

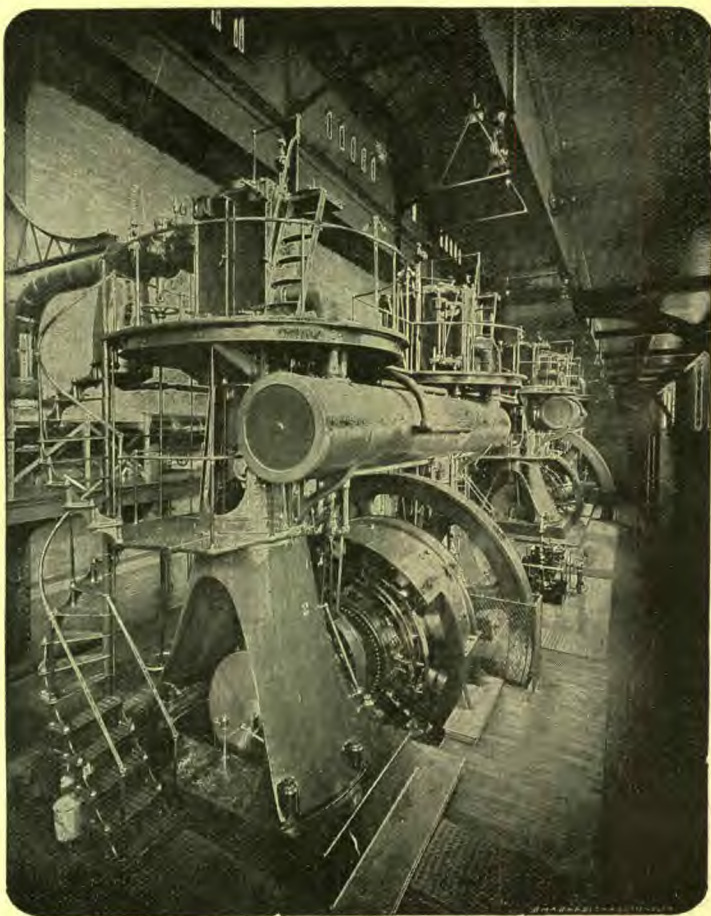
# THE YOUTH'S INSTRUCTOR

REMEMBER NOW! THE CREATOR IN THE DAYS OF THY YOUTH!



### A GIANT INDUSTRY.

THE century just closing has been described not inaptly as the "iron age," on account of the marvelous advances made in the use of the dark metal. In this wonderful development, few manufacturing concerns have had a more important part than the Reliance Iron Works of the Edward P. Allis Company, of Milwaukee, Wis. This company is to-day without a rival in its line, being the most extensive builders of steam-engines in the world. Its shops have a floor space of twenty-eight acres, the daily pay-roll is four thousand dollars, and fully two thousand men are employed all the time. In every part of the world where civilization and modern methods have found their way, the products of this firm are used.



ANOTHER VIEW OF THE COMPOUND CONDENSING ENGINE.

Fifty expert draftsmen are constantly employed in this great institution, working out plans and specifications for steam-engines. No two engines in this shop are made exactly alike, plans being designed for each one, so that in each case the machine will be specially adapted for its work in the place where it will be operated.

As one enters the various departments, where different processes of manufacture are carried on, the attention is attracted by the immense electric cranes used in lifting and carrying to different parts of the works the enormous castings finally brought together in the completed engine. The delicacy shown in the adjustment of these machines, and their fitness to do what is expected of them, in just the way desired, are certainly wonderful. There are, all told, thirteen of these cranes in the institution, some of them having a lifting capacity of forty tons.

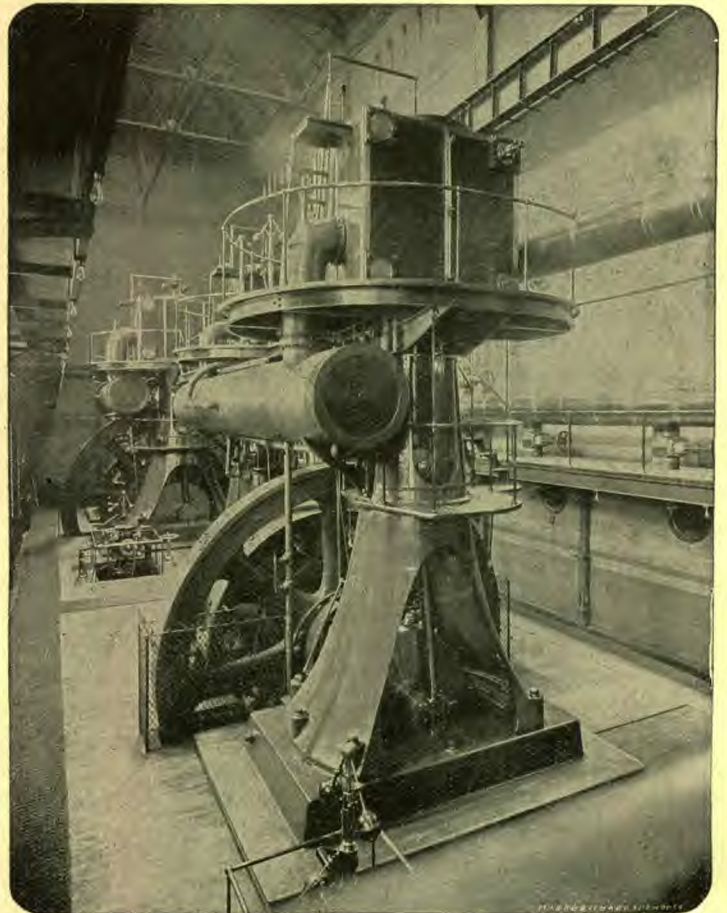
One of the most interesting features of the establishment is the molding department. Both sand-work and loam-work are produced; but the latter method is used most, especially for large castings. In making molds for the loam-work, large brick-kilns are constructed according to specially prepared plans, and so built as to conform to the shape of the casting to be molded. After the

metal has had time to cool in the molds, the entire structure, brick work and all, is torn away; and the well-shaped part of some monster engine comes to light. Castings weighing as much as sixty tons are often made in this way.

The Allis Works is now filling the largest single order for stationary steam-engines ever received by any company, being that of an Eastern street railway company. The order calls for eleven power-engines, with a total running capacity of sixty thousand horse-power. When these engines are completed and in place, the company owning them will have the largest power-plant under one roof in the world. These engines are so made that each one can be run with perfect safety to the limit of seven thousand horse-power, though they will probably be run at a rate not exceeding six thousand horse-

power. The significance of these figures will be appreciated when it is remembered that expert mechanical engineers thought that the top notch of high-power engines had been reached when a three-thousand-horse-power engine was made by the Allis Company, and set up to run the vast machinery connected with the Columbian Exposition, held at Chicago in 1893. The gain

made since that time seems almost incredible. The Allis Company not only manufactures engines, both large and small, but other kinds of machinery as well, including flour-mill, saw-mill, and mining machinery. The firm maintains agencies in the leading American cities, also in the City of Mexico, Paris, Sydney, London, Johannesburg, and other foreign points.



ALLIS VERTICAL CROSS COMPOUND CONDENSING ENGINE, IN THE POWER-HOUSE OF THE CHICAGO METROPOLITAN RAILROAD.

Orders have recently been filled for immense street-railway power-plants at Madrid and Barcelona, Spain; Dublin, Ireland; and for the underground railway system of London, England.

J. C. BARTHOLF.

AT Claremont, N. H., an original method of cheaply filling ice-houses with fine ice was in successful operation last winter. The ice-house has within it a water-tight tank, just enough smaller than the house to allow for the expansion occasioned when water turns into ice. The water, taken from the water-works, first goes to a tank sixty feet above ground; from this it emerges through small tubes, and is allowed to fall to the floor of the ice-house below, just as shot are made in a shot-tower. The water freezes on its way down. The ice builds upon itself, becoming all the time denser and clearer, and the result in the end is a house filled with one solid three-hundred-ton cake of ice of such pure color as no one ever saw who has been limited to pond or river ice. The outside temperature must, of course, be freezing or colder. The ice is estimated to cost only five cents a ton.—*The Pathfinder*.





## BETWEEN THE DAYS.

BETWEEN the days — the weary days —  
He drops the darkness and the dews;  
Over tired eyes his hand he lays,  
And strength, and hope, and life renews —  
Thank God for rest between the days!

Else who could bear the battle's stress,  
Or who withstand the tempter's shocks?  
Who thread the dreary wilderness,  
Among the pitfalls and the rocks,  
Came not the night, with folded flocks?

The white light scorches; and the plain  
Stretches before us, parched with heat;  
But by and by the fierce beams wane;  
And lo, the nightfall, cool and sweet,  
With dews to bathe the aching feet!

For he remembereth our frame!  
Even for this I render praise.  
O tender Master! slow to blame  
The falterer on life's stony ways,  
Abide with us between the days!

— Emma Herrick Weed.

## THE RESURRECTION OF LAZARUS.

## IX.

AT this council Christ's enemies had been deeply convicted. The Holy Spirit had impressed their minds. But Satan strove to gain control over them. He urged upon their notice the grievances they had suffered on account of Christ. How little he had honored their righteousness! He had presented a righteousness far greater, which all must possess who would be children of God. Taking no notice of their forms and ceremonies, he had made the service of God so simple that sinners were encouraged to go directly to God, as to a merciful Father, and make their wants known to him. Thus, in their opinion, Christ had set aside the priesthood. He had refused to acknowledge the theology of the rabbinical schools. He had exposed the evil practises of the priests, and had irreparably hurt their influence. He had injured the effect of their maxims and traditions, declaring that though they strictly enforced the ritual law, they made the law of God void by their traditions. He had accused them of being ignorant of the Scriptures and of the power of God, denouncing them as hypocrites. This Satan now brought to their minds, persuading them that they had a quarrel against Jesus, which nothing but his death could end.

Satan told them that in order to save their authority, they must put Jesus to death. This counsel they followed. The fact that they might lose the power they then exercised was, they thought, sufficient reason for coming to some decision. With the exception of a few who dared not speak their minds, the Sanhedrin received the words of the high priest as the words of God. Relief came to the council; the discord ceased. They resolved to put Christ to death at the first favorable opportunity. In coming to this shameful decision they eased their minds with the fact that many guiltless lives had been sacrificed to save others.

The rulers were well pleased with themselves. They regarded themselves as patriots, who were seeking the nation's salvation. Thus they persuaded themselves that they would be doing God a service in apprehending Christ. They thought that by putting him to death they could avert danger and preserve their power. Every device possible was to be tried to find something whereby Christ could be represented as working against the Roman power. By putting spies on his track, who would profess to be

honest inquirers after truth, they hoped to entrap him. Thus by their own course of action they demonstrated as true all that Jesus had said of their malignity.

This spirit had been worked out in the history of Daniel. His enemies, who hated the faithful statesman for his integrity, and who wished to remove him from their path, that they might rise to eminence, planned and intrigued long in order to find some way by which he might be condemned and put to death.

By deciding to murder the Son of God, the Jewish rulers forged the fetters that were to hold them in irrevocable bondage. They loaded the cloud of vengeance that was soon to break over them, leaving them divorced from God and a prey to their enemies. From the time of this decision, the protection of God was withdrawn from the Jewish nation. The restraint of his Holy Spirit was removed.

Christ's act in raising Lazarus was the crowning act of his life. What an influence for good it should have had upon all! But the hearts of the priests were hardened by it. Heaven's light was shining upon them; the evidence was strong enough to lead them out of the dark shadow in which the enemy had enveloped them. But the words were verified: "Though he had done so many miracles before them, yet they believed not on him. . . . Because that Esaias said again, He hath blinded their eyes, and hardened their heart; that they should not see with their eyes, nor understand with their heart, and be converted, and I should heal them."

God never hardens the heart in any other way than by giving great light. Heaven's favors slighted, turned from, rejected, because of a perverse will, harden the heart. So Pharaoh's heart was hardened. In order to accomplish his purpose, the Lord continued to give him greater and still greater manifestations of his power. But the king's first resistance made obedience to God more difficult. To refuse first, and then obey, is humiliating.

God did not actually make Pharaoh stubborn and unyielding. He continued to give him light, and the king's increasing stubbornness brought its sure result. By resisting the will of God, seeds of disobedience are sown, and a harvest of evil is reaped. One seed of unbelief generates another and a stronger seed. By submission to the will of God, seeds are sown that will produce a rich harvest of good. The seed that is sown is the seed reaped; for seed reproduces itself. "Whatsoever a man soweth, that shall he also reap." As responsible agents, all are deciding for themselves what their harvest shall be.

God never urges any one on in wickedness. He never leads man to become desperate in his rebellion. He will not that any should perish, but that all should be saved. But he forces no one to accept the light. If, after bearing long with man, God sees that he will not submit, he leaves him to work out his natural hatred. He gives him up to the worst of all tyrants,—self.

From those who will not see the light, who are determined to go on in the hardness of their hearts, God gradually withdraws the restraining power of his grace.

To-day, as in the days when Christ worked his wonderful miracles, the truth of God is made known. Men have within themselves the evidence of its divinity. The Holy Spirit impresses their minds by the manifestation of divine power. If received, the light sent from God leads to freedom, life, and salvation. But if by resistance, preconceived opinions are strengthened, if the God-given blessing is not received, the light becomes darkness.

MRS. E. G. WHITE.



"I WILL DELIVER THEE."

INSTANCES of remarkable answers to prayer are not lacking in the history of the brave men and women who have gone out into the dark places of earth with the gospel lamp in their hands, nor, indeed, with believers everywhere. Many a Christian cherishes the memory of some special deliverance in answer to prayer, and remembers, with a thrill of joy, how the closed way opened before him, and the evidence of God's hand in it all was so plain it could not be mistaken. The experience related below is one more fulfilment of the promise that the Lord will deliver those who call upon him in the day of trouble:—

In September, 1863, Dr. Chamberlain, missionary in India, with some native preachers, a large party of coolies, and an armed guard, started on a twelve-hundred-mile journey into the interior, where no missionary had yet gone. The journey required five months' time, on horseback, and was beset with grave danger from fevers, wild beasts, and fierce northern tribes, who for hundreds of years had offered human sacrifices.

"They expected to find a government steamer, when they struck the Pranheta River, an affluent of the great Godavery. But the heavy torrents of the monsoon had made the Godavery a stream of tumultuous waters, three miles wide. The steamer, in attempting to stem that fierce current, had broken its machinery, and could not come to their aid. There was now no way out of their trouble but to march through the seventy-five miles of that deadly jungle, dare its fever and the tigers, and at the foot of the second cataract reach the next steamer."

Deserted by the coolies and the guard, in a lonely country, Dr. Chamberlain and his companions pressed on, and succeeded in crossing the swollen Godavery. Then he got together a new caravan, and "struck once more into the jungle, amid perils and exposures so great that only by intimidation could even those hardy men be compelled to go forward. At last a new and seemingly insurmountable obstacle lay in their way. Two huntsmen crossed their track, from whom they learned that the backwater of the Godavery flood, thirty feet higher than usual, had made unfordable the affluents beyond which lay their only safe resting-place for the night. And to their inquiries the answer was returned that there was neither boat nor raft nor any floating material to make a raft, whereby to cross to the knoll where they had purposed to encamp. The party were even then standing in the wet and mud, as they surveyed their hopeless plight. The royal guides and native preachers, who were in the party, were disheartened and at their wit's end; and the fierce, hungry roar of the tigers could be heard about them as the night began to fall."

At this point the brave missionary, who was doing one of the Master's errands, rode away from the party to pray. As he committed his cause to the Lord, he heard an answer, "not audible," he says, "but distinct, as if spoken in my ear by human voice, 'Turn to the left, to the Godavery, and you will find rescue.'"

When he proposed to follow this direction, he was met with opposition by the guides. What! turn to that swollen river, a mile away, where there was no rising ground on which to camp, and no village for many miles! It would be folly.

Again the missionary rode apart for prayer; again came the answer, "Turn to the left, to the Godavery, and you will find rescue;" and again the guides objected. In despair he once more retired for prayer, and still again the answer was repeated. Then with the courage of God in his heart he commanded his men to turn to the river.

Knowing no more of how deliverance would come than did his bewildered companions and



the unwilling coolies, but his heart filled with the calm assurance of one who has come near to God, he rode ahead as they reached the river, "all his senses keenly observant. And as he emerged from the dense undergrowth of bushes, there, right at his feet, lay a large flat-boat, tied to a tree at the shore—a large flat-boat, with strong railings along both sides, with square ends to run upon the shore. It had been built by the British military authorities in troublous times, to ferry over artillery and elephants, but it belonged at a station high up on the north bank of the Godavery. Two men were trying to keep the boat afloat in the tossing current. 'How came this boat here?' said the doctor.

"They, taking him to be a government official who was calling them to account, begged him not to be angry with them, and protested that they had done their best to keep the boat where it belonged, but declared that it seemed to them possessed. A huge rolling wave swept down the river, snapped the cables, and drove the boat before it. Despite their best endeavors, it was carried farther and farther from its moorings into the current and down stream; they said they had fought all day to get it back to the other shore, but it seemed as if some supernatural power were shoving the boat over. An hour before, they had given up, let it float to its present position, and then tied it to a tree."

Dr. Chamberlain had full authority to use any government property on his journey; so he immediately took possession of the boat.

"Who," he gratefully says, "had ordered that tidal wave in the morning of that day, that had torn that boat from its moorings, and driven it so many miles down the river, and across from the north to the south bank, and that had thwarted every endeavor of the frightened boatmen to force it back to the north shore, and had brought it to the little cove-like recess, just at that point where we would strike the river? Who but He on whose orders we had come; he who had said, 'I will be with you;' he who knew beforehand the dire straits in which we would be in that very place, on that very day, that very hour; he who had thrice told me distinctly, 'Turn to the left, to the Godavery, and you will find rescue?' I bowed my head, and in amazed reverence thanked God for this signal answer to my pleading prayer."

#### A PRECIOUS PILLOW.

THE experiences of Dr. Adoniram Judson, who went to India in 1810, and spent thirty-seven years in missionary service, are among the most thrilling in the annals of mission life. From 1824-1826 England was at war with Burma; and Dr. Judson, suspected of being a spy, was seized, and cast into a loathsome prison, where he was confined seventeen months, being bound with three, and for two months with five, pairs of fetters. His sufferings during this time are beyond description.

Before seized by the officers, he had finished the translation of the New Testament into Burmese, though it had not yet been printed. This manuscript was the most precious thing the faithful missionaries possessed. Fearing for its safety, Mrs. Judson buried it in the ground; but she knew that if left there, it would soon be ruined. Finally she decided to put it in a cotton pillow, and take it to her husband. For a wonder the keeper did not object: the pillow was so hard and small he did not covet it. After seven months it was taken from Mr. Judson; but his wife cleverly redeemed it with a better one. Sometime later he was taken to another prison, and the pillow was thrown into the prison yard with other rubbish. Now it would surely seem as if the precious roll must perish, and all the work of the missionary be in vain. But God was guarding the labor of his servant; in a few hours a native Christian found the pillow, and took it home to keep as a relic. Long afterward the manuscript, complete and in good condition, was found in the cotton. It was printed; and thus, after many vicissitudes, the New Testament was given to the Burmese.



#### A PLAIN LITTLE GIRL.

ONCE I knew a little girl,  
Very plain;  
You might try her hair to curl,  
All in vain;  
On her cheek no tint of rose  
Paled and blushed, or sought repose:  
She was plain.

But the thoughts that through her brain  
Came and went,  
As a recompense for pain,  
Angels sent;  
So full many a beauteous thing,  
In the young soul blossoming,  
Gave content.

Every thought was full of grace,  
Pure and true;  
And in time the ugly face  
Lovelier grew,  
With a heavenly radiance bright  
From the soul's reflected light  
Shining through.

So I tell you, little child,  
Plain or poor,  
If your thoughts are undefiled,  
You are sure  
Of the loveliness of worth;  
And this beauty, not of earth,  
Will endure.

— St. Nicholas.

#### MAKING HOME PEACEFUL.

##### XXV.

REGINALD had been an unobserved listener to this conversation; and now, snatching his cap, he hurried out of the house, more determined than ever that he would overcome his father's scruples, and before the winter was over, be his own master, and enjoy perfect freedom at Uncle Earl's. Still the boy had moments of real sorrow over his own waywardness, and at last he determined to promise his father that he would certainly do better, and would quit the company of bad boys altogether, or else try to induce them to visit him at his own home. For a week after his promise was made, which he really intended to keep faithfully, the lad was so good and obedient that his father at last gave a reluctant consent to his going away to school; and the next Thursday afternoon was appointed for his departure.

But a whole week of orderly conduct, of respectful attention to his parents' wishes, of staying at home or helping his father at the store evenings, and going to bed when the other members of the family did; in short, a whole week of unrepachable conduct, seemed an age to the self-willed lad, and was almost more than he could endure; so the reformation which his anxious father and too sanguine mother had hoped was to be permanent, proved, before the week was gone, to be of very short duration.

The evening before he was to leave home was a beautiful one; a thousand diamonds glittered and sparkled on the crisp snow, as the bright light from the street-lamps fell upon it, and the temptation to spend an hour or two with his reckless companions before he left them, was too strong to be put aside. So, carelessly remarking that he guessed he'd go over to the store for a while, he went out to spend his last evening with the wild young men whose acquaintance he had cultivated, and whose habits and manners he had long imitated. Reginald knew very well where he would be likely to find them; in fact, Will Green had suggested that day that he meet a few of the boys for a "good-by treat" at Reddy's hotel in the evening.

The lad was not altogether hardened; and his conscience whispered to him not to heed

the invitation, but to spend his last evening at home, especially as little Flossie begged him, just as he was going out, to hold her in his lap, and tell her about the big tigers in his natural history. But the evil angels prevailed. Down the streets he hurried, as if driven on by the spirits of darkness. The gay saloon, with its brilliant lights, is reached and entered. As he opens the door, snatches of vile songs and coarse laughter fall upon his ear. He does not intend to stay long; but it takes only a glass or two to bewilder and confuse his mind, and the hours pass rapidly by, as in a dream. At last, as the midnight hour approaches, he is carried out by two of his companions, more accustomed to the effects of the vile cup, and steadied home, conscious only of a terribly aching head, an outraged stomach, making an effort at frequent intervals to relieve itself of its vile contents, and haunted by a vague fear of the results of his act of indiscretion. By the time he has dragged his unwilling feet up the steps, he is completely overcome, and is quite unable to enter the house. His sneaking companions, whom he calls "friends," ring the bell loudly, leave the poor lad in a heap upon the cold steps, and beat a hasty retreat.

Mrs. Beardsley had supposed that Reginald was at the store until his father came home at half-past nine; then she did not mention his absence, hoping her husband would not ask about him; and he, supposing Reginald had spent his last evening at home, with his mother, said nothing. Mrs. Beardsley had two objects in expressing no surprise to her husband that Reginald was not with him when he came home: she hoped to be able thus to keep the truth from him; for she knew well that he would be grieved and disappointed that the boy had not kept his word, and perhaps he might refuse entirely to let him go to his uncle's. Even if he did not do this, she feared he would reprove him; and the unwise and foolish woman dreaded nothing so much as that her son, the darling of her heart, should receive censure for anything. She had gone to bed hoping that he had taken a night-key with him, and that his father would not be awakened when he returned. She did not believe in being so strict with him, anyway, and was greatly annoyed because she could not induce her husband to give up his "straight-laced notions," as she termed them.

Let us not be too hard upon this woman, foolish and unwise as she appears. She believed in her son,—believed in him implicitly,—and that is well. No mother can have any influence over her son, who does not believe in him. But Ellen Beardsley believed in her son blindly, unwisely, and against her better judgment; yes, even against the evidence of her own senses. She was getting to fear not so much the sin as the exposure; not so much the baneful effect of evil companions as that something should occur which would serve to thwart her cherished plans. She had not believed it possible that *her* boy could be led very far away from the path of rectitude; other boys might be led away, but surely not hers. Had she thought this possible, she would have been as greatly distressed and grieved as any less unwise mother. She hoped for great things from him—her first-born. He will graduate! How proud she will be of him! and how surprised Professor Hill will be! From this fond dream she was awakened by the loud ringing of the bell. Thoughts of Reginald were the first that filled her mind, and rushed in upon her waking consciousness, even as they had been the last that occupied her sleeping fancies.

"What is it, Ellen?"

"Nothing—just somebody at the door, that's all." A dread of something terrible about to happen almost paralyzed her tongue. What if—but no! it could not be Reginald. Still, she felt an unaccountable and almost overmastering desire to hurry down-stairs.

MRS. L. D. AVERY-STUTTLE.

(To be continued.)

"IN the house of Life, Energy seems to do all the work, but Patience does the real drudgery."



## HOW SOME THINGS ARE MADE

### WOOD-TURNING.

PERHAPS there is nothing in the line of wood-work that would interest the amateur more than wood-turning; for there are many things that can be made by this method of workmanship, such as household utensils, handles to tools, boxes, brackets, and useful trinkets of various sorts. When I was thirteen years old, I had a turning-lathe, on which I did a great deal of work. You may ask, "Of what use would be a turning-lathe without steam- or water-power?" — Well, there is a great deal of useful power in the leg and foot, if rightly applied. For a small outlay, you can make a lathe to run by foot-power.

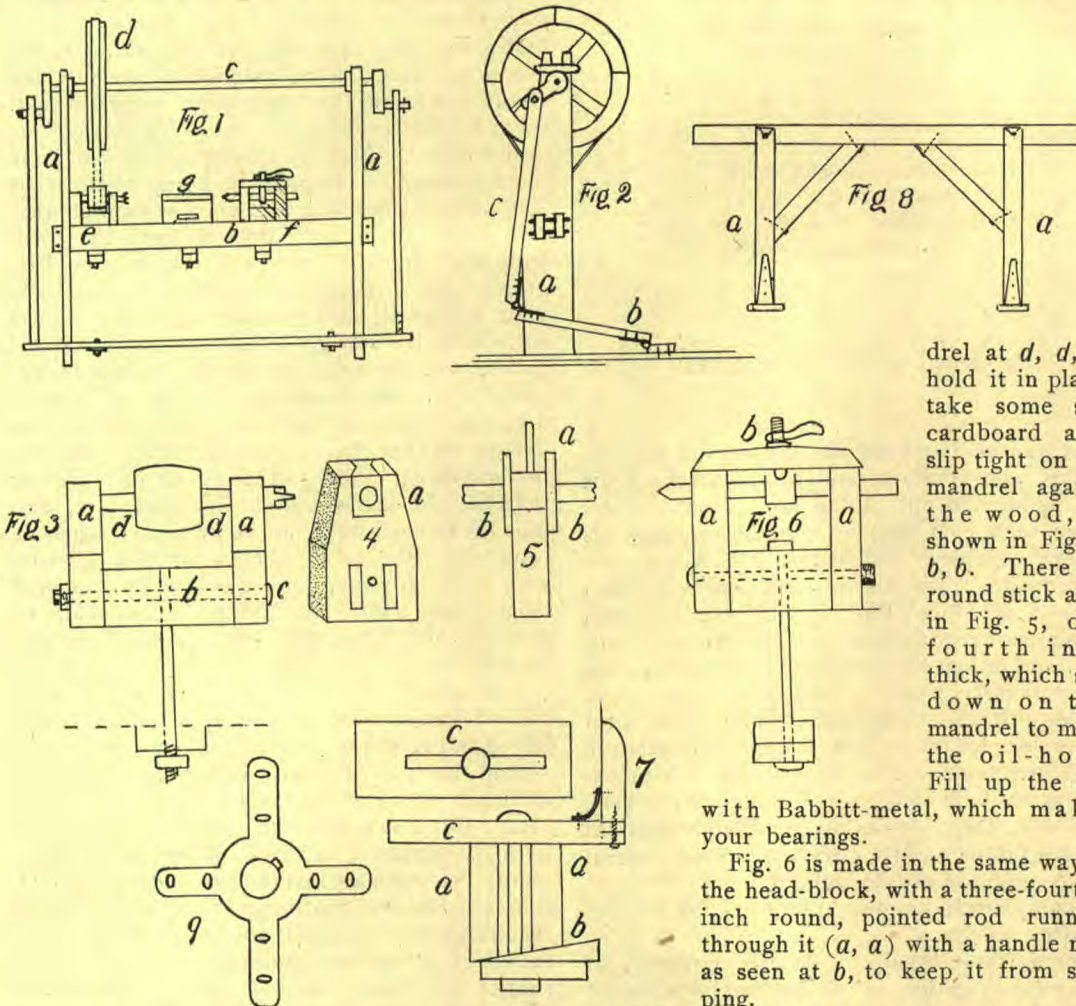
In this lesson I will illustrate some instruction about making such a lathe. In Fig. 1 you will see a lathe set up, like one I am building for myself. First, *a, a*, are two planks six feet

At *e*, Fig. 1, you will see what is called the head-block, in which are the shaft, called the mandrel, and the pulley, which hold in place the piece to be turned. The same is shown in Fig. 3. The tail-block is shown at *f*; and the rest, upon which to support your chisel, at *g*.

Upon each end of the shaft, *e*, is a crank with two pieces of hard wood running down to the treadle. (I will give you a picture of these cranks with the other patterns.)

In Fig. 2 you will have an end view of the upright plank, with wheel, crank, and rod, which should be about two inches wide in the center, and one and three-fourths inches at the ends. Attach these rods with T hinges, as seen at *a*, and at *b*, which is screwed to the floor.

In making the head-block (see Fig. 3), *a, a* are one and three-fourths inches thick, nine inches high, six inches wide, and taper to three and one-half inches at the top. In this figure, *b* is a piece of scantling three and one-half inches square, with a double tenon on each end, half an inch long, to go into mortises, shown in Fig. 4. These are held together with a bolt running through at *c*. Then the iron called a mandrel is centered in the place where it belongs. After putting something under the man-



long, twelve inches wide, and two inches thick. Beginning three feet from the bottom, these taper back to eight inches in width at the top, thus throwing the wheel farther back. Two planks six inches wide are shown at *b*. The top of these should be three feet from the floor. There are two of these, two inches apart, mortised through the two upright planks. Make the mortise five inches long, leaving a shoulder half an inch high on each edge of the six-inch planks; then insert two half-inch pins outside the upright plank, as seen in illustration, at the ends of plank, *b*, and in *c*, Fig. 2.

The main shaft, *e*, Fig. 1, is of one-inch round, rolled iron, seven feet long. Attached to it is the driving-wheel, *d*. To make the wheel, use two planks five inches wide, three feet long, one and three-fourths inches thick, halved together in the center. Bore one-inch hole through the center. Make the rim of two thicknesses of one and three-fourths-inch pine or whitewood plank, screwed or nailed together. Have cross-pieces one inch thick run through them. Break joints in the rim when you put them together. You should have a cast-iron piece called a spider for the shaft to go through. This is bolted on the arms of the wheel. See Fig. 9.

drel at *d, d*, to hold it in place, take some stiff cardboard and slip tight on the mandrel against the wood, as shown in Fig. 5, *b, b*. There is a round stick at *a*, in Fig. 5, one-fourth inch thick, which sets down on the mandrel to make the oil-hole. Fill up the slot with Babbitt-metal, which makes your bearings.

Fig. 6 is made in the same way as the head-block, with a three-fourths-inch round, pointed rod running through it (*a, a*) with a handle nut, as seen at *b*, to keep it from slipping.

In the next article I will give you description of Fig. 7, the patterns of casting needed for the lathe, with the crank attachments.

W. K. LOUGHBOROUGH.

### CUSTOMS OF JAPAN.

JAPAN is a queer country; it is a land of contradictions and inversions. We prefer sweet fruit, they sour; they make saucepans of paper; we weep at misfortune, they laugh; we think white teeth beautiful, Japanese women varnish their teeth black; they put on the roof of a house first, and build the walls afterward; their carpenters draw the plane toward them; their horses' shoes are of straw; their tailors, in stitching, point the needle from them; in their locks the keys turn from left to right; old men in Japan fly kites and spin tops, while the children look on; Japanese books begin where ours end; Japanese writers use paint-brushes, not pens, and write from top to bottom, from right to left; in Japan there are no lawyers, and Japanese doctors never make any charges or send in any bills; our mourning garments are black, theirs are white; their horses stand with their heads to the stable, and they mount a horse on the off side.—*Lutheran Evangelist.*

## Science Stories

### QUEER LITTLE HISTORIANS.

Just a raindrop loitering earthward,  
All alone,  
Leaves a tiny, tell-tale story  
In the stone.

Gravel, tossed by teasing water  
Down the hill,  
Shows where once in merry laughter  
Flowed a rill.

In the cool bed, dark and hidden,  
Ferns (how queer!)  
Left a message, plainly saying,  
"We've been here!"

You may see where tiny ripples  
On the sands  
Leave a history written by their  
Unseen hands.

Why, the oak-trees, by their bending,  
Clearly show  
The direction playful winds blew,  
Years ago!

So our habits tell us, little  
Maids and men,  
What the history of our whole past  
Life has been!

— Selected.

### HERBERT'S SCIENCE LETTERS.

ETHEL TERRY REEDER.

MY DEAR RALPH: Uncle John went away last week, to be gone some time. We boys didn't like the idea of giving up our talks for so long; so he said he would write out what he had to tell us, and then we might send the letters to you. We received the first one yesterday, and I will send it on to you, with the two little pictures.

Your loving cousin,

HERBERT.

### Uncle John's Letter.

MY DEAR BOYS: After arriving here, I found that the business which I came to attend to will keep me away from home much longer than I expected; but I think I shall find time for our science letters each week.

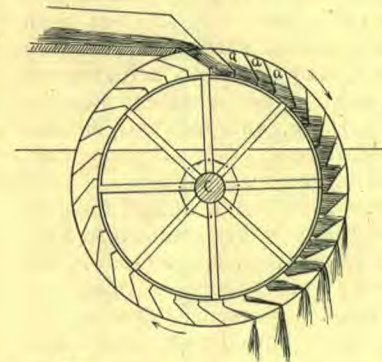
This time I will write about the use of water in running machinery. Perhaps you have never seen a water-wheel; but only a few years ago nearly all the flour and meal were ground in mills run by water-wheels. You may have heard grandpa tell how, when he was a young

man, he used to ride horse-back to mill, and take two bags of grain to be ground, and then carry the flour or meal home in the same way. I never think of the old water-wheels without thinking of a proverb that I

learned when I was a boy: "The mill will never grind with the water that has passed." It taught me a good lesson: see if you can find one in it.

Nowadays, a few large mills, with powerful engines, make flour and meal for all the world; and the small mill, with its clanking wheel, is seldom seen. The large mill is run by water, though, in another form.

I have made two illustrations, which will help you understand how the water-wheel works. Fig. 1 is what is known as an overshot wheel. It is so arranged that the water from a running stream is caught in the little cups marked *a, a*. The weight and force of the water keep the wheel turning in the direction indicated by the arrows. Where there is no natural fall, the stream is dammed, and an artificial fall made. The water is carried out on the wheel by a



Overshot water-wheel



trough, like *d*. The machinery inside the mill is attached to the wheel by a strong rod, or bar, passed through *c*, and is thus kept in motion.

Where a fall can not be arranged, the undershot wheel (Fig. 2) can be used. This wheel is placed in a running stream in such a way that the water rushes under instead of over it, filling the little cups, or buckets, *a, a*, and turning the wheel in the direction of the arrows.

At *b* is an arrangement to measure and regulate the quantity of water passing under the wheel, and thus regulate the working power of the wheel. This can be done with the overshot wheel by a simple device in the trough, *d*.

Last summer when we went across the lake on the little steamer, you were sure you could not have taken the ride if it had not been for the water; but did you ever think, when you were riding on the train, that it was water that was pulling you along so fast? Yet it is true that our great locomotives would run little better than Bob's toy engine if it were not for water; neither would it be possible to move any of the machinery in our large mills without water; for water does much of the world's work.

You know that when water is heated, it floats away in steam, or vapor. It does this without any apparent effort when it is free to do just as nature intended; but when men want the water to work for them, they shut it up, and heat it. As it is heated, it expands; and in trying to get away, it puts forth a great deal of energy.

I hope you will sometime have an opportunity to study more about the ways in which water is made to work. Meanwhile, keep your eyes open.

Yours lovingly,

UNCLE JOHN.

#### A BIRD'S EAR.

DID you ever see a bird's ear? or have you wondered where it was, as you have seen him bob and twist his pretty little head from side to side when listening intently to some sound that aroused his curiosity?

In a beautiful book of his about birds, Mr. Ruskin says that "it is curious, considering how much, in one way or another, we are amused or pleased by the chatter or song of birds, that you will scarcely find, in any bird-book, 'more than a sentence, if so much, about their hearing; and I have not myself at this moment the least idea where a nightingale's ears are!'"

To his question about birds' ears, a friend sent him this very interesting and satisfactory answer: "If you blow gently on the feathers of the side of a bird's head, a little above and behind the corner of the beak, a little below and behind the eye, the parted feathers will show the listening-place,—a little hole, with convolutions of delicate skin, turning inward, very much like what your own ear would be if you had none,—I mean if all of it that lies above the level of the head had been removed, leaving no trace. No one who looks at this little hole could fail to see that it is an ear.

"The feathers are so planted around a bird's ears that, however ruffled or wet, they can't get in; and perhaps they conduct sound. Birds have no need of ears with a movable cowl over them, to turn and twist for the catching of stray sounds, as have foxes, and hares, and other four-footed things; for a bird can turn his whole head, so as to put his ear wherever he pleases, in the twinkling of an eye.

"We may as well take the trouble first to look for, and then to look at, a bird's ear, having first made the bird like us and trust us so much that he won't mind a human breath upon his cheek, but will let us see behind the veil into the doorless corridor that lets music into the bird soul."—*Selected.*



#### GRANDMA'S WEATHER-VANE.

"WHEN the baby's eyes are stormy,  
With a pucker in between,  
Grandma shakes her head, and murmurs,  
She's afraid 't is going to rain.



"When the baby's eyes are dancing,  
Shining like two stars with fun,  
Grandma smiles, and says she's certain  
We shall have a spell of sun!"

#### HOW JOHNNIE LEARNED TO WIPE HIS FEET.

"DID you wipe your feet, Johnnie?"  
"No, mama; I forgot."  
"Run back and wipe them, then, please."  
"Yes, mama."

There was a prolonged and energetic scraping and rubbing of two obedient feet on the rug.  
"Mama, won't you tell me why you have to wipe your feet *every* time you come into the house?"

"Yes, if you can not find out for yourself." Johnnie looked interested. Mama always let him find out things for himself when he could. He had found already that there was always a reason behind her commands, and he enjoyed hunting for it.

"Where can I begin?"

"Well, walk all around the rooms, and when you are near the beginning place, I'll say, 'Warm!'"

That was just like mama, and Johnnie knew he was going to have a good time. He went through the two parlors, but mama was silent. Johnnie was watching her over his shoulder, and hardly knew when he crossed the threshold into the library.

"Warm!" cried mama, suddenly.

Johnnie halted promptly, and looked all about him.

"Don't look too high for the reasons of things," said mama, with a smile, as Johnnie, not budging an inch, stood rolling his eyes up toward the ceiling.

"Warmer!" as the little lad began to look toward the floor.

"Oh, I spy!" said Johnnie, suddenly. And he picked up a cake of dry mud from the carpet. "I've found out, mama."

"That is one reason; but there are others."

"In the house, mama?"

"Yes, but you can't see them just yet."

"Why can't I see them now, mama?"

Mama laughed, and gave Johnnie a kiss. Then she handed him pencil and paper.

"I will write a question on this paper, and you may have until to-morrow night to answer it: 'What makes mud?'"

"Huh; that's easy! Water and dirt."

"Yes. Write it this way: 'What makes mud? 1. Moisture. 2. Dirt.' Write down everything that you see dropped and left on the sidewalk or in the street. If it is wet like water, put it under 'Moisture;' if not, put it under 'Dirt.'"

"Oh, what a nice play!" Johnnie moved over to the window.

"Hello! here's the sprinkler. Do you spell 'water' with an *a* or an *o*, mama?"

"W-a-t-e-r," said mama, without a smile. She never laughed at Johnnie's mistakes.

Presently the city carts came along to gather up the garbage. The barrels were heavy, and the men, to save lifting them, emptied the contents upon the street, and then shoveled it into the carts. They left a good amount behind them, however, and Johnnie became really excited, trying to write down all the different things he saw remnants of. Mama suggested that "garbage" would cover it all; so Johnnie, after much wrinkling of his forehead and twisting of his tongue, wrote "Gobbige;" for mama was called away just then.

The ashman came down the street, and he, too, tipped over the barrels, and shoveled the ashes into the cart—all but what blew away; for the wind was high, and a large part of every shovelful went flying all over the street.

Mama was gone a long time; but when she came back, Johnnie called her to the window.

"I don't know how to say things, mama. There are the sewer men cleaning out the sewers, and they spill the dirty stuff on the street. Then a wagon went by full of old bones and meat from the market, and some of that dropped from the cart. Then there are the horses, and dogs, and cats. I saw a dog go by with blood dripping from his ear; and the men spit on the sidewalk,—and O mama! I don't think mud is nice; do you?" and Johnnie's little nose was all puckered up with disgust.

"No, Johnnie."

Mama smiled meaningly.

"Oh, I've found out already, have n't I?"

"Yes, part of it."

"What else is there, mama?"

"Draw two circles of the same size on your paper."

So Johnnie brought the compass which mama had given him for a birthday present (they had so many circles to draw that mama taught Johnnie to do it scientifically), and drew two circles, each about one inch across.

"Put eleven dots in one. Just scatter them about anywhere. Now put two hundred dots in the other."

"My, what a lot for that little circle!"

"Now suppose that every dot is a grain of dust. Would you rather breathe air with eleven grains of dust in it, or air with two hundred grains in it?"

"I guess the two hundred grains would choke us; don't you?"

"That depends. Will you close the blinds to that front window, where the sun shines so bright?"

When the blinds were closed, mama hung a dark cloth over the window, and cut a little hole in it right over a crack in the shutters, so that the bright sunlight came through in a long pencil of light. Then Johnnie saw myriads of little dust particles, so small that he had not known they were there until the strong sun lighted them up.

"You see, Johnnie, the mud and the dirt brought into the house are ground up fine by our feet, and then set moving about in the air by the movements of people and the drafts through the room. The more mud brought in, the more dust for us to breathe. Now that you know what mud is made of, you can see that it is not very good stuff to take into our lungs."

"O mama! you won't have to tell me to wipe my feet any more. I am going to do it every time—if I don't forget."

Just then mama took a little red note-book from her work-basket, and wrote something in it. Johnnie thought she wrote down his promise. Mama did that sometimes, and had a queer way of letting Johnnie look over her note-book about the time when he failed to keep his word. To-day, however, she wrote: "Get a good microscope for Johnnie's Christmas present. If he fails to wipe his feet, show him the dangers of dust."

And that is the way Johnnie's mother helped her boy to remember to wipe his feet.—*Sunday-School Times.*



# BIBLE LESSONS AND NOTES

## SABBATH-SCHOOL LESSON.—NO. 10.

(June 3, 1899.)

### SECOND CIRCUIT THROUGH GALILEE; CHRIST AND THE PHARISEES AT CAPERNAUM.

Lesson Scriptures.—Luke 7:36-50; 8:1-3; Matt. 12:22-50.

Memory Verse.—Matt. 12:35.

#### QUESTIONS.

Who invited Jesus to dine with him? Luke 7:36. Note 1. While Christ was eating in the Pharisee's house, what beautiful act of love was done to him? Vs. 37, 38. What was the character of the woman? What did the Pharisee think of it? Divining the thoughts that were passing through the mind of his host, how did Christ lay the matter before him? Vs. 40-43. What contrast did he draw between the treatment he had received at the hands of the Pharisee and what the woman had done for him? Vs. 44-47; note 3. Repeat the Saviour's words to the woman. Vs. 48, 50. What question was raised among the guests? V. 49. Where did Christ go next? Luke 8:1. What women accompanied him on these journeys, to care for the needs of the company? Vs. 2, 3. What remarkable cure was effected at Capernaum about this time? Matt. 12:22. What did the people say, on beholding this mighty work? V. 23. How did the Pharisees reply? V. 24; note 5. Give the substance of Christ's reply? Vs. 25-30. What solemn warning did he utter with reference to those who should reject and blaspheme the Holy Spirit? Vs. 31, 32. How was the discourse interrupted? V. 38. What sign did Christ give these proud Pharisees? V. 40. What further instruction and warnings did he impart? Vs. 41-45; note 7. The rumor having reached Nazareth that Jesus was beside himself, what did his mother and brethren do? What did the Saviour say, on being told that they waited for him without? Vs. 47-50.

#### NOTES.

1. Simon of Bethany was accounted a disciple of Jesus. He was one of the few Pharisees who had openly joined Christ's followers. He acknowledged Jesus as a teacher, and hoped that he might be the Messiah, but he had not accepted him as a Saviour. His character was not transformed; his principles were unchanged. Simon had been healed of the leprosy, and it was this that had drawn him to Jesus. He desired to show his gratitude, and at Christ's last visit to Bethany he made a feast for the Saviour and his disciples. This feast brought together many of the Jews. There was at this time much excitement at Jerusalem. Christ and his mission were attracting greater attention than ever before. Those who had come to the feast closely watched his movements, and some of them with unfriendly eyes.—"The Desire of Ages," page 557.

2. The ancient custom of the Jews was to sit at meals, having the legs crossed beneath the body. In Christ's day the custom of the Persians, Greeks, and Romans, of reclining on cushions, had become common. Eastern hospitality, which allows open doors on all such occasions, explains the presence of the woman. When a feast is held to-day in Oriental countries, there is always a crowd of onlookers.

3. For the master of the house to meet his guest with a kiss on the cheek and to invoke a blessing upon him, was a formal welcome. This was always followed by water being brought to wash the guest's feet. The head and beard were then anointed with fragrant oil, either by the host or by one of the servants. This last was a mark of special honor.

4. Beelzebub, the filth god. Mark says that they charged the Saviour with having an unclean spirit. The Phenicians assigned to this god the power to inflict diseases of all kinds. They implied that this unclean spirit had made Christ mad. See John 10:20. When this report reached his brethren, they went to take him home, because they said he was beside himself.

5. The Pharisees . . . did not themselves believe the charge they brought against him. There was not one of those dignitaries but had felt drawn toward the Saviour. They had heard the Spirit's voice in their own hearts, declaring him to be the Anointed of Israel, and urging them to confess themselves his disciples. In the light of his presence they had realized their unholiness, and had longed for a righteousness which they could not create. But after their rejection of him, it would be too humiliating to receive him as the Messiah. Having set their feet in the path of unbelief, they were too proud to confess their error. And in order to avoid acknowledging the truth, they tried with desperate violence to

dispute the Saviour's teaching. The evidence of his power and mercy exasperated them. They could not prevent the Saviour from working miracles, they could not silence his teaching; but they did everything in their power to misrepresent him and to falsify his words.—*Id.*, page 322.

6. Vast multitudes followed John, and seemed to be temporarily benefited by his ministrations. The old unclean spirit had for a time left the people. But inasmuch as they refused to let God's Spirit come in and fill them, Jesus predicted that the old spirit, with others still worse, would return, and they would be worse than before. This was but to foretell his rejection by them.

For application of the diseased eye, see "Desire of Ages," page 322.

## INTERNATIONAL LESSON.—NO. 10.

(June 4, 1899.)

### CHRIST CRUCIFIED.

Lesson Scripture.—John 19:17-30.

Related Passages.—Parallel accounts; Isaiah 53; Psalm 22.

Memory Verse.—Gal. 2:20.

#### QUESTIONS.

What day and hour was Jesus crucified? Tell of his going to Calvary. Who accompanied him? How was he helped by a man and by women? How does the story open? V. 17. When the place was reached, what was done? V. 18. Describe the crucifixion. What was the superscription of his cross? V. 19. How could all read it? V. 20. Did this superscription suit the Jewish rulers? V. 21. Could they have it altered? V. 22. Describe how Jesus' garments were apportioned. Vs. 23, 24. Does God notice such little transactions? V. 24. Name the four women who stood near the cross. V. 25. What man stood near? V. 26. How did Jesus commend one to the other? Vs. 26, 27. Where did Mary thereafter live? V. 27. What point did Jesus know he had now reached? V. 28. Explain what had been accomplished. What did Jesus then declare? V. 30. How did he die? V. 30.

#### NOTES.

1. Between the hours of 9 A. M. and 3 P. M., Friday, April 7, A. D. 30, Jesus was led to Calvary. In order to have a full understanding of the crucifixion, study Mark 15:22-37; Luke 23:33-46; Matt. 27:31-54. Each evangelist relates some incident not recorded by the others.

2. "As Jesus passed the gate of Pilate's court, the cross which had been prepared for Barabbas was laid upon his bruised and bleeding shoulders. . . . Since the Passover Supper with his disciples, he had taken neither food nor drink. He had agonized in the garden of Gethsemane, in conflict with satanic agencies. He had endured the anguish of the betrayal, and had seen his disciples forsake him and flee. He had been taken to Annas, then to Caiaphas, and then to Pilate. From insult to renewed insult, from mockery to mockery, thrice tortured by the scourge,—all night there had been scene after scene of a character to try the soul of man to the uttermost. Christ had not failed. . . . But when, after the second scourging, the cross was laid upon him, . . . he fell fainting."

3. Luke gives us the incident of the sympathetic wailing of the women, the only thing that brought forth a word from the patient sufferer: "Weep not for me, but for yourselves, and for your children." In their reaping of the whirlwind, in the destruction of Jerusalem, from their sowing of the wind, on Calvary, he saw the fearful result of their rejecting him, and giving themselves over to the demons they had chosen.

4. History recognizes crucifixion as the most terrible mode of inflicting death. The body was fastened to the cross by nails or ropes while on the ground; then the cross was raised, and thrust violently into the ground. The torture can not be imagined, as, sleepless, exposed, feverish, racked, starved, suffering in every nerve, the victim lingered for days before death brought relief. Too little do we stop to realize the depth of love that could enable the Son of God to bear this death for us.

5. The darkness of Calvary was not without one ray of light for Jesus. That ray came through the penitent thief, who beheld his godlike glory of character, recognized his divinity, and believed in his coming kingdom, "To-day,"—the very day of his seeming defeat,—Jesus was enabled to say to the thief, "shalt thou be with me in paradise." The kingdom was sure; the labor of love was not loss; and he who believed, in the day of seeming loss, should be remembered in the manifestation of triumph.

6. "Those who suffer from wounds similar to those inflicted by crucifixion, testify that after a time all other pains are forgotten in the terrible agony of an unquenchable thirst."

7. "Forsaken." Christ "drank the dregs of human woe," even tasting what the lost will experience when they are going into everlasting death. He finished the "purpose" that had been "hid from times eternal," and gave up the ghost; for he had power to lay down his life.



**A Wonderful Gem.**—A vase that has been locked up in the Cathedral of Genoa, Italy, for six centuries is twelve and one-half inches in diameter and over five inches high, and is claimed to have been cut from a single emerald. A local antiquary has tried to prove that this precious relic was one of the gifts of Solomon to the queen of Sheba.

**An Aluminum Pencil for Glass.**—The singular and unexplained property of aluminum of writing upon clean glass and porcelain, a property discovered by M. Charles Margot, of the Geneva High School, seems admirably adapted for decorative purposes. The burnisher and oil give the designs drawn with the aluminum pencil the luster and appearance of inlaid silver.

**A Northern Experiment Station.**—An agricultural experiment-station has been established at Sitka, the capital of Alaska, about two thousand miles north of San Francisco. During the twenty-three-hour-long summer days, vegetation matures quickly. Wild hay flourishes in the valleys, and it is thought that some of the more hardy cereals can be successfully raised there.

**Significant.**—"Never before were there so many millionaires gathered in one hall at one time," said a late New York paper, in describing a convention of brewers. The *Youth's Companion* adds this comment: "And now if we could assemble all the men whose beer-drinking has made these colossal fortunes possible, it would be quite as significant, and certainly an uncomfortably suggestive sight."

**The Pope's Titles.**—That power of which we read that he "exalteth himself above all that is called God, or that is worshiped," finds its living representative in the pope, the head of the papacy. Here are a few of his titles: Vicar of the Son of God; Lion of the Tribe of Judah; Most Divine Head of all Heads; Holy Father of Fathers; Pontiff Supreme over all Prelates; Christ by Unction; Melchisedec in Order; High Priest; Key-bearer of the Kingdom of Heaven; Vicar of Christ; Sovereign Bishop of Bishops; Ruler of the House of the Lord; Physician of Souls.

**A New Use for Electricity.**—Thawing out the ground, which freezes hard as a rock to a depth of several feet, is one of the perplexing problems the miner in the far north has to meet. This has been accomplished, hitherto, by building bonfires to thaw out the frost; but as by this method only one foot of soil could be made soft enough to work in twenty-four hours, and eighty-five per cent. of the heat was wasted in the air, it was unsatisfactory. A patent device for thawing the ground by electricity has lately been sold, by which it is claimed that all the heat generated can be utilized, and one foot of frozen ground thawed out in an hour.

**The Samoan Commission.**—The men appointed to arbitrate on the disputed questions in the government of Samoa are now on their way to the islands, in a United States cruiser, which flies the flags of England, Germany, and this country. These commissioners have authority to assume full control of affairs on the islands, superseding all officials now there. They will make an effort first to restore peace; and will then investigate the cause of the trouble, and report thereon. It is to be hoped that their arrival may accomplish all hoped for it, that quiet may be restored, and that our missionaries there may have the privilege of carrying on their good work.

**Telediagraphy.**—This long name is used to describe the process of sending pictures over wires to places thousands of miles distant, much as messages are sent by telegraph. The instrument by which this is done is called the "telediagraph." A few weeks ago, the first official test of the perfected instrument was made in the office of a large New York newspaper, when a picture was sent simultaneously to offices in Boston, Philadelphia, Chicago, and St. Louis, each of which sent a return picture. Although these sketches are somewhat crude, and need retouching, the test was regarded as a success, and several large dailies immediately added this wonderful electrical machine to their news service.





## ONE UPWARD LIFT.

If you were toiling up a weary hill,  
 Bearing a load beyond your strength to bear,  
 Straining each nerve untiringly, and still  
 Stumbling and losing foothold here and there;  
 And each one passing by would do so much  
 As give one upward lift, and go his way,  
 Would not the slight, reiterated touch,  
 Of help and kindness lighten all the day?

There is no little, and there is no much;  
 We weigh, and measure, and define, in vain;  
 A look, a word, a light, responsive touch,  
 May be the minister of joy to pain.  
 A man may die of hunger, walled in gold;  
 A crumb may quicken hope to stronger breath;  
 And every day we give or we withhold  
 Some little thing that tells for life or death.

— Susan Coolidge.

## GARDENING FOR GOD.

SPRING has returned to us once more, bringing a train of blessings from the kind Father above. The springing blades of grass, the budding leaves and opening flowers, the joyous bird-songs that fill the air,—all tell of the love of God. Surely it is proper at this season, when all nature is attuned with praise to God, that man, the masterpiece of creation, should think seriously of his high station in life and the consequent responsibility resting upon him in relation to God and to his fellow men. The birds live not for themselves; their bright, cheery presence and tuneful songs do much to brighten our lives. The flowers do not selfishly retain their fragrance, but shed it forth freely, and the soft winds carry their sweet love-messages wherever they go. What a lesson for us! We, too, must not live for ourselves, but freely and generously share with our fellow men the blessings received.

The writer has read with interest the excellent articles by Arthur Hughes, on missionary gardening, and has thought that the INSTRUCTOR family might be interested in learning something about that branch of our missionary work which is largely supported by the proceeds of missionary farming and gardening.

It is an old saying that one half the world does not know how the other half lives. If those who live in the country, and enjoy the pure air, bright sunshine, and wholesome, nourishing food so easily obtained there, could realize, even to a slight degree, the unhappy, wretched life of families living in the slums, they would need no urging to engage in missionary farming and gardening; and instead of setting apart a small piece of ground, they would dedicate as large a portion as possible. If the country boy could realize the suffering and hardship undergone by some city boys of his age and under; if he could see the stuffy little room in some old tenement that the poor newsboy calls home; if he could see, as the writer did on one occasion, one of these same heroic little fellows take out a dry crust of bread from his pocket, and contentedly make his dinner of it, together with part of a banana that was so badly decayed that the dealer had thrown it away, he would survey with new thankfulness the rich blessings he enjoys, and the bounteous table spread for his benefit two or three times a day. But our country boys know little of the dark side of city life. When they go to the city, they see thousands of well-dressed persons on the streets, and show-windows glittering with attractive displays, and they go home with the idea that city life is a dream of pleasure. They see only the outside. It takes some experience and knowledge to get on the inside; but when one does get a view of the misery, and ignorance, and crime that abound in the dark centers, he will have an ever-growing sympathy for the poor victims.

Thousands of these wretched people live like cattle in a pen. They do not have the com-

forts of a good house-dog in the country. The children grow up in ignorance and vice. The father may be a drunkard, who, in his insane rage for drink, abuses his family dreadfully. The mother, with pale, wan cheeks and emaciated frame, sits in a corner, busily sewing to earn a few cents with which to buy bread for the half-starved little ones, whose hunger-pinched faces look, not on smiling fields and blue skies, but on dense smoke, dirty streets, and a foul back-yard, with a garbage-box and ash-heap. Sometimes it is sickness on the part of the breadwinner that brings on the poverty-stricken condition that compels persons to take up their abode in the slums; more often it is strong drink. But whatever the cause, the need is very evident, and our hearts can not but go out in tender sympathy for the poor victims.

M. E. OLSEN.



## INSECTS AND REMEDIES.

## II.

"ETERNAL vigilance the price," of success in any undertaking, and especially is this true in gardening. A day's neglect, and the whole crop is gone. To be successful with melons, cucumbers, etc., keep their leaves well dusted, on the under side, with the remedies recommended last week. When the beetle appears, an unceasing warfare must be continued until the last one has disappeared.

The brown squash-bug, or "stink-bug," as it is commonly called, is an unwelcome visitor. It spends the winter under boards, chips, and in other protected places; and as soon as the squashes are up, it comes out to devour the vines. It lays its reddish-brown eggs in clusters on the leaves.

REMEDIES.—Hot water and kerosene are the only remedies that have proved effectual in destroying this pest; but as the vines are very tender, these remedies will often do more injury than the bugs themselves. The best and easiest way to get rid of them is to catch and kill them. Lay shingles or pieces of boards near the hills, and the beetles will gather under them. Brush the beetles into a pan or some other receptacle containing water; then pour scalding water over them. This beetle works on cucumbers and melons; but if this method is followed, its ravages can be checked.

THE SQUASH-VINE BORER.—Much of the injury attributed to this pest is traceable to the grub of the cucumber beetle, mentioned in the last article. This borer works at the base of the stem, so its work can be easily detected.

REMEDIES.—If the larva, or worm, has got into the root, make a longitudinal slit in it, and continue until the enemy is found. With squashes and other members of the same family, which take root at the joints, the ravages of the insect can be checked by covering two or three joints after the vines are about three feet long. If the parent stem dies, you will have two or three more that can be depended upon. The moth usually lays her eggs under the leaves; hence Paris green will do no good unless applied on the under side of the leaf. The simplest remedy is to put cobs or rags saturated with coal-tar, around the hills. The moth dislikes the odor of coal-tar, and will not lay her eggs where it is.

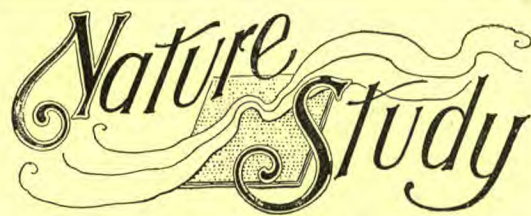
All reptiles, from the lizard to the toad; and all birds, from the screech-owl to the little wren, are the farmer's friends. The thoughtless gardener kills the toads and snakes, either because he is ignorant of their value as insect-destroyers, or because they are not pretty to look at, forgetting that "handsome is that handsome does." He kills the innocent robins because they eat a few cherries, forgetting that they live mostly on grubs and worms. He hunts the skunk, because he can sell its skin, ignorant of the fact that its value as an insect-destroyer is worth many times the price of its

skin. He scatters poisoned corn to kill the crows, forgetting that the crow is one of the best grub-eaters. He traps and kills owls and hawks, never stopping to think that they live mostly on rats, mice, and ground squirrels, and do more good than harm.

London and Paris gardeners know the value of toads as insect-destroyers, and they are sold there for the same purpose that slug-shot is sold in the American markets. Put a toad in a hotbed that is infested with insects, and they will rapidly disappear. There is not an insect, no matter how hard its shell, or how obnoxious its odor, but will fall a prey to his voracious appetite. Learn who your friends are; then protect them.

Do not forget to rotate your crops. Radishes, lettuce, or string beans may be planted among melons and squashes, and will be out of the way before the vines have begun to run very much. Keep the ground well stirred around these vegetables. If you wish to have the lettuce form heads, thin it out, leaving the plants six inches apart. The beets may be thinned, leaving plants ten inches apart if you wish to have a late crop. The early ones may be thinned out and sold for greens. Radishes may be thinned when they are large enough to use.

ARTHUR F. HUGHES.



## MAN'S PLACE IN NATURE.

## Man's Relation to Heat.

IN order that heat may be evenly distributed throughout the whole body, the Lord has provided a system of circulation, which enables the blood to enter the remotest parts of the body. The heart is the center of this system. It is the great pump, which forces the blood through the arteries and into capillaries; and from these it returns, through the veins, to the heart. Before passing out again, it is carried to the lungs, where it receives a fresh supply of oxygen. Then passing back to the heart, it is pumped again through the body. This is the wonderful plan that the Creator has provided for heating the body.

I suppose you have often heard persons say, "My hands are cold," or, "My feet are cold; I can not get them warm," and this, too, on a warm summer day. What is the trouble?—The circulatory system is out of order, and needs to be repaired. One of the best ways to do this is to take exercise. Often a lack of exercise will bring about this condition.

Are you familiar with the heart, the wonderful machine that forces the blood to every part of your body? It is pear-shaped, and is divided into four chambers, called "auricles" and "ventricles." The two auricles are situated in the upper part of the heart, while the ventricles occupy the remaining portion. Let us follow the blood in its circulation through the body.

We will begin with the right auricle. The blood passes through the right auricle into the right ventricle. From here it is forced through the pulmonary arteries into the lungs; it passes through the lungs, after becoming laden with oxygen, then through the pulmonary veins into the left auricle. From here, it passes into the left ventricle. It leaves the left ventricle through the great artery called the "aorta," which divides into several branches. Some of these carry the blood into the head and upper limbs, while others carry it downward, supplying the stomach, liver, pancreas, and other parts of the body, finally terminating in the lower limbs. It is brought back to the heart from these extremities by means of veins. Two of these enter the right auricle, one coming from the upper portion of the body and one from the lower. The connection between the arteries and the veins is small hair-like capillaries.

M. E. CADY.





A FEW WORDS TO MOTHERS.

Now that the opportunity is presented for giving the children instruction in sewing, in Our Sewing Circle, we are sure that with the hearty co-operation of parents, this department can be made both interesting and instructive to the children. Lack of domestic education, or manual training, not only makes of them dependent and inefficient men and women, but puts them in fearful peril morally.

The approval of God rests with loving favor upon the children who cheerfully take their part in the duties of domestic life. Sharing the burden of the parents, children trained to the practical duties of life will go out from the home to be useful members of society. In laboring with his hands at the carpenter's trade, Jesus gave an example to all youth; as he worked in childhood and youth, both mind and body were developed. By precept and example he dignified useful labor. He did not use his physical powers recklessly, but gave them such exercise as would keep them in health, that he might do the best work in every line.

In its broadest sense, education is threefold, and includes a culture of the head, hands, and heart. True education is a growth; and in domestic education, as in any other, there should be opportunity for climbing upward, not only from one step to a higher, of the same work, but from one department of work to another, as proficiency is gained. The desire of every normal child to "help" should be developed, and in no way can this be better done than by giving each a share in the common duties necessary for the proper conduct of a home.

Training in domestic work develops judgment, patience, accuracy, promptness, thoroughness, perseverance, and responsibility. It teaches the nobility of labor, and aids in the formation of habits of industry. Coupled with intellectual training, it gives children an all-round education, such as books alone fail to impart.

Sewing can, and ought to be, just as educational as any other subject taught in the schools, because it may assist in developing the character, by the exercise of the child's threefold nature,—physical, mental, and moral. Physically, he gains control of his muscles and acquires dexterity. His power of observation is trained by the close attention required to do the work properly. The moral being is developed by the necessity of exactness, patience, and care, and by the privilege of giving to others the simple little things that he can make. Much of the pleasure that comes to children in this work consists in the satisfaction that follows the completion of a piece of work that has been well done; but anything done slightly and left unfinished has a discouraging effect.

All work that the children learn to do well has an educational influence upon their characters. In learning to sew they can be taught thoroughness and honesty, by never being allowed to do any work carelessly on the wrong side or in obscure corners. They are taught that everything should be done methodically and economically, and why. These principles will become so inculcated in their every thought that they will become a part of their character. Next week our first lesson to the children will be given.

NELLIE V. DICE.

"THE full beauty of the smallest leaf—its living green, its wonderful tracery, its exquisitely formed tissue—can be seen only when the sunlight shines through it, transfiguring every part. So the full beauty of every life can never be developed until the sunlight of God's grace shines through it, and transfigures its smallest details."

THOSE who read Mrs. Braucht's letter in last week's paper will be interested in the following brief extracts from her latest letter, written under date of April 16: "Yesterday there was a battle up near Stevenson's [the English writer, Robert Louis Stevenson] place, and eighteen loyal Samoans were killed. The mortality on the rebel side is not known, and probably never will be, as they drag their dead and wounded away, and always try to make it appear that they have not lost any. . . . I was down to the coast yesterday when the wounded were brought in. It was a sad sight. Altogether, twelve white men, officers and marines, some English and some Americans, have been killed. . . . All the neighbors living beyond us, including the chief justice, have had their houses looted, and everything carried away or destroyed; but, so far, our place has not been touched. . . . Yesterday the war-ships did some shelling. When this is going on, the house shakes, the dishes rattle, and the noise is deafening. The authorities have cut down the banana-trees all around us, and clear down to the beach, so that the natives can not slip into Apia undiscovered. . . . This evening as I write, the drums are beating, and some one is playing the fife not far away. Now and then a bugle sounds, and a gun goes off. As we witness the destruction of life and property, we realize more and more what an awful thing war is. How thankful we are for the protecting care of our loving Heavenly Father!"

NOTHING costs so little and gives so much happiness as kindness,—pleasant, appreciative words, and little helpful deeds. Be generous with loving words: each one sent out will return to you, like the dove to the ark, bearing the leaf of hope to lighten some dark hour.

"TO SPEAK modestly and to serve mightily is to succeed surely."



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<i>They that sealed the covenant.</i>	<b>NEHEMIAH, X.</b>	<i>The points of the covenant.</i>
gavest before them, neither turned they from their wicked works.	B. C. 445 B.	25 Rē'hūm, Hā-shāb'nah, Mā-q-sē'iah,
36 Behold, <sup>a</sup> we are servants this day, and for the land that thou gavest unto our fathers to eat the fruit thereof and the good thereof, behold, we are servants in it:	<sup>d</sup> Deut. 28. 48. <sup>e</sup> Ezra 9. 9.	26 And Ā-hī'jah, Hā'nān, Ā'nān, 27 Māl'luch, Hā'rīm, Bā'q-nah.
37 And <sup>e</sup> it yieldeth much increase unto the kings whom thou hast set over us because of our sins: also they have <sup>f</sup> dominion over our bodies, and over our cattle, at their pleasure, and we are in great distress.	<sup>c</sup> Deut. 28. 33, 51. <sup>f</sup> Deut. 28. 48. <sup>g</sup> 2 Kin. 23. 3. <sup>h</sup> Chr. 29. 10; 34. 31.	28 ¶ <sup>e</sup> And the rest of the people, the priests, the Lē'vites, the porters, the singers, the Nēth'i-nīms, <sup>f</sup> and all they that had separated themselves from the people of the lands unto the law of God, their wives, their sons, and their daughters, every one having knowledge, and having understanding;

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