

THE YOUTH'S INSTRUCTOR

REMEMBER NOW
THY CREATOR IN THE DAYS OF THY YOUTH

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OUR CONTRIBUTORS

HEAVENWARD

ONLY a ripple on life's dead sea,
But it touched the shore of eternity,—
A wave of blessing, a gleam of light,
A kiss of love on the scowl of night.
Humanity's ocean is dark and wide,
With a dreadful ebb from the heaven side,
And the ripples are few toward the golden shore;
Let us row that way till the night is o'er.

F. E. BELDEN.

"FROM THE TOPS OF THE ROCKS"

THE mountains rise rugged and solemn,
Against the bright sky of the west;
Rocky snags,
Stony crags,
Silent types of the power of creation,
And grandeur of nature, expressed.

The colors of sunset behind them
In tints iridescent ascend;
Yellow flame,
Crimson stain,

Strive together in dazzling battle,
And, equally triumphing, blend;

Till all of a sudden the masses
Of wind-driven flame, red and gold,
Opened wide,
Side by side,

Like a gate, which, on entering heaven,
Lets throne light escape from its hold.

And the glory of God's awful presence,
Which the rocks of the mountain-tops fills,
Just a rare
Moment there

Is gilding the crags, where our vision
Beholds the bright crown on the hills.

MINNIE ROSILLA STEVENS.

A CHURCH SCHOOL IN AUSTRALIA

FOR several years the subject of church schools has been kept prominently before the readers of the INSTRUCTOR. Such schools have been organized in various States, and many interesting reports have been received from them in our papers. But I do not remember having seen many reports from other countries. The fact that a flourishing school is being carried on in North Fitzroy, Victoria, will no doubt be of interest to all, especially when accompanied by a picture of the pupils and teachers.

I shall not attempt to tell how this school is carried on, nor try to give any theories concerning the correct way to conduct a church school. Theories of this kind have their proper place; but after all, the successful school is the one where good results are obtained,—where the children make rapid advancement in a general, all-round education; and where they are taught the Bible, and their proper relation to it. When these things are accomplished, a school is meeting the object for which it is in existence.

Early in the winter of 1900, which in this country began with the first of June, this school was started in rooms in the rear of the Alfred Crescent Seventh-day Adventist church, with one teacher and twenty-one pupils. It has now been

running a year and a half, and has a present enrollment of seventy-nine, with three teachers. The usual difficulties stood in the way of its organization at the outset. First, an excellent state school was situated within calling distance of the church. The tuition at the latter school was free, and many felt at first that they could not afford to pay tuition when free schooling was right at hand. Then another thing made it harder here than in many of our American schools. In this country, as in England, the people, as a rule, have large families; and with the rates of tuition only about half, the amount of that in the church school in Battle Creek, the sum required was still a large item for many of the families represented.

But the benefits of such a school, more apparent here than in the United States on account of the pernicious military training and other undesirable features of the state schools, led the parents to make the effort, and the result has been

been and is being accomplished. A glance will show that the pupils are all young. Only two in the entire school have reached the age of fifteen years. (Most of the children leave school here at thirteen years of age.) These children can nearly all name the furniture in the sanctuary, and the round of service carried on in it, or diagram the twenty-three hundred days,—in many cases much better than their parents. This study of the Bible is systematically carried on, though not to the exclusion of other branches. Children of ten years readily tell the localities chosen by the sons and grandsons of Noah, and from which of these come the various nations of modern times. They also give intelligent accounts of the crusades, and the early history of both the political divisions and the literature of England. They tell how many bones are in their bodies, and their various uses. They understand that good food makes them strong and healthy. One afternoon a few weeks ago nearly the entire



THE NORTH FITZROY CHURCH SCHOOL

very satisfactory to all concerned. Each Monday morning the tuition is paid for the advance week. Some parents have done this, not knowing where the money would come from for the next week; but a blessing has attended their efforts, and the money has always been forthcoming.

Mrs. N. D. Faulkhead, wife of the treasurer of the Echo Publishing Company, is at the head of the school. She is an experienced state-school teacher, and has to account to the government at regular intervals for the condition of the school and the advancement made by the pupils. She is seen standing at the right side of the picture by the drain-pipe. Miss Prismall, sitting at the other end of the picture near the front, and Miss Hubbard, sitting in front of Mrs. Faulkhead, are her able assistants.

In viewing results one is surprised at what has

school visited the natural history museum in Melbourne to aid them in their study of various types of men and animals. The skeletons, mummies, and fossils were studied with intelligent interest, and not with vacant curiosity. One Sunday soon afterward a large number of the pupils with their teachers went to Preston, a pretty suburb in the country, further to study nature in the fresh trees and flowers of spring, which here comes with October.

Music is another science which all the children are studying. They sing, and are taught to sing, every day. Every Sunday night public services are held in the church; and as the regular choir is needed in a missionary effort in another part of the city, a choir of children has done good service for months. They also lead the singing in Sabbath-school, a good selection of the best

singers sitting in the choir seats by the organ.

The patronage of the school is by no means limited to the children of Adventists. Several other families in the neighborhood realize that a work is being done for the young that can not be had at the state school, and the number of pupils from the outside is constantly increasing. By their children being trained to assist in singing at the meetings, and being daily taught the Sabbath-school lessons, these parents become interested in both, and are thus led to attend public service themselves.

The North Fitzroy church has much to be thankful for in its excellent school; and it is hoped that similar schools may be started in all the churches where there are children.

H. E. SIMKIN.

ONLY ONE TALENT

ONCE a great Italian violinist stood up to play before a cultured audience. He drew the bow across the first string, the E string, and it snapped. The audience smiled. He tried the next string, and it likewise parted. The audience laughed. He tried the third string, and it also broke. The audience hissed. One thought was in the mind of the people,—What could he do with a single string, and the G string at that! What *could* he do!

He was not in the least disconcerted. He drew his bow across the remaining string—and it did not break. He drew it across again and again, and then the people looked at one another with questioning eyes; for the violin was laughing with them! His fingers moved on the string, the bow touched light and heavy, fast and slow, and the violin awoke and throbbled as a thing of life. The laughter was gone; smiles were laid aside; hisses were forgotten. There was only one thing to do,—to weep,—and the people wept. Then in varying mood he led them back to laughter, or bathed their eyes in tears. And when the music ceased, the people forgot to applaud, and in their wonder left the room, still under the spell of the master's touch.

My brother, shall not God, playing on the single talent of a human heart, make it all-sufficient for whatsoever place or duty?

EDISON DRIVER.

THE MISSION INDIANS OF CALIFORNIA

THAT the natives of the Southern and Central portions of California differed in many respects from their more proud and warlike Northern and Eastern brethren, is a matter upon which all writers are agreed. Most writers call them feeble of body, faint of heart, and weak of intellect, and ascribe to them the most degraded of lives.

Father Venegas, an early writer who wished to justify the Catholic Church in its method of dealing with the California tribes, writes as follows of them: "It is not easy for Europeans who were never out of their own country, to conceive an adequate idea of these people. For even in the least frequented corners of the globe, there is not a nation so stupid, of such contracted ideas, or so weak both in body and mind, as the unhappy Californians. Their characteristics are stupidity and insensibility; want of knowledge and reflection; inconstancy; impetuosity and blindness of appetite; an excessive sloth and abhorrence of all fatigue; an incessant love of pleasure and amusement of every kind, however trifling or brutal; in fine, a most wretched lack of everything which constitutes the real man, and renders him rational, inventive, tractable, and useful to himself and society."

This, and all other writers, whether friends of the church or not, impute to the Indians great affection; and assert that before the padres came, fierce intertribal wars were waged almost incessantly.

I have been unable to reconcile these state-

ments with the ones first made. One who is faint-hearted will never be the aggressor in a war that may end in his own death and the death of those who are near and dear to him. Neither will one who truly loves be slothful when he knows that by his exertion he can contribute to the happiness of the loved one. It can not be disputed that they lived degraded lives when we measure them by the standard of civilized and enlightened nations; but this was probably because of their ignorance rather than their shiftlessness. God alone knows what the result might have been if the padres had brought them a message of peace instead of rites of formalism, and taught them habits of industry and self-reliance instead of enslaving them.

Socially their habits did not differ greatly from those of other tribes. They seemed to have no established religious belief, though a vague idea prevailed among them that the sun was the supreme ruler of the universe, and that there was a future life. They made no attempt to cultivate the soil; but obtained their food from wild fruit, seeds, and nuts, and by hunting, trapping, and fishing. The home of a family of these aboriginal Californians was usually a hut made of tule-grass, supported by a light frame of slender poles. When the camp was deserted, this hut was burned down, and another erected at the next stopping-place.

The General Plan

When the missions were established, it was the usual custom of the government to grant to each a tract of land fifteen miles square. This was the most fertile land in all the region, and upon it, in the most convenient place, the mission buildings were erected. Adobe, or sun-dried brick, was the building-material most commonly used; but, where it could be obtained in the neighborhood, stone was often used for the church, which was, of course, the principal building. The church was generally quite plain on the outside; but the interior was often richly decorated in the most gorgeous colors. Nothing was spared that would be likely to make an impression on the untutored minds of the Indians. Near the church were situated the storerooms, workshops, and dormitories for the unmarried colonists. Some distance from these stood the Indians' huts,—always arranged in regular order. These huts were usually built of adobe; but sometimes the Indians were allowed to rear them in the primitive way—of poles and tulegrass.

A Monotonous Life

Life in one of these colonies must have been very monotonous. Everything went by rule. At sunrise every one assembled at the church for morning mass. This lasted about an hour. Then followed the breakfast, which each family obtained from the mission storehouse, and cooked and ate in their own hut. Breakfast occupied about an hour; and after it was over, each went to his work. The men were engaged in farming or caring for the stock; or worked as carpenters, bricklayers, blacksmiths, or shoemakers, or combed wool, and wove it into the coarse cloth of which their clothing was made.

The women were employed chiefly with their household duties. Promptly at twelve o'clock the dinner-bell summoned the colonists to their noonday meal, to which one hour was devoted. Two or three hours' work in the afternoon finished the labor of the day, except during harvest or other busy seasons. Then the working hours were sometimes doubled or even trebled, as the urgency of the work might demand. When the work of the day was ended, an hour was devoted to mass; then followed the evening meal, after which the Indians were at liberty to spend the remainder of the day as they saw fit.

The power of the missionary was absolute. He was lord of the colony. From his decision or command there was no appeal; for he was accountable to no earthly power for the govern-

ment of his charge. That the priests seldom abused their great power is undoubtedly true; for they were bound by vows of perpetual poverty and celibacy; and while they were faithful to their vows, they had no personal interest to gratify. If they chose to be dishonest, they could find a more fruitful field for their ambition than the California missions.

The Result on the Indians

The primitive lives of the Indians demanded almost constant exercise of both mind and body, and their migratory habits in a measure saved them from the consequences of their uncleanness; so that they enjoyed a measure of health equal to that of most savage tribes. Cooped up in the missions, however, they soon became subject to many contagious diseases. Taught to depend entirely upon the judgment of the padres in all emergencies, and to yield unquestioning obedience to all commands from those in authority over them, they had little moral stamina; and on falling ill, they were easily discouraged. As one might expect, the mortality in the mission colonies was very large.

Measured by the present-day standard of the ambitious American people, this is a rather dark picture; yet the Indians suffered no real hardship, and they were generally quite content with their lot. They had much time for amusement and idleness, they were well clothed and well fed; and with these things the majority were satisfied. Those who were ambitious could, by faithfulness to the duties assigned, soon secure promotion, and became foremen of crews of workmen or beadles in the church.

Those who could be trusted were often sent to the haunts of other tribes, or back to their old homes, with instructions to bring back as many of their new acquaintances or old friends as could be induced to join themselves to the mission colonies. During slack times on the mission farms, large parties were sometimes sent out on proselyting expeditions, and they seldom returned empty-handed.

The large parties were always armed with muskets, and sometimes even cannon were carried for the purpose of impressing the savages with the power of the colonies with which they were invited to ally themselves. Of course the instruction of the fathers was that only persuasion should be used. But the Indians were usually overanxious to please their pastors, and the guns were often used to "persuade" those who could be influenced in no other way. When this method was adopted, the invaded tribes often made armed resistance, and sometimes drove off the intruders. The latter always returned with re-enforcements, however, and punished the "attack" of the hostiles by carrying away a number of captives.

In 1826 one of these proselyting parties from one of the missions was repulsed with a loss of thirty-four of the converted Indians. The expedition sent to avenge this loss captured and brought back to the mission forty women and children from the offending tribe. Under such circumstances the principal object was to capture the children, as the parents would often voluntarily follow them into captivity. If the mother could be secured with her children, the captors felt little concern about the husband and father; for he would almost invariably choose captivity with his family in preference to freedom without it.

Further Methods

When once the Indians reached the mission, the rest was easy. All the "conversion" necessary was that the candidate should be able to repeat the names of the Trinity and a few of the "saints" in the Spanish language, and submit to those in authority. Submission, indeed, was the principal requirement. Conversions of this sort were usually accomplished without serious difficulty. If, however, one of the prisoners

should prove obdurate and refuse to be "converted," he was locked up and put on spare rations. Every few days he was taken out for a walk around the mission grounds, in order that he might see the happy state of his more passive tribesmen; then he was locked up again to think the matter over. This course was continued until the resolution or the health of the captive was broken. When he expressed a willingness to submit to the regulations of the colony, he was baptized, after which rite he was entitled to enjoy all the rights and privileges that a membership in the mission colony conveyed.

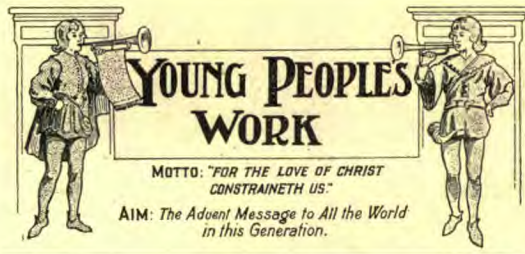
In the early days of the missions it was not a difficult matter for the disaffected converts to escape; but after the missions became thoroughly established, it was well-nigh impossible for a runaway to elude the pursuit that was promptly begun as soon as the desertion was discovered. The punishment of captured deserters was so severe that it was well calculated to discourage similar attempts on the part of others. They were publicly whipped; then imprisoned; and when liberated, they were compelled to wear a ball and chain as a badge of their disgraceful conduct, as well as to prevent its repetition.

The entire government of the colony was one of forced submission; and when the Fathers were shorn of their power to compel submission, the prosperity of the colonies rapidly declined, and the missions soon failed. J. EDGAR ROSS.

A PRAYER

O SAVIOUR! be my guide,
The way is rough and wild;
To thee my prayer goes forth,
To own me as thy child.
No earthly parent have I here
To comfort when I mourn;
Be thou my father, mother, too,
And when my heart is torn
With adverse words from friends
So-called, O wilt thou intervene,
And hide me in thy temple, Lord!
My Father, stand between my foes and me;
and then
So safe from harm I'll be,
That unkind words and harsher thoughts
Will purify my heart for thee.
Stand thou between! O, ever thus
I pray shall I be found,
Behind my Father; for 'tis there
His own are placed, the whole world 'round.
Fight thou for me. This is my prayer,
My earnest, humble plea;
For thou canst win the hardest fight;
Thy strength sufficient is for me.
Stand thou between; and when my heart
Sheds tears of grief and woe—
O cover me, thou Mighty One!
And grant that I may know
And feel thy everlasting arms
Were e'en for me stretched out,
And I am safely held therein,
And tossed no more about.
I am not worthy of a place
So near to thee, my God;
But thou hast asked us all to "come,"
For e'en thy staff and rod
Are each to us as comforters;
Then help us all to hope
That thou wilt save each one who asks,
E'en though we can not cope
With trials that our way beset.
Thou hast not asked us to;
Our strength is nothing; thine is all,
And all for us can do.
Help each to understand
That just to thee alone
The heart must all its secrets tell.
No earthly friend is known
Whose sympathy is wide enough
To share our inmost thought,
And understand. To thee alone
Belongs our deepest life: for thou hast bought
Our sins and griefs and woes
On Calvary's hill. O Saviour! Friend!
What can we do to thee repay
For the great love thou didst bestow
On us, unworthy of it all?
O Father! worthless though they be,
Take thou our hearts, our thoughts, our lives,
And make them consecrate to thee.

MARGARET ANDERSON.



A CALL TO LABOR

"AND I heard the voice of the Lord, saying, Whom shall I send, and who will go for us? Then said I, Here am I; send me."

The Lord calls upon young men to enter the harvest-field, and work diligently as harvest-hands. Let them go forth to trade on their talents. He who has called them to labor in the gospel will give them evidence that they are chosen vessels, and will give them words to speak.

One of the very best ways in which young men can obtain a fitness for the ministry is by entering the canvassing field. Let them go into towns and cities as canvassers for the books which contain the truth for this time. In this work they will find opportunity to speak the words of life. The seeds of truth they sow will spring up to bear fruit.

When young men take up the canvassing work filled with an intense longing to save their fellow men, they will see souls converted. From their work a harvest for the Lord will be reaped. Then let them go forth as missionaries to circulate present truth, praying constantly for increased light, and for the guidance of the Spirit, that they may know how to speak words in season to those that are weary. They should improve every opportunity for doing deeds of kindness, remembering that thus they are doing errands for the Lord.

They will be invited to take meals with the families they visit. Flesh-meat will be passed to them. As they refuse it, giving their reasons for so doing, they will, perhaps, have opportunity to present the principles of health reform. In their work they should always take some health books with them; for health reform is the right hand of the message.

The canvasser should speak modestly, and he should never engage in controversy. He should feel that he is on trial before the heavenly universe. "Behold, I send you forth as sheep in the midst of wolves," Christ said; "be ye therefore wise as serpents, and harmless as doves." You will meet many precious souls ripe for the harvest. Learn, therefore, to speak modestly and discreetly. Show that you have been with Jesus, and have learned of him.

This is the rule we are to follow,—to be like him who went about doing good. Christ said, "If any man serve me, let him follow me." Study the life of the Saviour; find out how he lived and worked. Strive each day to live his life. Wear his yoke, and learn his meekness and lowliness, walking in the path that leads heavenward.

Follow on to know the Lord, and you will know that his going forth is prepared as the morning. Seek constantly to improve. Strive earnestly for identity with the Redeemer. Live for the saving of the souls for whom he gave his life. Try in every way to help those with whom you come in contact. Let your love for Christ lead you to say, "Thy word have I hid in mine heart, that I might not sin against thee." Let your life fulfill the words, "Thou through thy commandments hast made me wiser than mine enemies." Talk with your Elder Brother; he will complete your education, line upon line, precept upon precept. A close connection with him who offered himself as a sacrifice to save a perishing world, will make you an acceptable worker. When you can lay your hand on truth, and appropriate it, when you can say, "My Lord and my God!" grace and peace and joy in rich measure will be yours.

MRS. E. G. WHITE.

MESSAGE OF THE SECOND ADVENT

Suggestive Program

(January 19-25)

1. OPENING EXERCISES.
2. Scripture Reading: Joel 2: 21-32.
3. Four prophetic outlines (let four members be appointed to give two-minute presentations of prophetic outlines showing that the kingdom of God is at hand):—
 - (a) Lessons from the past. (Cite examples in the Bible history in which warning messages were sent to prepare people for great events, or to warn against doom.)
 - (b) Second advent message. Three references. (Showing that there is to be a final message of preparation and warning.)
 - (c) How extensively is it to go forth? Two references. (A profitable five-minute exercise may be had, with or without the aid of map, if one after another in quick succession will name a language in which the message is to go, stating in what country the tongue is spoken.)
 - (d) A reform message. Two references. (Show that the closing message calls for reform on the Sabbath and the law of God.)
4. Reading of selection. Five minutes. (Let some one or two be appointed to select and read from Chapter IV of "Great Controversy" those paragraphs relating to the training and work of the youth in the days of the Waldenses.)

NOTE.—This day's study will very likely suggest to all our part, as young people, in this work. An informal testimony meeting or talk about our motto, our aim, and what more can be done just where we are, may be timely. We may well be thankful that we have not to work after the manner of the Waldensian youth; but let us emulate their sturdy faith and patient industry in studying to qualify for God's work.

W. A. SPICER.

FROM OUR YOUNG PEOPLE'S SOCIETIES

As the work of the young people takes more definite form, cheering reports are received in increasing numbers at the Secretary's office. The following extracts from recent letters show a spirit of good courage and active missionary effort:—

From Joseph S. Johnson, New York City: "We have organized a Young People's Society in Greater New York, and have held two meetings. The attendance at the first meeting was thirty-seven; the second, forty-two. Elder Luther Warren spoke at the first meeting, and was with us during part of the second."

E. Josephine Rupert, Oklahoma: "Our Society has taken hold of the new plan of organization with a good will, and has appointed a committee for nomination of officers. We enjoy our work very much. Our church has taken up the package plan of distributing envelopes, and our young people will help in that work."

Jennie Nichols, Pleasant Hill, Mo.: "You wished to know about the young people's meetings in our school. We have never organized a society. We appoint some one two weeks ahead to take up the study, and lead the meeting. This allows time to look over the study carefully, and give topics to different ones. I had charge of the study a few weeks ago, and assigned different topics to the young people, asking each to write a short paper. The result was indeed encouraging. One took up the work in Africa, another wrote of progress in the Orient, etc. All were intensely interested. Our meetings are held after Sabbath-school each Sabbath. We have no one here to conduct a regular service, and are so scattered that it seems almost impossible to meet

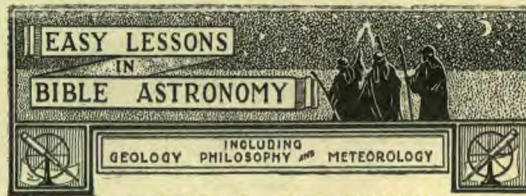
more than once a week. Something is being accomplished. The young people are willing to help all they can. Our school is small, and of course it is more difficult to make the meetings a success than where there is more material to work on. But if we do what little we can willingly, and depend on the Lord for results, he will not disappoint us."

Miss Tillie Ertel, Williamsport, Pa.: "We have a small band of young people and children organized into a Society here. We have great reason to thank the Lord for the way he has helped us, and for the privilege of working for him by doing little helpful deeds of love. We are very glad that this work has started among the young people, and believe that it is of the Lord, as all good things come from him. Our company meets every week, sometimes in the homes of the members, sometimes in the homes of those who for various reasons can not attend a service at church. We use the lessons in the INSTRUCTOR, with singing, prayer, and testimonies. Thus we have ample opportunity for receiving benefit from the word, and also to develop a spirit of mutual helpfulness. We hope to take up more systematic work soon. Our members have visited the sick, and have gone in groups to sing for aged and lonely persons. We endeavor to make our meetings interesting to the children, and encourage them to take part in the service."

Della Wallace, Des Moines, Iowa: "In many respects the outlook for the young people's work in Iowa is most encouraging. We have ten organized societies in our list, with two others all ready to organize. At Boone we have a junior society, which is doing excellent work. They have been piecing quilts for the poor, and the older members have quilted them. They had one all finished when they last wrote me. They were anxious to earn some money for the Christmas contribution, and it was suggested that they sell the *Life Boat*. One hundred copies were ordered. The children sold these, and the profits went to swell the missionary offerings. At Adel everything is ripe for organization. The church is in harmony with the movement, and anxious for the Young People's Society to get into working order. Sigourney and Atalissa, two of the oldest societies, are each doing good work, though laboring under serious difficulties. They are not discouraged, however, but are trying to 'press the battle to the gates.' Giant City and Mt. Pleasant are new companies, but have started with the determination to succeed. Marshalltown was badly discouraged, and about ready to give up; but on receiving some encouraging letters from the State officers, decided to try again. Grinnell is a small company, but holds its meetings regularly. The older ones meet with the young people, so the interest is not allowed to wane. Here in Des Moines we have a large and enthusiastic company, which is doing excellent practical work, holding branch Sabbath-schools, and visiting the poor and needy. Their work is supplemented by that of the Christian Help band.

"We trust that from these societies will emanate an influence which will kindle into flame other societies, and that they may work for the salvation of the young until all who bear the name of Seventh-day Adventist shall become laborers together with God."

"PART of to-day belongs to to-morrow, as the seed belongs to the shoot, as the foundation belongs to the building. So to-day owes its best to to-morrow; for not to do right to-day may ruin to-morrow. But the reverse is not true. To-morrow can not ruin to-day. Time's wheel does not run backward. Banish, then, foreboding and anxious forecast, and fill to-day with faithful work, with kindness and courage and hope; and so you will keep to-morrow from being a marplot, and make it an honest to-day when it comes."



DIVISION II—PHILOSOPHY
Chapter XVII—Vibration¹

§181. So far as we are able to discern, every manifestation of life, both animal and vegetable, is but some definite form of matter in vibratory action. From the majestic roll of distant thunder to the most delicate painting of the sunbeam upon the rose's petal, all is vibration.

The tiny flower we crush beneath our feet, that turns its face to meet the rising sun, following it in its course through the heavens, and looking its last farewell toward the western sky, is only obeying, though in an opposite manner, the same great law of electrical attraction and repulsion that is followed by the resinous trees of the forest, which manifest such tremendous force in striving, seemingly, to avoid the course of the sun, that they twist and wind their trunks, often two, and occasionally three, times completely around in their growth.

§182. The lowest manifestation of vibration, above that of a mere succession of blows, or the swinging of a pendulum, is that of sound. The lowest tone that is recognized by the human ear is that produced by thirty-two vibrations a second, though Savart, who has made extended research in the field of musical vibration, claims that the human ear can be trained to recognize sound in as low a form as seven and eight vibrations a second. The average range, however, as usually accepted, is from thirty-two vibrations up to twenty-four thousand vibrations a second.

The lower the number of vibrations a second, the lower will be the tone; while the greater the number of vibrations each second, the higher the pitch will be. When the number is increased beyond twenty-four thousand, or at most thirty-six thousand five hundred vibrations a second, as Savart claims, the human ear ceases to recognize the vibrations as sound, and they are perceived by other organs of sense, as an entirely different element.

§183. Many insects produce vibrations so rapid that the human ear ceases to recognize them, yet naturalists assert that these are sounds perfectly appreciated and understood by other insects of the same family, and they obey them as calls of attention or warnings of danger.

§184. The relative vibrations in the musical scale run as follows: C—one octave below middle—is produced by 128 vibrations; D by 144; E by 160; F by 170; G by 192; A by 214; B by 240; middle C by 256; while upper C is produced by 512 vibrations a second; and so on, according to a definite, mathematical rule.

§185. The pitch, or tone, of a sound is materially lowered by passing through a poor conductor, or meeting with any resistance. This fact may be seen by noticing that the tone of a distant bell reaches us slightly lower than the real pitch is known to be. Perhaps the most common illustration of this interesting phenomenon is the noticeable change in the pitch of either the whistle or the bell of a rapidly approaching locomotive. If carefully observed, it will be seen that as the engine approaches, there is a *continual rise* in the pitch of the tone; and that the moment it passes, there begins a *gradual lowering* of the tone.

Why is this? Why is there a continual rising in the pitch as the engine approaches, and a continual lowering of the same as it passes away from us, until the last tone that reaches our ear is slightly lower in pitch than the one we

¹ NOTE.—This division comprehends but a brief study in vibration, bringing out only such points in that interesting phase of philosophy as are really necessary to a proper understanding of the great study of Bible Astronomy.

first heard as it approached us? The answer, which, as we will learn in the future, involves vastly more than at first appears on the surface, is simply this: The first tone we heard in the distance reached us at a lower pitch than when it started, simply because of the resistance it was compelled to meet during the length of its journey. As the train approached, the distance became gradually lessened, the amount of resistance to be met and overcome was also lessened, and the tone correspondingly raised. But as the train passed, and the distance through which the sound had to travel was increased, we found the tone gradually lowering, in place of rising in pitch. This occurrence is so common that we need but to call attention to the fact for all to realize its truthfulness. Its importance will appear later on.

§186. One interesting quality of sound, or sounds, is what may be termed its "compositiveness," or difference in vitality. All tones, so far as we are able to learn, travel a given distance in exactly the same length of time; but all tones have not the same amount of vitality. While a low, heavy tone will travel no faster than will a shrill tone, yet its power of endurance is so much greater that it will travel much farther than does the higher one.

You have noticed, perhaps, with some degree of unpleasantness, while standing near a band of musicians, how loud the shrill notes of the cornets and piccolos sounded; but when you stepped away a few rods, you were pleased with the general balance that seemed to be in the volume of the different instruments used. Had you walked slowly away from the band, you would soon have reached a point where you could not distinguish the tones of the high instruments, that seemed so loud at first, and only the tones of the heavy drum and base horns would have reached your ears. What does this prove?—Plainly, that the higher tones lose their vitality, and cease to be sound, sooner than do the lower and heavier tones, which, as we have already learned, are composed of a smaller number of vibrations each second than those of the higher and less vigorous tones. While the music starts out as a composite whole, much of it is lost, or overcome, by the resistance met in the air, and only a certain class of tones reach the distant ear as music.

Questions

How many different forms can you mention in which vibration manifests itself? What is sound? What makes the difference in the pitch of a tone? Between what extremes is vibration manifest as sound? How many vibrations a second produce middle C on the musical scale? What effect has resistance upon the pitch of a tone? Is the pitch of an echo higher or lower than that of the original sound? Why does the pitch of an approaching bell or whistle continually rise? Do all tones have the same velocity? Have all the same vitality? Illustrate your answer.

DR. O. C. GODSMARK.

2005 Magazine St., Louisville, Ky.

JUST BEING HAPPY

Just being happy
Is a fine thing to do:
Looking on the bright side
Rather than the blue;
Sad or sunny musing
Is largely in the choosing,
And just being happy
Is brave work and true.

Just being happy
Helps other souls along;
Their burdens may be heavy,
And they not strong;
And your own sky will lighten
If other skies you brighten
By just being happy
With a heart full of song!

—Ripley D. Saunders.

CHILDREN'S PAGE

THE STEADFAST BOY
 NEVER a fear for the boy who keeps
 True to his aim till the clouds pass by;
 After a while, when the bright sun peeps
 Out of the mists, in the warm, blue sky,
 He'll not be sorry his faith was strong
 When others vowed that the world went wrong.

Never a fear for the boy who moves
 Steadily, sturdily, on his way,
 Striving, perhaps, in the well-worn grooves,
 Making them worthier every day,
 Just for the reason that he has found
 Duty a pleasure on common ground.

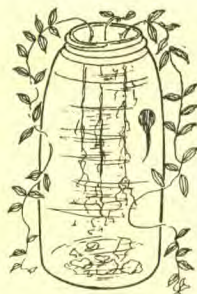
FRANK WALCOTT HUTT.



THE FROGS.

I HAVE raised a number of frogs, but will tell the story of one, and let that do for all. In this story I will tell some things that I noticed with one frog, and some that I observed with others.

My first frog was a very young tadpole when I put him into a jar of water, and took him to the house. In the jar were planted some water-plants, and of course there were a great many microscopic beings in the water. The tadpole lived mostly on the little organisms that grew on the stems of the plant, though I have no doubt that he also ate some of the germs that were too small for me to see. Tad was a young bullfrog, and of course grew to be about three inches long before he became a frog. When he was a baby, he had gills, and breathed water like a fish. At first he lay near the bottom of the jar most of the time. When he was about three months old, he began to show signs of something happening, and soon he had two little feet growing out where his front legs were to be. Pretty soon legs began to grow, and before long his front legs were fully developed. But so far he had no hind legs. Some frogs get their hind legs first, some their front ones first, and some all at once. There seems to be no rule about it.



IN A JAR OF WATER



HE HAD GILLS

are to be found at the top of the water, breathing air as soon as they hatch from the egg.

When Tad was five or six months old, he began to use his legs as much as he could, and his tail grew smaller every day. A support for him was not thought of, and of course he could not climb on the glass. He breathed air entirely now. One day he was found dead in one part of the

jar, and his tail lay in another. He had become a frog, and lost his tail. Then, as he could not swim enough to keep on top, he had drowned.

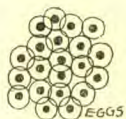
Most of my other frogs lived in a pond by the side of the road on my way to school. They were little fellows, and used to make things merry with their songs. In April the frogs would lay their eggs, which looked very much like a bunch of the gum that sometimes runs out of the limbs of peach or apple trees, except that it was in little round drops. Each drop had a spot in it about the size of a pin-head. This was the yolk of the egg. The eggs were stuck fast in bunches to grass and sticks that happened to be in the water. By the last of June they had hatched, and developed into frogs. The only time I ever played truant from school was to watch them crawl out on the bank, try to hop, and finally lose their tails. I have seen many boys get their first pair of trousers; but I have never seen one more pleased than a frog when he loses his tail, and can jump and croak.

Next to losing his tail, the most interesting time in a frog's life is when he gets a new suit of clothes. On the great day a number of frogs which were ready to shed their skin would hop out on the bank, blink their eyes, and croak a few words in frog language. First one or two would catch a third around the waist, and hold him firmly in their arms. Then another would catch around him just behind the front legs, and several others would begin to nibble and bite at the skin on his back. Soon it would loosen and come off. Then all would scramble for the skin, and those that succeeded in getting it proceeded to eat it. Afterward they would skin another in the same way. They all acted very proud when they got rid of their old skin. Frogs eat any kind of meat that they can get, even their own young. Sometimes, too, they eat the seeds of weeds.

FLOYD BRALLIAR.

THE CAPTIVE GIRL A True Story

Not very far from Philadelphia lives a little girl named Regina. She is a dear little girl, with a very fair face, blue eyes, bright hair, and pink cheeks. Grandma says she is the very image of the little Regina who was carried off by the Indians so long, long ago.

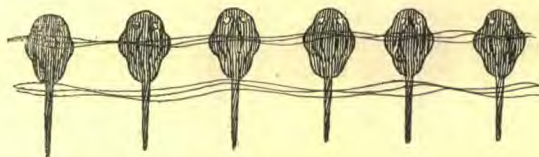


EGGS

Then Regina runs to grandma, and says: "O grandma! please tell me again about poor little lost Regina!"

Grandma loves to tell that old story. She remembers just how the country looked when the lost Regina was an old woman; and she had heard so often how it looked when Regina was a little girl, that it seems to her that she must have seen it all just as it was then.

This story of grandma's is one of the saddest



stories in our early history,—a true story and a wonderful one; and all through it we can see what care God takes of his children, even in the greatest trials and dangers.

Little Regina—the one who was carried off by the Indians—lived in a cabin in the forest, not far from where Harrisburg now stands. That part of Pennsylvania was then a forest, with wild animals and savage Indians roaming through it.

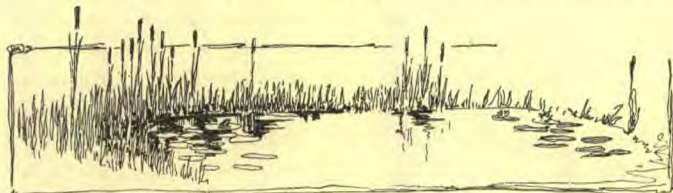
Regina had a father and mother, a brother fifteen years old, a sister thirteen years old, and a baby brother of three. Regina herself was ten. Regina was a little Christian. She loved the Saviour, and always asked his help in time of danger. There was a little hymn she was very fond of singing. She and her mother sang it every evening after prayers:—

"Alone, and not alone, am I,
 Though in this solitude so drear,
 I feel my Saviour always nigh;
 He comes the weary hours to cheer.
 I am with him, and he with me;
 E'en here, alone I can not be."

This is the hymn they sang, and God used it in a wonderful way to bring Regina back to her mother after she had been stolen by the Indians.

One day Regina's mother went to the mill for flour, taking the little boy with her. The mill was a long way off. It took her all day to make the journey. When she came back in the evening, nothing was left of her home but a heap of smoking ruins. The little house she had loved so well, and the barn that was filled with grain, were burned to the ground. Not far away lay the bodies of her husband and son, murdered by the Indians and scalped. Regina and Barbara, her two daughters, were gone, and she knew well enough that the Indians had carried them away.

Some days after, a party of hunters found Barbara's dead body lying by a stream of water,



THE POND BY THE SIDE OF THE ROAD

with her head cleft by a tomahawk. When the mother heard of this, she knew that she would never see Barbara again in this life; but for nine long years she heard nothing of Regina, and she mourned for her, and hoped and prayed for her, and at last God answered her prayer.

Poor little Regina was taken by the Indians to their camp, and there given to an old squaw, who was very cruel to her. The squaw was so old and stiff with rheumatism that she could not work, but she was not



A BRIGHT, NEW SKIN

too stiff to beat poor Regina most brutally. The child was compelled to carry all the wood and water that were needed in their wigwam, to gather roots and berries, trap animals, and catch fish. She had a very hard and bitter life, and



FOUR REAL LEGS



TWO LITTLE FEET GROWING OUT

after a while, as the old squaw would not allow her to speak anything but the Indian language, she forgot how to speak her own language; but she never forgot her prayers, nor the hymn her mother used to sing with her every evening.

Regina looked like the other little Regina who lives not far from Philadelphia. Her face was so fair and lovely that the Indian children called her Sawquehanna, which means, in their language, "a white lily." But after she had lived with the old squaw for some years, her hair and skin became dark and coarse, so that no one would have known her for a white girl, except for her large, clear, blue eyes, which never changed.

During the nine, long years that Regina was lost, her mother never ceased to search for her. When she heard of a white girl being seen with the Indians, she immediately set out to find her, always feeling sure it was her own dear daughter, and always coming back home disappointed.

The French and Indian war was being carried on at the time, and when finally it closed, and the English became masters of the country, the Indians were compelled to give up all their white captives. Many white children had been carried off by them, and these were all taken from them by the English soldiers. Good Colonel Boquet, who had charge of this work, was very careful that not one white child should be left with the savages. In this way more than one hundred white children, between five and twenty years of age, were taken from the Indians.

At first the children were taken to Pittsburg, or Fort Pitt, as it was then called, and there about fifty of them were found by their parents. The others were taken to Carlisle, and there almost all of them found parents or friends, though a few of them had no one left in the world after the Indians had slaughtered the family and burned the home.

Regina's mother went to Carlisle in hopes of finding her long-lost daughter. Regina was nineteen years old at that time. She was very tall and dark. She had forgotten a great deal. She could not tell her last name nor the names of her parents or brothers and sister. She did not know where she had lived, and though she remembered her own name, "Regina," she could not pronounce it so that others understood it. She remembered her home and her mother, but she had forgotten how her mother looked. She was so changed that her mother did not know her, and she did not know her mother.

Mrs. Hartman—that was her mother's name—went about among the captives, looking for her daughter, but there was no one there who could possibly be Regina. The captives were in a large room, and Mrs. Hartman looked at them all, and they looked at her. Then she went back to the inn with a heavy heart, sure, now, that Regina was dead. The next morning she was to start early for her home; for the way was rough and slow to travel, and she had to go on horseback. Before she started, however, she decided to take one more look at the captives, who had been brought out on a green square, between the old court-house and the old stone church. Crowds of people from the town and all around the country had gathered to see them. Many parents were there looking for their lost children, and every now and then some one would be made happy by finding a lost child. When this happened, every one shouted for joy. Twenty or thirty children were thus recognized by friends.

Mrs. Hartman lingered until noon, watching all this happiness; then, as she was turning away with a heavy heart and sad face, Colonel Boquet came to her, and asked her whether she was sure her daughter was not with those still unclaimed. He was so anxious to have the mother find her child that he asked whether there was not some sign, or mark, by which she might identify her; for he knew that nine years among the Indians could change a child so that even her mother would not know her.

Mrs. Hartman said that there was nothing by which she could identify Regina.

"Was not there some song or hymn you sang to her when a child?" the colonel asked. "She might remember the song you sang her to sleep with."

Then Mrs. Hartman remembered that old hymn she and Regina loved so much, and she began to sing, in a clear, loud voice:—

"Alone, and not alone, am I,
Though in this solitude so drear —"

Scarcely had she reached the second line when a tall, straight girl, with blue eyes, uttered a sharp cry, and rushing to Mrs. Hartman, threw her arms around her mother's neck.

It was Regina. The old hymn that she had never forgotten had brought her mother to her. How God blessed that hymn!

When the mother looked at Regina, she wondered how this tall, dark girl could be her fair little daughter; but she took her into her arms, and wept over her, and loved her, and thanked God again and again that he had answered her prayers.—*Presbyterian.*

A FLOWERY LAND

"A LAND flowing with milk and honey." This was what God said about the land to which he was leading the children of Israel.

Where does honey come from?

"The bees make it," a little boy told me the other day. But the bees do not *make* honey. All that they can do is to—

"gather honey all the day
From every opening flower."

God makes the honey; he uses the plant through which to make it, and he stores it in the beautiful scented cups that we call flowers.

Then what sort of land must it be that flows with honey?—A beautiful land, bright and fragrant with flowers, musical with the hum of busy bees, and gay with butterflies and other insects that the flowers attract.

The bees are attracted to the flowers by their bright colors and their odor. As they flit from flower to flower, they carry the pollen, or fertilizing dust, from one to another, which brings the seeds to perfection. So while the bright flowers feed the bees, and cause them to increase, the bees also help the bright flowers, and cause them to increase to produce more honey.

All who visit Palestine at the present day are struck with the variety and brilliancy of its flowers. One traveler called it "the garden of Eden run wild."

And the land was to flow with milk as well as honey. This means, of course, that it would be covered with rich pastures and grazing herds. But it could not be so unless it were well watered.

Moses described the promised land as "a land of brooks of water, of fountains and depths that spring out of valleys and hills." And the result of this abundant watering was that it was "a land of wheat, and barley, vines, and fig-trees, and pomegranates; a land of oil olive, and honey."

Such was the beautiful land that God prepared for his people, and led them out of the hard and cruel bondage of Egypt that they might go in and possess it.

EDITH E. ADAMS.

THE CHEER-UP CLUB

THERE were five of them, if you counted the baby, and they formed a club,—the Cheer-Up Club. Of course mama began it—mama began all the nice things that pleased every one.

"What shall we do now, mama?" Debbie had asked one rain-stormy day; and mama had looked down the scale of four dubious little faces, from Austin's down through Clem's and Debbie's to Jesse's (the baby wasn't dubious), and then she had said, "Let's join a club, every one of us."

So that was the way it came about. There were laws and by-laws in a blank-book, written

out in Austin's very best writing, and you paid your fines—when you were solemn, and there wasn't any need of it, you know—into the little tin trunk on mama's bureau. When the trunk was full of pennies, the club was going to cheer somebody up with them somehow—mama was going to think of a way.

It was dull and "mis'ble," as Jesse said, one morning when all the little Cheer-ups sat down to breakfast. Little slate-colored clouds scurried across the sky, and bumped against each other. There was not a sunbeam as big as your thumb even.

"Oh my!" cried Debbie, "I'm 'fraid this is going to be a dreadful busy day!"

"Well, maybe, but I can't think of a single person to be cheered up," said Austin, thoughtfully.

Papa glanced out of the window. "I can," he said. "There's lots of folks. First of all, Uncle Nahum Trott. He always has rheumatism on days like this, and his poor old muscles almost tie up in hard knots."

"I'll try to 'tend to Uncle Nahum," Debbie said, her round little face full of compassion.

Mama laid down her fork with a sudden little click. "I've thought of a case," she exclaimed, "for one of you! Let's see; first,—"

"Me, mama!" cried Jesse, excitedly.

"Well, you, dear. Mrs. Butterworth's lame Christy went to the hospital yesterday, and she couldn't go with him. It almost broke her heart."

"Oh," murmured Jesse, pityingly, "but I'm almost sure I'm too little for such a big cheering-up as that, mama."

"You can do a little, dear. I think it will help," said mama, gently.

Austin's face was creased with little thought lines. Soon he spoke slowly: "There's Kent Bishop—he's a case, too. He's got a bad sore throat, and perhaps 'twould cheer him up to play with him."

"Yes, dear," mama said.

"Well, I'll take Kent," quietly decided Austin.

"Nobody's got me a case," Clem announced, suddenly, such a dismal little look beginning to dawn on her face that mama jingled the spoons to remind her of the tin trunk and the jingling pennies for fines.

"O Clem!" she said, quickly, "there are so many folks for you to cheer up, it will keep you busy all day! First there's baby, you know, with his little toothies trying to cut their way through his poor little swollen gums. He's brave, but he needs helping out. And Nora had bad news in her letter this week,—her old father is ill. And Kitty Clover has lost two of her babies, and wants cuddling."

"And I am sure I need cheering," said papa, trying to make a very solemn face. "I shall come home to-night worn out with cares of the day, and need a little girl to put some sweetness into me."

"Why," laughed Clem, "I think you'd better excuse me, mama, so I can go to work! I'm going to begin on the baby; but I'll be ready for papa when he comes. Come, baby, we'll build a beautiful new three-story church."

That night mama tucked a tired but happy little Cheer-Up Club into bed, and don't you wonder how many of their "cases" had little warm, cheered-up spots in their hearts?—*Selected.*

A SINGLE word is a little thing,

But a soul may be dying before our eyes
For lack of the comfort a word would bring,
With its welcome help and its sweet surprise.

A kindly look costs nothing at all,
But a heart may be starving for just one glance
That shall show by the eyelids' tender fall
The help of a pitying countenance.

These gifts nor gold nor silver may buy,
Nor wealth alone can love bestow,
But the comfort of word or ear or eye
The poorest may offer wherever he go.

—*Selected.*

SABBATH SCHOOL LESSON NO 4

THE MEASURE OF FORGIVENESS

(January 25)

MEMORY VERSE: Matt. 5:7.

LESSON SCRIPTURE: Matt. 18:21-35.

LESSON HELP: "Christ's Object Lessons," pages 243-251.

70 x 7 = "that we are never to become weary of forgiving."

21. Then came Peter to him, and said, Lord, how oft shall my brother sin against me, and I forgive him? till seven times?

22. Jesus saith unto him, I say not unto thee, Until seven times: but, Until seventy times seven.

23. Therefore is the kingdom of heaven likened unto a certain king, which would take account of his servants.

24. And when he had begun to reckon, one was brought unto him, which owed him ten thousand talents.

25. But forasmuch as he had not to pay, his lord commanded him to be sold, and his wife, and children, and all that he had, and payment to be made.

26. The servant therefore fell down, and worshiped him, saying, Lord, have patience with me, and I will pay thee all.

27. Then the lord of that servant was moved with compassion, and loosed him, and forgave him the debt.

28. But the same servant went out, and found one of his fellow servants, which owed him an hundred pence: and he laid hands on him, and took him by the throat, saying, Pay me that thou owest.

29. And his fellow servant fell down at his feet, and besought him, saying, Have patience with me, and I will pay thee all.

30. And he would not: but went and cast him into prison, till he should pay the debt.

31. So when his fellow servants saw what was done, they were very sorry, and came and told unto their lord all that was done.

32. Then his lord, after that he had called him, said unto him, O thou wicked servant, I forgave thee all that debt, because thou desiredst me:

33. Shouldest not thou also have had compassion on thy fellow servant, even as I had pity on thee?

34. And his lord was wroth, and delivered him to the tormentors, till he should pay all that was due unto him.

35. So likewise shall my heavenly Father do also unto you, if ye from your hearts forgive not every one his brother their trespasses.



LORD, HAVE PATIENCE WITH ME

Questions

1. With what question did Peter come to Christ?
2. How many times did he think it necessary to forgive his brother?
3. What standard did Jesus set before him?
4. How did he further teach Peter concerning forgiveness?
5. With what comparison does the parable begin?
6. As this king began to reckon with his servants, what enormous sum did he find one owing him? (A talent is worth about \$1,600.)
7. What did the king command to be done with this servant?
8. Who were to be sold to help pay his debt?
9. What promise did the servant then make?

10. Was it accepted?
11. What compassion did the king therefore show him?
12. Although forgiven so much, how did he soon treat a fellow servant who owed him a little? (A Roman penny is worth about fifteen cents.)
13. What appeal did the debtor make?
14. Nevertheless what was done with him?
15. When the king heard how this debtor was treated, what did he do?
16. What did he say to the wicked servant?



PAY ME THAT THOU OWEST

17. Because this servant failed to follow his lord's example, what was therefore done with him?

18. What likewise will be done with us if we are unmerciful?

19. In the Lord's prayer, according to what measure do we ask God to forgive us?

20. In the parable what measure is set forth according to which we are to forgive our fellow men? Verse 33.

Quotations

1. This parable presents details which are needed for the filling out of the picture, but which have no counterpart in its spiritual significance. The attention should not be diverted to them. Certain great truths are illustrated, and to these our thought should be given. The pardon granted by this king represents a divine forgiveness of all sin. Christ is represented by the king, who, moved with compassion, forgave the debt of his servant."—"Christ's Object Lessons," page 244.

2. But the teaching of this parable should not be misapplied. God's forgiveness toward us lessens in no wise our duty to obey him. So the spirit of forgiveness toward our fellow men does not lessen the claim of just obligation. In the prayer which Christ taught his disciples he said, "Forgive us our debts, as we forgive our debtors." By this he did not mean that in order to be forgiven our sins, we must not require our just dues from our debtors. If they can not pay, even though this may be the result of unwise management, they are not to be cast into prison, oppressed, or even treated harshly; but the parable does not teach us to encourage indolence. The word of God declares that if a man will not work, neither shall he eat. The Lord does not require the hard-working man to support others in idleness.—*Id.*, page 247.

3. But the great lesson of the parable lies in the contrast between God's compassion and man's hard-heartedness; in the fact that God's forgiving mercy is to be the measure of our own. "Shouldst not thou also have had compassion on thy fellow servant, even as I had pity on thee?" We are not forgiven because we forgive, but as we forgive. The ground of all forgiveness is found in the unmerited love of God; but by our attitude toward others we show whether we have made that love our own.—*Id.*, page 251.

INDIA MISSION FUND

RILLA GOODEN, of Selton, Ontario, sends fifty-six cents for the India Mission Fund.

BIBLE NATURE STUDIES

THE revised edition of "Bible Nature Studies" may now be ordered. The new form of this work is much more convenient than that of the first edition. Page and type are the same as "Christ's Object Lessons," but the book has between five and six hundred pages. It is strongly bound, and is sold at the nominal price of one dollar.

This work will be especially valuable to parents and teachers, and will serve as an excellent text-book for the sixth to ninth grades. Those desiring copies should address M. E. Cady, Healdsburg, Cal.

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F. E. Belden, author of "Christ in Song," says, "I had sore throat and cold hands and feet every winter until I put on these common-sense protectors. I would not take them off for any price. The false theory of hardening these portions of the body by exposure, nearly killed me. Until under-garments are made right, it is sensible to splice on."

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GRAND TRUNK R'Y SYSTEM.

Taking Effect June 2, 1901.

Trains leave Battle Creek.

WEST-BOUND.

No. 9, Mail and Express, to Chicago.....	12.15 P. M.
No. 7, Limited Express, to Chicago.....	7.10 A. M.
No. 3, Lehigh Valley Express, to Chicago.....	4.14 P. M.
No. 4, Lehigh Express, East and Canada.....	3.50 P. M.
No. 6, Atlantic Express, East and Detroit.....	2.10 A. M.
No. 75, Mixed, to South Bend.....	7.30 A. M.
Nos. 9 and 75, daily, except Sunday.	
Nos. 3, 5, and 7, daily.	

EAST-BOUND.

No. 10, Mail and Express, East and Detroit.....	3.45 P. M.
No. 8, Limited Express, East and Detroit.....	4.14 P. M.
No. 4, Lehigh Express, East and Canada.....	8.23 P. M.
No. 6, Atlantic Express, East and Detroit.....	2.10 A. M.
No. 74, Mixed (starts from Nichols yard).....	7.15 A. M.
Nos. 10 and 74, daily, except Sunday.	
Nos. 4, 6, 8, and 2, daily.	

W. C. CUNLIFFE, Agent,
BATTLE CREEK.



"UNITED STATES" IS SINGULAR

In his recently published work on "A Century of American Diplomacy," General John W. Foster, former Secretary of State, uses the singular verb in connection with the United States, and is called to account therefor by a prominent critic, who admonishes him that "to make United States a singular noun would require an amendment to the Federal Constitution."

Mr. Foster has spent considerable time and labor in making an investigation of this subject, and concludes from all the testimony he has been able to gather that the point is not well taken.

"I have found," said Mr. Foster, recently, "that in the early days of the republic the prevailing practice was the use of the plural, but even then many public men employed the singular, and of late years the latter has become the rule. Among statesmen who have habitually used the singular verb are: Hamilton, Jefferson, Seward, Blaine, Edmunds, E. J. Phelps, Webster, Benton, Fish, Frelinghuysen, Motley, Reid, Gresham, Silas Wright, Marcy, Evarts, Bayard, Charles Francis Adams, Depew, Olney.

"Of living professors of international law, Woolsey, of Yale; Moore, of Columbia; Huffcut, of Cornell; and James C. Carter, of New York, use the singular. Andrew Jackson was the first president to adopt the singular verb in his official papers. In the earlier messages of the presidents the plural form is usually found; but since Lincoln, all of them, including Grant, Cleveland, Harrison, and McKinley, have invariably used the singular. In the decisions of the Supreme Court during the first half-century the plural form is generally used, but the singular appears occasionally. In later years the court has used the singular. The same remark applies to treaties with foreign nations."—Chicago Record-Herald.

A THIRSTY ORCHID

A most interesting plant, which draws water for itself when thirsty, has recently been found in South America. Its discoverer, Mr. Suver-krop, thus describes it:—

"One hot afternoon," he says, "I sat down under some brushwood at the side of a lagoon on the Rio de la Plata. Near at hand there was a forest of dead trees, which had actually been choked to death by orchids and climbing cacti. In front of me, and stretching over the water of the lagoon and about a foot above it, was a branch of one of these dead trees. Here and there clusters of common *planta del ayre* grew on it, and a network of green cacti twined round it.

"Among the orchids I noted one different from the rest, the leaves, sharp, lance-head shaped, growing all round the root, and radiating from it. From the center, or axis, of the plant hung a long, slender stem about one eighth of an inch thick by one-fourth inch wide, the lower end of which was in the water to a depth of about four inches.

"I at once went over to examine my discovery. Imagine my surprise, when I touched the plant, to see this center stem gradually contract, and convulsively roll itself up, like a tape.

"But more surprising yet was the object and construction of this stem. I found on close examination and dissection that it was a long, slender, flat tube, the walls about one thirty-second of an inch thick, cellular in construction, open at the outer end, and connected at the inner end to the roots of a series of hair-like tubes.

"By subsequent observation I found that when the plant was in want of water, this tube would gradually unwind till it dipped into the water. Then it would slowly coil round and wind up, carrying with it the amount of water that that part of the tube which had been immersed contained, until when the final coil was taken, the water was dumped, as it were, directly into the roots of the plant. The coil remained in this position until the plant required more water. Should the plant, however, be touched while the tube is extended, the orchid acts like the sensitive plant (*mimosa*), and the coiling is more rapid."

THE GUILLOTINE

The guillotine is an instrument used in France and elsewhere for inflicting capital punishment. It came into special prominence during the dark days of the great French Revolution. Traces of the use of a similar instrument long before the Revolution, however, are to be found in Scotland, England, and various parts of the Continent; indeed, it is believed that this method of decapitation originated with the Persians.

In the Antiquarian Museum at Edinburgh, Scotland, is preserved a rude guillotine called the "maiden," constructed to execute the regent Morton in 1581. It was last used to decapitate the Earl of Argyll in 1685, the father, the Marquis of Argyll, being the previous victim in 1661.

The guillotine was never brought into general use in England; but until 1650 there existed in the forest of Hardwick a mode of trial and execution for theft, called the gibbet, the condemned being beheaded on a machine called the Halifax gibbet. During the Middle Ages the machine was in general use in Germany. From the thirteenth century it was in use in Italy, confined, however, to the execution of criminals of noble birth. It was in use in France until 1632, but for the execution of nobles only; and not until Dr. Guillotin proposed it, was it ever used for all classes of criminals. His resolution was presented to the French Assembly in 1789, but was not formally adopted until October, 1791. After a machine was constructed, and its efficiency tested, it was erected on the Place de Gieve for the execution of the highwayman Pelletier, April 25, 1792. At that time the machine was known as *louisette*, or *la petite louisone*, but in April, 1792, the French Assembly officially recognized its originator by naming the instrument *la guillotine*.

The statement is frequently found in print that Dr. Guillotin perished on the guillotine, but this is an error. He survived the Revolution, and died peacefully in 1814.

W. S. CHAPMAN.

THE SQUID AND ITS FOES

WALKING, one summer's day, across a bridge by the seashore, I chanced to glance over the side, and saw there a school of squids lying quietly in the salt water. They were almost perfectly still, holding their position against the slight tide by gentle motions of their fins. Picking up a pebble, I dropped it into the water near them, and, in a flash, every squid had disappeared. I looked carefully to find out, if possible, where they had gone, and soon discovered, to my surprise, that they had not moved at all. They had simply assumed a color so like that of the sand over which they were swimming that they were only with great difficulty distinguished lying on the sandy bottom.

In the skin of the animal are thousands of minute drops of brilliant colored liquid. The squid can flatten these drops out so as to spread them over his whole surface, thus giving to his body the color of the liquid; or he can contract them into a very small compass, so that they almost disappear, and then the body assumes a grayish, transparent appearance. It is a beautiful sight to hold a live squid in one's hands, and watch

the play of colors flashing over the body as these color drops contract and expand. Since the drops are not all of the same color, some considerable variation of colors is possible, and by taking on the hue of surrounding objects, the squid frequently escapes the observation of the foes that seek to devour him.

But the chief means of escape is an extraordinary power of locomotion. The squid's body is surrounded by a large sack, called the mantle, which is attached along the back, but widely open around the neck—much as if one were placed in a meal-bag which was sewed to the back of his coat, but open around his neck. Ordinarily this sack is so widely open at the neck that water flows in freely, and completely fills it. When the squid is frightened by some large enemy trying to capture him, the muscles around the neck are at once contracted, closing the opening entirely. Then the animal violently contracts the muscular walls of the sack, squeezing the water very forcibly. The water thus pressed on must find an exit, even if it can not get out around the neck. Communicating with the cavity of the sack is a little tube having a wide opening into the sack, but a very small one on the outside, underneath the head of the animal. This tube is commonly pointed forward, and is called the *siphon*. When the water in the sack is so pressed by the muscles, it is squeezed out through this tube in a very forcible jet. The force of the water thus shot out is such as to drive the squid backward with great rapidity. When the squid forces the water out of his mantle cavity in this manner, the whole animal shoots backward, almost with the velocity of an arrow.

But this is not all. Inside the mantle cavity the squid possesses a little sack of very black ink. The mouth of this ink-sack is close to the siphon through which the water is forced out, and when the animal, by its muscular contraction, forces out the water through this siphon, a little jet of ink is forced out with it. This ink spreads rapidly through the water, and in a fraction of a second it effectually conceals the squid beneath its dark cloud. When, therefore, a large fish swims toward a school of squids, hoping to get a meal, he is sure to be met with a cloud of ink.

While the squid feeds upon smaller animals, matters are nicely balanced, since he, in turn, forms the food of larger ones. His body is muscular and soft, and has no skeleton or other hard parts to break the teeth of the fishes which try to devour him. There is hardly a fish of any considerable size that does not regard the squid as a dainty morsel of food. Even large marine animals do not disdain this exquisite delicacy; for squids form a considerable portion of the food of giant whales.

The squid is an animal with a long history, and has, for many thousands of years, been extremely abundant in all seas. It is among the most interesting objects at the seashore. A more beautiful object can hardly be found than a glistening, almost transparent squid, with its bright, greenish eyes, and its flashing play of changing colors.—Prof. H. W. Conn, in St. Nicholas.

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