellen. Oh, I wish I’d been better to his father,” she added, with a sigh, as Mrs. Beardsley hurried to call her husband.

With hands raised to heaven, James Beardsley bowed beside the couch of the trembling woman; and with earnest voice and a heart filled with faith, he commended her to the keeping of the Good Shepherd, from whom none of his lambs ever wander so far that he can not hear their cry.

“Do you think he’ll hear, James? will he hear?” she wailed. “Oh, I’ve been a ‘wanton professor’ so long! Bunyan calls ‘em ‘damnable.’ If I’d been a better mother, Ellen, you wouldn’t have found it such hard work to do right; but if you an’ James’ll forgive me, mebbly the Lord will.”

Ellen Beardsley was sobbing aloud. “Yes, mother,” she said, gently, “we forgive you as we hope to be forgiven.”

Quickly the restless head fell back upon the pillows, the terrified expression in the deep eyes gave place to one of peace; and in a moment the sick woman dropped into a quiet slumber. It was as if the touch of healing had accompanied the assurance of pardon, even as when, nearly nineteen hundred years ago, the divine Master said to the dying sufferer, “Thy sins be forgiven thee; arise, and walk.” When grandmother again awoke, the pain was gone, and an expression of such peace and happiness and love glorified her face that it was almost transfigured. “O Ellen! Ellen!” she cried, “the angels of God have met me!”

After that Grandma Sharpe gradually but surely regained her health and strength. But if those knowing her so well wondered within themselves if the keeping power of God would be strong enough for such as she, they gradually ceased to doubt as the weeks passed away. The jealous, unlovely disposition had been exchanged for one of kindness and loving charity toward all. In this wondrous change no one rejoiced more than did James Beardsley, and he often said to himself, “What hath God wrought!” Even the children noticed the difference in grandma.

“Dranma don’t stold Bessie one bit all day,” the child remarked in an astonished manner one afternoon when she had been unusually trying to grandma’s patience; “Bessie lites dranma now.”

“Why, yes, Bessie,” replied Flossie, in a whisper, “why, yes; grandma says the angels met her one time, and one of ‘em stays with her all day now; and I presume,” she added, wisely, “it’s the same one that stayed with grandpa ‘fore he died; she acts most ‘zactly like him.”

Mrs. Beardsley’s surprise at this change was very great; and though she said little, the Spirit of God was pleading with her every moment. Night and day the burning words that her mother uttered in her mortal terror on that memorable night rang in her ears with ever-increasing frequency, and would not be dismissed: “I’m going to die, and I’m not ready!” What if the angel of death should again hover over their roof? what if *she* should be chosen? Would *she* be ready? Ellen Beardsley’s conscience was at work; and memory brought back many a scene, especially in the management of her children, which caused her much regret and pain. She remembered how unwisely she had dealt with Reginald; how she had failed to instruct him and warn him with loving tenderness; what if *he* were never converted, as the result of her example and unwise course!

In the midst of reflections like these one beautiful morning late that spring the postman called with letters. There was one in the bold, familiar hand of her brother Earl. She opened it with a dull foreboding of evil. It was a very brief letter; and as Ellen Beardsley read it with trembling haste, every word seemed to burn itself into her heart. She noticed that the wrapper was a square pink-tinted one, instead of the plain-white which her brother always made use of, and she dully wondered why he had used it. She even noted the scent of violets on the paper. Just then the canary began a merry tune from his cage in the sunny

window, and she dimly realized that Janet was asking her some question about making a pudding for dinner. Strange that in moments of anguish, when the heart is suddenly filled with an overmastering sorrow, the most trivial affairs—the most commonplace sights and sounds—will stamp themselves upon the brain. Once more, with dry eyes and a feeling of suffocation at her heart, Ellen Beardsley read the letter she had received. Let us stand by her side, and read with her the few brief words:—

DEAR SISTER: Reginald left here this morning. I do not know just where he intended to go, but I think to some point in the South. We quarreled yesterday, Ellen, and this is the result. Of course you will blame me; but when I tell you that I have just discovered that the young man has been appropriating money from my office for some time, I trust you will not think me hasty in allowing him freedom to go, as he naturally wished to do. I am much disappointed in him; for he seemed to be doing well at school. You will forgive me for saying that although I am not a Christian, I must say I did not expect such duplicity from a boy who, I suppose, has had Christian precept and training from babyhood.

In much sympathy,

EARL.

With a second reading of the letter, Ellen Beardsley understood more fully its real import. She had only one thought,—to hurry to her own room, where no one could witness her agony. She rose mechanically from her chair, and tottered forward; but her trembling feet refused to support her, and with a moaning cry, “My punishment is greater than I can bear!” she fell heavily to the floor.

For days the stricken woman lay upon her couch of pain, battling for life through the delirium of fever. Weary weeks of tedious convalescence followed,—weeks of heart-searching and deep humiliation of soul,—weeks when memory was busy bringing to her mind scenes which she would fain forget. She remembered with sorrow the unquestioned freedom she had given her son in the use of the too liberal allowance of money she had furnished him from childhood, until all sense of its true worth had been taken away; how she had screened him from blame in the matter of Janet’s stolen money, and stubbornly refused to use reason or judgment.

She sees it all plainly now,—the whole miserable affair. Tom Willis told his story truly, after all,—poor Tom! how she had wronged him! Knowing her son’s dishonesty at last, she could understand many things that had puzzled her in the past. How blind she had been! how unjust to Tom! She decides to write and ask his forgiveness. She remembers her cruelty to little Tim Mallory; her unsympathetic, unloving conduct toward her noble husband; and last but by no means least, her harshness and severity toward his godly father. All these things come up before her, and settle themselves with such crushing weight upon her soul that it seems to her she can never be forgiven.

In deep contrition of heart, Ellen Beardsley reviews her past life with all its deformity; but not until she has fully decided that the blood of Christ alone is sufficient to cleanse her sins; not until she flings herself, in her helplessness and sin, at the feet of the Saviour of sinners, and cries from her burdened heart, “Just as I am, . . . O Lamb of God! I come, I come,” does she feel the sweet peace of forgiveness: but when at last she arises from her bed of suffering, she is indeed a changed woman.

MRS. L. D. AVERY-STUTTLE.

(Conclusion in next number.)

## LISTENING.

It is annoying for one to say anything, and find afterward that nobody was listening. Public speakers often find it difficult to talk to an inattentive audience. Not all have the gift of being interesting in ordinary conversation, but all who have ears may become good listeners. An old philosopher once said that he learned manners from the unmannerly,—by doing exactly opposite to what he saw others do that was disagreeable to him. A. R. WILCOX.





### PATTERNS AND MOLDING.

As mentioned in the last article, our present study is to be on molding and pattern-making. In making patterns for molding it is necessary to bevel, or, as we call it, give draft to, them, that they may be drawn from the sand without injury to the mold; and, as far as possible, it is best to avoid square corners inside, as such tend to hold the sand. To make a nice corner, warm some beeswax sufficiently to soften it, and smooth it over with the point of a knife blade that has been heated a little.

All nail-holes, brad-holes, or any other indenture should be filled with wax. Never use putty for this purpose, as sand always adheres to an oily substance. All patterns should be sandpapered smooth, and afterward varnished with shellac. When the first coat is dry, sandpaper smooth and varnish again. In this manner apply about three coats of varnish into which has been stirred thoroughly just enough lampblack to color it.

In making a pattern with a hole that has to be drawn, make the draft on the under side. I can not in this article give you all the instruction upon this subject that I would like to.

Now about molding, and the tools used for the work: The first thing required is a kind of sandy loam,—not the gray sand, which slips easily, but a yellowish sand, which, when pressed in the hand, will pack and keep in place.

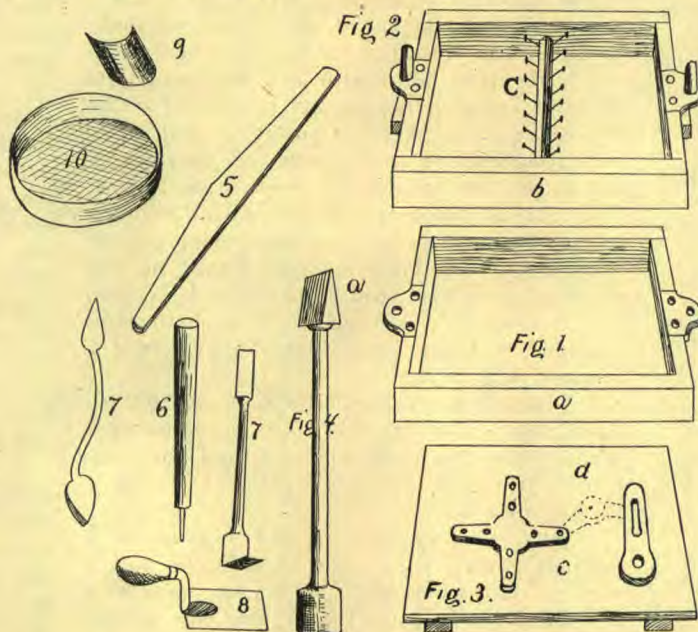
Next come the flasks. Let us suppose we have the patterns for the spider and crank to the lathe. We will make the flask about sixteen inches wide on the inside, two feet long, and ten inches deep. It is made in two parts, as shown in the illustrations. The lumber for such flasks is generally of pine, about one inch and a quarter thick. Then you want a follow-board, also a molding-board. These should be the size of the flask on the outside. In Fig. 1, *a* is the lower part of the flask, called the "nowel," and *b*, Fig. 2, is the top, or "cope." Upon each end of the flask you will notice some irons with holes and pins to hold the flask in place. Across the top part, or cope, there should be a crosspiece, *c*, running to within two inches of where the pattern comes. These are beveled from each side, with eight-penny nails driven in to keep the sand from dropping out. Pack the sand under the crosspiece with your hands. Lay down your molding-board, and place your patterns upon it. See Fig. 3. Take *a*, Fig. 1, and turn it bottom side up, having the irons come down on molding-board. The large side of the patterns should be placed down. Then take a coarse wire sieve (brass wire is best, as it will not rust), called a "riddle," and sift on a little sand. See that the holes are packed with sand. Do this with your hands, not packing them too hard. Fill your flask with sand; then take your rammer (see Fig. 4), and with the peen end, *a*, ram around the edges of the flask. With the other end of the implement ram it all down so hard that it will stay in place. Take a stick or straight-edge (Fig. 5), and strike off the sand. Sprinkle on a little sand with the hand, put on your follow-board, grasping both sides firmly; then turn it over, take off your molding-board, and you will see your patterns. Now with a bristle brush, like a counter brush, brush off all the loose sand. See that it is full up to the top of the pattern. Then sprinkle on some parting sand (burnt sand brushed from castings when removed from the mold), and with a hand-bellows blow sand off from patterns.

To form a hole into which to pour the metal, a tool is used called a "sprue." It is a stick about ten inches long (see Fig. 6), one inch and a quarter in diameter at the top, and three

fourths of an inch at the bottom. In this end there is inserted a piece of one-fourth-inch wire, which should project two inches. Place your sprue in the sand (see *d*, Fig. 3), put on the cope, and with your riddle sift on sand enough to cover your patterns, afterward filling up with sand. Now, with your rammer, as you did at first, take your strike (Fig. 5), and scrape off the top. Pull out the sprue, and with your finger in the hole, rim it out on the top to make a sort of cup to turn the metal into. Take hold of the handles on the ends of the cope (the handles to the cope are blocks nailed to the end of the flask. The handle to the rammer, shown in Fig. 4, is about four feet long), and lift off the cope, letting it stand upon the side. This will separate where the parting sand was sprinkled.

From a sponge containing water squeeze a little around the edge of the pattern. Rap the pattern lightly with a small hammer; then with a gimlet having a coarse screw upon the end, carefully draw out your patterns. Afterward look them all over; and if you discover any broken places, you can mend them with a tool called a "slick." Wet this instrument so that sand will adhere to it, and patch the broken places, slicking down smooth.

Then with a little piece of tin or brass bent up (see Fig. 9), cut your gate where it enters the mold one eighth of an inch deep, and an inch and a fourth wide from the mold to the sprue (see dotted lines at *e*, Fig. 3), beginning



at the point from which the pattern was drawn; close together, and it is ready for the metal.

Some of the tools used are shown in the illustrations. Fig. 8 is a brass trowel for smoothing the sand. The slick (Fig. 7) is of one-fourth-inch brass wire, from six to eight inches long. Brass wire is generally tempered. To anneal it, or make it soft, heat it red-hot, afterward dipping it in cold water. After it is annealed, hammer the ends thin to the shape wanted. Pounding sometimes hardens it so that you will need to reheat it. Fig. 9 is a piece of tin or brass about three inches square, bent to a curve, to cut the gate. Fig. 10 is a "riddle."

W. K. LOUGHBOROUGH.

### HOW DISHES ARE MADE.

THE Chinese were the first to discover the art of making china; and their principal branch of this industry was making teacups, this being the article most used by the tea-drinking Chinaman.

There is a town in China where a great many potters lived, and made their beautiful dishes. There was a river close by this town; and when the cups and pots were finished, they were packed and sent away in the boats. The potters' furnaces were always burning to bake the dishes, so that at night the town looked as if it were on fire.

The potters would not allow a stranger to stay all night in the place, for fear he would find out the secret of china-making. Visitors were obliged either to sleep in one of the boats or to go away until the next morning. At last

two strangers thought they had found out the secret. They saw potters buying large bricks at the markets, and they were sure this was the material they used; and they were right, so far, but they soon found that something else was needed. We can imagine how the Chinaman laughed when he heard that people were trying to make china without "kaolin," as the necessary substance was called. But now people do not even have to use the Chinaman's bricks, as there is a kind of clay that does quite as well: it is called "porcelain clay."

This clay is carried to a porcelain manufactory, where all kinds of cups, saucers, jugs, and basins are constantly being made. It is put into a machine where it runs upon a number of sharp knives that work round and round, and chop it to pieces. When it has been chopped long enough, it is turned into a kind of churn, and churned as if it were going to be made into butter. When the churning is over, it is called "clay cream." Other substances, such as flint and bone, are then mixed with it; but they have to be ground into powder before they can be used, and then made into a "clay cream."

Then the two creams are mixed together, stirred until they are quite smooth, and boiled over a fire until the moisture is dried out, and the mass looks much like dough. A man then begins to slap and beat it, and cut it in pieces, and to fling the pieces one on the other with all his might. When he has slapped it long enough, he says it is "ready for the potter."

The "potters' wheel," used in making dishes, is of great antiquity. When china was first made, one man did the entire work of making a dish; but now potters are classed according to their work, as throwers, turners, handlers, etc.

"Throwing" requires a great deal of practise, as a good thrower is expected to throw several hundred pieces a day. In consequence of the new plan of pressing all large pieces in plaster molds, the thrower has but small or moderate-sized pieces to work, and these he finishes only on the inside, leaving the outside to be finished by the turner.

The thrower prepares the pieces of a thicker bulk than is required, and it is the turner's business to bring them to a proper thickness by removing the excess of material, and giving to the outside a smooth and highly finished surface.

Flat pieces, such as plates, dishes, saucers, and the like, are made in plaster molds, on which a bat of soft clay is tightly compressed by a hand-tool,

called a polisher.

In manufactories which have adopted the latest improvements, the ovens in which the pieces are dried are heated by steam-pipes. After the ware is dried, it is placed in "sag-gars" and fired. The firing must be conducted very slowly at first, to prevent too sudden an evaporation of the damp, which would cause the dishes to crack.

Our best china is painted by hand. In China one man paints nothing but red, another blue, and so on; but here one person paints flowers, another leaves, another fruit, and another figures. After being painted, the dishes are fired for the last time.

It was a long time before people found out how to paint pictures on china, or to give it its beautiful gloss. The surface was not hard enough to hold the colors, and wanted a coating upon it called "enamel." A potter named Bernard Palissy tried again and again to make the enamel, and spent all his time in trying one thing and then another. We are glad to know that he succeeded at last, and made a great deal of money; but since his time many improvements have been made.

Until recently the English stoneware and earthenware had possession of the American market. We made but little of these wares ourselves; but now manufactories are springing up in different parts of the country, and potters' clay has been found in many places. The purest porcelain, however, still comes from China and Japan.—*Laura E. Hutchinson.*

"Sin clips the soul's wings."





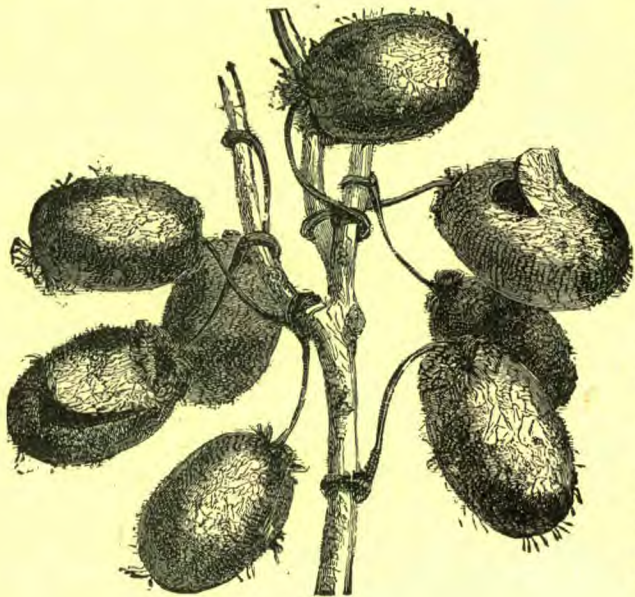
## SOME OF OUR TOOLS.

In our last lesson we named the articles that we are to use in sewing; we will now tell something about how each is made. First let us examine the needle. The sewing-needle is made from steel wire, which is cut from coils into pieces about twice the length of a needle. After being straightened, the pieces are ground to a point at each end, and flattened in the middle; on this flattened portion two small dents are made to mark the places for the eyes, which are drilled by machinery. They are then cut in two, hardened by being heated and dipped in oil, and tempered by again heating and cooling. After being scoured, rounded, and polished, they are sorted, folded in papers, and labeled ready for sale. Simple as the needle is, it passes through the hands of a hundred workmen before it is finished.

Thread is "a slender cord composed of two or more yarns or filaments, as of flax, silk, cotton, or wool, twisted together." That made from the flax-plant is called linen thread, and is very strong. This plant grows to a height of two or three feet, and has a delicate blue flower. The stalk of the plant is hollow, and consists of a woody portion, called the boon, and a fibrous portion, from which the thread is made. If a fine fiber is desired, the stalks are pulled up by the roots as soon the leaves begin to fall off, and the bottom of the stalk becomes yellow. By waiting until the seeds are ripe, seeds for oil and a coarse fiber are obtained. After being dried in the sun, the seeds are removed, and the stalks soaked in water to loosen the fiber from the boon. The fibers are dried and run through rollers, to break the boon. Then they are combed out, and the wood is removed by machinery. The flax is then ready for the mill, where it goes through many processes before the finished product is spooled.

Silk thread is made from the cocoons of the silkworm. Each cocoon contains one fourth of a mile of thread, which is so fine and delicate that it is necessary to reel the threads from four or more cocoons together. In order to keep the threads of the moth's silken house unbroken, the cocoons are subjected to heat sufficient to kill the little builders inside. It is said that to furnish material for forty yards of silk, over one hundred thousand of these tiny creatures perish. Silk is the strongest of all fibers used for weaving.

Cotton thread is made from the cotton-plant, which grows on plantations in warm countries.



COCOONS.

The seed is sown in March and April, and early in June the plant begins to bloom. The blossom resembles that of the hollyhock, and changes its color, being a pale straw-color in the morning, pure white at noon, pale pink at night, and a bright pink the next morning. At

the close of the second day it is a light purplish red. After the flowers fall, the pods, or bolls, grow rapidly. When they are ripe, they burst open, showing the fleecy cotton ready for picking. When thread is to be made, the yarn is doubled and twisted more than for weaving into cloth, as greater strength is required. It is then reeled off into loose skeins for washing, bleaching, and dyeing, after which comes the reeling onto the bobbins and the spooling. After an attendant has set the spool on the spindle, and attached the end of the thread from the bobbin, the machine runs the thread on evenly, without overlapping or leaving a hair's-breadth between, and even adjusts its work with the same precision to the widening of the spool with every layer of thread. It runs on exactly two hundred yards, and at the right time and place cuts a slit in the edge of the spool, draws the end of the thread tightly into the slit, and cuts it off, dropping the finished spools into a



COTTON BLOOM.

tray, where they are labeled, and packed into boxes containing a dozen each.

Pins such as those now in use were not known in ancient times; but thorns, and bone, wooden, gold, or silver skewers were used to fasten the clothing. In the sixteenth century, when pins were first manufactured, they were so expensive that only the rich could afford to buy them. When first made in the United States, a paper of pins cost one dollar; but pins in many sizes are now made by machinery, and can be bought for less than five cents a paper.

Scissors are made in many sizes and styles. Every pair over six inches long should be called shears. Those made of steel are made almost entirely in Germany. In this country iron, with steel for the inside edges, is used. Nearly all the work in making scissors is done by hand, the process depending somewhat upon the size. Each pair passes through the hands of fifty or sixty workmen before it is finished.

In last week's paper you read something about thimbles. They are made of celluloid, aluminum, silver, and gold, with open or closed tops. The little dents on the surface are made to hold the head of the needle firmly.

Do not be satisfied with this brief description of the articles we shall use oftenest in our work. If you can, read further on each subject, especially about thread-making and the working of the little silkworm. NELLIE V. DICE.

"CHARGE not thyself with the weight of a year,  
Child of the Master, faithful and dear,  
Choose not the cross for the coming week;  
For that is more than he bids thee seek.

"Bend not thine arms for to-morrow's load;  
Thou mayest leave that to thy gracious God:  
'Daily,' only, he saith to thee,  
'Take up thy cross, and follow me.'"



## WHO LIKES THE RAIN?

"I," SAID the duck, "I call it fun,  
For I have my little red rubbers on;  
They make a funny three-toed track  
In the soft, cool mud. Quack! quack!"

"I," cried the dandelion, "I;  
My roots are thirsty, my buds are dry,"  
And she lifted her little yellow head  
Out of her green and grassy bed.

"I hope 't will pour! I hope 't will pour!"  
Croaked the toad at his gray bark door;  
"For with a broad leaf for a roof,  
I am perfectly weatherproof."

Sang the brook: "I laugh at every drop,  
And wish they never need to stop  
Till a big river I grow to be,  
And find my way down to the sea."

—Selected.

## CONCERNING A PEST.

"O MAMA!" cried Flora, as she ran into the house, "isn't it too bad? Nannie and I had made the nicest playhouse in the barn, and were having such a good time,—and now we can't play there any more at all!"

"Why not?" asked mama.

"'Cause the rats keep running across the floor and scaring us. I hate rats, and I just wish I lived where there was n't a single one!"

"If you had lived here two or three hundred years ago, you would have had your wish; for there were none here then."

"Yes, but there were no people here then, except Indians," spoke up fourteen-year-old Ned; "and Flo and Nan would have been more afraid of them than of any number of rats. Really, mother," he added, more thoughtfully, "were there no rats here then? How is it that there are so many now?"

"They came over here in ships from European countries. Every ship brought a colony of rats, which, without so much as saying 'by your leave,' stole a passage across the Atlantic. They increase rapidly, and are sometimes extremely troublesome on shipboard. We are told that on the return of the man-of-war 'Valiant' from Havana, in the year 1766, the rats on board had increased to such a number that they devoured one hundredweight of biscuit daily. The ship was at length smoked between decks, in order to suffocate them."

"All the rats I ever saw were brown. Are they all that color?" asked Nannie.

"No," answered her mother; "there used to be more black rats in this country than there are at present; but the brown rat has nearly driven them away. Originally, the brown rat came from Norway, whence it has been carried to all parts of the world."

"Wherever rats may have come from, they are nothing but nuisances," said Ned, decidedly; "see how they are eating father's corn."

"You remember the little bird which sang so sweetly in the old elm-tree a few days ago, don't you, Ned? We said that the life of God was in it, and we all agreed that this was a beautiful thought. Whose life is it, I wonder, that is in the rat?"

"Why, it must be God's life, mama," said Flora.

"Certainly; for God is the author of all life. If we love God, we shall not hate anything he has made. When we are obliged, in self-defense, to destroy any creature, we should do it as mercifully as possible. Rats prefer clean food; but when they can not get it, they will eat almost anything. They are often of great use in places where there is much refuse. It is a good plan to remember that—

"He prayeth best who loveth best  
All things both great and small;  
For the dear God, who loveth us,  
He made and loveth all."

—VIOLA E. SMITH.



# BIBLE LESSONS AND NOTES

## SABBATH-SCHOOL LESSON.—NO. 12.

(June 17, 1899.)

### HEALING THE DEMONIAKS, AND OTHER MIRACLES.

**Lesson Scriptures.**—Matt. 8:28-34; 9:18-26; Mark 5:1-43.

**Memory Verse.**—John 11:25.

#### QUESTIONS.

After the stilling of the tempest, where did Christ and his disciples land? Mark 5:1; note 1. Who met them as they left the ship? Vs. 2-5; note 2. Describe this man's condition. With what words did he address the Saviour? V. 7. When asked his name, what reply did the man make? V. 9. What request was made in behalf of the demons? Where did they desire to go? Vs. 11, 12. What was the result of their being permitted to enter the swine? V. 13. When the swine disappeared in the sea, what did the keepers do? V. 14. Who came to see what had been done? Did they show any gratitude for the healing of the poor demoniac? What did they beg Jesus to do? V. 17; note 3. As Jesus was about to leave, what earnest plea was made by the healed man? V. 18. What did Jesus counsel him to do?—V. 19. How well did he carry out this instruction? V. 20; note 4. How was the Saviour received on his return to Galilee? Luke 8:40. Who came to Jesus, and what request did he make? V. 41. While the Saviour was hastening to the dying bed, what incident happened that delayed him? Vs. 43-48. What was the difference between the touch of this woman and that of the many persons who were roughly jostling against the Saviour? Have we access now to the hem of Christ's garment? As the Saviour spoke words of hope and good cheer to the woman, what message was brought from the house of the ruler? V. 49. How did Christ comfort the sorrowing father? V. 50. On arriving at the house, whom did Jesus find in the room of the departed? V. 52; also Matt. 9:23; note 5. What did he do? Tell how the girl was raised to life. Vs. 54, 55. How were the parents affected? What charge did they receive?

#### NOTES.

1. Gadara was the fortified capital of Perea, the "country of the Gadarenes," or Gergesenes. It was about eight miles southeast from Tiberias. The present ruins of the city are about two miles in circumference. The tombs were in the sides of the cliffs, round about the city, some of which were still preserved, and used by Arabs for dwellings.

2. Mark and Luke speak of but one demoniac coming to Christ, while Matthew introduces two. The lesson here given follows the two former accounts, simply because they are more complete in detail. While two demoniacs were present, probably one of them made the prominent demonstrations, which would explain why only one is mentioned by two of the evangelists.

3. Covetousness is well-nigh universal, and robs its unhappy victims of the richest blessings. These Gergesenes felt so bad over the loss of their swine that they had no words of welcome for the Saviour, nor appreciation for the wonderful miracle he had wrought. Many professing Christians of to-day show more real concern for their property than for the saving of precious souls.

4. The record says that he "began to publish in Decapolis [meaning *ten cities*] how great things Jesus had done for him." This name Decapolis was applied to an extensive territory lying east of the Jordan.

5. The wondering crowd that pressed close about Christ realized no accession of vital power. But when the suffering woman put forth her hand to touch him, believing that she would be made whole, she felt the healing virtue. So in spiritual things. To talk of religion in a casual way, to pray without soul-hunger and living faith, avails nothing. A nominal faith in Christ, which accepts him merely as the Saviour of the world, can never bring healing to the soul. The faith that is unto salvation is not a mere intellectual assent to the truth. He who waits for entire knowledge before he will exercise faith, can not receive blessing from God. It is not enough to believe *about* Christ; we must believe *in* him. The only faith that will benefit us is that which embraces him as a personal Saviour; which appropriates his merits to ourselves. Many hold faith as an opinion. Saving faith is a transaction, by which those who receive Christ join themselves in covenant relation with God. Genuine faith is life. A living faith means an increase of vigor, a confiding trust, by which the soul becomes a conquering power. After healing the woman, Jesus desired her to acknowledge the blessing she had received. The gifts which the gos-

pel offers, are not to be secured by stealth or enjoyed in secret. So the Lord calls upon us for confession of his goodness. "Ye are my witnesses, saith the Lord, that I am God"—"The Desire of Ages," page 347.

6. These "minstrels" were hired mourners, who kept up continual discord on wind instruments, accompanied with wild howls of lamentation. The number of these mourners was in proportion to the wealth of the afflicted family.

## THE INTERNATIONAL LESSON.—NO. 12.

(June 18, 1899.)

### THE NEW LIFE IN CHRIST.

**Lesson Scripture.**—Col. 3:1-15.

**Related Passages.**—Eph. 4:17-32.

**Memory Verse.**—Col. 3:15.

#### QUESTIONS.

Who wrote this book? When and where? What circumstances called for it? What danger threatened the Colossians? Upon what great fact is the argument of this passage based? Where are we to seek for Christ to-day? V. 1. In what sense can we ascend to heaven? V. 1. What is Christ's position now? V. 1. To what, then, should we give attention? Vs. 1, 2. Must Christians take no interest in things of this world? V. 2. In what sense are Christians *dead*? V. 3. What life have they now? V. 3. What further is said of this life? V. 4. How and when will Christ and Christians be manifested? V. 4. How is this fulfilled now? What should be put to death? V. 5. How can it be done? What will be the end of evil and those who love it? V. 6. Were we ever sinners? V. 7. In what relation to sin does the Christian now stand? V. 8. How must his sincerity be manifested? V. 9. What has been put on? V. 10. What does this mean? How does the Christian grow? V. 10. What distinctions are obliterated? V. 11. Explain this. What fills all hearts and thoughts? V. 11. What, therefore, should the Christian put on? V. 12. To what extent should we be ready to forgive others? V. 13. In what one virtue are all included? V. 14. What should be a ruling power in our lives? V. 15. What cause for thankfulness have we? V. 15.

#### NOTES.

1. The epistle to the Colossians was written by Paul during his first imprisonment at Rome, about 62 A. D. It was addressed to the church at Colosse, a city in Phrygia. Epaphras, its pastor, visited Paul, and reported that the church was being misled by false teachers, who set forth a mixture of Judaism, Christianity, and speculative philosophy. The object of the epistle is to prove that Christ is all and in all,—the head of the church and of the individual.

2. The argument is based upon the resurrection of Christ. He had risen from the dead, and ascended on high, into a new world, a new life. Those who have followed their Lord, in a spiritual sense, are also risen from death, and have ascended into a new world of desire and deed. "If ye then be risen with Christ, seek those things which are above." This is not so much a command as a consequence. He who is risen will seek the things above.

3. "For ye are dead;" your life is hidden with Christ; your communion is with heaven; you live as seeing him who is invisible. Your glory is not manifested to the world; but it will be when he appears in glory. You are a prince in training, getting ready for court, and will be brought out in due time, and in heavenly splendor.

4. "Put off the old man:" the mind and deeds of the low family and environment from which you have been rescued must be put away. "For which things' sake the wrath of God cometh." The life of the past and the flesh can not be tolerated by him who can not look upon iniquity. Verses 5-9 give a detailed list of the things God hates, and will not excuse in those who would enter into the heavenly family, into the court of the King.

5. "Put on the new man." The same lesson is taught again and again, under various figures and symbols in the Word. "Take away the filthy garments from him," is the putting away of the "old man." "I will clothe thee with change of raiment," represents the new man. "Though your sins be as scarlet, they shall be as white as snow." "Though ye have lien among the pots, yet shalt thou be as the wings of a dove covered with silver, and her feathers with yellow gold." The change wrought in the heart by the reception of the grace of Christ is brought out in most beautiful symbols. The difference between the old and the new life is of the vastest and most striking contrast.

6. To the character described as "the new man" belongs peace. It is no chance, no new circumstance; it is a result. Live out the recipe, and prove the sequel. Christ said, "My peace I give unto you." His was the peace of the character of the "new man." Mercy, humility, kindness, meekness, compassion, willingness

to forgive, love,—what could result from such a combination but the peace of God, which passeth all understanding? "Let the peace of God rule in your hearts, . . . and be ye thankful."

# NOTES AND COMMENTS

**In Dewey's Honor.**—The cruiser "Olympia," with Admiral Dewey on board, left Manila, May 20, for her homeward voyage through the Indian Ocean, Red Sea, Mediterranean, and Atlantic. The plan is to reach New York about July 4. An outlay of \$150,000 has been planned in that city, which will be the place of the first and noisiest demonstration. It is also proposed to build him a palatial house in Washington, and supply him with money to keep it up. Subscriptions are already pouring in for this object.

**St. Gotthard Tunnel Ventilated.**—The question of satisfactory ventilation for the great St. Gotthard Tunnel, the longest tunnel in the world, has been settled by utilizing compressed air to clear the passage of smoke and gas. The system works perfectly; and with increased traffic no smoke remains in the tunnel, the pipes soon drawing it out. Before this system of ventilation was adopted, the smoke often became so dense that trainmen were afraid to venture in; but now it is not necessary to close the car windows while passing through the tunnel.

**Gay Automobile Parade.**—A gay scene was presented in front of Madison Square Garden, New York, May 24, when fifty electric vehicles were arranged in line, ready for the automobile parade. All kinds and styles were represented. Several hundred persons gathered to view the unusual sight; and spectators all along the line of the parade halted to watch the line of motor-carriages as they rolled along at a high rate of speed. Like the telephone and other inventions of recent years, these vehicles have come to stay, and without doubt one result will be a great improvement in the public roads of the country. The increasing use of bicycles also has a tendency in this direction.

**A Long Reign.**—May 24, the birthday of Victoria, queen of England, was generally observed all over the world. Telegrams of congratulation from the rulers of all civilized nations and from many prominent societies were received. The queen was born in 1819, and is therefore eighty years old. Only one of England's rulers reached a greater age than she has already attained. George III, her grandfather, died in his eighty-second year; but the closing years of his life were darkened by insanity. She has already reigned longer than he did, as he became king at the age of twenty-two, while she was crowned at nineteen. The world has never seen in any country so great advancement during the life of one sovereign as has been seen under the rule of the present queen; and the government of England to-day is as good as that of any earthly power.

**Expedition to Guam Island.**—Not long after Admiral Dewey's famous battle in Manila harbor, the Island of Guam, thirty-two miles long and five broad, one of the Ladrões, was seized for a United States naval station. Captain Richard P. Leary has been appointed governor of Guam; and on May 10 he and his garrison of one hundred and twenty-five marines, with the ship's officers and crew, sailed from New York on the "Yosemite," which will remain at the island three years. It is proposed to survey the coasts and harbors of the island, place beacons and buoys, prepare maps, develop roads, organize a police force, and establish a stable government. The natives are said to look kindly upon American rule, and the development of the little island will be watched with interest. On account of the comparatively isolated position of Guam, which is out of the regular steamship routes, the "Yosemite" carried a miscellaneous assortment of articles in her hold, among which were the following: "A military band for the plaza, a windmill for the gardens, new furniture for the palace, an evaporating plant for supplying pure drinking-water, portable lighters for carrying the cargo from ship to shore, acres of roofing for coal-sheds, hundreds of thousands of feet of lumber for dwellings, an ice-plant, an elaborate astronomical and surveying outfit, an equally complete photographic outfit, special postage-stamps for the island, agricultural implements for those of the natives who are inclined to work, saddles and horses for Governor Leary, carpenters, builders, machinists, clothing, provisions, and a complete outfit for the subsistence of all hands for one year."



# Nature Study

## MAN'S PLACE IN NATURE.

### Man's Relation to Air.

WHILE air is necessary to lift the vapors above the earth, and carry the clouds about, thus watering the dry land, it is also necessary for the growth and development of plants, the lower animals, and man. As soon as God had formed man, he breathed into his nostrils the breath of life, and he became a living soul. Many persons breathe as if they thought God breathed into man's mouth instead of his nostrils. The nostrils are provided with air-chambers, in which the air is warmed before it enters the lungs. The nose contains the olfactory nerves, which respond to the fragrant odors that are carried about in the air. After the air has passed through the nostrils, it enters the music-box (larynx), which is situated at the top of the windpipe (trachea). The larynx contains the vocal cords, which vibrate under the influence of the air as it passes between them. In this way we are able to express ourselves in conversation and song.

The air passes on down through the trachea, which divides into two branches, called bronchial tubes. Both these tubes divide and subdivide again and again into smaller and smaller divisions, until we come to the microscopic air-cells of the lungs. The trachea, with the two bronchial tubes and their smaller branches, reminds one of an inverted tree. The two lungs are enveloped in a sac called the pleura.

As the air is received into the lungs, they are inflated. The lung cell-walls are permeated with minute blood-vessels,—the capillaries. These subtract the oxygen from the air, and give off, in return, carbon dioxide, which is exhaled from the lungs. The oxygen passes into the body by means of the blood, and takes up waste particles of carbon, and carries them out at each expiration of the air from the lungs.

Not only does the air force these wastes out of the body, which, if retained, would cause death in a short time, but it also enables us, through the sense of smell, to detect the presence of impurities in the outer air, and thus avoid breathing them into the lungs to poison the blood. The sense of smell is not only a protection against these dangers, but through it we also are able to enjoy the delicate perfumes of the flowers, the fragrance of the fields and meadows, and the savory odors of our foods. And smell is an important element in taste. One who has lost the sense of smell is unable to distinguish and enjoy the flavors of many articles of food. This may be tested by holding the nostrils closed, and endeavoring to taste various kinds of food. Without this sense of smell, which is dependent upon the air we breathe, we should be deprived of many of the pleasures of life.

This would be true, also, if we could not hear; and hearing is almost entirely dependent upon vibrations in the air. To understand this, we must know something about the mechanism of the ear. The *outer ear* is simply a funnel, leading into a canal which terminates in the ear-drum, or *middle ear*. Within this drum is a chain of small bones, which is attached at each end to the flexible walls of the drum. Beyond this is the *inner ear*, consisting of the *cochlea*, or "snail-shell," a spiral passage filled with fluid. Projecting into this fluid are several rows of very small hairs, and in the fluid are small "ear-stones," which move about as the liquid is agitated.

But how does the liquid become agitated?—The air strikes the ear-drum, and the movement is communicated by the ear-bones to the inner ear. The walls of the inner ear are permeated with the small fibers of the auditory nerve, which carry the sensations to the brain. So we really hear in the brain. The ear is the instrument which collects the sound-vibrations, and the auditory nerve carries them to the brain.

By this short study we see that air sustains wonderful relations to man. Without it he could not smell, hear, or even live. We should take great care of the nostrils, lungs, and ears,—the organs by means of which life is made so much brighter and happier. Our next study will be on "Man's Relation to Water."

M. E. CADY.



## MISSIONARY MONEY FROM BOUQUETS.

(Concluded.)

NEXT take your green stuff, and sort it over, putting each kind of leaf, twig, or spray, by itself. If anything shows the least sign of wilting, don't use it. Begin with the largest leaves; if you have but a few, place them equidistant from one another. If you have a good supply, made a border all around, lapping each leaf a quarter of an inch or more over the preceding one. Use a wooden toothpick, a darning-needle, or something similar, to make a hole for the leaf-stem. These holes should be small, so that the leaf will be held firmly in place; the leaves should hang gracefully over the edge of the plate.

When the first row is in place, add another of smaller leaves of a different kind. Let this row project half an inch less than the first. Add still another row, if you have smaller and still different leaves, or smaller leaves of the same kind as the first row. Finally insert your twigs and other green stuff over your foundation of leaves, using taste and judgment so as to produce the effect of a soft, full cushion of green, as well as a border. This cushion, to look well, should swell in an arch from the earth to the tip of the first leaves. Therefore in adding the twigs and odd green things, draw them in, or extend, as needed, to give this rounded appearance.

Sort over your flowers and buds as you did your green stuff, not only putting the different kinds together, but sorting the buds and blossoms according to size. Having them all before you, select the smallest bud, cut the stem about half an inch long, and, beginning in the center of the mud, put in a single bud, and then a few of a similar size around it. Then put in a circle of larger buds around the smaller ones, then a still larger row, and so on until you have filled a small space, which will vary according to the size of your plate, from one to two or more inches. Try to have your bouquet framed in your mind before you begin, and then work toward your ideal. Don't have the center of buds too small or too large; use your judgment. Take the smallest blossoms, and cut off each little bloom that goes to make the flower; that is, cut off every little bloom that has a stem. Often these stems will not be more than a quarter of an inch long, but cut them half an inch long when you can. In cutting up your flowers in this way, you will obtain blossoms varying in size. After cutting off as many as you think you will need, sort them out according to size. Select the smallest, and put in a row around the buds, and another row of larger, and a third of still larger, and so on until you reach the border of green, where you will use, of course, the largest size.

Often a pretty effect is produced by making a ribbon of blooms of another color half-way between the center and the edge; stripes up and down are effective; and a variegated bouquet is very striking. You can also pile the mud on the plate in the shape of a pineapple, and putting the green end of a pineapple in the top, and securing it with a slender stick, build rows of sweet-scented shrub bloom down the mud to represent the pineapple growth.

If these bouquets are sprinkled daily, and are not exposed to too much heat, they will often last several weeks.

W. S. CHAPMAN.



## SWALLOWING A FARM.

SOME one has wittily set forth one effect of the drink evil in the following words, which are worthy the careful thought of every young man:—

"My homeless friend with the chromatic nose, while you are stirring up the sugar in a ten-cent glass of gin, let me give you a fact to wash down with it. You may say you have longed for years for the free, independent life of a farmer; but you have never been able to get enough money to buy a farm. But there is where you are mistaken. For some years you have been drinking a good improved farm at the rate of one hundred square feet at a gulp. If you doubt this statement, figure it out for yourself. An acre of land contains 43,560 square feet. Estimating, for convenience, the land at \$43.56 an acre, you will see that it brings the land at just one mill a square foot. Now pour down the fiery dose, and imagine you are swallowing a strawberry-patch. Call in five of your friends, and have them help you gulp down that five-hundred-foot garden. Get on a prolonged spree some day, and see how long it will take to swallow a pasture-land to feed a cow. Put down that glass of gin, there is dirt in it—three hundred feet of good, rich dirt, worth \$43.56 an acre."

## CIGARETTES.

Do you know how they are made? I think I can enlighten you. An Italian boy only eight years old was brought before a justice in New York City as a vagrant, or, in other words, a young tramp. But with what did the officer charge him?—Only with picking up cigar stumps from the streets and gutters. To prove this, he showed the boy's basket half full of stumps, water-soaked and covered with mud. "What do you do with these?" asked the justice.

"I sell them to a man for ten cents a pound, to be used in making cigarettes."

Not a particularly agreeable piece of information, is it, boys?

In our large cities there are a great many "cigar-butt grubbers," as they are called. It certainly is not a pretty name, though very appropriate; for it is applied to boys and girls who scour the streets in search of half-burned cigars and stumps, which are dried, and then sold to be used in making cigarettes.

But this isn't all, nor even the worst of it. These cigarettes have been analyzed; and physicians and chemists were surprised to find how much opium is put into them. A tobacconist himself says that "the extent to which drugs are used in cigarettes is appalling." "Havana flavoring" for this same purpose is sold by the thousand barrels. This flavoring is made from a bean that contains a deadly poison. The wrappers, warranted to be rice-paper, are sometimes made of common paper, and sometimes of filthy scrapings of ragpickers, bleached white with arsenic.

A bright boy of thirteen came under the spell of cigarettes. He grew stupid and subject to nervous twitchings, until finally he was obliged to give up his studies. When asked why he did not throw away his miserable cigarettes, the poor boy replied with tears that he had often tried to do so, but could not. Another boy of eleven was made crazy by cigarette-smoking, and was taken to an insane asylum in Orange County, New York. He was regarded as a violent and dangerous maniac, exhibiting some of the symptoms peculiar to hydrophobia.—*Selected.*

DR. CARTER, of Liverpool, has lately pointed out that the number of deaths directly resulting from the use of intoxicants is increasing.





[SUGGESTIONS FOR MARKETING.

"DIVERS weights are an abomination unto the Lord."

As it is now time for us to begin to sell our garden produce, a few suggestions as to the best manner of arranging vegetables for market will not be out of place. No matter where you may be situated, the largest, cleanest, and brightest vegetables always bring the highest price.

In preparing radishes, beets, and turnips for market, do not mix the small ones with the larger ones. It does not look well to see one or two small radishes in a bunch of large ones; while to put small berries in the bottom of a box, and cover them with larger ones, savors of dishonesty. Study your market; it may pay you to grade your vegetables and berries; that is, divide them, putting the finest in one class and the second grade in another. My experience, however, goes to show that it does not pay to sell small radishes, beets, tomatoes, etc. There are always plenty of poor persons who will gladly accept them.

Never show inferior quality. Always keep the best, and you will have a demand for your vegetables which the careless gardener will not have. If you live in the country, cover the vegetables with canvas, or better, with oilcloth. Then when you reach the market, they will be fresh, and free from road dust. Another suggestion: Always be on time. If you have promised to have your produce at a certain place at a certain time, be sure to live up to your engagement, even if you have to make a sacrifice to do so. It will pay you in the end.

I do not know that I can do better than to quote a few extracts from a New Jersey gardener on this subject:—

"Retailers like to deal with producers whose word is as good as their bond. They desire to be sure that in every basket, box, or barrel the uniform goodness of the contents reaches clear to the bottom. They like men who, when taking orders to-day for to-morrow, can be depended on to live up to their engagements; whose vegetables are always washed clean, tied tightly, arranged neatly, and whose call can be counted upon with never-failing certainty every week-day, and under all conditions of weather.

"Even to-day there are hundreds of families in every large town, and thousands of farmers, upon whose tables spinach, cabbage, salsify, and many other vegetables, both toothsome and healthful, have never appeared. To encourage this trade takes time and patience.

"It has been, and will always be, that each market has its favorites, who can sell more at the same price than other growers. If to dispose of your load to-day, you sacrifice the price you would be sure of to-morrow; if to-morrow you find yourself compelled to make further concessions, in order to sell your products, you may be sure the necessity for making concessions will continue from day to day, until the prices of all goods in your line are depressed below the line of profit to yourself and all other gardeners; and you will have lost the esteem and good will of your competitors without being better thought of by dealers and customers."

Keep an eye on your garden for the injurious insects. If the simple remedies recommended in previous articles are followed, these will soon disappear. Do not be content with one application, but continue until the last insect is gone.

Do not leave a single square foot of your garden lying idle. It is now time to plant the second crop of sweet corn, string beans, peas, potatoes, radishes, and lettuce.

ARTHUR F. HUGHES.

"God has a special message to speak through every Christian."



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COURTESY takes less time than apology.

WHEN the recent change was made in the YOUTH'S INSTRUCTOR, the time of each subscription was extended, the figures being set ahead to make up for the reduction in price. This explanation is made because some have evidently not noticed the change in the figures on their address label.

WHAT ONE LITTLE BOY HAS DONE.

A SISTER in Chicago, writing for an INSTRUCTOR canvassing outfit for her little boy, says: "He has long wished to earn money; and since he was told about the sale of babies in India, has wanted to buy one, and have it educated for the Master. Though he is only seven years old, and small for his age, he has already earned and saved about twenty-five dollars for this purpose. He took orders for 'Sketches of Bible Child Life,' at the same time selling dandelion greens to pay for the books. His long curls were cut and sold, and the proceeds added to the fund. He does not think of spending money for himself, as he has asked God to help him. Now we would like to know just how he is to buy the baby, and provide a home for it. Can you enlighten us?"

These inquiries, with the letter, were forwarded to Brother Robinson, in India; and we hope to be able in a few weeks to give this earnest little worker the information he desires. Older INSTRUCTOR readers will be interested, too; and some will doubtless be glad to join this little brother of the family in his work. "Inasmuch"—how beautifully the words come to mind—"as ye have done it unto one of the least of these my brethren, ye have done it unto me."

THE YOUTH'S INSTRUCTOR GOOD-READING DIME MISSION FUND.

AN offer was made in the YOUTH'S INSTRUCTOR of Oct. 6, 1898, to furnish the paper to reform schools, orphanages, Y. M. C. A. mission reading-rooms, and public libraries for sixty cents a year. At the same time an invitation was extended to all who wished to have a part in this worthy enterprise to contribute to its support.

There have been responses, and a number of these institutions are being supplied with the INSTRUCTOR. As an incentive to a more extended work in this direction, we have decided to offer the paper at the rate of fifty cents a

year, when sent to such institutions. We hope there will be a generous response by the youth who read this paper, and that our tract societies and Sabbath-schools will raise a fund for this purpose. Even if the amounts are small, send them in.

There are many boys and girls who are inmates of orphans' homes, State reform schools, and other institutions, who would be glad to read the INSTRUCTOR. Will you not aid in sending it to them? It will be genuine missionary work, and may be the means of saving some precious souls.

ACKNOWLEDGMENT.

BROTHER BOETTGER, of Ottawa, Ontario, whose request for papers appeared in recent numbers of the INSTRUCTOR, writes thus to those who have kindly supplied his wants:—

DEAR FRIENDS: In response to my recent appeal in the INSTRUCTOR, I have received, and been able to distribute, several hundred copies of this silent messenger, and of the *Little Friend*. Other papers have also been received and judiciously used. By the courtesy of the secretary of the Lady Aberdeen Association, I am able to send, by mail and freight, large numbers of our papers to the most isolated parts of Canada, and thus furnish spiritual food to hundreds who are hungry in mind and soul. Not always knowing who have sent papers for this work, it is impossible to thank all directly; therefore I gladly take this opportunity of expressing my gratitude. May God's blessing be with you and abound.  
123 Albert St. C. V. S. BOETTGER.

WANTED, AT ONCE!

IN order to complete its set of files, the INSTRUCTOR wishes to obtain a copy of Vols. IV; V; XV; XVI; XVII; XXVI; and XXXVI. Any one who has one or more of these volumes, complete and in good condition, with which he is willing to part, is invited to write at once to the INSTRUCTOR.

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