HEALTH

TURNER-COLLINS

REVISED

MALDEN HEALTH SERIES

HEALTH

BY

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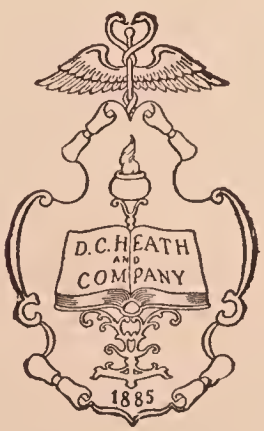

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PREFACE

One of the most important and far-reaching Public Health movements of the present century is the rapid development of a systematic and positive Health Education Program on the part of the public schools. This program as it is understood today involves an organized procedure within a school system which develops such habits, attitudes, and knowledge as will best promote the physical and mental health of the pupil. Positive health is the dominant note. We shall continue to correct the defects in school children and to give information as such, but this is not enough. We recognize the responsibility of the school system, not only to give special consideration to those children who are ill, but also to so organize the whole school program as to prevent well children from becoming ill, and to promote normal, happy, buoyant health among all children.

The general organization of such a program is fairly well agreed upon. It involves the training of children during the first few grades in proper habits of living. This training is based upon the natural interests of the child and it is primarily a process of motivating the child to do the right thing without a conscious attempt to convey knowledge as such. In

the intermediate grades, the first task is to answer the "why" of these health habits and then year by year to expand the knowledge of the child. This informational material is *in addition to* the continuous motivation program. It is not a substitute for it. The child's continued interest in *doing* is the central theme of the health program throughout all grades. The informational material should be expanded with the natural interests of the child, to furnish the reasons which underlie the development of proper habits.

The teacher is the chief stone in the arch of school health. She holds together the work of the various specialists in the health field, interprets the program to the child, and makes it real. Without the teacher's sympathetic coöperation every phase of a school health program will fail to accomplish what it should. Her task is not merely one of instruction. It means allowing health to take its proper place throughout the school health program, the development of health attitudes as a normal interest in life, and the correlation of health with other subjects as these are built into the child's personality. It means a practical interest in the health improvement of children. To the teacher who loves children, health education appears not as a new task but as an opportunity and an ideal. Although such a program may involve new activities for the already busy teacher the authors have no hesitation in recommending it, for it has been proved again and again and again that teaching from this view-

point is more enjoyable than the mere presentation of subject matter.

This book has been developed from three years of experimental studies in the intermediate and higher grades of the city of Malden, Massachusetts. All of the material and suggested procedures have been found successful in actual practice. Many devices are suggested in such a way that those which are most practical for the individual room may be selected and developed by teacher and pupil. It is not merely a physiology but also a health program for pupils who have reached the point where they wish to know the reason for the health habits they are being taught. It may be used in the grades or in the one-room rural school where the responsibility for the health program is divided among individual pupils according to their age and accomplishments.

The authors desire to express their sincere appreciation for the assistance of the school people of Malden. Superintendent F. G. Marshall and the School Board have made possible these studies as a part of their program for developing the best possible health activities for the school children of their city. The late Lewis Wightman of the Faulkner School, Mrs. Cora Dempsey, Principal of the West School and the teachers serving under them have given innumerable helpful suggestions and constructive criticisms and have individually assisted in the development of the work in a most cordial and sympathetic manner. The

authors also express appreciation for the assistance of Miss Bernice Andrews of the Cutler School, Somerville, Massachusetts, and Miss May Barry, formerly of the Faulkner School, Malden, Massachusetts, for criticisms and assistance in the final redrafting of the manuscript.

The authors also wish to express grateful appreciation to the Department of Hygiene of Harvard University for permission to use the posture chart developed in that department, and to Miss Bertha M. Wood for permission to use one of her stories.

C. E. T.
G. B. C.

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HEALTH

I

WHAT IS HEALTH?

Health! This is such a familiar word that when you are suddenly faced with the question, "What is Health?" you think at once, "How easy! Any one can answer that!" But discuss it for a few minutes in class. You will be surprised to see how many different ideas are expressed.

Can you make a good definition of health? It is not so easy as making definitions in arithmetic and geography, for health is a feeling. It is better expressed in what you do than in what you can say about it.

It is something more than not being sick, isn't it? There are some days when everything goes on like a song. You just cannot walk; you have to skip and run and hop! It seems as though you cannot keep still; you long to laugh and shout and sing! Nothing troubles you; you could not be cross! You are cheerful and happy, ready for everything—play, work, or

whatever comes along. That is the feeling of Health!

Then there are other days. You are not exactly sick, but somehow everything goes wrong. You do not care if you never do anything. You are tired and cross. Everybody picks on you. Once in a while there are days worse than that. You lie in bed or you stay in the house; you are not hungry and you are not happy. You are sick.

What price would you be willing to pay to get rid of the bad days and make every day a Health Day? Here is the story of how one boy did it.

This boy was born in the city of New York many years ago. His people were wealthy and his father was prominent in public life. The family was a happy one, and it looked as though he was very lucky indeed. Unfortunately he had missed the most important thing of all, without which it is very hard to be really happy—he had missed Health.

When the boy was your age, he was so frail that he could not go to school with other children. He had to be taught at home by a private tutor. He was not strong enough to play the rough games that boys enjoy.

He was very bright and was much interested in everything he saw or heard. A great deal of his time was spent in studying plants and animals, which he loved. He loved books, too. He knew almost by heart the lives of great Americans and explorers. He dreamed of doing great things himself some day, for he was ambitious and had strength of mind enough almost to make up for the frailness of his body.

In spite of all his courage and ambition, there were often days when he felt too tired and weak to do much except read, or listen while some one read to him. He used to write often in his diary, "I am very tired to-day. I was awake nearly all night with the asthma." This is a disease which causes difficult breathing. Night after night it kept him awake, so that day after day he was tired and worn. Finally his father decided that if the boy were ever to throw off this trouble, he must make a big fight against it at once.

His family's wealth was a big help, for there was money with which to get everything the boy needed. As a beginning, his father fitted up for him a little open-air gymnasium in the house. Then he took his son to it, and said: "This is yours. I hope you will use it faithfully to help you build a strong body. You

have a splendid mind, but you will never be able to go very far unless you build a body which will do the things that your mind wants to do. You yourself will have to train and build your body. It is going to be a long, hard job, but you can do it. I believe you have the determination to do it."

The lad lived up to his father's expectations. When he was not as old as most of you, he began the long, hard job of building a strong body out of a weak one. Day after day found him exercising in his open-air gymnasium to build the broad, deep chest and strong muscles that were to support him in later years. His food, rest, study, play, and exercise were watched with greatest care.

By the time he went to college, he was a good all-round athlete. He stood high in his studies, too. He was the best boxer in his class, in spite of the fact that he was extremely nearsighted and was obliged always to wear his glasses. Still he had to be saving of his strength. He spent much time exercising and playing in the open air to keep free from his old enemy, the asthma. Even after he left college and was beginning to be well known in public life, he found it necessary to go out West on a ranch for a long time. There he lived a simple out-of-door life which further strengthened the body he had been working so long to build.

Years went on, and the man was sought for one important position after another. He was governor

of his state, vice president of his country, and finally he filled the office which is the highest honor given to an American—he was President of the United States! Many of you have already guessed his name —Theodore Roosevelt.

Theodore Roosevelt has given us a fine example of how a boy can develop his body if he has the determination to do it. *Health is a result of what Nature gives you plus what you give yourself.* Some of you have had the best kind of start. Others are not so strong. Probably not one of you has had so poor a beginning as Roosevelt, for you remember that when he was your age he was so sickly he could not even attend school. Have you the strength of mind to undertake building your body with the faithfulness and courage of a Theodore Roosevelt?

Questions to Answer

1. What is health?
2. How can one earn health?
3. Tell about any person you know who has done something worth while that he could not have done without health.

Things to Do

1. Tell in your own words what you can learn about Roosevelt.
2. Arrange the following words to make true statements:
   Your health affected is more by you do what than by what know you.
   Health a result is what of Nature you gives plus what yourself you give.

II

THE HEALTH GAME

Let me tell you another true story—a story of two boys very like any of you. Ted Miller and Jack Brown lived not far apart in a New England village, and were the best of friends. Ted was a year older than Jack and was always larger and stronger. When they were in the fourth grade, Jack was quite frail and sickly. He took such good care of himself, however, that by the time they finished grammar school he had gained much in health and strength.

The two boys entered High School together, anxious to do well in their studies and especially anxious to make the football team. Ted still had the advantage, for he was big and athletic in build. He made the team the first year, which is unusual, you know. Can you imagine how proud he was? Jack was proud of him, too. He tried hard to make the team himself, but the best he could do was to get a place on the second team.

After the first football season was over, Ted began to be careless. You see he had always been so well that he thought he always would be. Then because he made the team so easily his first year he felt as though it would be very easy to stay on it. He seemed to think it did not matter whether or not he got to bed on time, and he ate whatever he wanted even when he

knew it was not good for him. Of course no one noticed any change in Ted at first. Even Ted himself did not know that anything was happening.

The second year of football came. Ted played remarkably well. He was naturally one of the strongest boys in school, and with a year's experience he was one of the best men on the team. Jack was still plodding away, although he had improved enough to earn a place as substitute. At the end of that season, Ted was elected captain of the team for the next year.

Perhaps success was too much for him. Perhaps he had never understood that even a splendid body needs the best of care. Anyhow, he became still more careless of his daily habits. He began to walk in a slouchy way because he thought it looked smart and called attention to him. He wasted a lot of his time

in the evening at shows and hanging about the streets, smoking cigarettes. This meant that he always came home late. By the time he had half finished his lessons for the next day, it was long past his proper bedtime.

Jack liked to have a good time but he never broke training. He did his home lessons early in the evening and got to bed at a regular time. He did not smoke cigarettes with Ted because he knew that while he was growing, cigarettes would keep him from building the best kind of body and from doing his best work in school. He knew also that alcohol, as well as tobacco, is always forbidden to men in training for athletic work, because it keeps a man from playing his best in the game.

Then the third season of football came. At last Jack made the team. Can't you guess how happy he was? He was really one of the best players on the eleven. Of course Ted was captain, but everybody knew that the success of the team was due almost as much to Jack as to Ted.

Ted worked hard for the good of the team, but all the boys could see that he did not play as well as formerly. In spite of this they elected him again as captain. It seemed only fair to make him captain for his last year in school after he had played on the team all through high school and had been its captain for a year.

In that last year the crash came. Ted had become

more and more careless about his health. He smoked a great deal. His appetite was so poor that he did not eat the food his body needed. He was always having indigestion. He thought it was smart to be out every evening with some rough fellows. He never had enough sleep and was all the time threatened with failure in his lessons.

During the football season he tried to take good care of himself, but in spite of that he could not play well. He was nervous and disagreeable. Anyone could see that he was a different boy. After the first few minutes of a game, he would get all out of breath and have to be taken out. He found, too, that it was not so easy to shake off his old habits. Every boy on the team soon knew that their captain was not keeping the rules of training which the coach demanded. Ted's years of bad habits brought their punishment at last. After the third game he lost his place on the team for breaking training.

Who should become captain in his place but Jack! For many years he had taken the best care of his health, and now he had a body of which he could be proud. His muscles were tight and hard; he did not get out of breath easily. No matter how fast and wild the game, he never lost his nerve. With such a captain, every fellow on the team was honor bound to do his best. They won every game in the last half of the season.

Many years have passed since then. Jack is a suc-

cessful business man with two boys of his own. Ted started out in a business house, too, but it seemed that he never had the health and energy to push himself ahead. Whenever I think of these two boys, it makes me realize how easy it is to spoil a splendid body by not taking good care of it. It is quite possible, also, to build a strong, athletic body from a frail one, if a boy is willing to pay the price.

Among the boys you know there are some like Ted and others like Jack. I wonder which one *you* are like. Are you going to high school or to work with the

strong, well-trained body of an athlete? Or are you going with a frail body that cannot do the things you long to do, just because you did not train and build that body when you had the chance?

Perhaps you have never thought much about the importance of taking good care of your health. Perhaps you have never thought much about health, anyhow, except when you were sick. Of course you have always known that some people are strong and healthy and others are not. Do you think health is just an accident?

Baseball players, football men, and all other athletes must be topnotch in health. Surely everybody who wants to be useful and happy should be equally careful to keep in the best condition. For this reason they, too, are in training, and must follow important rules for healthful living. Training is something more than merely avoiding alcohol and other harmful substances —it means keeping every health rule.

Would you like to know the way in which men have made themselves alert, strong, manly, and always ready for a difficult task? Would you like to know the secret by which some women keep well and beautiful? If so, you will like to study Health. We are going to find out what soldiers and ball players and other people do to keep fit. We are going to find out also what you yourself can do to build a strong body of which you will be proud, and to become a well and cheerful person with a likable disposition.

Here is another reason why you will like to learn the rules of health and play the Health Game. Everybody can *succeed* at it. Hundreds of boys and girls and men and women have shown that they can improve their bodies if they pay attention to it.

Even if one's body is not very strong there is no reason to be discouraged. Charles Darwin, one of the greatest scientists of the world, was never strong enough to work more than a few hours a day. Robert Louis Stevenson, who wrote "Treasure Island" and many other delightful books, never became very robust. Yet he was always cheerful and gave a great deal of pleasure to other people with his stories and poems. That is, of course, the most important thing—to make people around us happy and to do things worth while. Sometimes boys and girls who are not strong learn to take such good care of themselves that they live longer and do more for the world than others who began with the best of health.

Health is more than learning something out of a book. It is chiefly *doing*. Of course it is not always easy to live up to health habits, but who is afraid of a little hard work for something so worth while?

Questions to Answer

1. Why does every one desire health?
2. What habits help a school athlete?
3. What is to be learned from the story of Jack and Ted?
4. What do we learn from the lives of Darwin and Stevenson?

III

GROWTH IS A SIGN OF HEALTH. ARE YOU GROWING?

Did you ever have a garden? What fun it is to watch the plants grow! If they grow fast, you think it is a pretty good garden. If some of them do not grow as fast as they should, you try to find out why. The farmer judges the success of his crops by the way they are growing. If they stop growing, he tries to find out what is wrong. Growth is natural and you have a right to expect it.

An animal's health, also, is shown in growth. Stock raisers watch the growth rate of their colts and calves. You watch your pets grow, too. Every mother watches the growth of her baby. She knows that a healthy baby grows much faster than a sickly one.

Every boy wants to grow into a strong, husky young man. Every girl is just as anxious to grow into an attractive, healthy young woman. It is not only interesting but perfectly natural to watch your own growth. Children do that in two ways—by seeing how tall they grow, and how much they gain in weight. Do you know your height and weight? Are you weighed and measured regularly so you can see how fast you are growing?

Many schools have scales of their own so that all

the children can be weighed every month. They are measured twice a year—in September and in January or February. If you are not being weighed and measured at school, can't you find a way to do it? The greatest fun of all in playing the Health Game is getting weighed and seeing how fast you grow.

You would not enjoy putting money in a bank if you did not know how much you put in, would you? We might make believe there is a health bank where people store up energy instead of money. Gaining weight is putting money in the "health bank." Health

banking is much more fun if you get weighed every month; then you find out just how much you have put in. You can have a class weight record on the wall. Perhaps you can have weight cards to carry home each month just as you do your report cards.

From your weighing and measuring you can find out also whether you are up to the average weight for your height and age. The tables in the back of this book tell you what is average weight. When you know how tall you are, perhaps your teacher will help

you to find out where you stand in relation to the average. You may be able to do it yourself.

Do you want to know whether you weigh as much as the average boy or girl of your height and age? It is difficult for some children to be up to average weight because they are naturally slender. Other children are naturally stocky and are above average weight. Almost every one varies from the average. Very few children are exactly average weight. There is nothing to worry about even if you are a little below the average if you are gaining regularly each month. If one is unusually thin, he should take special care to do those things which will help him to gain weight.

One of the reasons for being underweight is a shortage of muscle and fat. Is there any one in the class who has better muscles than your own? How do you know? Some children have stronger muscles than others, because they use their muscles more and have in their diet more of the food substances that build muscle. If you are underweight, do you suppose it is because you have not enough weight in your muscles? Are they hard and strong? Or are they small, flabby, and weak? What can you do about it?

The first place where the body stores fat is on the inside. When hunters kill wild animals in the woods, they find that even the leanest ones have a storage of fat within the body. So when you begin to store up fat, it does not show on the outside, but it does show in your weight.

Fat is also stored in a thin layer under the skin. That helps to keep you warm. You know that thin people usually get chilled much more quickly than others. The little padding of fat under the skin makes you look better, too. It is surprising how much a very thin girl improves in looks when she adds a few extra pounds of weight. Moreover, fat is stored food which the body can dissolve and use when it is needed.

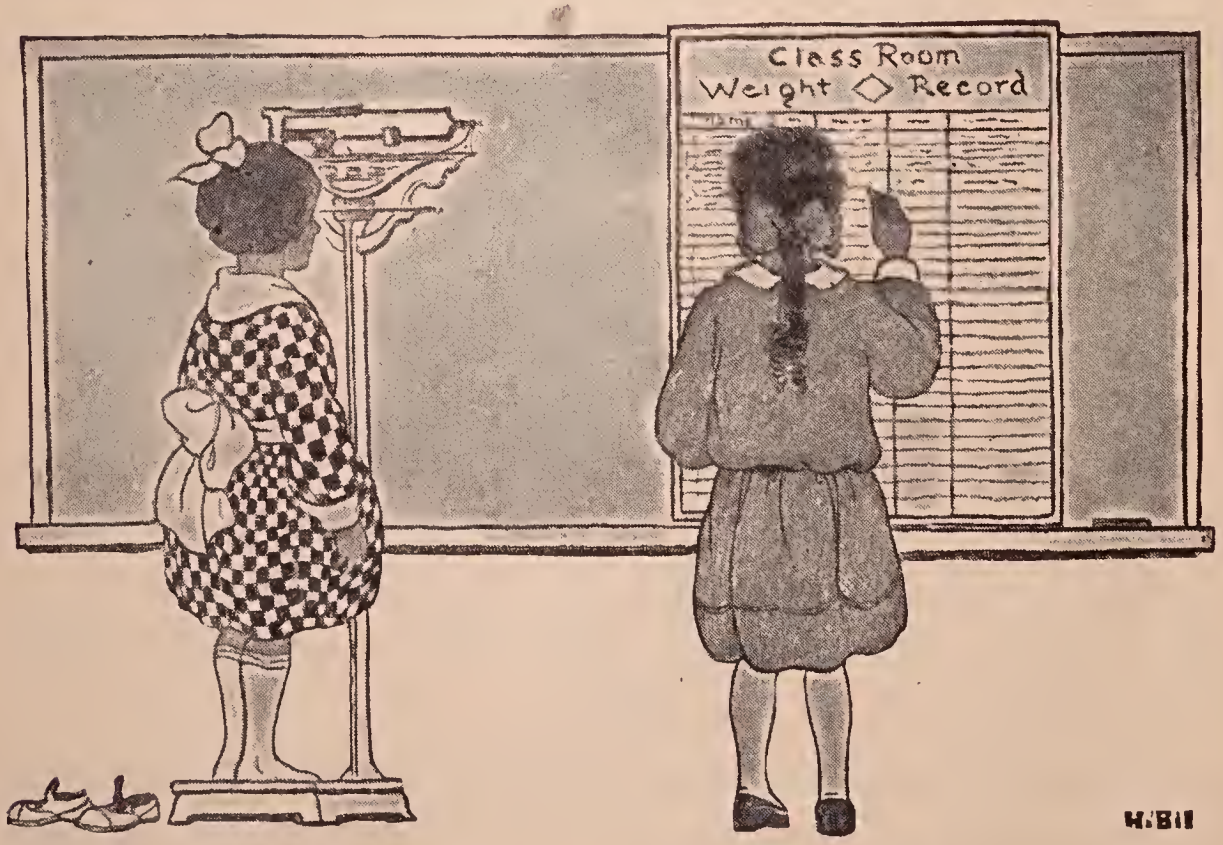
You should understand now why it is important to be somewhere near the average weight for your height. If you are very much underweight, you are quite sure to be short of muscle and lacking in fat. That means that you are not so strong as you ought to be, and that you do not have the little "fat account" which makes the body so much more comfortable and gives you something to draw upon in time of need.

Perhaps you are wondering if there is ever such a thing as being too much overweight. It is usually thought that if a child is more than one-fifth above the average weight for children of his height and age, he is too heavy. For example, suppose the average weight for your height and age is 80 pounds. One-fifth of 80 pounds is 16 pounds. If you are more than 16 pounds above 80 pounds, you may be too much overweight. That is, a child who weighs 96 pounds or more when the average weight is 80 pounds is usually considered to be overweight.

You do not need to worry unless you are *very much* overweight, but perhaps you would be more happy and

comfortable if you did not weigh so much. You should not try to reduce your weight, however, unless you do so under the direction of some one who understands what foods you need to keep you well and what kinds of exercise are safe for you. The best way to lower your weight is under the direction of a doctor or a hospital clinic.

A while ago we said that you would like to study Health because every one can play the Health Game and win. Do you remember the story from "Alice in Wonderland," where the tortoise and the other animals had a race? "When do we start?" they asked. "Any time!" was the answer. "How far do we run?"



"As far as you like!" "Who wins?" "Oh, we all win!" Your race is like that! You begin any time, go as far as you can, and you each win!

Your test in Health comes on weighing day. Your weight card shows your score. When you improve your habits of living, it is sure to show in your weight sooner or later. Perhaps it will not show immediately. So do not be discouraged if you do not gain at once even though you have been trying very hard. You have succeeded when you have improved your habits, and you may be sure that soon your weight card will show a good score.

Look at the tables in the back of the book and see what is the average gain per month for boys and girls of your age. Children who live where there are cold winters usually gain most in the fall and early winter months. They do not gain quite so rapidly through the spring and early summer.

Farm animals are often thin in summer, but they fatten in winter when they are kept inside. Probably they are thin in summer partly because of a change of food and partly because they run their flesh off. It is possible, however, to fatten an animal at any time if you can keep up its appetite and limit its exercise.

Boys and girls are not interested in fattening, but in growing. They want to grow tall as well as to gain weight. Watching your growth is one way of watching your health, for it is just as natural for a husky child to grow rapidly as it is for a sturdy animal.

There are many reasons why children sometimes do not grow as fast as they should. Perhaps, like Roosevelt, they had a poor start and must make a long, hard effort to catch up to the average. Some children do not grow as they should because they never get enough sleep in the fresh air. Others do not eat enough of the right kinds of foods. Still others do too many things in addition to school work and never have enough time for rest and play. Boys sometimes injure their growth by the use of tobacco.

If you have not made average growth—that is, if you are not near the average weight for your height and age—what can you do about it? If you are nearly up to the average, how can you stay there or do even better? In both cases the answer is the same—play the Health Game.

Let us speed up our growth. Play the Game hard. Make every day a Health Day and every boy and girl First Class in Health.

Questions to Answer

1. Why is gaining weight each month a sign of health?
2. How tall are you, how much do you weigh, and how much do you expect to gain this year?
3. How much have you gained during the past year?
4. Are your muscles large, hard, and strong? How can you make them so and keep them so?
5. Where is fat found in the body?
6. Why can every one play the health game and win?

Things to Do

1. Make plans and preparations for a weighing day once each month, and for a measuring day at weighing time in September and January.
2. Keep a classroom weight record. On this record, show the weights of children in your class each month. Keep the record where it can be seen.

IV

WHAT HABITS MAKE YOU GROW?

Not long ago some college women of the Middle West chose from their number the "most beautiful college girl." The girl selected was not only beautiful, but strong and vigorous in body and clever in mind. She was a splendid athlete, led her class in studies for the year, and was popular in college affairs.

Read what she said in a letter to some school girls in Malden, Massachusetts. These girls were about your age and were playing the Health Game.

"When I was twelve years old, no one—not my best friend—would have said I was beautiful, I am sure. I was thin and colorless. But, fortunately, I had an intelligent mother who saw to it that I had plenty of eggs and milk and vegetables and fruit to eat and that I acquired the best ideals of cleanliness and exercise. By the time I was fourteen these efforts were beginning to show results in a more attractive, healthy body and lots of energy.

"I know it is hard at first to remember always to do this or that, even though you are sure it is going to contribute to making you attractive, but every time you do remember makes the next time much easier.

"Go to it! Remember you all have the opportunity to develop into splendidly healthy, attractive girls. I wish you the best of luck!"

Here is an example of the importance of right living habits in developing health and beauty. Can some of

you boys suggest ways in which right living helps to develop good athletes?

Perhaps you have read in the papers that when young men come away from the army camps after only a month's training in summer, they are much improved in health. They have gained in weight, their posture is better, and many physical defects have been partly or wholly corrected. The reason is just that their daily program has been a health-building program, under the care of men who understand the body, how it works, and how to make the most of it.

Right habits every day are important in keeping grown-up people in the best physical condition. How much more important they are for boys and girls who want, not only to keep fit, but also to grow!

Here are "The Rules of the Game" as issued by the American Child Health Association:

1. A full bath oftener than once a week.
2. Brushing the teeth at least twice every day.
3. Sleeping long hours with windows open.
4. Drinking as much milk as possible, but no coffee or tea.
5. Eating some vegetables every day.
6. Drinking at least four glasses of water a day.
7. Playing part of every day out of doors.
8. A bowel movement every morning.

These eight rules are important, but as you continue the study of health you will doubtless make many others. Moreover, you can find many interesting things to do which help you to remember the rules and which make half the fun of playing the Game. How would you like to make some posters illustrating these Rules?

You may find it is easier to keep the rules if you make a record of your habits every day. If you have not made a book for records, you can rule a piece of drawing paper or composition paper. Plan for room to write down every day what fruit you eat, what time you go to bed, how much water you drink, or any other health habits. It is surprising how much more likely you are to remember a habit if you know you are going

to keep a record. Sometimes it is surprising to see from your record what a poor game you are playing.

Of course health records in themselves are not very important. The place where good habits will really show is in your growth and your general health. Writing them on paper merely helps you to practice them more successfully. It also give your classmates and teacher a chance to look over your record and suggest what habits need to be improved. You will not want to try all the projects suggested above, but you may like to try some of them.

It is not necessary that the football player should know *why* he must follow certain rules, but he is much more likely to follow the rules well if he does understand them. It is not necessary that the boy who plays the Health Game should know all the reasons why he must follow certain rules; but, like the football player, he is much more likely to play a good game if he does understand why.

Wouldn't you like to know why it is that you need to drink so much water every day? What are the harmful effects of tea and coffee that are so much talked about? Why does being cheerful help us to be healthy? Why is the right amount of sleep so important? Why does the use of alcohol and tobacco hinder you in building a strong body? How could eating sweets between meals make you thin? Aren't there a lot of things that you would like to have explained right now?

That is what we want to do for you in health lessons. We want to talk things over with you and explain the reasons for the health rules you have already learned to keep. We shall give you some idea of what that marvelous body of yours is like and how it works. We will try to answer that question "Why?" But please do not wait to practice the rules of health until you find out all the reasons.

Questions to Answer

1. If you have gained or lost during the month, can you tell what habits may have been the cause of it?
2. Can you name the eight habits which are called the Rules of the Health Game?

Things to Do

1. Organize your class into divisions or teams, appoint captains, and have a morning inspection for cleanliness every day. Let the class decide what items of cleanliless are to be checked. A team with a perfect record gets a score of one. Keep your score records on the blackboard. Change captains often.
2. Start a health scrapbook in which you can illustrate your health lessons. Each pupil may make a scrapbook of his own, or one book may be made by the class as a whole.
3. Make posters illustrating the Rules of the Game. Have all the rules represented.
4. Keep a daily record for two weeks of one or two health habits which you may select, such as how many glasses of milk you drink, how many glasses of water, what fruit or vegetables you eat during the day, and what time you go to bed at night. See if you can improve your record.

V

A LIVING SHIP

Have you ever seen a steamship? Wouldn't it be interesting to spend a day on a big ship? What fun it would be to go over the boat! We would see all its rooms, the method of steering the ship, the big engines which make it go, the manner of feeding the engines with fuel and keeping them in order, the captain's quarters and the rooms where the people on the boat live. We could see how the captain's orders are carried out, and how the great ship proceeds busily and cheerfully on its task of making people happy and bringing to us the things we need from all parts of the world.

We may think of the body as being like a beautiful ship. Surely we must give as good care to our bodies as the captain gives to his boat. A ship with a captain who did not know how to run it would be very likely to get into trouble. It could not be very useful, and might even be wrecked.

Of course the captain might have very careful rules for running the ship. But unless he understood what his ship was like and how the various parts worked, would you feel safe in setting out on a long voyage with him?

You have been given rules for running your living ship, but if you are going to make a long safe voyage,

would you not like to know something of what your ship is like and how its many parts work? Your body, like the ship, has a great many different parts, each suited to its own particular work. Let us begin by finding out the most important parts of the body.

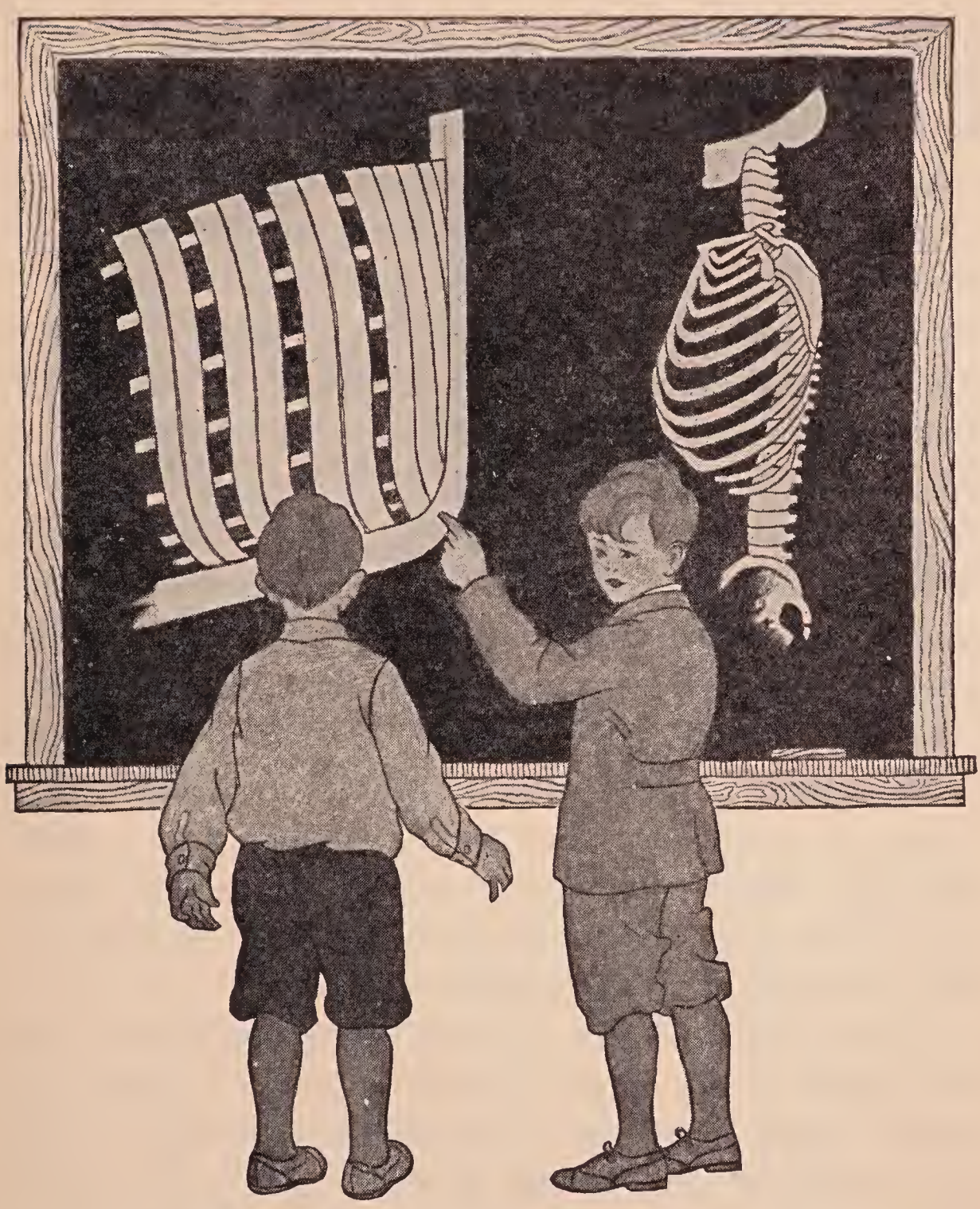
Perhaps some of you have seen the building of a wooden ship. First the workmen lay the keel, which is a heavy planking that runs along the bottom. The heavy timbers which form the frame of the ship are attached to the keel.

Look at the pictures and see how much the framework of the body is like the framework of the boat. When you lie on your back, your backbone and ribs are in the same position as the framework of the ship.

The bony framework of your body is called the skeleton. It includes not only the bones of the body proper, but also those of the head and the arms and legs. Your bones are still growing. Are you building the sort of framework you want for the rest of your life?

Away down inside the ship is the firebox. There are the fires which make the steam to move the ship. Your body has a firebox, too, and you like to kindle the fires at least three times a day. Your firebox is called the stomach. What do you use for fuel? Some kinds of fuel are better than others for a ship. Do you not suppose some kinds of foods are better than others for boys and girls?

When the ship is completed there are parts which



make it go. They are the large shafts which move and turn the propeller much as the driving bar turns the wheels of a railroad engine. In the body there are muscles which pull on different parts of the skeleton and make it move.

Put one hand on the big muscle of the other arm. If you double up the arm you can feel the muscle working. If you put your hand on the elbow and move the arm up and down you can feel the movement of the bones. When you double up your arm, are you proud of your muscle?

Every movement of your body is due to the contraction or shortening of some muscle, or of several muscles acting together. When you think of how many different things you can do with your body, you realize how many different muscles you must have. See how many movements you can make with your hand. Move each finger separately, if you can. You learn to do different things with your hands by training your muscles.

Then there is the part of the ship from which everything is managed. In front is the pilot house. Through the windows the pilot looks ahead as he steers the ship. Your body, too, has a pilot house. What are the windows called?

From a place near by the captain directs every movement of the ship. This is done by an elaborate set of signal wires or a real telephone system which runs to every part of the boat. The captain's place in the human ship is the brain. Your brain is in a neat little box of bone, called the skull. From the brain, nerves run to all parts of the body.

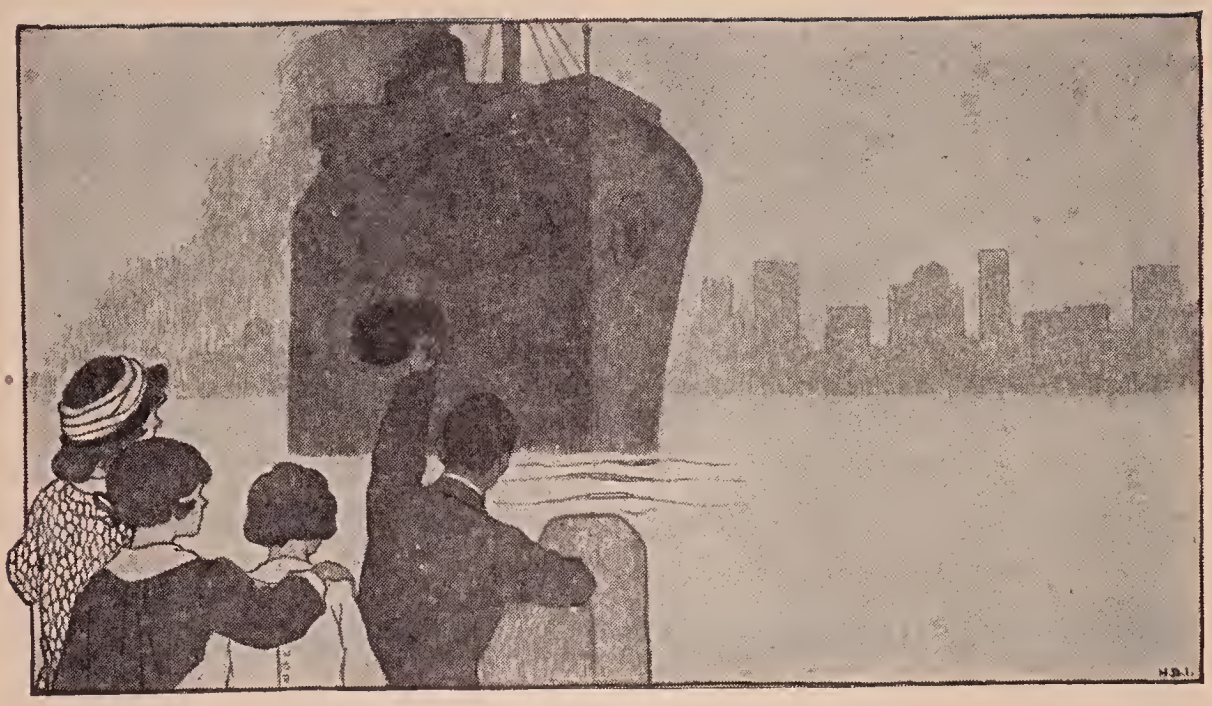
Some of these nerves are quite large as they leave the brain. If you could cut one in two and examine

the end of it with a microscope, you would find that it is very much like a cable of wires which leaves a central telephone office. That is, there are a great many "wires" inside this large tube, and each "wire" is carefully separated from the one next to it. The nerves and the brain make up the nervous system. Over the nerves are sent messages from the brain to all parts of the body, or from all parts of the body to the brain.

The paint on the outside of the ship is like the skin of the body. What is the paint for? Some of you will say it is to make the boat look well, and some will say it is to keep the wood from rotting. Both are right. The paint is for both protection and beauty. The skin serves the same purposes for the body. It protects the parts underneath from injury, and if the body is in good health the skin will be clear and beautiful.

The best ships are kept very clean, inside and out. The decks are scrubbed, the different parts of the boat are washed, and the outside is regularly cleaned. You already know many rules for the cleanliness of your own body. Do you practice them? One thing which people never forgive is a lack of personal cleanliness. Being dirty may not always make you sick, but it certainly makes you disliked by other people. The clean boy or girl stands a much better chance of succeeding. The clean boy or girl stands a much better chance of making friends.

Finally the ship goes to work. How proudly she



sails the seas! Her decks are firm and level. She is not warped or tipped. You like to watch her as she cuts her way through the blue water—so clean, straight, sturdy, well built, a thing almost alive. I wonder if you ever think of the way you carry your body, and the way you stand and sit. Are people who see you pleased with the way you carry your human ship?

Every ship has some useful work in the world. Perhaps she carries people from one port to another, —people who are traveling on important business, or people who are traveling for pleasure. Perhaps she carries important cargoes of supplies from far-away places,—leather for shoes, wool for warm clothes, or good things for boys and girls to eat. All parts of the ship must be running smoothly and doing their work

well if the ship is to find her greatest usefulness in the world.

Did you ever hear Kipling's story of "The Ship that Found Herself"? This beautiful ship was on her first voyage. One might have thought that every part would rejoice in its work—that it would be happy and proud to belong to such a stately craft. Not at all. Each part was jealous of some other. Each feared that it was being imposed upon in carrying more than its own share of the work. Near the end of the voyage a great storm came up. The ship was tossed about wildly. The great planks creaked, the masts shivered, and the bolts and rivets were hard put to hold tightly in their places. But the storm passed by. As the noise and confusion died away, the grumbling and complaining also ceased. In its place was the harmonious song of all the parts working together. The good ship had found herself.

I like to think of this story in connection with the human body. All parts of the body must work together and be well cared for if a boy or girl is to have a happy, healthy, and useful life. Every boy and girl must do his part without fussing or complaining if your class is to be a happy, healthy, and useful class.

In the rest of our health lessons we are going to learn more about the parts of the body. If you are very anxious to learn about some particular part or the reasons for some special health habit, you may hunt up that chapter and study it before the others.

The lessons may be changed about in any way you like. But unless you have some real reason for skipping about the book, studying different chapters here and there, probably you should take them in order as they have been planned.

Whatever lessons you study next be sure to remember that the real test of success in Health is not how many health habits you can remember, but how many your body has learned to practice.

Questions to Answer

1. Who is the captain of your body ship?
2. By what rules to do you run your ship?
3. What can you tell about the framework of the body?
4. What must you do to keep your body framework straight?
5. Where does the human body get the fuel which makes it go?
6. What causes the different parts of the body to move?
7. What part of the body directs the activity of the muscles?
8. What is your pilot house, and what are the windows called?
9. To what does the brain correspond?
10. What are nerves?
11. How do the nerves help your captain to command your ship?
12. What is the use of the skin?
13. Why is it important to keep the skin clean?

Things to Do

1. Make a list of the parts of the ship and write opposite them the parts of the body which correspond.
2. Find pictures for your scrapbook to illustrate these things.

VI

DOES YOUR SHIP NEED REPAIRS?

A wise captain would not put to sea on a long voyage without having his ship inspected to see what parts need repairs. Of course he doesn't depend on himself to make the inspection. He understands a good deal about his ship, to be sure, but when it is a matter of a thorough examination, he calls in a man who knows more than he does about the way in which ships are built and repaired.

This man goes all over the boat. Then he in turn may call in special experts to examine different parts. If he thinks the engines or boilers are not quite safe, he calls an engineer. If he is not sure of the ship's radio outfit, he calls a radio expert to see that it is all right. The captain himself may call several different experts in the first place, and have each one examine his special part of the ship.

It is just as important for you to have your living ship inspected at regular times to see if everything is all right. The general inspection may be made by the school doctor, the nurse, or the teacher. Perhaps they will find that your ship does not need a repair, and that you appear to be in first-class condition. If the examination shows that your body *does* need repair, they will advise you to go to your own family doctor for further examination.

It would be useless for a captain to have his ship inspected if the necessary repairs were never made. He knows that it is best to make repairs as soon as they are needed. It saves time for the ship owners, because trips can be made more quickly. It saves money, because the sooner repairs are made, the less they cost. It means greater safety, too. In time of storm or danger, a ship with every part working well has a better chance of coming safely into port.

For you, as well as for the ship, it is best to have repairs made as soon as they are needed. Think how much time and money is saved by the boy who goes to the dentist to have his teeth repaired twice a year. Usually there is only an hour or two of work to be done. It is not painful, and it does not cost much. But there is a still more important saving. The boy who goes regularly saves his teeth, whereas the one who waits is in danger of losing some because he did not take care of them in time.

Things which are wrong in the body, such as bad teeth, poor eyes, diseased tonsils and adenoids, deafness, deformed backs, and poor posture, are called physical defects. A defect is something that is wrong, and a physical defect is something wrong in the body. Sometimes the body has defects that cannot be corrected. Of course it is impossible to put new parts into the body as new parts are put into a ship. Any body, however, will give better service if it has good care and is kept in as good repair as possible.

Even if you have some defect which cannot be wholly corrected, it is no cause for worry or sadness. You may have known somebody who had a real deformity, but was so bright in mind and sweet in spirit that he was loved by every one. He was not loved less because of the deformity.

Do you remember the story of "The Christmas Carol" by Dickens? Tiny Tim, who was the favorite of the family, was loved by every one. Can't you

imagine how bravely he hurried about on his little crutches, and how his eyes shone when he said on Christmas morning, "God bless us, every one!"

Perhaps you have read "The Birds' Christmas Carol," too, and can remember how the life of the whole family centered about poor little Carol, who was lame and ill. She was so bright and cheerful that no one liked her less because her body was weak and lame.

If you want to be courteous and kind to any person who has a deformity, you will never let him think you notice it. Try to be very kind to the people who have defective bodies, and very patient with your own defects if they cannot be made right. Nothing needs to be a handicap to you unless you let it. There are men and women famous in history who made their way in spite of serious physical defects. Do you know some of them?

This does not mean that physical defects ought to be neglected if they can be corrected or improved. Teeth can be filled and cleaned, eyes can be fitted with glasses or treated in other ways, diseased tonsils and adenoids can be removed.

There is a great difference between being careful and patient with defects that cannot be corrected, and neglecting those that can be. The captain who has a propeller partly broken at sea knows that it cannot be repaired until the ship is in port, and wisely remembers the broken propeller in governing his ship. But

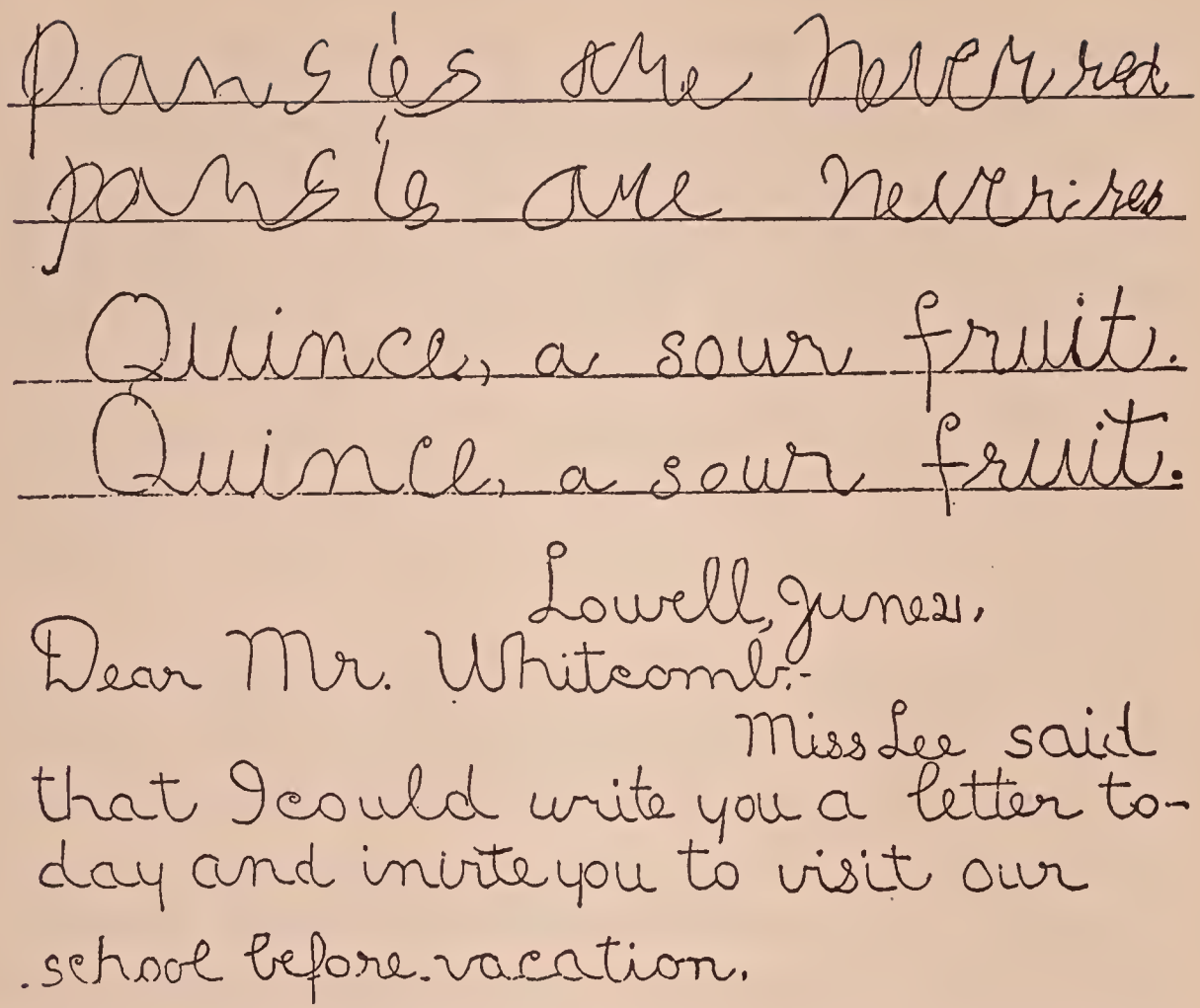
if he should put out to sea again without having it repaired, you would not think him a wise captain.

Sometimes great disaster comes because of neglecting these little things. There is an old saying which goes like this: "For want of a nail the shoe was lost; for want of a shoe, the horse was lost; for want of a horse the rider was lost; for want of a rider, the battle was lost; for the want of a battle, the Kingdom was lost; and all for the want of a horse-shoe nail!"

The same sort of story might be written about physical defects. Sometimes boys and girls think it isn't very important to have glasses fitted when their eyes are bad. The boy with bad tonsils thinks it does not matter whether he has them out or not. And for want of these things, the Health Game is lost! He who plays to win must give himself a fair start by getting repaired.

Ships are not only repaired when the captain knows something is seriously wrong, but they come into port at regular periods to be overhauled. Your ship, too, should be examined regularly. Many people go to a doctor once or twice a year for a thorough examination. What advantages are there in doing that? Do you have a regular examination?

In schools far out in the country, it is often rather hard to give children the examination which is provided in city schools. It is just as important for them to have it. It is always possible to go with your own

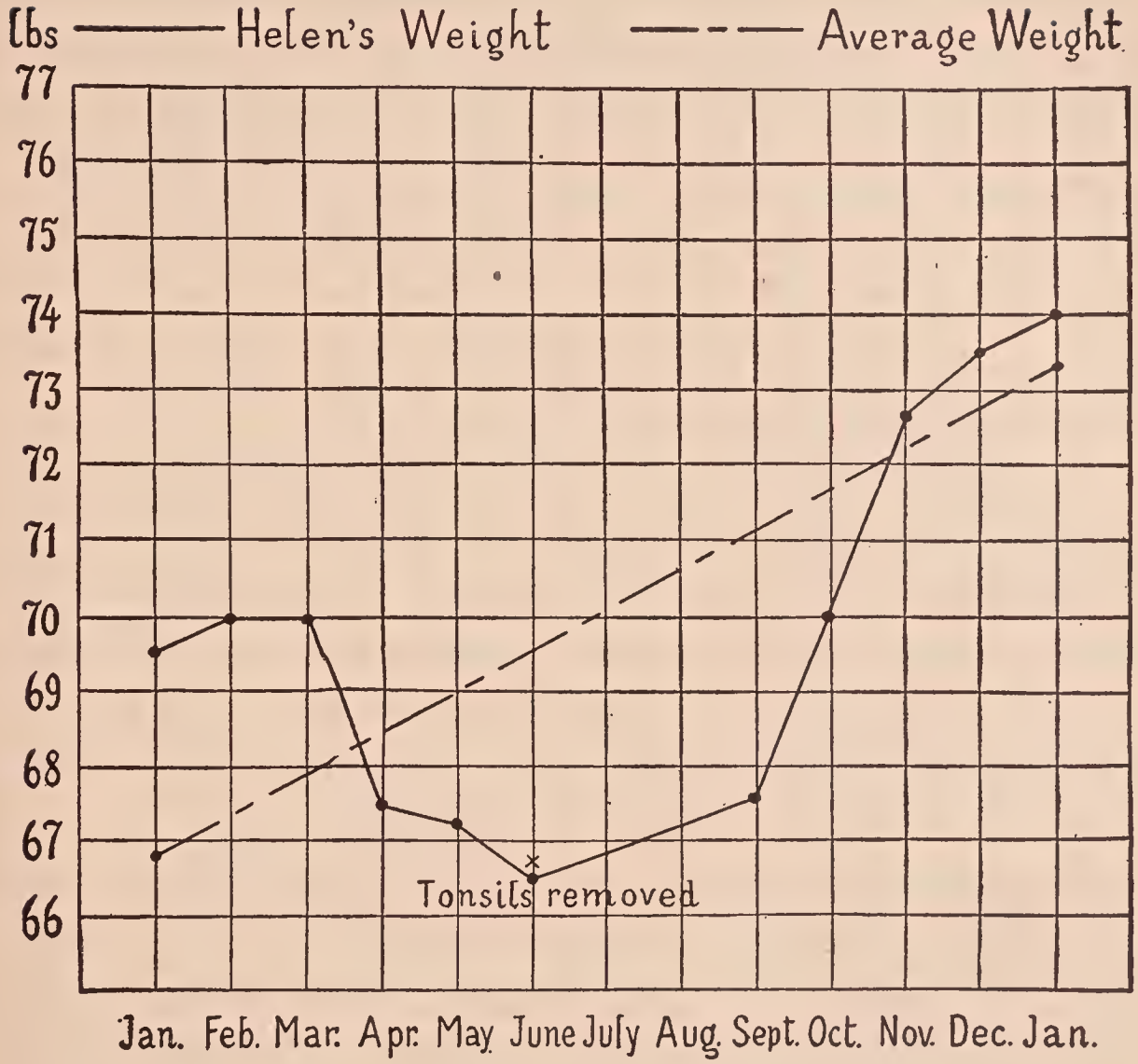


These specimens of penmanship show how a girl's handwriting improved after she had her vision corrected. The first two lines were written before she had glasses. The second two were written by the same girl the next day, and the improvement was wholly due to the fact that between the times of writing she had put on glasses which corrected her vision. The last specimen is the first sentence of a letter written by the same girl three months later. This girl was a pupil in the schools of Lowell, Massachusetts.

parents to your family doctor, and have him see if you are in good physical condition.

Children look better, feel better, and do better work when their defects are corrected. Look at the illustration and see how fast a girl's penmanship improved after she secured glasses. Can you see from the weight chart how Helen's growth increased after her tonsils were removed?

A GROWTH RECORD



Defects like bad tonsils, bad teeth, and poor eyesight nearly always hinder growth. A child who has one of these defects is not having a fair chance to grow as fast as other boys and girls. If some defect is keeping you from making average growth, can't you find a way to have it corrected?

We need to go to the doctor, not only for a regular examination, but for illnesses which we do not understand and which may become more serious. A per-

sistent cold or cough, a sick stomach that does not get well right away, and other similar things ought to take us to our good friend, the doctor. For he is a friend, and we are not fair to him if we wait until an illness is very serious and then find fault with him if he cannot cure us quickly. In cases of accident, too, it is a safe rule to call the doctor. A bad cut or wound is likely to need help from some one who knows more about repairing your body than you do.

Do you know that the President of the United States has a private physician to keep him well? It is so important for the President to be in good health that he must have a skilled advisor who carefully watches his condition. There are so many burdens on the shoulders of the man who is at the head of our nation that he cannot afford to be sick.

We cannot have private physicians, and we do not need them. But we do need to go to the doctor and dentist regularly for examination, and follow their advice in having our bodies repaired. See what you can do as a class in getting every pupil to have an inspection and secure the repairs which will fit his ship for the voyage ahead. How long will it be before you can record your class as one hundred per cent physically fit?

Questions to Answer

1. When did you have your ship inspected last?
2. What repairs were found to be needed?
3. Have you had these repairs made?

4. Tell why we need to keep our body ships in as good repair as possible.
5. Why would you rather be well than ill?
6. What can your friend, the doctor, do to help you keep well?
7. Why do persons who have important work to do take good care of their health?

Things to Do

1. If some child has seen a ship, or a boiler room where big engines are running, let him tell the class about it.
2. Bring to the class pictures of ships being repaired.
3. Dramatize a visit to the doctor for physical examination.
4. Tell a story of some one whom you know who saved time or money or both by having repairs made to his body ship as soon as they were needed.
5. Add a page to your scrapbook with pictures to show a visit to the dentist or to a doctor for the correction of some physical defect.
6. Start a class record of physical defects in a small space on the blackboard. Write the number of children who have no defects. Write the number who need glasses, the number who need to go to the dentist, and the number who have tonsils that need attention. Change the numbers as fast as the defects are corrected.

VII

GROWTH AND REPAIR MATERIAL

What are the things which are needed to keep a ship going? There must be wood for repairs, coal for fuel, oil to make the engines run smoothly, and iron to use in strengthening parts of the ship. These four things are necessary if the boat is to be kept in good condition, so they are taken on board at regular periods.

What are the things which keep your human ship going? You, too, need material for repairs, fuel to make you go, regulating material to keep everything running smoothly, and iron and mineral substances to strengthen certain parts of the body. All of these materials are found in food.

You may have thought that food was just food, and that one kind was about as good as another. That is not so at all. Different foods serve different purposes in the body just as different materials serve different purposes in the ship. Wood, of course, is used for building the ship. It is also used for rebuilding the parts which wear out. Certain kinds of food do this for the body.

Perhaps you think that your body does not need repair, because the repairing is done without your knowing or thinking anything about it. But every

day some parts of your body are being mended and strengthened. Nature delights in doing this, and the more the body is used in the right way, the stronger it becomes. After you have been sick, it takes quite a while for everything to get repaired again; that is, for you to get well. When you have a cut or a bad hurt, you take good care of the injury, so it may be healed as rapidly as possible.

The same food substance which builds the body is also used to repair it, so we may call this substance Growth and Repair Material. It is also called protein. Growth and Repair Material, or protein, is not found pure in any food, but men in chemical laboratories have found out for us what foods contain it.

Your body is still being built, and parts are wearing out with use in the meantime, so you need food to build your body and to make repairs as well. That is why you need more of the Growth and Repair foods than grown-ups. One must have enough of these foods to build a strong body, just as one must have enough of the necessary material in order to build a ship or a house.

Milk is the first food on this list. It is the very best food in the world for growth, because it contains not only Growth and Repair Material, but also other food substances which the body needs. It is Nature's perfect food.

Here is a story about milk which may interest you. Try telling it to little brother or sister at home! Do

you think the story illustrates a good reason for drinking milk?

"One day when we were in the country we saw right on the ground a brown and white ball. As soon as we children came near, it commenced to get up, and it got up and up and up, and we thought it never would stop. Its legs were long and its body thin and on one end hung its head. We thought the calf—for that is what it was—couldn't know very much because her head seemed too little to guide those four long legs. But she did know something because she went right over to her mother to get some M-I-L-K. And what do you think? Every time we went out to see her she was going to her mother to get some M-I-L-K.

"One day she said, 'I want to go out in the meadow with my mother to eat some grass.' The next morning her mother took her to the meadow. When she put her head down to take a bite, the sun shone down on the grass and the wind blew it until it tickled her ear. Then the grass whispered to her and said, 'I'm getting something for you.' And every morning when she went out into the meadow and the sun was on the grass and the wind blew, the calf put her head down to take a bite and the grass tickled her ear as it whispered, 'I'm getting something for you. I'm getting something for you.'

"One night when the calf was walking home beside her mother, she said, 'Why, mother, I'm as big as you are! I'd like to give milk to boys and girls to

make them grow.' And the very next morning when she went to the meadow and put her head down to take a bite of grass, the sun shone down on it and the wind blew and the grass tickled her ear and whispered, 'Give the boys and girls what I've given you. Give the boys and girls what I've given you.' The calf was shy and rooted her nose around the ground trying to get up her courage to ask what. At last she took a big bite, then put her nose down and asked, 'What?' and the grass answered, 'Growth materials and vitamins to make boys and girls grow.'

"Now, will *you* drink milk so as to grow as big as your father and mother?"

It makes you grow, because it contains Growth Material. It also keeps your body in repair, and helps you to get strong after you have been sick, because it contains Repair Material.

Boys on athletic teams in college drink milk regularly. Professional baseball players often drink a quart of milk a day. Milk is the very best food for boys who look forward to becoming athletes, and for girls who want to become attractive young women. Drink at least two glasses a day—more than that if you can. How much *do you* drink?

Wouldn't it be fun to have a kind of "trade-mark" for the foods that make you grow and keep your body in repair? Suppose we have two fairies to represent this kind of substance. They would be twin fairies, of course, for they are just alike. We will call them

Growth and *Repair*. You can make believe they "live" in the foods which contain growth and repair material. Remember they are always found together, and the "home" they like best is Milk.

Do you know another place where *Growth* and *Repair* like to live? You know of course how chickens

are hatched from eggs. If an egg can grow a whole chicken, don't you suppose it can make you grow? An eggshell must make a nice house for the fairies!

Do you eat an egg every day? If you have plenty of milk and other foods where *Growth* and *Repair* live, you may not need to do so, but eat one as often as you can. It is good to have eggs several times a week, at least. There are many different ways in which you can cook eggs. Find out which ways are best.

The fairies *Growth* and *Repair* also live in every food made from milk or eggs. With many people cheese is an important food. Too much cheese at one time makes work rather hard for the "firebox," but used with a generous amount of other things it is a splendid food for children.

Besides the milk you drink, the eggs you eat, and the cheese you use with other foods, you get milk and eggs in other ways. Cocoa is made with a great amount of milk. Custards are made almost entirely of milk and eggs. There are many puddings made mostly of milk and eggs, which are better desserts for children than cakes and pies. Do you know why?

Meat, fish, beans, and peas are among the other growth and repair foods. Meat and fish give very good building material for the body, but they are harder to digest than milk and eggs. It is often said that children should eat meat or fish not more than once a day. Certainly none of these foods can take

the place of milk and eggs for boys and girls who are growing.

One good way to find out whether you have enough of growth and repair food is to keep a record of these foods for two or three weeks.

The children most in need of growth and repair foods are those who need to grow the most or need to repair the most! That means the children who are small and thin, the children who are not gaining well every month, and the children who have often been sick. Perhaps these boys and girls can drink four or five glasses of milk a day. It is particularly good to have milk at recess if the school has milk to sell. It is also possible for a child to bring his own.

Sometimes it is hard to remember the different kinds of food and just where each food belongs. Some boys and girls like to keep a scrapbook, in which

they make small health posters to illustrate the health work all through the year. How easy it is to remember where the *Growth* and *Repair* fairies live when you have mounted pictures of them on a scrapbook page, surrounded with pictures of milk, eggs, cheese, and perhaps meat and fish. If you are keeping a scrapbook, you will find many interesting ways to illustrate Growth and Repair Material.

How much do you suppose you can gain before next weighing day if you drink more milk and eat more eggs? If you are very thin and find it hard to gain weight as rapidly as the other children, try drinking a glass of milk with an egg beaten into it. It's sure to mean "money in the Health Bank" when weighing day comes!

Questions to Answer

1. Name the four kinds of material necessary to keep the human ship going. Where are these materials found?
2. List all the growth and repair foods you know. Do you like all these foods and does your daily diet contain a variety of them?
3. What food should be first on the list? Why?
4. What are the best ways to cook eggs?

Things to Do

1. List all the desserts you can think of that contain growth and repair material.
2. If you live in the country, find out what growth and repair foods are raised in your neighborhood. If you live in the city, visit the near-by markets and see what kinds

of growth and repair foods you find there and where they came from.

3. Keep a daily record of the growth and repair foods you eat. Put milk first on the list.
4. Tell what you know about how cheese is made and the kinds used most in different countries.
5. Start a set of food posters. Make some posters to show foods that contain "growth and repair" material. Hang the best ones somewhere in the classroom as the beginning of a food poster exhibit. [It is not expected that each child will make a complete poster for each group of foods.]

VIII

GO MATERIAL

How does a ship develop the power to run? By burning coal or some other fuel, you say. What gives your body the power to go? Certain foods supply the body with fuel, or *Go Material,* just as coal furnishes power to the ship. These foods give us the strength to run and play and work.

There are three kinds of *Go Material*—starches, sugars, and fats. You may have seen how completely fats, sugar, and starch burn up in the fire. It is not hard to understand that they make good fuel for the body.

These food substances are burned up to make energy for work or play. When you do not use your fuel foods completely, the unused part is stored up as fat. The fat of your own body is a fuel reserve and when the food you have eaten does not supply enough fuel, you burn up some of the fat of the body itself. A long distance swimmer lost twenty pounds in swimming for twenty-seven hours across the English Channel. Football players often lose three or four pounds during a game. Surely boys and girls need a lot of *Go Material* if they are busy working and playing all day long!

One of the very best kinds of *Go Material* is cereal.

Cereals are made from several different kinds of grain —wheat, corn, oats, and rye.

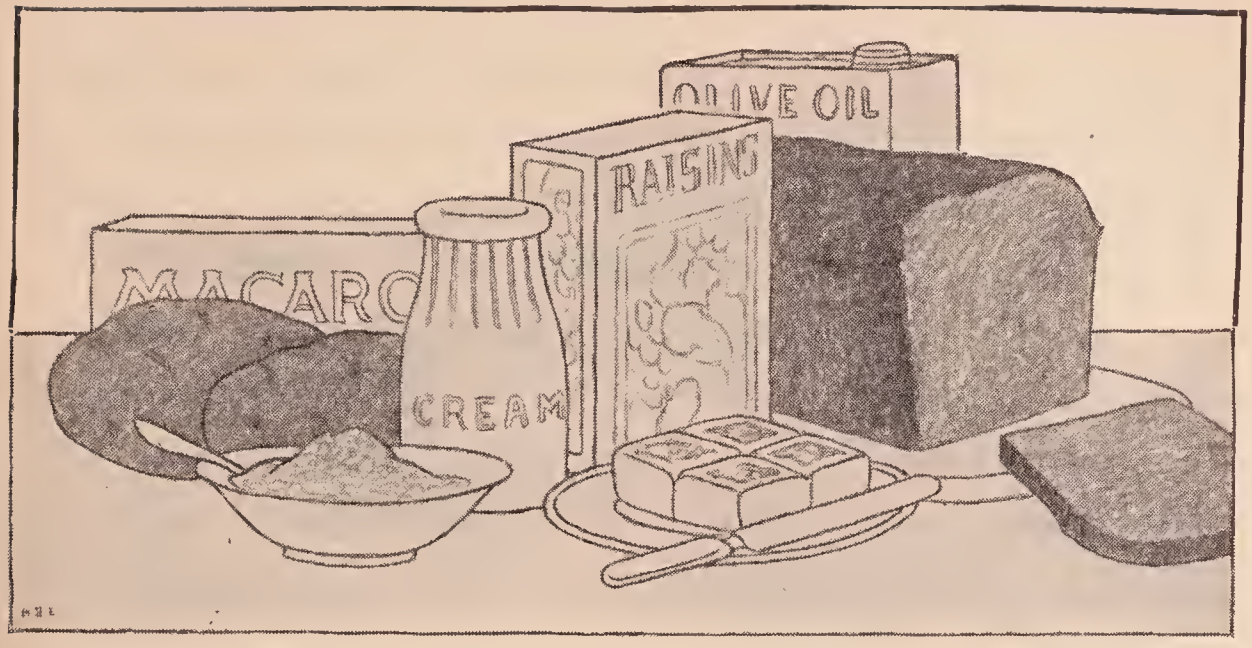
A long time ago people in Scotland grouped themselves together in clans. A clan was a group of people related to each other and living in the same part of the country. Many times one clan would get into a quarrel with another. They would even go to war.

It once happened that a clan in the highlands was at war with a clan in the lowlands. The clan in the lowlands surrounded the highlanders and tried to starve them out during the long winter. In the highlands, however, there had been a very good crop of oats. These were made into bread and oatmeal which formed the chief food for the people. When spring came, the highland clan appeared, not starved, but husky and strong enough to overcome their enemies.

A boy who heard this true story from Scotland immediately began to eat oatmeal for breakfast. His mother wondered what had happened because she had never been able to persuade him to eat cereal of any kind. She asked him why he wanted oatmeal, and he told her about the Scottish clan. Are you as husky and strong as you want to be? If not, try oatmeal!

See how long a list of cereals you can make. Perhaps you would like to see which cereal is the favorite among the boys and girls in your class. Cooked cereals are less expensive than dry cereals and usually they contain more *Go Material*.

Bread is another good energy food. Dark breads



like graham, whole wheat, corn bread, and brown bread are the best. They are made from the whole kernel of the grain, while white bread is made from the inside only. The outside covering of the kernel has a food material which the body needs, so when we eat white bread, we are losing a very important part of the grain. Another reason why dark breads are better is because they are coarse, and the body needs a great deal of coarse material to help digestion.

Macaroni and spaghetti are also starchy foods. They are made of wheat flour and are excellent fuel foods.

Many of the vegetables contain *Go Material,* too, in the form of starch. Potatoes have the most. Do you like potatoes? Try to eat one every day! There are many different ways to cook potatoes. Which ways are best?

We said that sugars are fuel foods. However, it is not at all necessary to eat white sugar or sweets. Nature put simple sugars in many of the fruits and vegetables and in milk. Moreover, starch is turned into sugar by the digestive juices of the body.

Many years ago, people did not have table sugar or candies, and they were probably better off without them. Since man has found that he can make a very sweet sugar from beets or from sugar cane, he is not satisfied with natural sugars. The great trouble with sugar and sweet things is that they take away your appetite and taste for other foods. As a result the body fails to get all the different food substances which it needs. For this reason athletes do not eat much sugar. Women who have nice complexions avoid eating much of sweet foods.

Eating candy between meals is like filling a coal furnace with kindling in the middle of the afternoon. Usually the furnace is filled with coal in the morning and at night. Suppose some one needlessly throws some kindling wood on top of the coal in the afternoon. The fire burns up briskly for a while, and the house is so warm that no one thinks of fixing the fire at the regular time. Then the first thing they know, the kindling is burned up. The house is cold and uncomfortable. When you eat candy you spoil your appetite for regular meals, and so soon as the candy has been used up the body is uncomfortable.

Fats supply *Go Material,* too. Indeed fat contains

more energy than an equal amount of sugar or starch. In cold countries where the body needs a great deal of fuel to keep it warm, as well as to keep it going, people use a great deal of fat. Have you read about such a race of people who live in the far North? In hot countries people eat very little fat.

The best fat for boys and girls is that which comes from milk—that is, cream and butter. If you have cream on your cereal or pudding, remember that it does something more than give your food a good taste. It furnishes you with *Go Material* to keep you warm and to give you energy for work and play. We get most milk fat in butter, and there is no better fat for growing boys and girls. Nut-butters and margarines may taste good, they may be perfectly clean and wholesome, but they do not benefit the body as much as butter made from milk. Olive oil, too, is an excellent fat.

Many people used to believe alcohol to be a good energy food. Now we know that it is not a real food at all. It burns up quickly, producing much heat and energy for a short time, but it acts upon the blood vessels so as to cause a great loss of heat immediately afterward. It fails to pass the tests of a true food, because it does not help to strengthen the body.

If we have a trade-mark for *Go Material,* surely it will be a picture of some one lively, full of fun, full of energy, always "on the go." Can't you imagine him as a Brownie, short and chubby, dressed in a little

brown suit, with bells on his cap and his toes? Of course his real name is *Go Material,* but his nickname is *Pep.*

You will find *Pep* in many of the foods you eat every day. He is hiding in every box of cereal. He has tucked himself away somewhere in every loaf of

bread. He is sold with every pound of butter and every jar of cream. If you look sharply, you may imagine him peeping out of the eyes of the potato, or running races through a long tube of macaroni! Be sure you eat enough of the foods where *Pep* lives. Start the day with a good breakfast of cereal. Then have a potato once a day. Eat plenty of dark bread and butter at every meal.

Remember that *Go Material* which is not used up as fuel is stored in the body as fat. Can you see a reason why boys and girls who are thin need more than other children? How much is needed by those who are very much overweight? Perhaps you can keep a record for a while of the *Go Material* you eat each day.

Remember, if you want to grow some every day, eat *Growth* and *Repair Material!* If you also want to go some every day, eat *Go Material!*

Questions to Answer

1. What are the three kinds of "go" material?
2. How does the body store fuel?
3. When does the body use this stored fuel? Give an example.
4. Why do boys and girls of your age need a lot of "go" material?
5. Name places where natural sugars are found.
6. Why is it better not to eat candy between meals?
7. Which produces the more heat when burned, a teaspoonful of fat or a teaspoonful of sugar?

8. What time of year do you need the most fat in your diet?
9. What are the best fats for boys and girls?
10. Why is alcohol not a true food?
11. What foods do you eat that have the "Brownie Pep" in them?

Things to Do

1. Make a collection of "go" material pictures for your scrapbook.
2. List all the cereals you know, including both the ones usually eaten hot and those eaten cold.
3. List other foods made from grains.
4. Draw a map and use pins or colored crayon to show in what sections of the country different grains are raised.
5. Make some posters to show foods which contain "go" material. Hang the best ones in your classroom with the posters of "growth and repair" material.
6. Keep a record of the "go" materials you eat every day. (This may be kept on the same paper with the "growth and repair" foods.)
7. List all the "go" material foods you know under the following headings: Starches, Sugars, Fats.
8. Tell what you know about the diets of people in different climates.

IX

REGULATORS AND FOOD MAGIC

What else does the ship need beside material for repair and fuel to make it go? Boys know that it must have oil to regulate the engines so that everything may run smoothly. The body needs a similar thing—foods which will regulate the digestive system. These foods we will call *Regulators*.

When we study the digestive system later, you will see that one of the most important parts is a long tube called the intestine. All the food passes through it, so it is necessary that the food should move along properly, and that the tube should be clean. This is what we mean when we talk about being clean inside.

The inside lining of the intestine is not smooth. It is made of little finger-shaped projections, somewhat like your own fingers when you lock the fingers of one hand through those of the other hand and let them all stick out side by side. These little projections are very small, of course. With such a lining as this, you can understand how food may clog up the intestine sometimes and hinder the work of digestion.

Water is one of the most important regulators. It helps to keep you clean inside as well as outside. The body also uses it in growth. It makes up about two thirds of the weight of your whole body. Just think,

I never have less water
Than four good drinks a day,
The first thing in the morning,
At recess and at play.

if you weigh ninety pounds, at least sixty pounds of that is water! Muscle, bone, blood—indeed, every part of the body contains a large amount of water.

You have probably heard of men who have fasted for a long time, and lived on water only. You know that men lost in the desert can live many days without food if the water holds out. But they cannot live many days without water. It is more necessary to life than food. It has two uses in the body,—to help regulate digestion, and to supply the water which is needed for every part.

Get the habit of having a full glass of cold water the first thing in the morning after you brush your teeth. Give yourself a bath inside every morning!

Get the habit of drinking between meals, too. Do you always drink from the bubbler at recess? And do you get a drink whenever you go into the house from school or play? Be sure that you have at least four glasses every day. Drink most of that between meals.

Water is not the only thing to keep you clean inside. Starchy foods or bits of meat may get caught along that rough lining of the intestine. Then the tube gets clogged and you need something like a scrubbing-brush to clean it out. There are foods which do this for you.

Did you ever notice the long fibers in celery? Or the stringy skin of the rhubarb plant? Or the coarse parts in the pulp of the orange or grapefruit? These coarse, stringy parts, which are also found in many other fruits and vegetables, help to move the food along, and regulate digestion by keeping the intestine

clean. They, too, are regulators. Eat some of them every day!

Other coarse foods help to regulate digestion, too. One reason why dark breads are better than white is because they always contain the coarse outside part

of the grain. This helps all the food to keep moving along through the whole digestive tube.

These foods are like the traffic officer who stands on the street corner. A big, strong, good-natured "Policeman" may be the trade-mark for our regulator foods. He will always be found in water, fruits, vegetables, and coarse bread.

If you have plenty of the regulator foods every day, you will not need to take medicine to regulate the digestion. They will keep your digestive tube clean, just as Nature meant they should. A boy told the story in a poster which had pictures of all kinds of fruits and vegetables, under which he wrote, "Eat plenty of these, and you won't need pills!"

I must tell you also about some magic materials in certain foods. They help keep you in good condition, and make you grow. These magic substances are called vitamins. Nobody ever saw a vitamin, nobody ever found one. But we do know where they are and what they do. Without them, boys and girls can neither grow nor be in good health. These vitamins are dissolved either in fat or in the water of certain foods.

Milk, cream, butter, and cheese all contain these magic substances. They are also found in nearly all the fruits and vegetables, particularly in the leafy vegetables, like spinach, lettuce, cabbage, celery, and other greens. They are found in the coarse outside part of the grains, too, and in the yolk of the egg.

That is another reason why these foods are so important. They have the magic substances which make you grow and keep you in good health.

Years ago, in China, there was much sickness among the people of a certain part of the country. The doctors did not know what caused the sickness, but they thought it was probably the food. The people were very poor and did not have enough variety in their foods. They lived almost entirely on rice—just the plain white rice such as you sometimes eat at home. This is the inside of the rice kernel from which the husk has been removed.

Doctors fed some birds on this plain white rice. The birds got sick just as the people did. After several days they began to lose their strength, and were unable to keep their balance. Then the doctors made a mush of the outside husks of the grain which had been taken off before the rice was used. When the birds were fed on the mush, they quickly began to get better. That was the cure—to eat the outside covering of the rice.

The news was spread to the people. They learned if they were to keep well when they had no food but rice, they must eat the whole of the grain. In the little coat which Nature had put on the kernel of grain there was enough vitamin food to keep people well. Of course white rice is a perfectly good food when we have other things to eat with it. But foods from whole grains are always more healthful than

those made from only the inner, or starchy, part of the kernel.

Years ago, there were times when sailors on long voyages had to live entirely on such foods as salt pork, salt fish, dried meat, and bread. Then a skin disease often appeared among them, which was cured as soon as they could get milk and fresh vegetables.

This disease is called scurvy. You scarcely hear of it nowadays, because people have learned that it is caused by a lack of vitamins. Ships travel faster now, they get supplies oftener, and so have the fruits, vegetables, eggs, and milk which the men need. On long trips canned milk, fruits, and vegetables, and fresh food in the ships' refrigerators give protection against scurvy.

Men have tested the value of vitamins in raising young guinea pigs. They have found that if these vitamins contained in foods are lacking in their diet, the animals do not grow as rapidly as they should. What is true of growing guinea pigs is also true of growing boys and girls.

Often in a family only one vegetable besides potato is served each day. That means that if the only vegetable you like is the beet, you eat a vegetable only on the day your mother cooks beets. If you are going to be sure of having a vegetable every day, you must learn to like every kind that your mother serves. Do you like them all? Which is your favorite? Are you willing to try to learn to like the others? Make a vege-

table chart on the board, and keep a record to see how many boys and girls have learned to like the most common vegetables.

Potato is not a Regulator food, you know. It is almost pure starch, so it does not belong to the *Policeman,* but to the brownie *Pep.* Now you can see why the health rule about vegetables says: "Eat some vegetables besides potato every day."

Nature made fruits so sweet, juicy, and attractive that boys and girls cannot help liking them. There are some seasons when fruits are not so plentiful, especially if you live far away from the city markets or the fruit regions. That is the time when dried fruits may be used. Prunes, peaches, apricots, and apples, when dried, are almost as good as fresh fruit if properly cooked. They help to supply regulator food and vitamins for the body when there is a scarcity of fresh fruit. Fruits are better than candy to eat at recess. They scrub out the digestive tract and make it ready for dinner, while candy makes it sticky and takes away your appetite.

You will like to make a page of Regulators for your scrapbook, because there are so many lovely pictures of fruits and vegetables in all the magazines. The picture of the *Policeman* may be hard to find. If you are somewhat of an artist, draw one,—a big, strong fellow, dressed in blue coat with brass buttons.

Most people do not eat enough of the regulator and vitamin foods. I hope you will keep a careful record

of the Regulators you eat every day until you fix the habit of eating some at every meal!

Many boys and girls who live on meat, potato, macaroni, beans, and bread wonder why they do not gain in weight as they should. Of course Growth and Energy foods are important, and you need plenty of each kind every day. But no matter how much *Growth* and *Repair Material* or how much *Go Material* you give your body, you will not gain as you should, or have the clear glow of health in your face unless you eat freely of Nature's regulators and food magic.

The vitamins are like the carpenters who put things together to build a house. Without them the other foods cannot build a body and keep it running. Without them a child cannot grow as he should.

Questions to Answer

1. What foods help to regulate the digestion?
2. What regulator foods did you have yesterday?
3. Why are dark breads and cereals better than white?
4. What are two uses for water in the body?
5. How much water should you drink each day? How much *do* you drink?
6. Discuss the value of the health habit, "Drink a glass of water half an hour before breakfast every morning."
7. What is the proper way to use a drinking fountain? Why is this important?
8. Did you ever see a magician perform tricks? Could you see how he did them? Why are vitamins called "magic substances?"
9. What do vitamins do for the body?

10. What are the foods that contain vitamins?
11. Tell the story of the people in China who ate only polished rice.

Things to Do

1. Make a complete list of vegetables.
2. Make a list of fruits.
3. Make a list of dark breads and cereals.
4. Keep a record of the regulator foods you eat every day.
5. Add two pages to your scrapbook—regulators and vitamin foods.
6. Add to your set of food posters some which show regulator foods and some which show vitamin foods.
7. Make a vegetable chart on the board and keep a record to see which vegetables are eaten by the greatest number of pupils in the class each day.

X

IRON FOODS AND BONE BUILDERS

IRON FOODS

A strong ship cannot be built of wood alone. Many parts must be made of iron. In fact a large wooden ship has many tons of iron in the form of rods and supports to strengthen different parts. In our bodies the iron shows itself in good red blood.

When we look at blood under a microscope we find that the *liquid* is clear like the fluid which fills up a blister on your finger. The red color comes from a countless number of little red discs—the red-blood corpuscles. These are too small to be seen without a microscope, and the result is that the blood looks to the eye like a red fluid. These little discs carry oxygen from the air to all parts of the body. This allows the different parts of the body to breathe. So you see all parts of the body are more alive in a person who has plenty of red blood than in a person who has not enough.

These little corpuscles are made in the marrow of the long hollow bones, like those of your legs and arms. They are made in part of iron which must come from the food you eat. Of course, you cannot eat pure iron as it is dug out of a mine. But let me tell you about it in a quite different form.

Nature has made some little miners that dig in the ground for all the iron they can find. Then they store it up for you to eat. Sometimes they themselves have lovely red and yellow colors. Goldy Carrot is one of the best iron miners.

Leafy Spinach is another miner who stores up a lot of iron. If you don't like Leafy Spinach, it must be because you have never really known him very well. Try to get acquainted, for, among all the vegetables, spinach is one of the most important.

Iron is so important in the body that doctors often give medicine containing iron to people who are pale. Men have been very clever in making iron into different kinds of pills and tonics, but no one has been able to do as well as the fruits and vegetables.

The body cannot use iron from pills and tonics so well as that taken out of the ground by one of Nature's own miners. Of course some people would think it much easier to take pills. But when you learn that you can get much more iron in Nature's own way, then you will understand why so many doctors tell their patients to eat more spinach, carrots, eggs, and fruits, instead of giving them iron pills to take.

Children who are pale and thin need iron most. Plenty of iron in the blood shows in red lips and rosy cheeks. If you are not getting your share, try to like more iron foods.

You must have heard stories of the brave Knights

of old, with their strong coats of armor. Can't we use the Iron Knight as a trade-mark for these foods?

Leafy Spinach belongs to the family of Greens. He, with his many brothers and sisters, such as Lettuce and Celery, are rich in iron and are also regulator foods. How many of them do you know?

Can you guess by its color what part of the egg has iron? You will remember that eggs also contain much *Growth* and *Repair* material. Most foods contain more than one kind of substance for the body. The white part of the egg is chiefly growth material, but the yolk also contains iron and energy material. You can understand why doctors sometimes tell people to eat several eggs each day after they have been sick. The eggs will repair the body and make good red blood.

Iron is found in some other growth and repair foods, too—in liver, beef, veal, and oysters. Doctors sometimes give an extract made from liver to persons who have not enough red blood. Molasses contains iron and that is one reason why it is a good sweet for children to eat.

Many of the fruits have the trade-mark of the *Iron Knight,* too. Apples and oranges show iron in their color. Prunes and raisins have their share. These very sweet fruits, however, are eaten in smaller amounts usually, and they are not so important as the foods we eat in quantity: carrots, spinach and other greens, lettuce, celery, apples, and oranges.

Watch carefully to see whether you are eating some of the iron foods every day. Many boys and girls have plenty of *Growth* and *Repair Material,* and enough *Go Material,* but fall short on *Regulators* and *Iron Foods.* If you are keeping a record of the foods you eat, add iron foods to your record for a while.

BONE BUILDERS

The body has need of still another strengthening material which is supplied by certain foods. It is called calcium, and is the same substance which is found in lime and marble. You know how strong white marble is. Surely it is easy to guess that calcium builds strong teeth and bones.

The framework of your body is built to endure great strain. Boys and girls may play very roughly, may even meet with accidents, and become severely injured without breaking their bones if the framework is as strong as it should be.

Have you ever handled the bones of an animal to see how strong they are? Perhaps you remember the old story of how Samson smote the Philistines with the jawbone of an ass. How strong that bone must have been to serve the powerful Samson as a weapon of battle against his enemies!

Some bones are more brittle than others. A baby's bones are very soft, but as he grows older, they get harder. When one gets to be very old, the bones have become so brittle that they break easily. Sometimes children have bones and teeth that are not hard enough because there is not enough calcium in the body.

Milk is perhaps our best source of calcium. That is another reason why small children need so much of it. Often children who have only a little milk in early childhood do not have good teeth, and the bony frame-

work does not grow straight and strong, because there isn't enough calcium for building it. No food can take the place of milk for building bones and strong white teeth. Some calcium is supplied, too, by many of the green vegetables, like cauliflower, celery, and spinach. Be sure that you have plenty of calcium foods for yourself. Try to help your younger brothers and sisters to drink all the milk they can and to learn to like leafy vegetables.

Remember, always, if you want to make the most of your body, watch the food you eat every day!

Questions to Answer

1. What foods make red lips and rosy cheeks?
2. What is iron used for in our bodies?
3. In what ways do boys and girls show that they are getting enough iron?
4. Which part of the egg contains iron?
5. What is calcium used for in the body?
6. What is the best source of calcium?
7. What other foods contain calcium?

Things to Do

1. Trace a map of your own state or county. On this map show your "iron mines" by sketching vegetables, such as spinach or carrots, on the places where the largest truck farms are located.
2. Keep a record of the iron foods you eat each day.
3. Bring into class samples of foods or containers or pictures to represent them. Arrange these on tables as an exhibit of the kinds of food needed by the body: growth and repair material, go material, regulators and food

magic, iron foods, and bone builders. (The class may prepare food models by cutting out pictures of different foods and pasting each on a piece of thin cardboard. Some boys may be able to make wooden blocks with a groove in the top in which the food models may be stood up straight. These models may be kept and used in many ways.)

4. Add to your set of food posters some which show iron foods and calcium foods.
5. Add to your scrapbook a page for iron foods and one for bone builders. You may like to use a stone mason or builder as a trade-mark for the calcium foods.
6. Use pictures, food models, or food brought from home to arrange on tables showing a good breakfast, dinner, and supper.
7. Play a guessing game about food. One pupil may say, "I am thinking of a food that will make you grow." The other pupils guess the name of it until someone guesses correctly, and then he takes a turn at letting the others guess what he is thinking of.

XI

DIGESTION

How much do you weigh? Are you gaining every month? Weight depends upon the amount of food you *digest* more than upon the amount of food you *eat*. If you ate a big meal of sawdust you would not gain weight, because the body cannot make over sawdust into flesh and bone. The body can change food into the things it needs.

The blood can't carry foods, such as bread and butter, milk, fruit, and vegetables, to all parts of the body. These foods must be digested and made over into a few simple substances. These can be dissolved, taken up by the blood, and carried to every part where they are needed.

From the mouth the food passes into a long tube, called the digestive tract. The body pours into this tube certain wonderful fluids—the digestive juices. These are planned by Nature to dissolve certain foods and make them over into substances that the body can use for growth and energy.

Starch is changed into sugar which can be dissolved in the water of the blood. Fats are turned into a soapy fluid. Protein is changed to simpler substances which will dissolve, much as gelatin does in hot water. No matter how many kinds of food you eat, the diges-

tive tract changes whatever the body can use into the following substances:

1. Sugar, dissolved in water.
2. A soapy or fatty fluid.
3. Dissolved growth-material substances.
4. Salts in solution—common salt and others.
5. Water.
6. Vitamins. (We don't know just what they are, you will remember, but we know they are dissolved either in water or fat.)

Here is a story about the first part of digestion. Perhaps you can guess what it means.

There is a little mill, all red on the inside with two red gates in front. Behind these are two rows of jolly white millers. There are also little fountains that pour out juice into the little red mill. These juices make sugar out of starch.

Everything that comes into the mill gets ground up by the jolly white millers, and all mixed up with the juice from the fountains.

If you want to see how well it is done, put a piece of plain bread or cracker into your little red mill. Let it be all ground up by the millers and well mixed with the juice from the fountains. Then notice the taste of sweetness. What has happened?

This is one reason why it is important to chew your food for a long time. If you swallow your food quickly, there is not time to change the starches into sugar. This means that part of your food has not

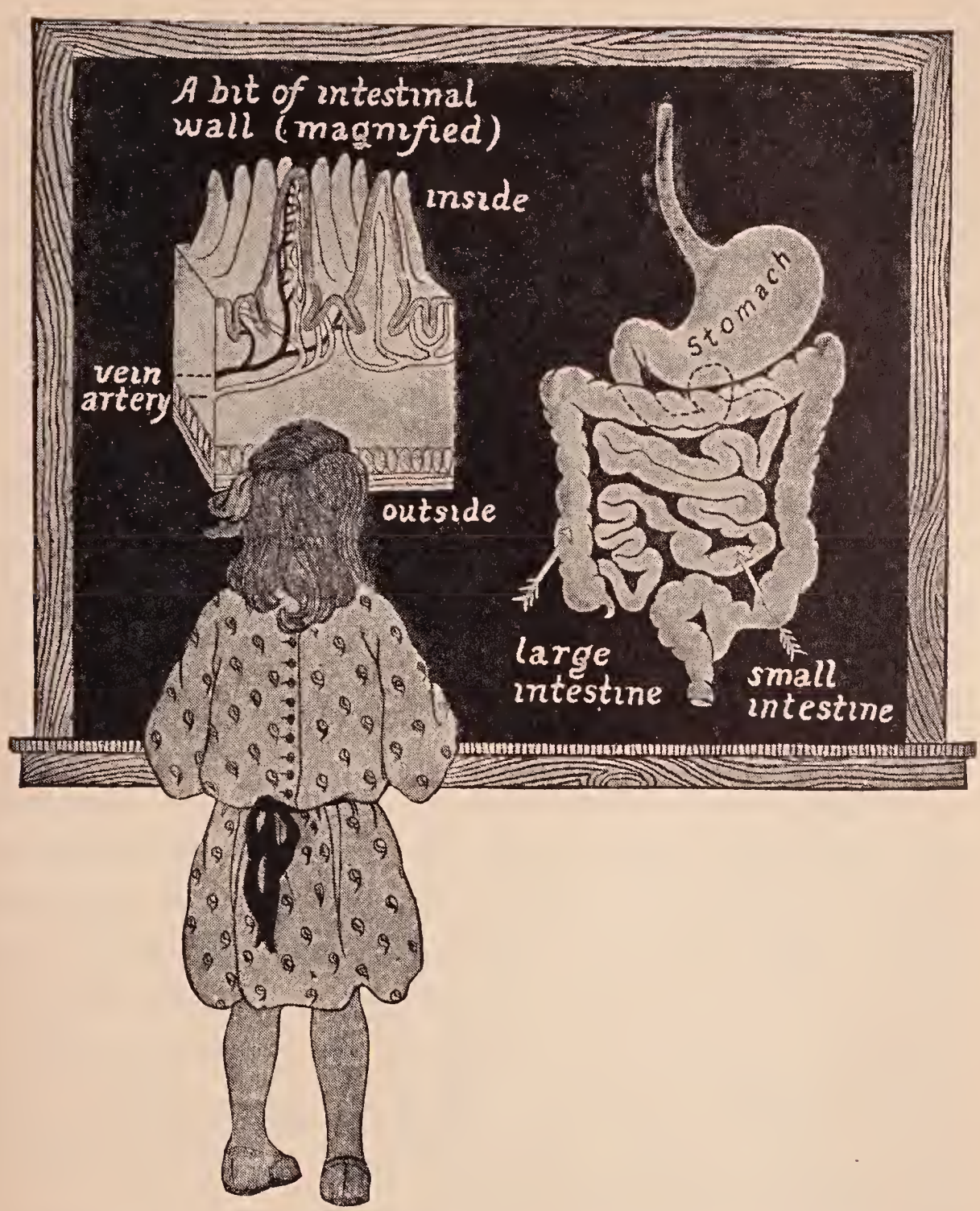
been dissolved as it should have been, and the work of digestion is hindered. The fountain juices cannot do their work well unless you let the little white millers help them by chopping up the food. What important fellows the little millers are! Equally important is the dissolving juice which we call saliva.

It is polite to eat slowly and take small bites, or mouthfuls, of food at a time. This is good for digestion, too, because it gives the food a better chance to get well mixed with the saliva.

It is important, too, not to use water instead of saliva to soften the food, for water cannot turn starch into sugar. You may harm yourself by drinking water at mealtime if you use it to wash down your food. Drink water only when you have no food in your mouth. This is more polite, and surely it is more healthful.

From the little red mill the food starts its journey down the long red lane into the tube called the digestive tract. Have you any idea how long this tube is?

The length of the digestive tract is about five times your height. Your height is just about the same as the distance from the finger tips of one hand to the finger tips of the other hand when you stand with your arms outstretched. Let some boy stand with his arms stretched out, and measure with string five times the distance from finger tip to finger tip. Pull the string out its full length and stretch it out across the room to show the length of his digestive tract! How long is it?



The first journey which the food makes along this tube is from the mouth to the stomach. Put your hand at your left side, just above the waist line, and you have the place where the stomach lies just under the edge of the ribs. It is a kind of bag made of mus-

cles with a thin, rough lining. This is where the food is stored and where the work of digestion continues.

The lining contains many little fountains, called glands, which send out a fluid called gastric juice. This dissolves the protein in food and gets it ready to be used by the body as growth and repair material.

Have you ever seen tripe at the market or eaten it at home? Tripe is part of the cow's stomach, carefully cleaned and prepared to be used as food. In a piece of tripe, you can see the wall of muscle and the rough lining. When there is food in the stomach, the muscles keep up a constant squeezing or churning motion, first tightening and then relaxing, until all the food inside has become thoroughly mixed with the gastric juice.

You can see at once that if you send the food into the stomach in large pieces, it will not be dissolved as quickly as when it has been properly ground up by the teeth. The stomach cannot grind it. So here's another reason why you should chew your food thoroughly. A little boy who lived on a farm out West made a health poster on which he said: "Chew your food. You haven't any gizzard!" He knew why the hen needs to have a gizzard.

As soon as the food has been well mixed with the gastric juice in the stomach, it is passed on to the small intestine. This is the longest part of the digestive tract and is coiled up in the region of the abdomen. Here other kinds of food are digested and made ready

for use. There are three digestive juices poured into the intestine: the *pancreatic juice,* the *intestinal juice,* and the *bile.* These change fats into soapy fluids and complete the digestion of protein, starch, and sugar. Here, also, the digested food substances are taken up by the circulation. The food becomes thoroughly mixed with the juices in the intestine in the same way that it becomes mixed with the gastric juice in the stomach; that is, by muscular movements in the wall of the intestine. Through the tiny projections on the thin wall of the intestine, the simple food substances are taken up by the blood and carried to all parts of the body.

The work of dissolving different kinds of food is nearly finished before the food reaches the large intestine or colon. This is much larger around than the small intestine, but not nearly as long. Here the remaining substances are passed along very slowly. Most of the water is absorbed, and the waste material is passed off from the body every day.

When the digestive system is in good order, its work is done very naturally and easily without your thinking anything about it. The digestive tract may be injured, however, so that it does not digest food well. Eating too much of the wrong kind of food, or failing to eat enough of the right kind, may harm the digestive system. Bad habits of eating, such as eating too fast and eating between meals, may also have a harmful effect. Serious trouble often comes

from the constant use of alcohol, which irritates the delicate lining of the stomach. Do you believe a person can injure his digestive system without injuring his general health?

Questions to Answer

1. How is the food carried to all parts of the body?
2. What happens to starch in the mouth?
3. Why is thorough chewing necessary?
4. What are the six simple food substances carried by the blood?
5. Explain the reason for the rule, "Never drink water when you have food in your mouth."
6. What is the stomach like, and what does it do in the work of digestion?
7. Describe the small and large intestines.
8. What are some of the ways in which a good digestive tract may be injured?
9. What does alcohol do to the stomach?

Things to Do

1. Have some member of the class bring in a piece of tripe. Examine it carefully.
2. Try measuring the length of the digestive tract by the method described in this chapter.
3. Complete the following sentences:

   _____ in the mouth changes _____ to a simple _____. The stomach digests _____. There are three digestive _____ in the _____ intestine. They change _____ into soapy fluids and complete the digestion of _____, _____, and _____. The digested food substances in the small _____ are absorbed by the _____. _____ material is passed off from the _____ intestine every day. Bad habits of _____ may injure the _____ system.

XII

KEEPING A GOOD DIGESTION

All the work of digestion is unconscious. You don't have to think about it. Yet the way you feel has something to do with the work of the digestive tract. Your digestive system cannot work well when you are worried, cross, disagreeable, or excited. It works best when you enjoy your food.

You know how your mouth waters at just the thought of foods you like very much. When you enjoy food, the saliva flows more freely, and that actually helps your digestion. By careful studies with animals we know that the stomach "waters," too. The juices flow when we are eating happily, and stop when we are angry or in pain or frightened. The churning movements of the stomach and intestines are also affected by the way we feel.

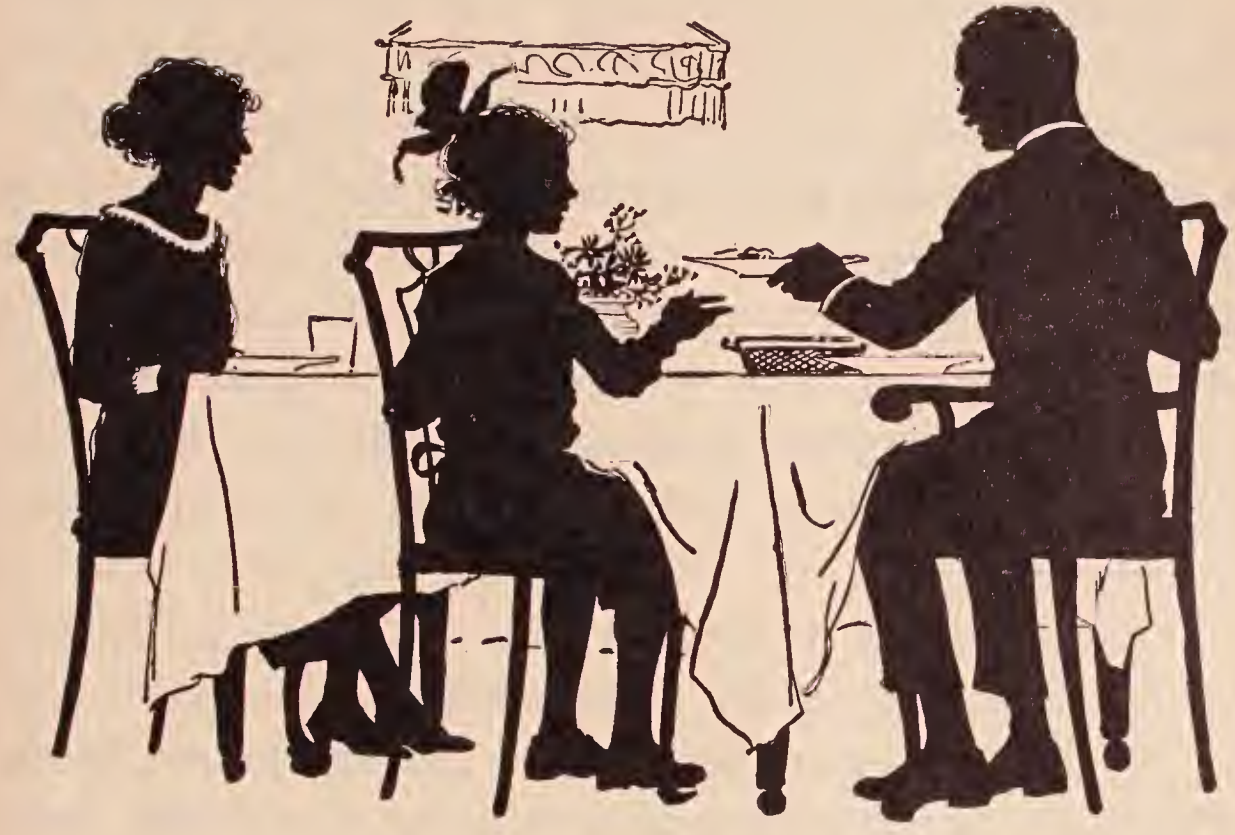
A cat was fed with a kind of food which made the outline of her stomach show up clearly when she was watched through the X-ray. She was comfortably enjoying her meal. Her stomach began to work with the churning motion, and digestion was begun. Then a dog was brought into the room. He didn't touch the cat; he wasn't even near her. But the cat was nervous as soon as she noticed him. How do you suppose it affected the motions of her stomach? The churning

movement stopped and did not begin again until some time after the dog had been taken out of the room.

There have been many studies which show that being happy and contented at mealtime really helps digestion. Children ought to practice good manners at the table for the sake of their health as well as for the sake of politeness, because bad manners always bring unpleasantness. Try to help your family have a happy mealtime by being as polite as you can. It is great fun to see if you can improve your table manners so much that Father or Mother will notice it. Do not say anything about what you are going to do, but try hard every meal to be polite and pleasant to every one at the table.

A story is told of an errand boy who was sent out by a druggist with a large order of medicine for a family who lived either at Number Eight or Number Ten of a certain street. The boy was not sure which was the right house. He looked through the window at Number Eight, where the members of this family were eating supper, all talking and laughing. They looked so happy and healthy that the boy knew the drugs could not be going to that house. Next door, at Number Ten, the family was also at supper. Through the open window came the sound of quarrelling. When the boy heard them, and saw their cross, unhappy faces, he said, "This is the family that has to take the medicine!"

Cheerfulness is health-giving to other people as



well as to ourselves. It has a great effect on the proper working of all parts of the body. When you make a list of food habits, don't forget the habit of cheerfulness. It is the best-known tonic for the digestive system, and without good digestion a boy can hardly be first class in growth and health.

Another way to help digestion is to have your foods cooked in the right way. Foods which are baked, steamed, or boiled digest very easily; but foods which are fried are hard to digest. The fat in which they are fried forms a coating on the outside of the food particles. Through this coating the digestive juices cannot easily pass, so the process of digestion is delayed and made difficult.

Your digestive tract is like the firebox of the ship. It receives the fuel which furnishes power for your body. Of course it does more than that, for it also selects the building foods and gives them to the blood for growth and repair. Imagine what would happen to the power of the ship if the firemen allowed the fires to keep on two or three days without shaking them and taking away the ashes. The fires would go out or burn so low that they could not continue to furnish power.

One boy made a poster with a picture of a firebox, under which he said: "This firebox is cleaned out every day! How about yours?" If you eat an abundance of fruits, vegetables, and coarse foods, and drink quantities of pure water between meals, your digestive tract will be so well regulated that it will take care of the "ashes" all right. You will get the habit of removing the waste from your intestine at least once a day. A great many people do not eat the necessary regulator foods, and the result is that the waste is not properly carried along the digestive tract and eliminated in a good bowel movement every day.

Some people think it much easier to take physic than to eat properly. Surely when you understand how the making over of food goes on in your digestive tract, you will see that this important work of carrying off waste should be brought about in the natural way, and not by taking drugs and physic, except perhaps occasionally when you are sick. There are different

ways of testing boilers and engines. One of the very best tests for a good digestive system is: "Do you have a bowel movement every day without taking physic?"

Sometimes a person is made ill by eating food which has spoiled. Foods which spoil easily should be kept in an ice box or in a cold pantry. All foods should be kept as clean as possible. Boys and girls who have clean habits never eat food which is picked up from the floor, ground, or street, and they do not exchange bites of food with other children.

Questions to Answer

1. How is digestion affected by the way one feels?
2. Explain the importance of the health rule, "Be polite at the table."
3. Why are fried foods hard to digest?
4. What regulator foods will help to keep the digestive tract clean?
5. Why is a daily bowel movement important?
6. How many of these rules do you practice every day?

   a. Eat slowly and chew your food well.
   b. Be polite at the table and have a happy mealtime.
   c. Be cheerful.
   d. Eat plenty of fruits, vegetables, and coarse foods.
   e. Drink at least four glasses of water a day.
   f. Have a bowel movement every morning after breakfast.
   g. Avoid taking physic.

Things to Do

1. Add pages to your scrapbook to show habits which influence good digestion.

2. Keep a record of some of your eating habits for the next two weeks.
3. If there are younger children at home, try to help them form one of the habits discussed in this chapter, and report your progress to the class.
4. Retell the stories in this chapter.
5. Arrange the following words to make true statements:

   Helps cheerfulness digestion.
   Meals at health good is politeness for.
   Foods to digest are fried hard.
   Digestion daily helps a bowel movement.

XIII

WHEN TO EAT

"There is a time for everything!" It is not enough to know what to eat and how to eat. One must know when to eat, and especially when not to eat!

The body gets along better on regular habits of eating than it does on irregular habits, even if it gets the same amount of food. We do not know the exact reason for this, but we do know from watching the growth of young animals and of children that it is true.

A man who had some good farm horses lost his hired man and was obliged to get a new one. Very soon he noticed that his horses did not look so well as usual and that they seemed to tire more easily. The hired man appeared to be taking good care of them, and giving them the right amounts of food and water. By watching carefully the farmer found that the time for feeding was not regular. One day it was at eleven o'clock, the next day at one o'clock, and so on. Sometimes the horses were not given a drink of water from morning till night. He came to the conclusion that the health of his horses was suffering because they were not being fed and watered at regular times.

Children, too, suffer in health and strength when their feeding is irregular. Babies must be fed very

often, of course, because they take only a small amount of food at a time, and they are growing fast. But they are fed at regular times and not in between. As they get older, they eat more at each feeding-time but not so often. By the time boys and girls go to school, most of them get along very well on three meals a day, as grown-up people do.

Should children ever eat between meals? Yes, if they need extra food; but they should eat foods which give real nourishment for the body, are easily digested, and which do not spoil the appetite for the regular meals. Your stomach must have time for rest. Whatever you eat between meals should put only a small amount of work on the digestive system. If you are going to work the digestive system at all between meals, you must make it worth while by eating something which has real nourishment.

It is more important for children to have three good meals regularly than to take extra food between. The most dangerous between-meal foods are those which spoil the appetite. Some boys and girls cannot eat anything between meals without losing their appetite for regular meals. It is better for them never to eat between meals at all.

Milk is one of the best between-meal foods. It is nourishing, easily digested, and it usually does not spoil the appetite. Milk at recess helps children to gain. Perhaps it even helps them to do better work in school, for teachers often say that children who

drink milk at recess are not so tired during the last part of the session.

Bread and butter is good food to eat between meals if you really need a lunch. Have dark bread if possible. Fruits, such as apples, oranges, and grapes, are splendid, too. There are certain foods, however, which no one can eat between meals without spoiling the appetite. These are the sweet foods, such as cake, cookies, pie, and candy. You probably know from your own experience that sweets do spoil your appetite; but do you know why?

In maple-sugar time, when the sap commences to run, all the children of the neighborhood take to the woods, if possible, and soon the fun begins. Holes are bored in the trees and pails are hung on the wooden pegs to catch the sap. You taste the sap from first one tree and then another. You find some which is especially sweet, and you lose your taste for the other sap.

Then the boiling down begins. You taste from one kettle after another until at last you taste the syrup which has boiled to the point of making sugar. Nothing tastes sweet for you after that except the rich, sweet sirup, or the sugar itself. Why? Because food which is very sweet spoils the taste for anything which is not as sweet as itself. This is the most serious thing about eating sweets between meals; it keeps you from eating the foods your digestive system needs, and as a result your whole body suffers.

Imagine what the Digestive System would say if it could speak! After suffering for some time from a girl's habit of eating sweets between meals every day, the diary of her Digestive System might read somewhat like this:

> *"Monday, Nov. 3d.* Mary Ellen got up late this morning. She was in such a hurry that she took me off to school without giving me any breakfast at all. Mary did not do very well in

school because she was tired and hungry, and I didn't feel well. At recess time I told her I must have something to eat. She gave me some candy, which satisfied me for a while.

"When we got home at noon, there was a good dinner, but I could not forget the candy I had at recess. So Mary did not eat much. She was lazy all the afternoon. After school I told her that what she needed was something to eat. She bought an ice-cream soda. It tasted good and we felt better, but it was so sweet that Mary was not very hungry for supper.

"*Tuesday, Nov. 4th.* It was the same old story last night. I was so hungry before bedtime that Mary ate some pie. She didn't sleep well, because I felt so uncomfortable that I disturbed her. Why doesn't Mary Ellen learn that I cannot work well and keep her happy and healthy when she abuses me this way! I am so hungry for real food, but all she sent down for breakfast was a doughnut and coffee. That does not do me much good.

"*Monday, Dec. 1st.* Mary Ellen didn't gain when she was weighed to-day. She hasn't gained at all since school began. Her teacher said that she looked pale and tired and asked her what was the trouble. How I wished I could tell the teacher that Mary eats nothing but sweets! How can she grow without the foods which make her grow?

How can I do my work without fruits and vegetables?

"I am worried about Mary Ellen. I feel sick most of the time. Mary is cross, she does poor work in school, she does not sleep well, she does not want to play, and she is pale and thin. Won't somebody please teach Mary Ellen to stop eating sweets between meals?"

We do not mean that you cannot eat pies, cakes, and candy at all. The proper time to eat them is after meals. You can enjoy them then just as much as at any other time. But you do not really need sweets at all if you have plenty of other foods. Of course there are sometimes parties after school where you will have things to eat which may spoil your appetite somewhat that night. You will want to eat them. But when you have a party in the afternoon, why not plan things to eat that will not spoil every one's appetite for supper? You might have fruit, or plain ice cream and sponge cake, or sandwiches and orangeade, if the weather is warm. In winter, perhaps you would like hot chocolate with sandwiches.

Tobacco is another thing which spoils the appetite. A growing boy often loses weight when he smokes, and gains again when he stops the habit. Doubtless one reason for his loss of weight is his loss of appetite. Surely a boy who wants to grow up strong and sturdy can't afford to smoke.

Children sometimes get the habit of eating pickles between meals. Pickles are hard to digest, because they are made from cucumbers which are not ripe, and because they are soaked in vinegar. Unripe things are always hard to digest. You remember the aches and pains which follow the greedy eating of green apples in the summer. Pickled foods are also hard to digest because the vinegar makes it difficult for the digestive juices to do their work. The best way to eat a pickle is to eat only a small amount of it with other foods at mealtime. When it is a question of pickles between meals, practice health and thrift at the same time. "Spare the pickle, and save the nickel."

Our meals should be regular and of the right sort. Perhaps the meal that gets slighted more than any other is breakfast. If there is any time in the day when you surely need food, it is at breakfast time. From supper to breakfast is the longest time without fuel for the body; and if you want to be ready for the day's work, you surely need to eat breakfast. One boy lost weight two months in succession just because he did not eat breakfast, and gained two pounds the next month when he did eat it. What is your idea of a good breakfast? It would probably include fruit, if possible, and cereal with cream or milk, toast or coarse muffins, perhaps an egg, and surely milk or cocoa to drink. If you find it very hard to eat a good breakfast, try eating as much as you can, and drinking milk and egg beaten together in addition.

There are several ways in which you can help yourself to get a breakfast appetite. One is to get up early enough to have time for washing and dressing properly before eating. Unless father has breakfast very early, you will want to eat with the rest of the family. You are more likely to be hungry when you sit at the table and eat with other people. If there is time for you to do an errand or help your mother in some way, that will give you a bit of exercise and fresh air which helps you get hungry for breakfast. It also helps your appetite in the morning if you have a clean mouth. A mouth that has its teeth well brushed the last thing at night and the first thing in the morning is much more likely to be a hungry mouth at breakfast time. If you find it hard to eat a good breakfast, you should never let yourself eat after supper at night.

It is much better for boys and girls to eat a light supper at all times if they can. In some families where the father is away all day, supper is the real dinner, and so the children eat their biggest meal at night. If you can have your dinner at noon and eat a light supper of cereal, fruit, and milk, or a salad with bread and butter and cocoa, it is a better thing to do. As your digestive system will not have to work so hard, you are likely to sleep better. Heavy eating at night causes restlessness, dreaming, and lying awake.

The noon meal may be as much and as varied as you like, if it gives you building material and fuel for your human ship. Just a thin soup and cracker does

not supply that. Neither does just a piece of cake and a cup of tea. You are sure to be hungry, and this is the natural time for your dinner of vegetables, bread and butter, meat, fish, or eggs, milk, and simple dessert of fruit, custard, or plain pudding. If your family has the heavy meal at night, you should be sure to have a simple warm lunch at noontime. Remember that the food you put into your mouth does not merely drop into a sort of bag, but becomes a part of your body.

What, then, are the rules for giving your digestive system a fair chance? First are the rules about eating between meals and then the rules about meals. Perhaps you can write them in your notebook and add them to the rules of the health game you are playing. You can illustrate the right kind of lunches and the right kind of breakfasts, dinners, and suppers in class.

If you will eat good meals, you will not feel the need of between-meal lunches; and if you do not lunch between meals, it will be easier to eat good meals.

Questions to Answer

1. What is meant by "regularity of meals"? Why is regularity important?
2. Under what conditions is it all right for children to eat between meals? What are suitable between-meal foods?
3. If you eat sweets at all, what is the proper time to eat them? Explain why sweets should not be eaten between meals.
4. How may tobacco affect one's appetite?
5. Why is breakfast an important meal?

6. What would you include in a good breakfast? Give a reason for including each food.
7. Tell several ways to help yourself have a good appetite for breakfast.

Things to Do

1. Make a number of suitable menus for breakfast, dinner, and supper, using foods which are in the market at the present time and which you could afford to buy. Have the best menu for each meal mounted on a chart, with picture illustrations, and hung up in the classroom. Food models may be used to illustrate the meals.
2. Keep a record of what you eat for breakfast every day for a week. Discuss your records in class.
3. Plan suitable refreshments for a party.
4. Add to your scrapbook a page to illustrate a good breakfast.
5. Make true statements using the following words: regular, nourishing, appetite, sweets, pickles, breakfast, supper, noontime, between meals.

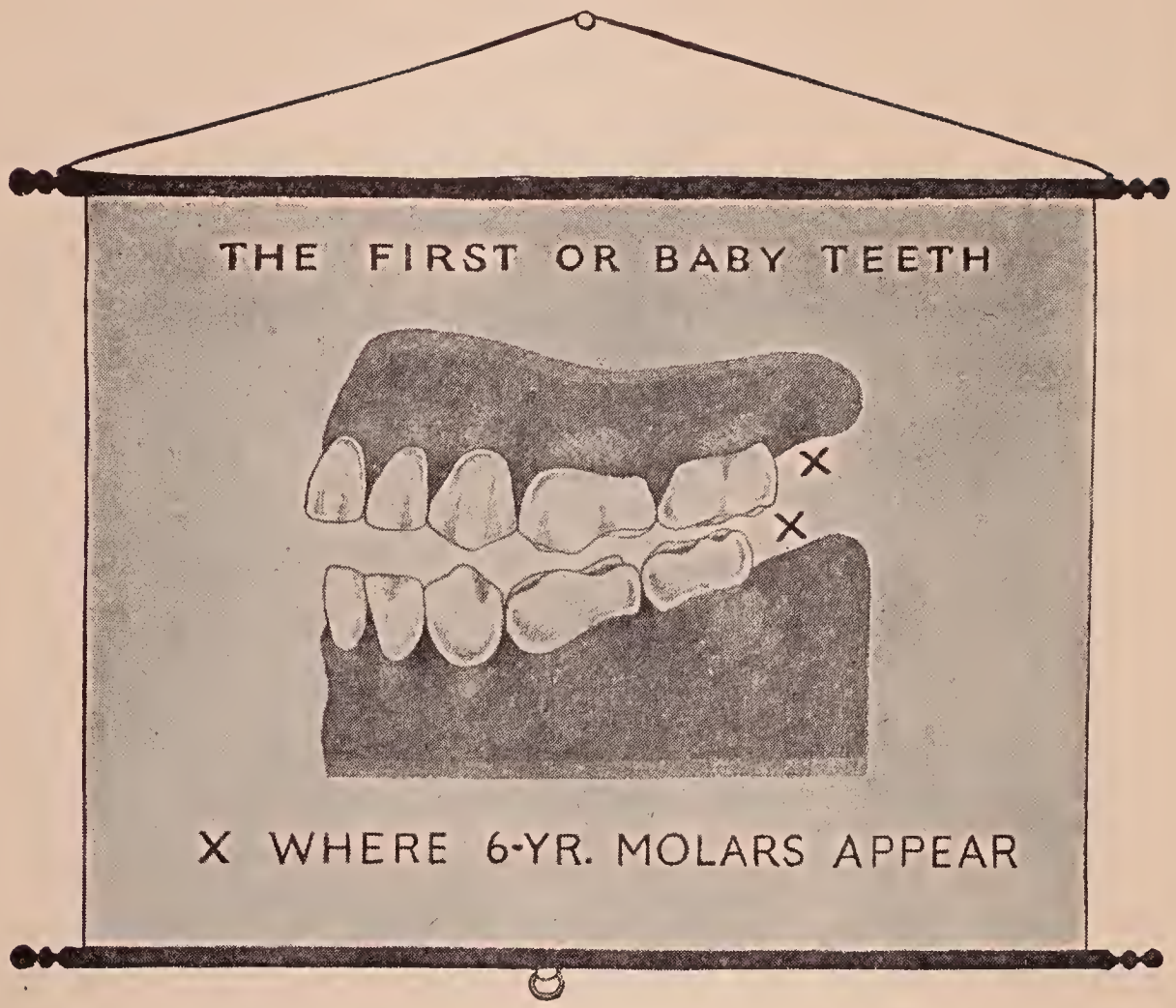
XIV

THE TEETH

What excitement there is in the house when baby cuts his first tooth! The lower front teeth are usually the first to come through. This is when baby is about six months old. By the time he is eight months old, he will probably have four teeth. At ten months, he will have four cutting teeth in the upper jaw and four in the lower jaw. When he is about a year old, he will cut his first grinding teeth. About the seventeenth or eighteenth month, he will cut the other sharp teeth which come in place between the front teeth and the grinders. When about two years old, baby cuts his last four teeth. These are grinding teeth and come through behind the others. Now he has the full set of baby teeth, which are to last him until he is old enough to go to school.

The jaws are very small when the first set of teeth comes, and a second set of larger teeth comes later when the jaws are more fully grown. The first tooth in the second set does not come at the front of the mouth, as it did in the first set. One by one the second set takes the place of the first, so that there are always some teeth in position to chew the food.

The first tooth of the second set of teeth is a big double one, called a molar. It appears directly behind the last one of the first set. There are four of these



in all, one on each side of the upper and lower jaws. These are called the six-year molars because they come when a child is about six years old. Look at the diagram and see where they are. Find them in your own mouth by counting from the middle of your jaw to the sixth tooth, which is the six-year molar.

As soon as the six-year molars are in place, and ready to do most of the chewing for you, Nature continues to replace your baby teeth with the permanent ones. These changes begin at the front of your mouth,

when you are about seven years old, and continue until, by the time you are eleven or twelve years old, a new strong tooth has come in place of every old one.

Then when you are about twelve years old, Nature gives you more big teeth just beyond the six-year molars. Can you guess what they are called? After these twelve-year molars come four more, called the Wisdom teeth, which usually appear when you are about seventeen, although they may come much later.

The six-year molars come through in time to do the work of chewing while the first teeth are being replaced. They are not so strong as the twelve-year molars. Their protecting coat of enamel is thin, and there may be tiny open places, or fissures, in the enamel, so that they are likely to decay more quickly. For this reason they must have extra good care. Children do not know this, and as a result lose their six-year molars before they grow up.

Even mothers and fathers often do not realize that the six-year molars are *second* teeth, but think they are the last teeth of the first set. They don't understand how serious it is when cavities come in these molars, for they believe the teeth will fall out and be replaced with new ones.

Have you kept all four of your six-year molars? If you have little brothers and sisters, watch for their six-year molars to come through. Perhaps you can help them to save their teeth, even if you have lost some of your own.

You will remember that teeth are made of calcium, a substance which you have seen in lime and in marble. You may also remember that the body gets this substance from certain foods, like milk and leafy vegetables. There is a very hard layer on the outside of the tooth called the enamel, the hardest substance in the body. The inside of the tooth is called dentine. This is hard, too, but not quite so hard as the enamel. Solid and hard as the tooth is, however, it is often destroyed.

When food in small particles is left between the teeth, it spoils, forming acids which destroy the calcium in the tooth. This often happens where food is tucked tightly away in little spaces between the teeth or in hollow parts of a tooth, especially where there is a tiny break in the enamel. When a pocket has been started, more food is stored there. This food spoils inside the cavity, which enlarges rapidly. At the center of the tooth are blood vessels and a nerve. When the cavity reaches this point, the nerve is not protected and begins to let you know there is serious trouble. Your tooth hurts when you take something cold into your mouth, and soon begins to ache.

There are certain rules in caring for the teeth, as in caring for other parts of the body. The first rule, especially for children, is to be sure to have plenty of the foods which furnish calcium for building teeth. You know what they are. Most of your teeth are already formed, but the supply of calcium needs to be kept up. Boys and girls who want strong, white teeth,

should drink a quart of milk every day and also eat fruit and leafy vegetables, for these are the foods which build teeth and keep them strong.

Another rule is to eat hard foods which require a lot of chewing. This helps to keep the teeth strong and clean. Fruits that are slightly acid, like apples and oranges, also help to clean the teeth. The teeth of animals usually last until old age, although they receive no particular care. Animals do, however, use their teeth, and exercise them by eating hard foods which they chew well.

Races of people who live on hard, coarse foods usually have teeth that are much better than those of people who eat soft foods, as we do. A large number of children who came to this country from Russia soon after the World War had perfect teeth, though they had never used a toothbrush and had never been to a dentist. Why? Because they had eaten plenty of the foods which build good teeth and had used their teeth vigorously. With the kind of food we eat we find it very important to use the toothbrush and to visit the dentist regularly.

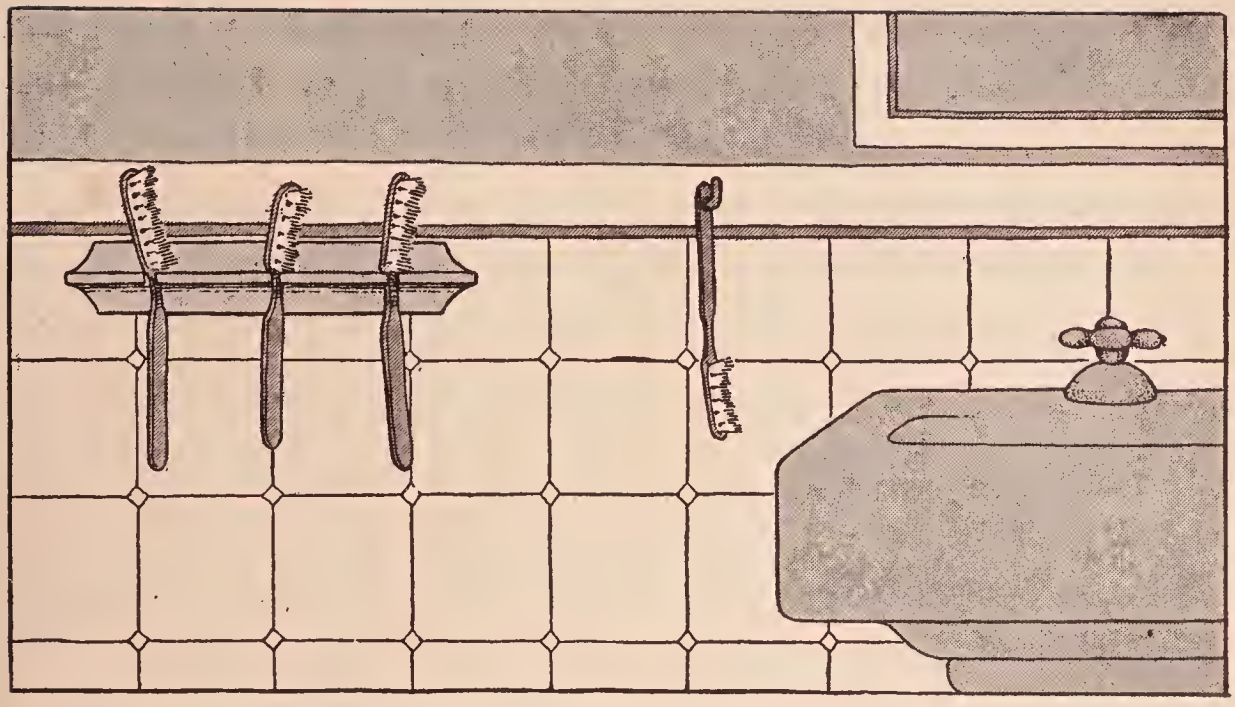
The third rule is: "Keep your teeth clean." Use your toothbrush at least once a day. Twice or three times is better. Most people like to start the day with a clean mouth, so they brush their teeth the first thing in the morning. They like to go to sleep with a clean mouth, so they brush their teeth the last thing at night. Many people also brush their teeth after each meal. There is

Some children are untidy
And not a bit like me,
For every day
In the proper way
I brush my teeth, you see.

no danger of brushing them too much! It not only helps to keep your mouth clean, but it also helps to keep the gums healthy, by cleaning them and increasing the circulation of the blood in them. It is most important of all to brush the teeth before going to bed.

The first important point to remember in brushing your teeth is: Brush up and down. The next is: Be sure to brush every part of your teeth, "upstairs," "downstairs," inside, outside and on the chewing surfaces. Last of all: Brush your tongue and the roof of your mouth, for your toothbrush is not only a toothbrush; it is a mouth brush. Last of all, rinse the mouth with cold water.

If your brush is to help you keep a clean mouth, you



must keep the brush itself clean. Rinse it well, after using, in hot water if possible. Shake out all the water, and put it in a clean, light place to dry. Do not put it into a closet or shut it up in a box or fancy case where it will not dry. Many people have a toothbrush holder in the bathroom where the brushes can be hung up out of the way. It is easy to put up a little screw hook on which you can hang your brush. If you haven't any such place, stand it up in a glass or cup.

It does not matter so much what kind of paste or powder you use. If your dentist tells you some kind that he thinks is particularly good for your teeth, you will want to use that kind. Otherwise, find some kind that you like, that makes your mouth feel clean and your teeth look white. You can keep your teeth clean

without toothpaste or powder. The important thing is to brush them. Did you ever hear of using a little salt or a little baking soda in water? Powdered chalk, also, is very good.

Another rule for saving your teeth is to go to the dentist every six months. Do not wait until you are suffering, for then it is probably too late for the dentist to save your tooth. If you go early, he doesn't have to drill near the nerve and you are not hurt. Let the dentist clean your teeth with his big whirring brushes, and fill up any little cavities he finds. Remember that when a little pocket has been made in your tooth, you yourself can do nothing to mend that tooth. The only person who can help you is the dentist. Sometimes boys and girls seem to think that Nature is going to keep on giving more teeth, just as she gave the second set to replace the first. But she doesn't do it. No power in the world can bring back lost second teeth. So take good care of yours.

Why does every one wish to have teeth in good condition? One reason is that teeth make you look better. People like to see clean, white teeth when you smile. Teeth give form to the face, too. You know that when older people lose their teeth, their cheeks hollow in, and they do not look so well. When children lose their molars, it makes a difference in the growth of the jaws and the shape of the face. Another reason why you do not want to lose your teeth is because you can't chew food properly. Many boys and girls who have

bad teeth cannot eat properly. They gain weight more rapidly after they have their teeth put in good condition.

A dentist was employed to come to a big factory to repair teeth for the men during working hours. After the dentist had been working for some time, the doctor of the plant noticed that he was having only about half as many cases of indigestion as before. He decided that many of the men had indigestion simply because they could not chew their food well.

No workman can do fine work without tools in good condition. No boy or girl can supply his body with plenty of food for growth unless his teeth are first-class tools with which to work. Take care of your teeth, for all the wealth in the world cannot replace them!

How many of these rules for care of the teeth do you keep?

1. Drink a quart of milk a day and eat leafy vegetables and fresh fruit.
2. Eat hard foods which exercise your jaws and help to keep your teeth clean.
3. Brush your teeth at least once a day.
4. Go to the dentist every six months.

Many classes have an inspection of teeth every day and keep some sort of a record. Sometimes the teacher inspects the teeth; sometimes there is a captain in each row who does it.

Questions to Answer

1. What are the temporary teeth? How many are there?
2. What are the molars? The six-year molars? The wisdom teeth?
3. What is the enamel of the tooth? The dentine?
4. How many teeth are there in the second set? At about what age are these teeth all in place?
5. What are the reasons for taking care of the first teeth?
6. Why are the six-year molars often lost?
7. What foods help build strong teeth? What is the tooth-building substance called? What other parts of the body use this substance?
8. How can you save your teeth from decay?
9. Give four rules to follow in caring for the teeth.
10. What are the reasons why you should brush your teeth at least twice a day?
11. Why is it important to have your own toothbrush?
12. How do you judge a good toothbrush? Why is it important to have a stiff brush?
13. How should the toothbrush be cared for?
14. Why should one refrain from biting hard objects such as nuts and thread?

Things to Do

1. If there is a baby in your family, find out how old he is and how many teeth he has. Give your reports in class.
2. See whether you can find out how many of your own temporary teeth have fallen out and been replaced by new ones.
3. Find your own six-year molars. Are they whole and clean?
4. Add to your scrapbook pages to illustrate rules for care of the teeth.
5. Have a toothbrush drill in class. Pretend you have your

toothbrush and a glass of water. As you brush, say to yourself, "Up, down, 1, 2, 3, 4, 5, 6, 7, 8, dip (into water)." Do this for the upper, lower, back, and front teeth, and then finish with a round-and-round motion on the chewing surfaces of the teeth, tongue, and roof of the mouth.

6. Bring into class whatever information you can find about the teeth of animals and how they are used.
7. Inspect for clean teeth as part of your morning inspection. Keep a record on the blackboard to show how many children brush their teeth every day.
8. Start an honor roll for teeth on the blackboard. Put on the roll the names of the children who have their dentistry all done and who keep their teeth clean. Add to the honor roll the names of other children as soon as they have their dentistry done. See whether you can have your class one hundred per cent on the honor roll before school closes.

XV

KEEPING CLEAN

If you live near a big seaport, perhaps sometime you have seen a large ocean liner set up in dry dock. A dry dock is like a huge basin or tank. The side toward the ocean is open and is fitted with a kind of gate, where the big ship is floated in. Then the water-tight gate is closed and all of the water is pumped out of the basin, so that the ship is left standing on the cement floor of the now empty tank.

Whenever a ship goes into dry dock for any kind of repairs, the captain always takes the opportunity to have the outside of the boat cleaned and painted below the water line. The ship picks up dirt from the water. Little animals and plants living in the water attach themselves to the bottom of the boat. Salt water spoils wood or steel, so a special kind of copper paint is used to keep the water out. This paint has to be renewed quite often, as a protection, for without it there would soon be leaks and the ship would not be safe.

If you were lucky enough to go aboard this ocean liner, you would find that every spot is very clean. The woodwork is beautiful. Here again the clean paint is a protection, for it preserves the wood and keeps it in good condition. It also makes the ship look well. Imagine what an ugly thing a ship or a house would be without paint! What an ugly thing, too, is a ship

with dirty paint! The covering of the ship cannot add beauty unless it is clean; neither can it give proper protection.

In your living ship, the outside covering, or skin, is like the paint. The skin gives protection and beauty if it is clean. Cleanliness does not always save one from every kind of sickness, but it certainly helps. Without cleanliness, surely one cannot be attractive to other people. You are not attracted to a new classmate at first sight if he looks dirty and careless. He may be a splendid boy, cheerful, unselfish, willing to work hard, and always doing things for other people. You will like him for these things when you know him better, but you will never forget that he is careless in his habits of cleanliness. Won't other people feel the same about you?

In fact, you are judged so much by your personal appearance that you cannot afford to be careless about it, even though it takes quite a bit of time every day to keep your body and your clothes in good condition. Not only do you have to fight against the dirt which comes from dust in the air, and from touching dirty things, but you have to be ever on guard against the dirt which comes from your own body.

All over the outside of a ship are round openings to let in light and air. They are called portholes. Your skin has countless "portholes," too. They are very small openings, called pores. The pores are not used so much to let in air as to throw off waste material from

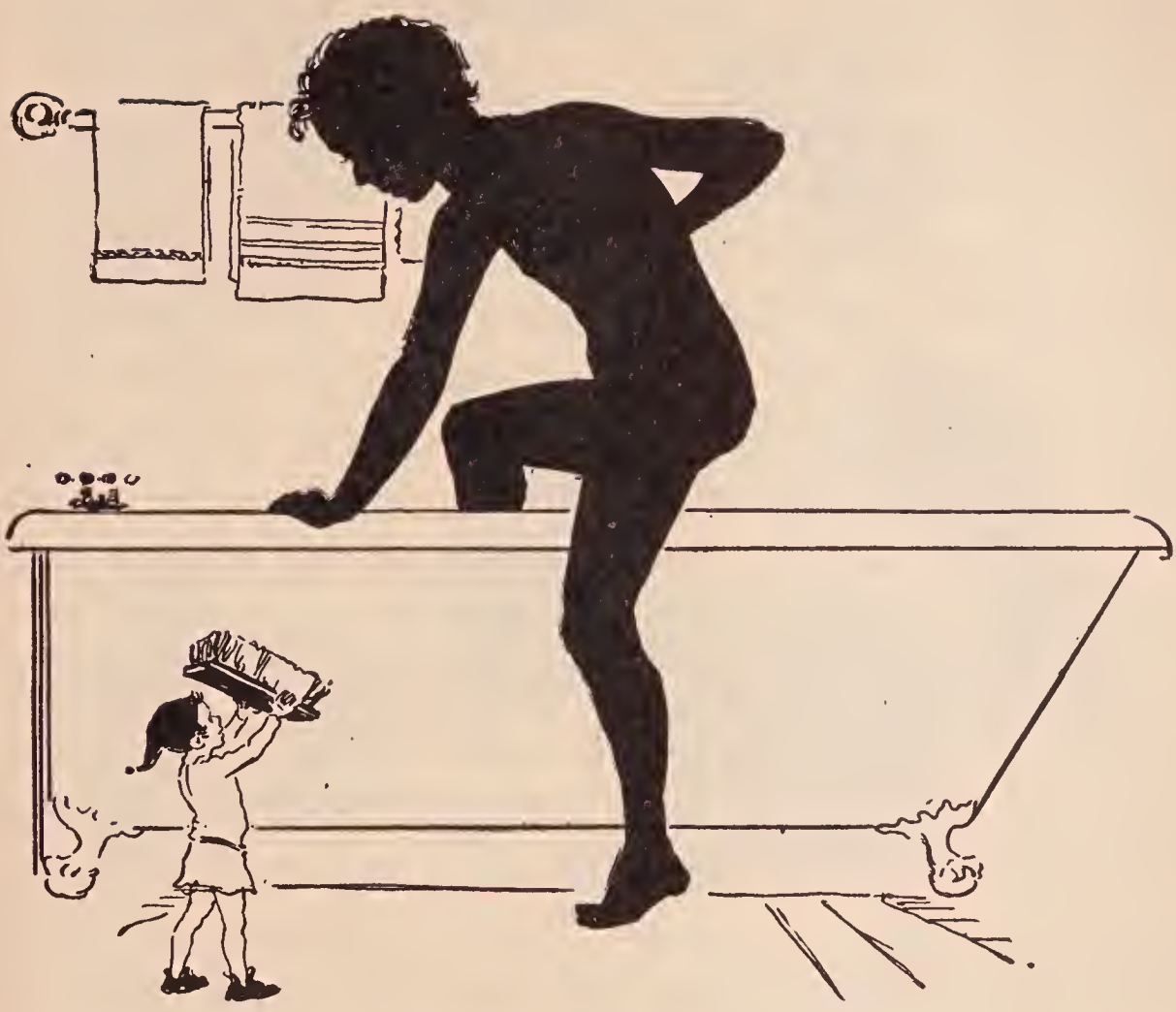
the body, just as the portholes of the ship are sometimes used for throwing out waste. The material thrown off through the pores is called perspiration, or sweat.

The pores in the skin are so small that they cannot be seen very easily. See how your finger tips are marked with fine, curved lines. By using a magnifying glass you can see the little pores arranged there side by side. Sometimes when your fingers are warm and moist, you can see in the pores little drops of perspiration. This contains small amounts of waste material thrown out from your body.

There is a still more important use for perspiration than carrying off waste. When you are very warm on a summer day, or when you have been playing hard, perspiration pours out freely on the skin to cool you off. Some people never perspire very freely, and they suffer more from heat because they do not cool off in this way.

You should exercise vigorously enough every day so that your pores are opened to let out perspiration on the skin. Be careful, of course, not to get chilly and so take cold after you have been exercising. Even when you do not perspire enough to feel it, some waste material is being thrown out through the pores. This remains on the skin until you remove it with soap and water.

When you understand that the skin has these little openings, or pores, you can easily see why you need to



have a full bath often. Unless your skin is kept well scrubbed and clean, the little pores become clogged up, and your skin looks coarse and dirty instead of clear and fresh. Unless you are clean all over, the odor of perspiration may annoy other people. Some parts of the body, like the feet and armpits, perspire more freely than the rest of the body. Be sure to guard against disagreeable odors by bathing these parts thoroughly every day. You can't deceive people about your cleanliness. If you are really

clean, they know it! If you are only nearly clean, they also know that!

Many people have a full bath every day with water which is cold or at least cool. That may not be necessary, but every one who wants to be clean should have a full, warm, scrub bath at least twice a week. Do not feel that you cannot have a full bath just because it is not possible for you to have a bathtub full of hot water. You can at least scrub all over from a wash basin or foot tub, as many other boys and girls do. A bath in the washtub is great fun, too.

If you do not have a full bath every day, you must be sure to scrub well all the soiled parts of the body that need a daily wash. Sometimes it seems as though ears were made just to hinder when you are in a hurry to get through your wash before breakfast. Do not think for a minute they can just as well wait until tomorrow, for some one will be sure to discover that those ears got left out of the morning wash! The back of your neck is another spot which sometimes escapes a scrub. You cannot see how your own neck looks when it has not been washed, but haven't you seen an unwashed neck on someone else? How can you risk yours looking like that!

No part of your body touches so many dirty things as do your hands. They need to be scrubbed thoroughly and regularly with soap and warm water. A hand brush helps to take away the grimy look from knuckles and finger nails. If you like a nice clean table

at mealtime, you must like clean hands at mealtime, too. Of course, the hands must be washed several times a day—always before meals, after going to the toilet, and before going to bed.

Hands are not clean unless the nails are clean, too. Make a practice of cleaning your nails when you wash your hands. They clean more easily then. The best way to clean them is with an orange-wood stick or toothpick. These will not scratch the nails underneath. A sharp file or knife blade makes the nails so rough that they catch more dirt and look grimy all the time.

The nails also need to be kept smooth and curved with a file or nail board. They may be cut with the

scissors, but filing makes them more smooth and even. If you have brittle nails, ragged cuticle, or hangnails, rub in vaseline every night after you have washed your hands before going to bed. See how soon your cuticle will become smooth and your nails shiny.

Sometimes children get the nervous habit of biting their nails as fast as they grow. The fingers roll up over the bitten edges, becoming stubby and ugly in shape. Not only is the shape of the nails spoiled and the fingers made clumsy, but small sharp bits of nail are carried into the throat. You can see how dangerous that is, for these sharp bits are likely to stick into the soft tissues there, carrying dirt with them.

It is not hard to break this habit once you have made up your mind that you will do it. Putting some bitter paste on the nails may help to remind you. It is, however, chiefly a matter for your wise "captain," the mind, to watch and control. Keep your hands away from your mouth at all times. As soon as a nail grows out, file it off smoothly so that you won't be tempted to bite it because it is rough. Get your classmates and family to help you by reminding you when you put your fingers into your mouth.

Make an inspection of your class to see how many have the nail-biting habit. Work out some plan for showing how fast they improve. Some will have every nail grown out at the end of two or three weeks. See how long it will take to get a class where no one bites finger nails.

Your hands tell a great deal about yourself and your daily habits. Hands that are very clean, with nails white and smooth, tell of boys and girls who are neat and careful in other habits as well. Unwashed hands, those with rough and dirty nails, tell quite a different story.

Your hair, too, tells something about you. Laziness is the only excuse for a dirty, untidy head of hair. If you give yourself a good shampoo once in two weeks, it will help to make your hair bright and glossy. Using your comb and brush every day takes out dust and dirt, too. Massaging the scalp by brisk brushing or rubbing improves the circulation in the scalp and helps to keep the hair in good condition. Girls, find some way to arrange your hair neatly so that it is becoming. Take pride in having a well-dressed head of hair, for it adds greatly to your good looks and general appearance. It is important, of course, to have your own comb and brush and to keep them clean.

Each person in the family should have his own towel and washcloth and keep them always in the same place so that they are used by no one except himself. A person of clean habits likes to have his own linen, and the use of individual towels helps to avoid the spread of skin disease from one person to another. Paper towels are best in public places where it is impossible to supply individual towels. In most families fresh towels and washcloths cannot be supplied every day. You can keep your washcloth clean by washing it out every time

you use it. Your towel will be kept clean if you are careful to wash your skin thoroughly before you use the towel.

The neatness of your clothing makes a difference in your appearance. What things do you notice most quickly about the clothing of other boys and girls? See how many rules you can make for care of clothing. Do not neglect to make one about clean underwear and stockings, for the clothing which comes next to your skin becomes soiled with perspiration and needs to be changed oftener than your outside clothes.

Among the many things you do for the cleanliness and comfort of your body, please give a little attention every day to your good servant, the nose. A great deal of dirt from the air is caught on the hairs which line the nose and on the mucous membranes. Clean your nose carefully the first thing in the morning and the last thing at night by blowing it gently. If your nose is very dry, or for any reason does not clean easily, perhaps the nurse or doctor can suggest some treatment that will help you.

Remember that the proper way to breathe is through the nose and not through the mouth. The nose cleans the air and warms and moistens it before it goes into the lungs. If you cannot breathe through your nose, ask the nurse or doctor to find out what the trouble is. When you cough or sneeze, cover your mouth and nose with your handkerchief. This is a polite thing to do, and it prevents the scattering of droplets.

Many classes have inspections every morning for cleanliness of hands, face, neck, ears, teeth, and for neatness of clothing and hair. Could you pass such a thorough inspection? Ask yourself every day these questions which are hung on the walls of a New York school:

Am I ready for school today?
Is my face clean?
Is my neck clean?
Are my ears clean?
Is my hair combed?
Did I brush my teeth?
Are my finger nails clean?
Do I wear a necktie?
Are my shoes blackened?
Look and see! Look and see!

Questions to Answer

1. What are two reasons for keeping the skin clean?
2. What are pores?
3. What is the use of perspiration? Why does it need to be washed off the skin?
4. What ways are there to take a bath if you do not have a bathtub?
5. Why should the hands be washed before meals?
6. Look at your nails and see whether they are clean and evenly shaped. Why is it important to care for the nails properly?
7. Discuss the reasons why a child should not bite or pick his nails. What things may help to overcome the habit?
8. Why is it important to rinse and dry the skin thoroughly?

9. Tell how to care for the skin if it becomes chapped in cold weather.
10. What must be done to keep the hair in good condition?
11. Discuss the importance of clean underwear and stockings.
12. Why should the hands and articles like pens and pencils be kept away from the face and the mouth?
13. Explain why one should use only his own handkerchief.

Things to Do

1. Bring into class the various articles which are useful in caring for skin, nails, and hair, and arrange them in an attractive exhibit. You may include part or all of the following: soap in an individual soap dish, washcloth, face towel (linen or cotton), hand brush, bath brush, nail file, orange-wood stick, hand lotion, comb, and hair brush.
2. Write a paragraph on the effect of cleanliness upon attractiveness and success.
3. Add to your scrapbook a page showing the articles needed in making a complete daily toilet.
4. Give a demonstration of the proper way to blow the nose.
5. Add to your morning inspection any new rules you have learned from studying this chapter.
6. Choose some girl to give a demonstration of what she would look for in the appearance and cleanliness of her first-grade sister if she were responsible for getting her off to school some morning.

XVI

HOW DO YOU CARRY YOURSELF?

In France when people meet on the street, instead of saying, "How do you do?" or "How are you?" they say, "How do you carry yourself?" Do you ever look at older boys and girls when you meet them to see how they carry themselves? If you do, you have seen some who were strong, erect, and graceful in their walk, and whom you would like to resemble or imitate. Others walk in a slouching, awkward manner, and you hope you will never grow to look like them. Perhaps after you finish this chapter, you will think the manner of carrying the body so important that you, too, will say, "How do you carry yourself?" when you meet each other.

The story is told of a British officer who called one day at the office of a well-known doctor. During the conversation the officer said, "As I came in just now, I noticed the man who tends your outside door. When did he serve in the British army?" The doctor looked up with surprise and said, "Why, I do not believe he ever did. So far as I know, he has always lived in this country. He has been a door tender in this building for many years." But the officer was not so easily convinced. "I would stake any amount of money," he replied, "that this fellow once served in our army. Give us a man in training for a few years, and he will ac-

quire a habit of posture that is never mistaken by an officer. Do you mind if I question the man on my way out?" "Not at all," said the doctor, "but I am sure you are mistaken." On the way out of the building, the officer stopped suddenly beside the man at the door, and in crisp, military fashion said, "When did you serve in the British army?" The man, taken wholly by surprise, clicked his heels together with a brisk salute, and answered, "In the Boer War, sir!"

Many years had passed since this door tender of the big office building was a soldier. How, then, did the officer recognize him? Because in his years of training

he had developed a habit of sturdy, upright posture which was a natural result of drilling in the army. Why had he not lost it during all those years? Because his muscles had been so well trained, that good posture had become a habit which could not be broken. You are training your framework in some habit of posture. Is it good or bad?

You must know it is worth while to pay attention to the way you stand and sit, because of the importance of personal appearance if for no other reason. When you see our soldiers and sailors on parade, or in the moving picture, don't you admire them? Everybody does, I think, chiefly because they look so straight and strong, and we are proud to think they are our own boys!

Can you imagine soldiers and sailors respecting an officer who has poor posture? A boy who has a good strong posture has an advantage over one who slouches and stoops. A girl who has a strong, graceful carriage is more attractive than one who has a prettier face but lacks the beauty of good posture. Artists have always seen that good posture is beautiful, and you will find in many pictures the finest examples of how to stand and sit.

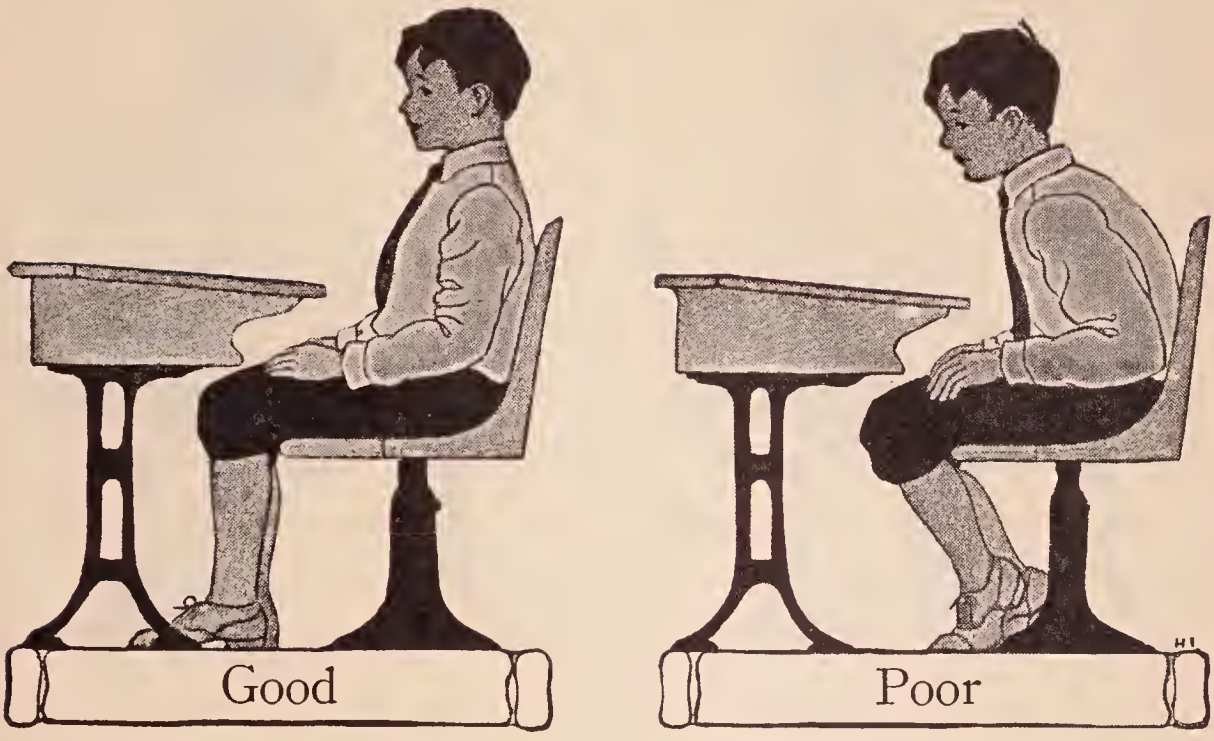
Posture has an even greater importance than that of making you look better. During the War, many men who went overseas were not able to stand the strain of the work placed upon them, and yet the one thing wrong with them was that they did not use their

bodies in good posture. Because their bodies were not trained to work like good machines, they were wasting energy every day. These men were sent to a special camp where they were trained to use their bodies correctly and to carry themselves in good posture. The result was that after a few months, most of them were able to return to their own companies and take up the hard work of army life successfully.

The difficulties in posture come about because man walks and sits in the upright position. If he went around on all four limbs like the cat or dog, he probably would have no trouble with body movements. But because he prefers to walk on his "hind legs," he has to learn the proper way to support his body in that position.

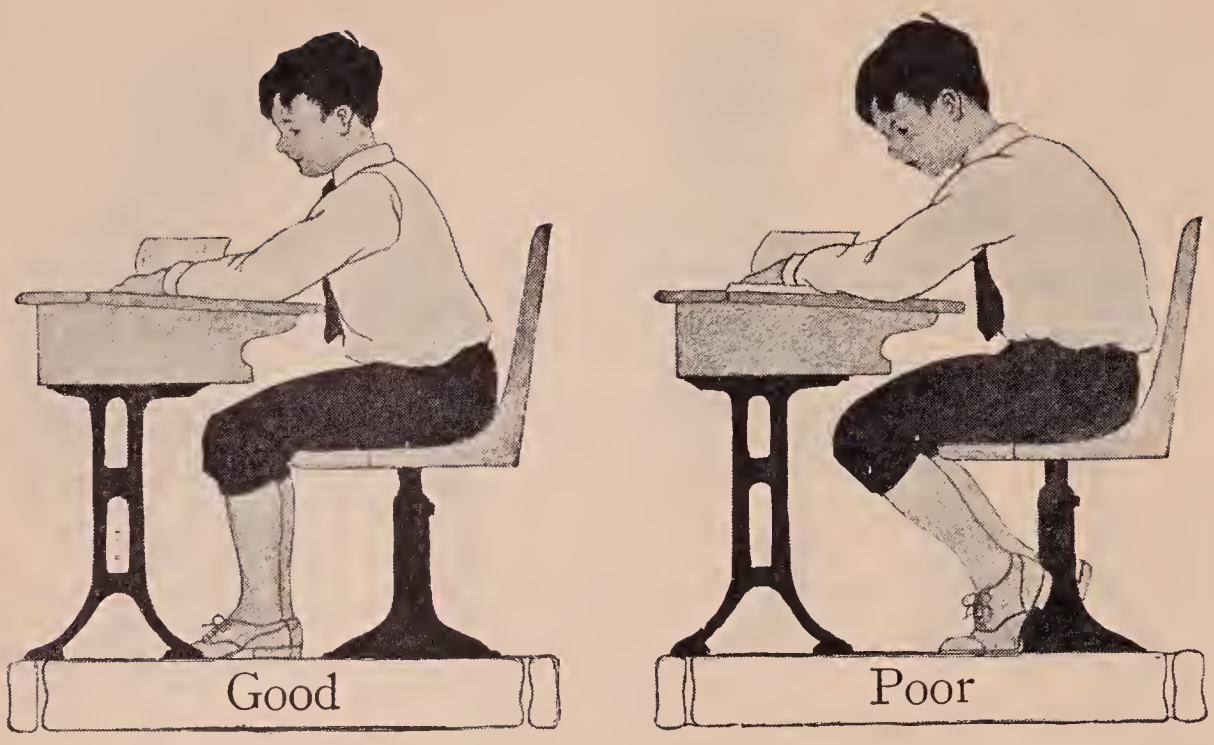
Inside your ribs is a big box-like cavity, which holds the lungs and the heart. It is separated from the big abdominal cavity below by a strong wall of muscle, called the diaphragm. The abdominal cavity contains the abdominal organs: the stomach, intestines, liver, and several other organs.

These organs are supported or held in place by being wrapped in an apron-like fold which is attached at the back of the cavity and they are also held in place by the big muscle which makes up the front wall of the abdomen. It is very important that these muscles should be kept strong. If they become weak, or if the back curves in too much at the waistline, the result is a "stick-out stomach," which you have all seen.



When this happens, it means that some of your organs are not in the proper place and therefore cannot do their work well. Some organs are pressed and crowded, the circulation of blood is hindered, and there is a nervous strain upon the system. Sometimes there is also indigestion and headache, because the digestive organs are not having the right support for the big work they have to do. To sit and stand well at all times affects digestion so much that perhaps we really should have included it in our rules for good digestion.

Have you any idea how to get this good posture which is so important to personal appearance and health? Some of you throw your shoulders back, or stick out your chest, but that is not good posture. Did you ever pile blocks one on top of the other to see how high you could make the pile without having the whole



thing topple over? That is what you must learn to do with your body—place your framework in a straight line, one part supporting the other just as the blocks do.

Do not worry about your shoulders. Remember that the trunk, the part which is built about the backbone and the ribs, is most important. The arms are just hung on. Take care of the trunk, and the shoulders will take care of themselves. It will surely make you have bad posture if you merely practice "shoulders back." It makes you look like a little bantam rooster, all puffed up and strutting! Don't be a bantam!

Let us try sitting first. Lean forward as though you were going to take a position for penmanship. Put your feet down comfortably on the floor. Keep your hips well back in the chair. Sit tall, stretch up

with your head as much as you can without making the strain too hard. Pull your chin in like a soldier. Get your chest high, but do not throw your shoulders back. Pull your abdomen in. Keep your back flat. If you have taken your position in the correct way, you should be able to find the "easy spot" in which you get the perfect balance of your body, like the balance of your tower of blocks. After you get this position, and have trained yourself for a while, you will be able to sit this way for a long, long time without tiring. Would it not make a world of difference in the building of your framework and the health of your body if you trained yourself to sit well during school hours?

Sometimes when you are reading or reciting, you can lean against the back of the chair. Be sure that your hips are pushed well back, and that your chair is of the right height to allow your feet to touch the floor. Now, without losing the good posture of head, chest, and abdomen, sway your whole trunk back from the hips until you rest against the back of the chair. Make yourself comfortable, but be sure of these points: Head up! Chin in! Chest high! Abdomen flat! Of course your teacher will have to help you in this because you cannot see yourself to tell whether you are in the right position.

Then there is the opposite kind of sitting, where you need to lean forward. You may need to do this always for writing and for studying on your desk.

Do not be a bullfrog and carry round shoulders on your back all the rest of your life! Start again from the correct upright position. Then sway your whole trunk forward from the hips until you are in a position to work easily. Remember always the magic signs, Head up! Chin in! Chest high! Abdomen flat!

Questions to Answer

1. What two reasons can you give for the importance of having good posture?
2. Describe what happens to the abdominal organs when the abdomen sags forward. How may this affect the health?
3. Why does the body tire less quickly with good posture?
4. What are the points of good standing posture? Demonstrate, and let your classmates judge whether it is good.
5. Why is it bad to throw the shoulders too far back?
6. What are the points of good sitting posture? Demonstrate, and let the class judge.
7. Tell the story of the British officer from this chapter.

Things to Do

1. Form the habit of taking good posture at the beginning of each lesson. See how soon you find your posture improving.
2. With the help of your teacher, select in each row a pupil who sits well. Let this pupil occasionally act as a captain during a reading or writing lesson to rate the pupils in his row Good, Fair, Poor, or Very Poor in posture. Change captains often.
3. Bring in pictures which show good posture and put them in your scrapbook.

XVII

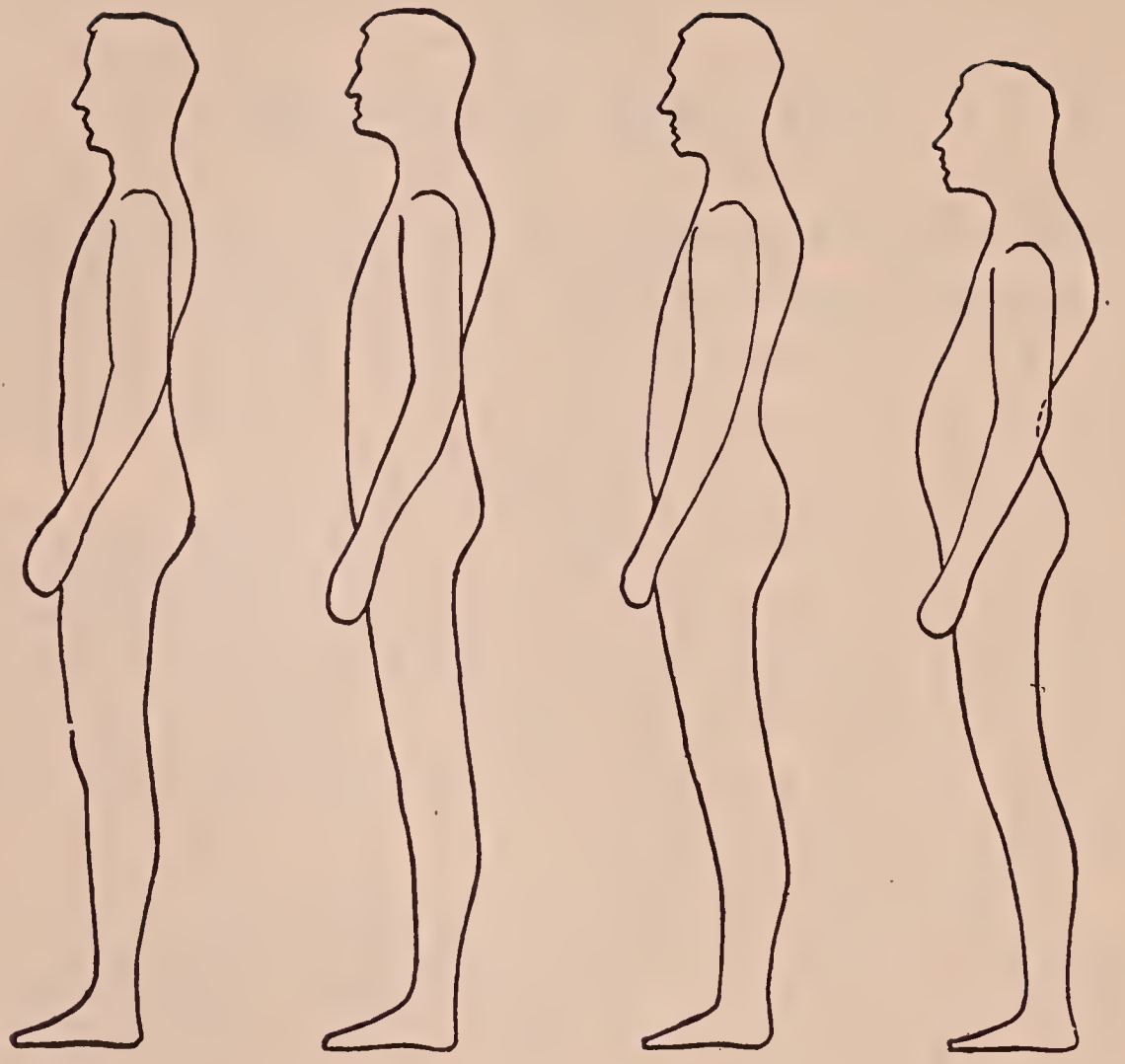
SHAPING YOUR SHIP

There are many things you can do to help each other in shaping the framework of your bodies. It is not easy to sit and stand well all the time, especially if you have already formed bad habits of "bullfrog" back, "stick-out" stomach, and hollowed-in chest.

On your classroom walls you can hang posters and charts which will remind you of your own appearance, and which will help you to understand what good posture is. Perhaps the best "sitter" in each row may act as teacher and reminder for his row during periods of written work or study.

Another thing to help you in this search for good posture is a chair and desk of the right size and height. Your feet must touch the floor. Your desk should be low enough so that you don't have to hunch up your shoulders when you write, and high enough so that you do not have to bend over double in order to be near it. This makes it easier for you to sit well. When you sit in big chairs at home, be sure that you really rest and relax, and not merely slump down in a position that strains your body and gets you into bad habits.

It will be a great help to you if you have two or three times a day in class to practice good sitting posture for a few minutes. After a while you should find



What is your rating in posture?

it easier to sit well than to sit poorly. If you try hard all the time to train yourself, and still find that you cannot hold a good position without becoming very tired, something is wrong. Perhaps your position is not really correct, and your classmates or teacher can tell you what is wrong. Perhaps you are the tall, thin type, or perhaps you are not very strong and well. In either case, you can help yourself by taking a rest

period flat on your back every day for twenty minutes or half an hour.

Teachers sometimes arrange for some children to take brief rest periods during school time, when they begin to feel tired from holding the sitting position. Can you find a comfortable way to relax with your head on your arms and your arms forward on the desk, or by sliding away down in your chair and resting your head on the back of it? Relaxing at a regular time each day, and having more sleep at night, will do wonders toward improving your posture.

The next question is how to stand. First of all, have you a good foundation to stand upon—are your feet correctly placed? Put them a little way apart, and let the toes point straight ahead, or nearly so. It is no longer stylish to put heels together and toes apart, because "toes straight ahead" is the natural way and gives a better base to stand on. When your feet are in position, see how well you can balance your whole body like the column of blocks. Never forget for a minute that the trunk is the important part, and that the backbone is the bone which holds the key to good posture. Stand tall, stretch up with your head, as though a rope from the ceiling were pulling it up. Chin in and horizontal. Chest high, but let the shoulders hang in a natural way. Abdomen flat, pull in hard at the waistline. Now, without losing all those points, sway forward from your ankles as though you were all one big wooden piece. Find the "easy spot" for

If you would have the proper shape
And learn to stand up tall, —
Chest out, head up and body straight, —
Get flat against the wall.

standing. That is, find the place where your body balances easily, where you do not have to pull and work hard with all your muscles to hold it. Usually you can find it by getting the weight of the body a little forward on the balls of the feet.

When you have taken all the directions for head, chin, chest, abdomen, and weight forward, the backbone should be as straight as you can make it. Here is a way to test. Find a flat place on the wall, against a door casing or some such place, where there is room enough for you to stand. Stand back to the wall with your heels about four or five inches away. Then flatten your back against the wall all the way from your hips to your head. Hold this position for a minute or

longer. Pull hard with your abdominal muscles and your back muscles. See if you can flatten out that curve in your back at the waistline. Perhaps you cannot do it at first, but train yourself to do it. This exercise of flattening your back gets your whole body in splendid posture. You are standing tall, chin in, chest high, abdomen flat, back straight. This is one of the very best exercises to practice every day.

Your standing position should be comfortable and attractive in appearance. Sometimes boys and girls hold their breath, and stiffen up all their muscles, trying to get into good posture. If you watch some one else do it, you see at once that it isn't good posture at all, neither beautiful nor comfortable. Until you find the position where you can stand and sit with only a little effort, you have not found good posture. Of course you cannot get the habit of a good standing and sitting position all at once, because your muscles have not been trained to it. Some of them will have to be stretched; some will have to be strengthened. Good posture is something to practice all the time, not something to put away most of the time and bring out only on special occasions. You must work patiently and train yourself day by day until it becomes a habit.

If you go to a gymnasium regularly, or if you have good setting-up exercises in school daily, you are fortunate; for this is the best way to train those lazy muscles of the back, chest, and abdomen. Remember this: you have not learned good posture unless your

body has learned to practice it. Your examination in good posture says, "Show me how you stand and sit at work and at play," rather than, "Explain on paper what we mean by good posture." Can you pass the test?

Good posture helps us to have more respect for ourselves and to have more confidence in our work. Teachers say that when a boy begins to stand better, he begins to do better work in school. He surely looks smarter, too! A young naval officer who has a son about your age has an unusual way of punishing him. When the boy has done something very wrong, he is brought to his father, who stands in the well-known posture of the Navy. The boy has to salute and stand "At Attention!" while his father talks to him as though he were a grown-up man who had disobeyed orders. He is so ashamed of his behavior when he stands like a man of the Navy that this form of punishment does not need to happen very often. To stand like a man helps you to think and act like one.

Are you in the race for good posture? Get the signals: Stand tall! Chin in! Chest high! Abdomen flat! Weight forward on the balls of your feet! Back straight!

Questions to Answer

1. How can you tell whether a chair and desk are of the right height?
2. How can you put the body into good posture by standing against the wall? Demonstrate.

3. How do rest periods help one to improve posture?
4. How does exercise help posture?

Things to Do

1. Continue good posture practice with captains as suggested at the end of the last chapter.
2. Try standing every day with your back to the wall as described in this chapter.
3. If you have a posture manikin, place it in position to show poor posture and change it to illustrate good posture.
4. Make posters to show the attractiveness of good posture.
5. Practice walking erect and carrying a beanbag on your head. Play a walking relay race by rows. A child who walks in poor posture or drops the beanbag puts his team out of the race.
6. With the help of your teacher, physical education director, or nurse, grade each pupil of your class in posture according to the standards shown in this chapter. Plan to be graded again before school closes to see how many have improved.

XVIII

THE CARE OF THE FEET

Did you ever notice how well Nature has adapted the bodies of animals to their ways of living? Take the matter of feet, for example. The duck and the hen are rather closely related, and yet the duck has a strong, webbed foot for swimming in the water, while the hen has an ordinary claw-like foot suited only for standing or scratching.

You know that the foot of a cat differs from that of a horse, and perhaps you can tell the advantages of each kind of foot. Probably you have watched monkeys at the Zoo and noticed how they use their feet. Which has a better foot, the monkey or you? The monkey doubtless would prefer his own, because yours cannot climb and perch on trees as his foot can. But you surely would not be satisfied with the monkey's foot, although there may be times when you would like to borrow it for a little while.

Nature has adapted man's foot, too, for the things he wants to do. We walk, run, jump, and dance. In all these activities we differ from the other animals because we stand up straight on two feet instead of going on "all fours." The horse could not stand up on two legs all the time, because his foot has no way of bracing itself. Your foot is built so as to brace in

two directions. If you sway forward, the front of your foot braces and holds you from falling. If you sway backward, the brace comes at the heel and saves you from tipping over.

During the last war, a great many men could not become soldiers because of foot troubles, especially because of flat foot. In factories and other places of business, many men and women are not able to do work they like because of weak feet. You may know people who suffer from corns and calluses, or from aching feet.

Let us find out what the foot is like and why these troubles arise. The foot is made very much like the hand. It has many small bones attached to each other, which are held in place by strong cords or ligaments and by many small muscles. Every movement of the foot, like every movement of the hand, is made by use of these muscles.

You know that the American Indian had great endurance, and was able to travel on foot for many hours, over long distances, walking either barefoot or in light, leather moccasins. He had a strong foot because he lived in the open, walking and running every day, using his foot in the easy, natural way. He stood and walked with toes pointing straight ahead. The white man was more civilized and farther away from Nature. He wore heavy, stiff shoes with heels. He often did not give his foot the vigorous exercise of the Indian's. As a result, his foot became weaker

and often did not travel in the straight-ahead fashion of the strong Indian foot.

When you stand with the foot in its natural position, that is, with the toes pointing straight ahead, a large share of the weight of the body comes on the outside of the foot, which is better suited to bear it. When the toes are turned out, too much weight falls on the inside of the arch, which is not suited by Nature to bear the load. Are you giving your foot a fair chance? You can have a good pair of feet as long as you live if you let them work as Nature intended. The first rule is: Stand and walk with toes straight ahead.

The next rule is: Exercise the muscles of your feet. You know that the boy who has strong arms is the boy who uses them a lot in work and play. I once knew a boy who broke his arm. It was put up in a sling for a long while and the joint got stiff. When the splints were taken off, he found he had partly lost the use of his arm, simply because he had not been using it. The joint had become stiff and the muscles weak. Sometimes people who are sick in bed for a long time have to learn to walk all over again. The muscles of the foot, like other muscles of the body, become weak if they are not used.

Playing, running, walking, dancing all strengthen these muscles. People who most commonly have foot troubles are those who stand at their work without walking or moving about—bakers, chefs, machinists, laundry workers, and others. They put a

severe strain on their feet in carrying the weight of the body all day, without giving the muscles of their feet any vigorous exercise. There is more likely to be trouble if the feet are bound up in tight shoes so that the muscles are cramped.

The third rule is: Wear the proper kind of shoe. You have heard how the Chinese girls used to have their feet bound up to make them very small. This is no longer done, of course, but even now many people harm their feet by wearing tight shoes. Shoes that are too small injure the feet in many ways. To illustrate this, grasp your left hand as hard as you can with your right. See how the joints of the left hand slide over upon each other. If you squeeze too hard, it hurts. When your feet are crowded into tight shoes, the joints are pushed together and the bones crowded out of their proper place so that the foot becomes deformed.

This deformity may cause serious trouble, but there are sure to be other troubles, too, because the muscles have no chance to exercise. Even in walking or dancing, the foot moves as in a vise. The muscles lose their strength because they are not used. They become unable to support the foot, and such troubles as weak arches and flatfoot result. Not all foot troubles arise from tight shoes, for there are other causes. However, the person who wears shoes that are too small is sure to have weak feet. Keep the framework

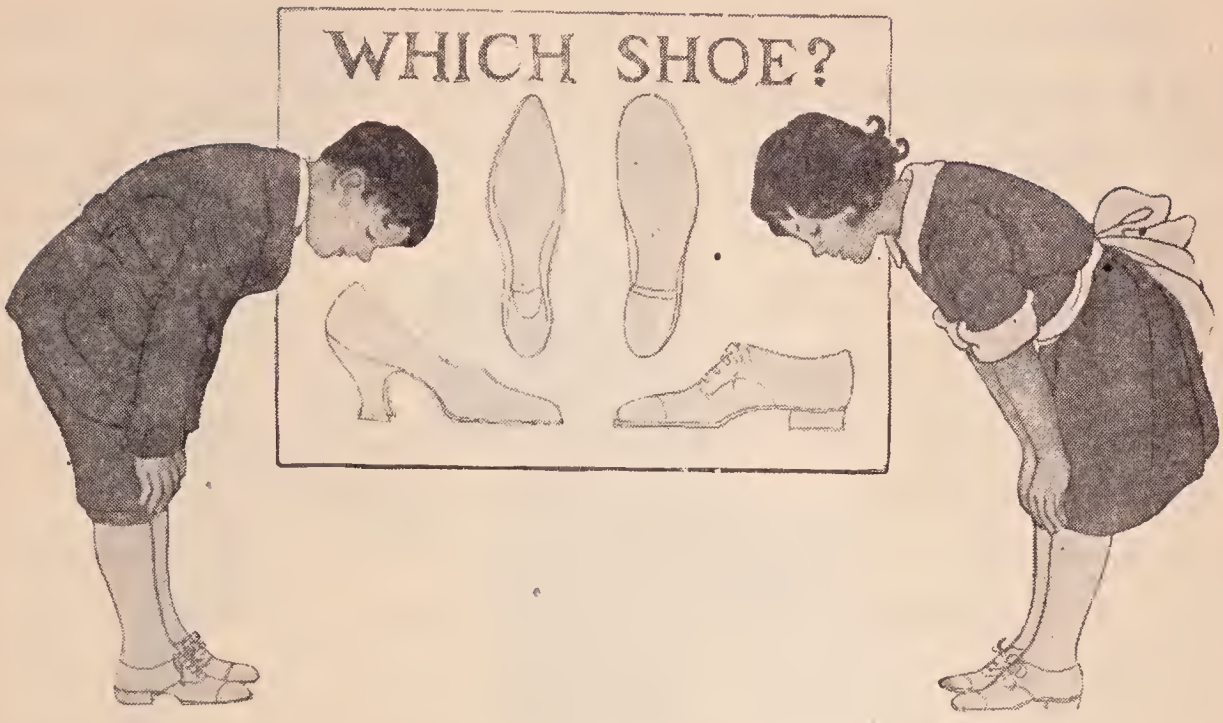
of your foot in natural shape and give the muscles a chance to exercise.

There is no reason for trying to wear a shoe which is too small. So many different styles can be bought, and shoes are so well made that a girl may wear a number seven without appearing to have an unusually large foot. As a matter of fact, many of the girls who take prizes for the prettiest feet at the Shoe Style Show wear sevens. Choose a shoe which is suited to your foot, and have a foot which is well shaped.

Probably your mother will not let you spoil your feet now with improper shoes; but when you are older you may be tempted to try to make your feet "look pretty" by wearing such shoes. The girl who tries to get a "pretty" foot in this way usually loses in the end. She deforms her foot, gets corns and calluses, and is in danger of more serious foot troubles. She may come to the point of having to wear the ugliest kind of shoes in order to have any foot comfort at all. On the other hand, the girl who sticks to a shoe that is sensible and large enough is able to play tennis, dance, or do whatever she pleases with a good-looking foot that has not been spoiled by foolish styles.

One doesn't have to give up style in order to be sensible in the care of the feet. Every good shoe store carries shoes which are beautiful and yet sensible. The athletic girl of to-day is proud of a strong, shapely foot rather than a small, weak, deformed one.

There are certain important requirements for a



sensible shoe. First of all, it should be large enough to give play to the muscles of the foot. The line on the inside of the foot running through the great toe and the center of the heel should be straight, or nearly so. If you notice the bare feet of babies and small children, you will see that this straight line is natural. Why do so many grown people have a line that turns off at the joint of the big toe?

The next requirement is a low heel. Some people need a heel higher than others, but it should never be so high as to throw the foot entirely out of position, with the weight of the body forced forward on the toes. It should always be broad enough to give a good support. The edge of the heel at the back should be in direct line with the back of the shoe or nearly so; that is, it should not be set in under the shoe, as a French heel is.

Some shoe dealer in your town will be glad to talk with you about shoes, and to lend models which can be examined and discussed in class. Get from him samples of shoes worn by people having foot troubles or by people who stand a great deal. Get samples of shoes which are sensible and yet rather stylish and dressy. You may like to bring in also some of the narrow, French heel shoes which you sometimes see on the street. These should never be worn for walking and working. For occasional use at parties and dances they may not be harmful. The girl who wears them on the street, or standing at work all day, is sure to regret it when the mischief is done.

Sometime at home, try the muscles of your foot to see if they can do some tricks. Can you pick up a marble with your toes? Can you pick up a pencil, hold it in your toes, and write your name? These tricks are great fun, and they are fine exercises for weak muscles.

The fourth rule in caring for the feet is: Take off rubbers, or rubber boots, whenever you come indoors. No air can go through your rubbers. The foot is just as hot and uncomfortable when you wear them in the house or school as the body would be if you had on a big rubber coat. Wearing them indoors makes the feet very tender. The feet chill easily and chilblains may develop.

Occasionally people have trouble with ingrowing

Rubbers were made for outdoor use,
To wear them inside is real abuse.

toenails. This often develops because the nails have not been cut straight across, as they should be. The nails should be kept short and clean. The feet need to be washed regularly and the stockings changed often. These things not only make one more comfortable but are also important in helping to keep the feet healthy.

Questions to Answer

1. How are the feet of animals adapted to their ways of living? How is man's foot adapted to his use?
2. What is the structure of the foot?
3. There are four rules for caring for the feet given in this chapter. Tell what they are.
4. How does exercise help the feet?

5. Which is the greater strain on the feet—walking a long time or standing a long time? Why?
6. Why are correct shoes important? What is the effect of constantly wearing tight shoes?
7. Describe a good shoe.
8. Do you know people who complain about tired feet? What kind of shoes do they wear?
9. Can you judge whether people have good feet when you see them walking on the street or elsewhere? How?
10. What is the chief cause of weak feet?

Things to Do

1. Illustrate in your scrapbook the health rules for taking proper care of your feet.
2. Ask a shoe dealer to lend you some good shoe samples. Make an exhibit in class and discuss the shoes.
3. Try at home some of the foot tricks suggested in this chapter. Report your success in class.
4. Demonstrate the proper way to walk.
5. Bring in pictures or samples of shoes from other countries. Discuss their good and their poor points.

XIX

YOUR MIND AND NERVOUS SYSTEM

If you were going to choose the captain for a ship, you would choose a man who understood the ship and who would be sure to take good care of it. If the captain were ignorant and careless, your ship would be in great danger even if it were the finest boat afloat. Many a splendid craft has been wrecked by a careless captain. Your mind is the captain of your human ship. Many a human ship is wrecked or injured, too, because the captain does not understand his ship or does not think it worth while to care for it. Do you remember the story of Ted and Jack? (Chapter II.) Which boy had a wise captain in his pilot house?

The brain is the center of the nervous system. It is the place where the captain lives. How well the brain is protected by the bones of the head! From the brain nerves run to all parts of the body like so many telephone cables. You will remember (Chapter V) that the nervous system is like a telephone system with the "central office" in the brain.

Some boys and girls have better nervous systems than others. As a matter of fact, your quickness of action depends quite as much upon your nervous system as upon your muscles. When you practice baseball or practice on the piano, you are training your nerves as well as your muscles.

A famous baseball player was tested for strength and quickness. It was found that he could drive out home runs, not merely because he was able to hit the ball with unusual force, but also because his eyes were unusually quick. His nerves and muscles worked so well that his bat could get to the right spot at the right instant to meet the ball and knock it away across the field. Any boy who plays baseball knows that a cool head and steady nerves count for much more on the baseball field than mere strength of muscle.

There are many things which have a strong influence upon your nervous system. Is there sometimes a day when you are slow of mind and uncertain in your work? Can you think what makes you so? Sometimes it is because you have not had enough sleep. Sometimes it is because of too much excitement. Sometimes it is the effect of drinking tea or coffee. Sometimes it is because Mr. Stomach is having a hard time with too much or the wrong kind of food. You see, when Mr. Stomach is not feeling well, he keeps sending up messages to the mind that he is in trouble.

When people do not have regular bowel habits, the poisonous substances which should have been gotten rid of irritate the nerves. People who do not have good habits, good digestion, regular bowel habits, and plenty of exercise find it difficult to keep a good disposition.

Did you ever hear children or grown-ups say they are "nervous"? Why should people be nervous? Your nerves were made to use. You should be proud that

you can use them, quickly, constantly, and happily. Some people used to think it was fashionable to be nervous. But the folks who had to live with them did not think so! Make it fashionable in your class to be clear-minded, happy, and cheerful all day long! Do not make the dreadful mistake of giving away to your temper. Do not be disagreeable to other people and make the excuse that you are "nervous."

The mind and nervous system are affected also by the use of alcohol and tobacco. When a person has drunk quite a bit of alcohol, part of his mind goes to sleep, so that he doesn't really know what he is doing. Very likely he thinks that he is more clever than he was before he drank the alcohol, but he really is not. Students have been tested with problems to see whether they do as good work when under the influence of alcohol as they do when they have not been drinking. In one such case, many of the students thought they had done better after drinking. However, the examination of their papers showed that their work was smaller in amount and less accurate. Tests of this kind make us realize that alcohol hinders the mind in doing its work. It also affects the whole nervous system. As a result, people who use alcohol constantly, or who use much tobacco, are often irritable and "nervous."

Of course sometimes people have sickness or trouble which makes them truly nervous. If you are sick, see a doctor and overcome your nervousness as soon as

you can. But do not let your mind, by behaving badly, injure your health and happiness, and call that "nervousness."

It is possible to train your mind the right way. The mind may become tired from working too long or not having enough play and rest, but it does not suffer from working too hard. Can you put your mind completely on the thing you are doing? Many boys and girls never get ahead in school or in later life just because they cannot concentrate. Their minds wander constantly while they pretend to be working. Such dreaming becomes a habit. It never helps you to earn more money, do better work, or be more useful.

On the other hand, concentration becomes a habit, too. Practice keeping your mind completely upon what you are doing. The habit of mind you will acquire in this way will make your hours of study shorter and your school work easier.

No part of your body gets into bad habits more quickly than the mind—habits of peevishness, bad temper, selfishness, or fault-finding. There is one kind of boy who always thinks everybody is picking on him. He is never a good sport about anything. There is the girl who never thinks about any one but herself. If she is not chosen for the best position in the game, she will not play. There are also boys and girls who complain about weather, report cards, the things they have to eat, or the time they have to go to bed. Sometimes people do wrong and then lie about it or blame the

trouble on some one else. Don't you wish such folks had a mind to do differently?

There is the other kind of person, too. Do you know some one who is always right there to say, "I'll do it!" if there is something hard or unpleasant to be done? Do you always smile and play just as hard even if you are not chosen captain for the game? Do you try to like the foods you ought to eat and to do the things that are part of your work every day without complaining? All these little habits of mind may be hard to acquire, but few things brings so much happiness to ourselves or to others. People who are busy with their work and have a happy, helpful spirit toward others, do not have a chance to be selfish. You will find the unhappy ones among the boys and girls who think constantly of themselves or shirk their work. They usually think that all the world is against them! It is not hard to guess which sort of boy or girl has the most friends and gets on most easily in the world, is it?

Of course we cannot fool ourselves when we get into bad habits of mind. But sometimes we think we fool other people by putting on a pleasant face and our very best manners. We may for a little while, but it does not last long. You can tell the difference between the boy who has nothing but polite company manners and the boy who really likes to be kind to people and make them happy. Which is true politeness?

Have you ever noticed that people show in their faces what they think and do? This is because the

Hurrah for the child that is
happy,
With a smile along the way,
For a cheerful disposition
Will help you every day!

nervous system affects the tiny muscles of the face and changes the expression. You smile, you frown, or pout by means of these face muscles. If you want a pleasant face, you must take care of your habits of thinking. Day by day, very quietly but very surely, your thoughts and feelings are being written in your face through the work of the "telephone system" and the tiny muscles.

There are other ways in which the mind affects the body. Do you remember the story in Chapter XII, showing how worry and unhappiness interfere with digestion? No wonder the body has trouble to do its work when the mind is all the time sending out mes-

sages saying, "Something is wrong, something is wrong." A discontented mind keeps the body "keyed up" for a fight all the time, and the poor old body cannot get any peace or rest at all. For the sake of your health, as well as your happiness, you cannot afford to let your mind get into bad habits.

The following story is told of a poultryman in Kansas who owns very valuable hens, one of which he claims to be worth $10,000. Long experience has taught him that he must take good care of his hens if he wants to get the best results. He feeds them on special foods, gives them drinking water at regular times, and supplies them with airy, clean houses. But, after all, he finds that there is one condition which will keep the hens from doing their best. "A discontented hen will not lay eggs," he says. "When I see a man go into the yard and yell loudly at the hens and wave his arms, I say to that man, 'You call at the office, get your pay, and go.' But when I see a man go into the yard, call gently to the hens, so that they gather around him clucking and eating out of his hand, I raise that man's pay." You see, even a hen cannot do very well unless she is cheerful and contented.

The condition of the body affects the mind. Take care of your body! The condition of the mind affects the body. Be cheerful!

Questions to Answer

1. Can you tell why the nervous system is like a telephone system?
2. What health habits have a marked effect upon the nervous system?
3. How do alcohol and tobacco affect the nervous system?
4. How does the condition of the nervous system affect you in work? In play?
5. What sort of "disposition" do you like in other people?
6. Can the mind be trained to good habits? Give an example.

Things to Do

1. Have a committee from the class visit your local telephone exchange and see how all the wires for carrying messages connect with the central office, and let them report to the class about their visit. Discuss the comparison between the telephone system and the nervous system.
2. Tell the story from this chapter which illustrates the fact that cheerfulness and contentment are important for the health of the body.
3. Add to your scrapbook a picture which illustrates the attractiveness of cheerfulness.
4. Write a short story or a paragraph about some animal you know, telling how he shows when he is contented and when he is unhappy, and what usually causes each condition.
5. Insert words to complete the following sentences:
   Sometimes the mind is slow when one has not had enough _____. A person who is _____ is not well liked. Habits of mind show in the _____. A _____ person is liked by others. The condition of the mind affects the _____. The condition of the body affects the _____.

XX

TEA AND COFFEE

If you had been using horses to haul loads all the forenoon, and wanted to work them in the afternoon, too, would you give them a whipping at noontime instead of hay and grain? A whipping would excite them so much that they would not show signs of being tired and might even forget they were hungry. A horse wouldn't last long, however, if he were given a whipping every day instead of dinner. Although a driver sometimes uses a whip to urge his horse on, he knows it is not a substitute for the good care which makes the animal willing to work without whipping. Tea and coffee are "whips" for the nervous system. They cannot take the place of the food and rest your body needs. Let us find out why!

Tea and coffee do not contain in themselves any growth or energy foods. They are stimulants. That is, they contain substances which find their way to the nervous system, and tone it up to a high pitch so that a person is easily excited. You might say, perhaps, that the nerves are all aquiver. Every message coming through eyes, ears, or other parts of the body is sent around over the telephone system with utmost speed.

There are other kinds of stimulants, too, Bright light is one. Sunlight wakes you up in the morning if it shines in your eyes. It is difficult for you to sleep in

a light room. Exciting music is a pleasing stimulant which keeps you wide awake. On the other hand, a loud, rasping, grating, or squeaking noise is an unpleasant stimulant which sets your nerves on edge.

The other morning John's mother said at breakfast, "I didn't close my eyes to sleep until half-past three this morning. I might have known I wouldn't sleep after drinking that cup of strong coffee late in the evening." You see the stimulant in the coffee had kept her awake just as a very bright light or a continual noise would have done.

Perhaps you say, "Why, mother never lets me have tea or coffee." Well, that is very lucky for you! However, there may be some girls or boys in your class who do drink tea and coffee. Perhaps when weighing day comes Judge Scales says they have not gained, for here is the way things happen when a boy depends on tea and coffee instead of food.

Tom gets up late. He is tired and cross. He does not want much breakfast, and thinks a cup of coffee and a cracker or piece of toast will do. There is not much good fuel and building material in that breakfast, is there? He feels all right for a little while after he has had his coffee, though, because it whips his nervous system and spurs him on.

Before noon he is very hungry, of course, because he did not have enough breakfast. He eats some lunch, but instead of drinking milk he whips himself on with a cup of tea. At supper it is the same story. Tea or

coffee takes the place of the milk he ought to drink, and all day long he has not had enough food to make him grow as fast as boys of his age should. Then he does not feel like going to sleep because he has taken too much stimulant. You can see the result, can't you? Tom does not get enough to eat and neither does he get enough rest. He becomes thin, tired, and fretful. He is nervous and does poor work at school.

There are lazy old horses who seem not at all troubled by a few taps from a whip. But have you ever seen a colt just being broken to the harness or saddle? He is so spirited that it is hard to keep him quiet enough to be taught and trained. You boys and girls are like the colt. Your nervous system is very

sensitive and active. You do not need a stimulant; it injures you. One of your health rules in caring for the nervous system is to drink no tea and coffee. It is different with grown-up people. Some seem to suffer as quickly as children do from the use of tea and coffee. Most grown-ups, however, use a moderate amount and do not mind it. They may be like the old slow horse—a little whipping does not disturb them!

A strong nervous system is a good servant to one who possesses it. You often hear about an act of bravery performed by some one with steady nerves who did not become excited, but remained calm in the face of danger. Don't you like the old story of William Tell? Imagine how breathlessly the people watched as he prepared to shoot the apple from his son's head. William Tell was a famous marksman, and to shoot with exact aim was not a new trick for his muscles and nerves. But think of the dreadful fear in his mind as he saw his own son in danger! Tell's courage and coolness were wonderful, and the son was equally brave.

If you are drinking tea and coffee every day, you are doing harm to your nervous system, even though you may not feel it now. A bad habit is hard to break, and you will not find it easy to stop. But there is a chance to show whether or not you are capable of a man-sized job! Any one can do what is easy. Not every one can do the thing which is hard. Once you have made up your mind to stop drinking tea and

coffee, the battle is half won. Making up your mind takes courage, and sticking to it takes more! Remember every successful effort makes the next time just that much easier.

Milk or cocoa is what you need, for that gives real nourishment. In fact, one of the worst things about drinking tea and coffee is that it keeps children from drinking milk. Some children find cocoa hard to digest; but if it is made mostly from milk and not too strong with cocoa, it is a fine drink, especially for cold weather.

See what you can do to encourage the coffee and tea drinkers in your class to give up the habit. You might keep some kind of a record for a while, and make posters or scrapbook pages to remind every one

that the campaign is on. Some classes have had a blackboard contest in which the milk bottles chased the coffee pot out of the room. How long will it take to drive the coffee pot out of your room? Try hard to have your class one hundred per cent on the milk-bottle side.

A small leak in a dike may not seem very serious, but it is sure to become so unless it is repaired. If the habit of drinking tea and coffee is a break in your dike, repair it!

Questions to Answer

1. How do tea and coffee affect the body?
2. Are tea and coffee foods? Give a reason for your answer.
3. Why is it more harmful for children to use tea and coffee than for grown-ups?
4. What two good substitutes can you think of to use in place of tea or coffee as a drink at mealtime? Why are they better?

Things to Do

1. Draw an outline of a big milk bottle on the board. Write a number inside the milk bottle every morning to show how many in the class did not drink tea or coffee on the previous day. Use colored chalk every time the record is one hundred per cent.
2. Make some posters to show that milk and cocoa are better for children than tea or coffee.
3. If you have younger brothers or sisters who drink tea or coffee, try to encourage them to drink milk or cocoa instead. Report your success in class.

XXI

HOW REST AND SLEEP MAKE YOU GROW

The captain of a ship at sea wants to be very alert while he is running the ship, but he has time for rest each day. Your captain, the brain, must also have a regular resting time. The brain rests somewhat whenever there is a change of occupation, as when you leave study to play at recess. You may feel tired when school closes, but after playing half an hour, you forget about it. All the time, however, your brain is busy and your "telephone system" is carrying messages. The only time your mind and nervous system get a complete rest is while you sleep. When you are asleep, then you are not thinking about anything.

Your muscles also get complete rest only in sleep. Even in sitting, some of them are used to hold the body in good posture. When you are lying down, they can all relax. The whole body can become limp. Some people, however, cannot relax when they first lie down. They still hold their muscles tightly, even though it is not necessary. Learn to relax completely, for in that way your body begins to rest as soon as you lie down.

Have you ever tried taking a rest period every day? This is a good thing even for those boys and girls who are in good health and gaining well. It is particularly helpful for children who are thin and frail and for those who are not gaining well in weight. Lie

down flat on your back after dinner, or after school, or before supper, whichever time seems best for you. Close your eyes and let your whole body be perfectly limp, even though you do not go to sleep. Do this every day for twenty minutes or half an hour, then see how much better you feel, and how well you gain in weight. In order to get help from your rest period, you must be faithful in taking it every day for a few weeks, at least. Sunlight will not help a plant to grow very much unless it shines upon the plant nearly every day. A little extra rest cannot do much to help you grow unless you have it regularly.

Does any part of the body have to keep on working even when you are asleep? "Yes," you say, "the heart." But you can give it less work to do, and that is what happens in sleep. You know the heart has to pump blood to all parts of the body. When you are lying down, it has to push the blood along on the level; but when you are standing or sitting, it has to lift the blood straight up. Then, too, when your body is resting, there is no hurry-up call for extra blood in some particular part of the body. If you eat a simple supper and take proper care of the digestive system, that will be having a rest, too, and the heart will not have to supply extra blood for it.

The work of the heart during sleep is somewhat like the work of the fire under the boiler of a big locomotive when it is not moving. The fire must not go out, and it must be hot enough for the engine to start at

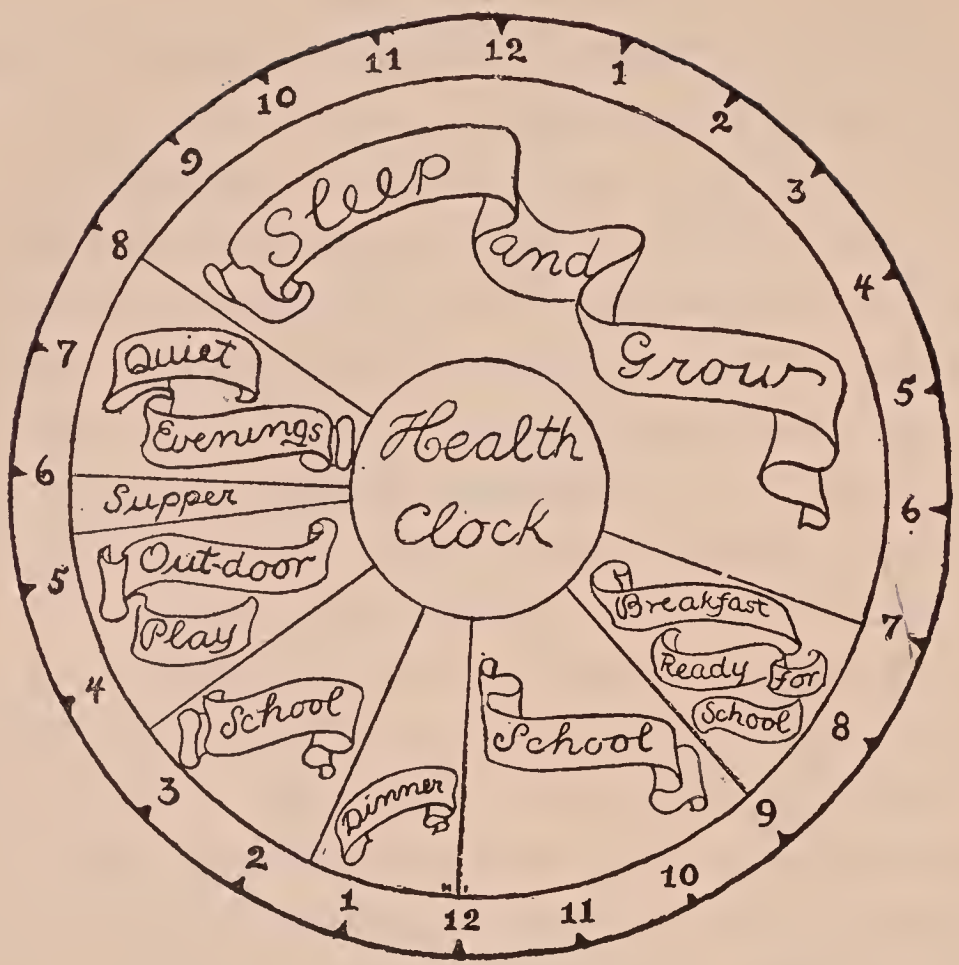
short notice. Yet it does not have to burn with the fierce red heat which is needed when the engine is running fast and drawing a heavy load.

Sleep is so important that Nature demands it. Men who were in service during the war tell stories about going a long, long time without sleep, and finally being so overcome with weariness that they could sleep anywhere under any conditions. They would crawl into a dugout, or into a shell hole, and sleep for hours, even when they were in great danger of losing their lives. Sleep seemed more precious than life itself.

During sleep a tired body repairs itself. All parts of the body give up the waste substances of the day's work to the blood stream, which gives back in their place new material to strengthen each part of the body and make it grow. Of course, grown-ups have only to repair the body, but children want to grow. That is why you need so much more sleep now than you will need after you have grown up.

Some say that the only time you grow is while you sleep. No matter how good care you take of yourself in every other way, you are sure to lose out in the Health Game if you do not have the right amount of sleep. It is a child's best friend; it is truly "Nature's gentle nurse."

Not only does sleep show in your health and the growth of your body, but it shows also in your school work and in your habits of mind. Ask your teacher if she knows the boys and girls in the class who never



have enough sleep. Very likely you suspect them, too. No health habit is so important in helping you to train your mind as the habit of having enough sleep.

Sleep is such a good friend of Cheerfulness, too. Have you never noticed how easy it is to be cross when you are tired? When you are rested, it is just as easy to be cheerful and happy! You must know, too, that Sleep and Cheerfulness are partners in business with Beauty! The girl who is cross and tired at night looks like a different girl in the morning when she is rested and rosy from a good night's sleep. If you want to

take treatment with beauty specialists who are sure to improve your looks, spend long hours with Sleep every night, and take lessons from Cheerfulness every day!

Can you remember now all the important benefits which come from sleep?

1. Your mind and nervous system rest.
2. Your muscles rest.
3. Your heart does less work.
4. Your body is repaired.
5. You grow.
6. You are able to do better work in school.
7. You gain in cheerfulness and beauty.

Do you wonder that the right amount of sleep is so important? Grown-up people usually get along very well on about eight hours a night. Children need at least ten, and more than that if they fail to gain as they should.

How shall we get all these benefits? There are several rules. First of all: Go to sleep promptly. If you ever have trouble in doing this, one cause may be thinking about things after you go to bed. This is a bad habit. Break yourself of it by relaxing as soon as you go to bed, thinking only how sleepy you are, and how soon you will be fast asleep!

The next rule is: Have a regular bedtime. In order to get at least ten hours of sleep every night, you must go to bed at eight o'clock or soon after. Bedtime is just as important as schooltime. Don't be late! Once

in a while you may stay up later on Friday or Saturday night, when you can make up your sleep the next morning. Of course, you cannot really make it up, because the body never gets along so well when habits are not regular. You will rest more, grow more, and do better work if you have a regular time for going to bed and stick to it.

Keep a record of your sleeping habits for a while, showing what time you go to bed and get up, or the number of hours you sleep. Some boys and girls take a calendar for the month, and make a red line through every date when they get to bed by eight o'clock. Others draw little clocks, letting the position of the hands show what time they go to sleep. Perhaps you think you do not sit up late very often; but when you keep a record for a while, you may be surprised to find that your "not very often" happens two or three times a week. Then you wonder why you cannot put money in the Health Bank when weighing day comes!

Spend a quiet time before bed. If you spend the evening reading or playing quiet games, it gets you sleepy and ready for bed. But if you spend the evening with exciting games, thrilling stories, or at the moving pictures, you are likely to stay awake for several hours. The first few hours in bed ought to be the time for soundest sleep. Do not spoil these early hours of the night by having an exciting evening, by eating before going to bed, or by drinking tea and coffee.

Have a clean bed, with light, warm covering, and a low pillow, if any. Heavy covering is likely to make you restless, although you need to be warm and comfortable. A low pillow is best because it gives your framework a chance for good posture while you sleep. Lie with your head as low as the shoulders, if you can, and your back straight. A low pillow is quite all right, however, if you are uncomfortable without one. Throw the bedclothes back over the foot of the bed or over a chair every morning. The daily airing and clean linen once a week will make your bed feel fresh and clean.

Open your windows as wide as you can. You spend more than one third of your whole life in sleep. Why not spend it in the fresh air? Did you ever sleep outdoors? It's great fun! The next best thing is to open the windows and let the outdoors come in.

Have you gained well ever since you were first weighed this year? If you have not, please prescribe for yourself extra large doses of sleep taken every night in a dark room with the windows open. Begin the dose about eight o'clock, and keep it up until seven in the morning if you can.

One of the most famous living baseball players says he always gets an extra hour of sleep every night to keep him fit for the game. You have your favorite

game, though perhaps it is not baseball. If you want to play it well and grow at the same time, you cannot afford to try it on less than ten hours a night.

Questions to Answer

1. What parts of the body have complete rest during sleep?
2. What part of the body must work even while we are asleep? How does it get its rest?
3. Do puppies and kittens sleep more while very small than after they are full-grown?
4. Why do children need more sleep than grown-ups?
5. Why does one need more sleep during illness than at other times?
6. How does sleep affect your mind and ability to work? Your disposition? Your looks?
7. How much sleep does a child of your age need? Figure out what time you must go to bed to have the required amount.
8. Why is a regular bedtime important?
9. Why is a low pillow or no pillow at all best for sleeping?
10. Do you like to have fresh air while you sleep? Why?
11. What does the word "relax" mean? Can you relax quickly when you go to bed or take a rest in the daytime?

Things to Do

1. Keep a record of your sleeping habits for the next two weeks. Suggestions have already been given in this chapter.
2. Make some posters about sleep.
3. Make a list of quiet, pleasant games to play in the evening.
4. Make sentences about your habits of sleep and rest using the following words: relax, pillow, exciting games, clock, coffee, covering, fresh air.

5. Add pages to your scrapbook to illustrate some of these six rules for sleep.

   a. Have a regular bedtime.
   b. Spend a quiet time before bed.
   c. Have a clean bed, with light, warm covering and a low pillow, if any.
   d. Open your windows as wide as you can.
   e. Learn to go to sleep promptly.
   f. Be sure you get at least ten hours of sleep every night.

XXII

HARMFUL SUBSTANCES

ALCOHOL, DRUGS, AND TOBACCO

When a boy in high school or college goes out for an athletic team, he is reminded at once that he must not use alcohol or tobacco. He is told that it will hinder his growth, his strength, and his success as an athlete. Why do these substances have such a serious effect? It is not enough to say that they are harmful. Let us find out what they are and how they affect the body.

Alcohol

Alcohol is made by yeast plants growing in a liquid which contains sugar. The yeast uses the sugar as food and gives off two waste substances. One of these is carbon dioxide, which is a gas. It rises in bubbles to the top of the liquid and escapes into the air. The other waste substance is alcohol.

You probably know that yeast is used to make bread. The carbon dioxide makes the bread dough rise into a large loaf. Both the carbon dioxide and the small amount of alcohol formed are driven off by heat as the bread is baked, so that no alcohol is left in the bread.

But in making alcoholic drinks the yeast is growing in a liquid instead of in a spongy substance like dough. The alcohol, which is also a liquid, increases until enough is present to stop the growth of the yeast. Wine is made by growing yeast in the sweet juice of grapes. Beer is made by growing yeast in water which has soaked out the sugar from sprouting barley seeds. Liquors like whiskey and gin contain a very high per cent of alcohol.

Many people have studied the effect of alcohol upon the body. They all agree that it is harmful. When a person has taken a little alcohol, he seems more lively and active than before. We used to think that it was because the alcohol had stimulated him. Careful studies show, however, that alcohol belongs to a group of substances called narcotics. These substances put one to sleep. One part of the body after another is put to sleep by alcohol. The first is that part of the brain which controls the judgment. People are less likely to be polite and careful of what they say. They talk a lot and perhaps laugh or shout. You see they are not really stimulated, but they seem different because their judgment is asleep and they are not quite themselves.

After a while, when a person takes a great deal of alcohol, the reason is put to sleep. Such a man acts quite strangely. He cannot walk very well, and finally the whole body is asleep under the poisoning effect of the alcohol. So you see alcohol has a serious effect on

the nervous system. Studies have shown that even when small amounts are taken, the memory is not as good and the mind works less quickly and carefully. Other parts of the body are injured, too. The muscles do less work. The heart works faster, but its beat is not as strong. Neither can the body protect itself against disease as it should.

In these and many other ways alcohol injures people. Life insurance companies have found in their work with thousands of people that those who do not use alcohol live longer than those who do. Companies who hire large numbers of men know that accidents increase greatly when their men are using alcohol. Notice how often newspapers report automobile accidents caused by careless drivers who have been drinking. How is such a driver punished? The accident risk is so much greater when men use alcohol that our railroad companies refuse to hire a man who drinks. In fact, there can be no doubt about the danger of alcohol. Those who want to succeed in athletics or do any important work well, must be wise enough never to use it.

Habit-forming Drugs

We have said alcohol is a narcotic, that is, a kind of substance which puts one to sleep. There are other drugs, such as opium and morphine, which do this, too. People get the habit of using these drugs, as

they do alcohol. That is why they are spoken of as habit-forming drugs. When one uses them, he keeps his nervous system partly asleep and partly poisoned. As soon as the effect of the drug wears off, he feels so nervous, irritable, and uncomfortable, that he thinks he must take more of the drug to quiet his nerves.

Morphine and opium are perhaps even more harmful than alcohol. People who know their danger are very careful not to use them. Sometimes a person may get these drugs in patent medicines without knowing it. One gets used to taking such a medicine, and soon finds that he cannot get along without it. The drug has fastened its hold upon him. Headache tablets, and other medicines which are sold in packages, sometimes contain these dangerous drugs.

Some patent medicines contain a great deal of alcohol. Many of them do the patient no good at all, but the effect of the alcohol puts the nervous system partly to sleep. For a while the man thinks he feels better; but after he has taken the medicine for some time, he is really worse off than at first.

Of course there are some simple home remedies which can be used when you are sick. It is dangerous, however, to buy at the drug store different kinds of medicine which you know little or nothing about. Many tonics, tuberculosis cures, soothing syrups, and headache remedies contain these poisonous drugs. It is a good rule never to use patent medicines without the advice of a doctor.

Tobacco

Tobacco is a plant, the leaves of which are dried and prepared for smoking. It is a native of America, and the custom of smoking began with the American Indians. Perhaps you remember the story of how it was taken up in Europe after the discovery of America. Tobacco contains several poisonous substances. Probably the most important of these is nicotine, which is also a narcotic.

When a person who is not used to smoking tries it for the first time, he shows several signs of discomfort. He becomes pale and begins to sweat. He is sick at his stomach, perhaps he vomits, and he may also feel weak and dizzy. One gradually gets used to small doses of tobacco poison, so that he does not feel such effects, unless he smokes a great deal at one time. But most people who have studied the use of tobacco believe there is always some harmful effect.

Some of our colleges and universities have made special studies and have found that men who do not use tobacco gain more in weight, height, growth of chest and lung capacity, than men who do use it. When college men are divided into two groups, those who do not use tobacco are found to be better athletes and better students than those who do.

If full-grown men in college show such effects from the use of tobacco, think how much more serious the habit is for boys twelve or fourteen years old who still

have years of growth ahead. Growing boys who use tobacco do poor work in school, look white and tired, and do not gain in weight as they should. When they stop, they very soon improve in their work, look better, and grow faster.

An interesting study was made sometime ago to see what effect tobacco would have upon a man's ability to pitch a baseball accurately. When men were given several trials in throwing a ball at a target and then given a few minutes of rest, their second trials showed a gain in accuracy. Of course you would expect them to do better at the second trial, because they had some practice in the first. When, however, each man smoked a cigar between the two trials, they did worse the second time. Smoking kept them from doing their best.

It has been clearly shown that tobacco makes the heart work faster, makes it more difficult for the mind to work well, causes the muscles to relax, and makes the vision less accurate and clear.

Questions to Answer

1. What is alcohol?
2. What is meant by saying that alcohol is a "narcotic"?
3. What are the effects of alcohol upon the body?
4. How is alcohol related to accidents?
5. What are some other drugs that are narcotics? How do persons sometimes take these drugs without knowing it?
6. What are patent medicines? Discuss their use.
7. What is the narcotic substance found in tobacco?

8. What has been found to be the effect of tobacco on college students?
9. Why is tobacco especially bad for growing boys?
10. Explain the baseball test described in this chapter.
11. Why is smoking forbidden for athletes in training?

Things to Do

1. Arrange the words in the following sentences to make true statements.

Heart makes tobacco the faster work.
Morphine contain some medicines patent.
Increases alcohol accidents.
Sleep a narcotic a substance puts which one to is.
Heart makes alcohol faster beat the.
Automobile alcohol many causes accidents.
Injures growing tobacco boys.

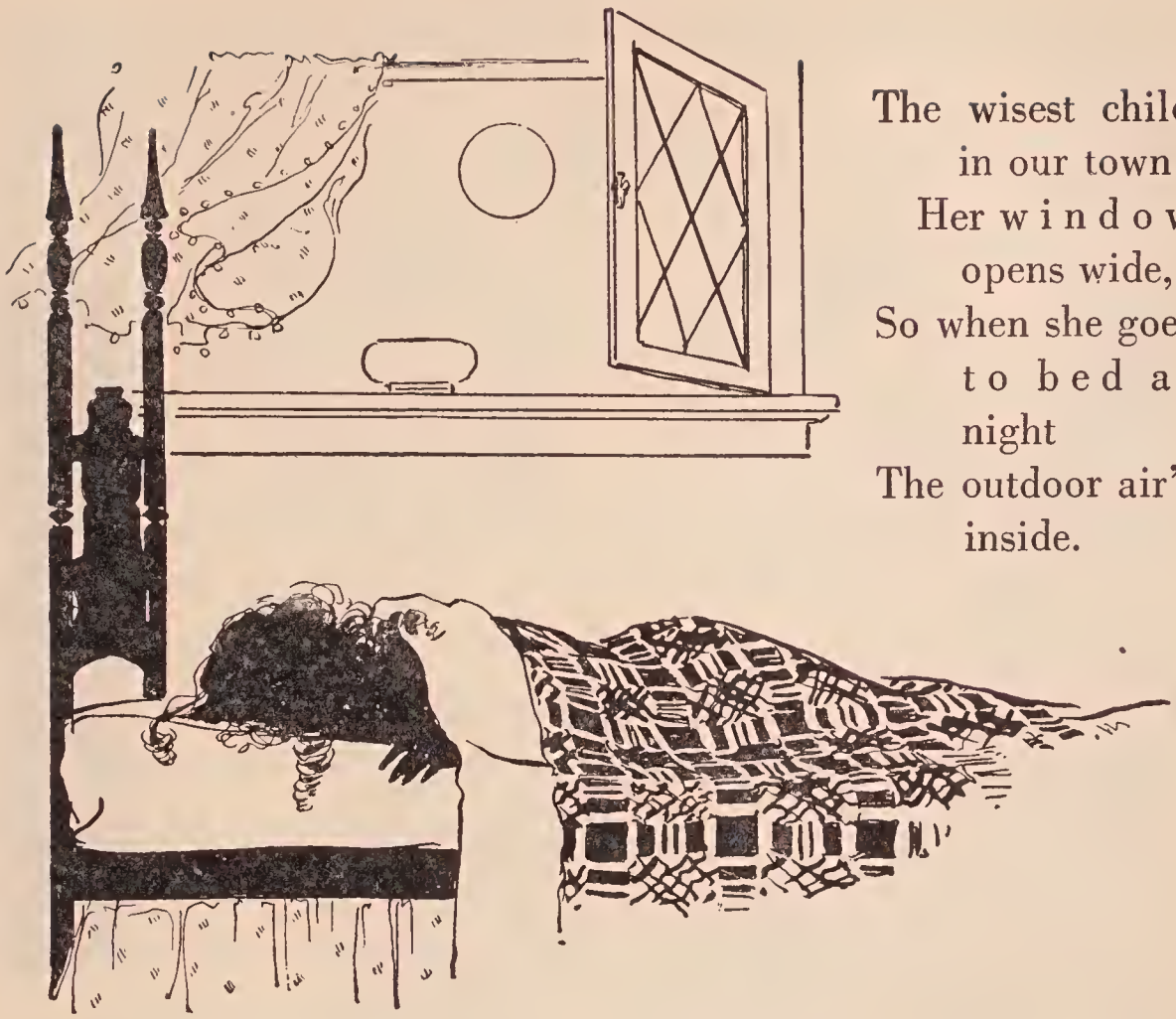
XXIII

CIRCULATION

Of course you know that you could not possibly live without air, although your body does not use all the substances in the air. What the body wants from the air is oxygen, the very breath of life. You and I cannot very easily look into the air and pick out the oxygen from among the other things. It looks all alike to us, or it looks just like nothing at all. But without our seeing or needing to understand anything about it, the body picks out the oxygen as easily as you and I pick out all the apples from a basket of mixed fruit!

Now every part of the body must have oxygen, and for a large body like that of a man, it is a little hard to manage. In some small animals like the earthworm, all the air needed can make its way in through the skin. In larger animals Nature has had to find some other way. The insects, like the flies and the bees, have sets of little tubes, somewhat like the windpipes in our throats, running all through the body.

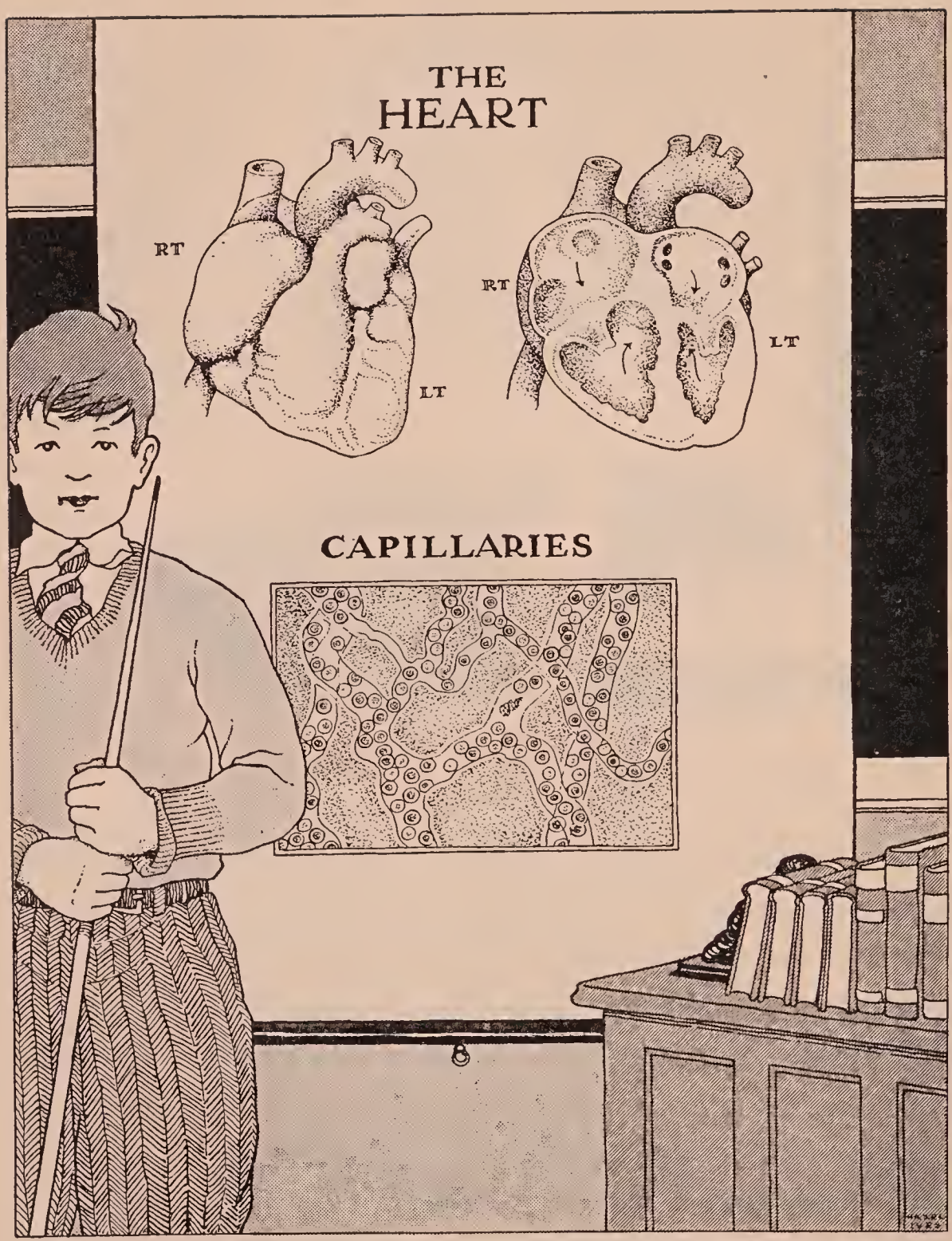
In your body there is a wonderful carrier system similar to the cash carrier systems which you have seen in department stores. You remember how the clerk puts your money into a little round iron box, and then slips it into a tube. Soon the box returns through another tube, bringing your change.



The wisest child
in our town
Her w i n d o w
opens wide,
So when she goes
t o b e d a t
night
The outdoor air's
inside.

Your own carrier system is called the circulation. It is a system of little tubes extending through every part of your body. Through these little tubes flows the blood, and in it there are many little round "boxes" or "rafts" made partly of iron. They carry air from your lungs to all parts of your body, and bring back the "change." That is, they bring back waste substances which the body does not want.

The red color of the blood is due to the little "cash-carrier boxes" or "rafts," called the red blood corpuscles. The liquid part of the blood in which they float is a clear, salty fluid. The red blood corpuscles



contain iron. In the lungs they take up oxygen from the air you breathe. When they come back after a trip through the body, they bring the waste from the

body, which is carbon dioxide, a gas produced by the burning of fuel foods.

The little red corpuscles change their color somewhat as these exchanges take place. When they are loaded with oxygen from the air, they are bright red. When they are not so well supplied with oxygen on their way back to the lungs, they are darker in color. You know how iron rusts and gets a bright reddish color if it is left out in the air? That is because the iron takes up oxygen. If the iron is protected from air and moisture, it is dark in color. That is just the way with the little "iron boxes" in the blood. When they have a lot of oxygen they are bright red, but when they do not have so much, they are darker.

The blood going away from the heart flows in the tubes which we call arteries. On the way back it flows in the tubes we call veins. Any of these, either arteries or veins, may be spoken of as blood vessels. Just under the skin on the inside of the wrist and forearm you can see the dark blood in the veins. It looks blue, doesn't it?

There are other things flowing in the blood fluid beside these little rafts or red blood corpuscles. The most interesting are the "soldiers" or "fighters" for the body, called the white blood corpuscles. They are rather independent, and go all over the body helping to repair any damage which has been done. Some of them can really devour any tiny thing which gets into the body and ought not to be there. Others seem to

produce substances which the body needs in time of sickness or accident. These little soldiers always flock to a place where the body has been cut, or injured, to clear away the parts of skin and muscle which cannot be repaired and to help heal the wound.

Doctors have noticed that people who use alcohol constantly cannot throw off disease as well as others. One reason for this is because alcohol poisons the body in such a way that these little "fighters" cannot work as they should. Insurance companies know this, too, and they consider that a drinking man is not a "good risk."

In order to give oxygen to every part of your body, you must have a good circulation, with a strong pump to push the blood through the arteries. This pump is the heart, and it never stops as long as you live. Most machines stop to rest, but the heart gets its rest only between beats.

We might study the way in which the heart works by means of a rubber bulb such as is used with an atomizer or spray. One of you may have such a bulb at home which you can bring for the class to study. When it is pressed together with the hand, the air is forced out of the tube at the end. If you look at the opening on the other end of the bulb, you will see that it is closed by a little piece of rubber, or metal, on the inside, which is called a valve. When the hand is removed, the air rushes in at this end because the valve is free to go toward the inside of the bulb. But

when the hand squeezes it again, and the valve is pushed toward the outside, it covers the hole. Then the air cannot come out of the bulb through that opening, but must escape through the tube.

The heart works in the same way except that it has its own muscles. It has four of these bulb-like chambers instead of one. Each chamber is fitted with valves at the entrance and exit which allow the blood to flow in only one direction.

The regular pumping, or beating, of your heart makes the pulse you can feel at the wrist. You can count the number of heartbeats per minute by means of the pulse. See how steady, strong, and regular is the action of the heart. Try the pulse of some one else and see if it feels about the same as yours.

A good heart is one of the most valuable possessions your body can have. An athlete particularly needs a good heart. Before very strenuous events like marathon runs, or football games, each man's heart is examined to see if it has endurance enough to stand the strain. A strong heart is of great importance in many kinds of sickness. Often a doctor says that a man will get well if his heart holds out.

The heart is often seriously injured by the use of alcohol and tobacco. Under the influence of alcohol, the heart beats faster, but with less force. Even a very good heart cannot stand this treatment constantly.

The heart is really made of muscle, which, like any other muscle, gets strong by exercise. Put your hand

over your heart sometime after you have been running or playing. You will find that it is beating fast and hard. That is because your muscles have been working and calling for more of the breath of life! This extra work strengthens the heart just as vigorous work or play makes other parts of the body strong, and it is an important reason for having some good, active exercise every day.

As we have seen, the heart pushes the blood into the arteries. If you could follow the course of an artery, you would find that it is quite large as it leaves the heart, but the farther away it gets, the smaller it becomes. Finally it branches out again and again into smaller blood vessels, until it becomes a network of tubes so small that only one row of the red blood corpuscles can pass through at a time. And yet, you remember, the red blood corpuscles are so small that they can be seen only with the microscope. In these narrow tubes, called capillaries, the little red rafts are unloaded. In the capillaries of the lungs the carbon dioxide is given off, and oxygen, the breath of life, is taken on. In the capillaries of other parts of the body, oxygen is unloaded and the carbon dioxide is taken on.

On the way back the blood is moved along through the veins by the suction of the heart and the body movements. When you feel the pulse in your wrist, you have your fingers over the main artery for your hand, where the blood is being pumped away from the heart. If you feel of a vein, you find no throbbing

there because the blood is flowing quietly back to the heart and is not being pumped along. In any movement or exercise of the body the veins get a continual rubbing and pressure from the muscles around them, which help carry the blood back to the heart.

You know that pumps get out of order. So does the heart. Sometimes after sickness, the heart has had such a hard struggle that it is not in very good condition and needs repair. The wonderful thing about it is that this automatic pump can often mend itself. In order to give it a good chance for repair, one must be careful not to run, climb stairs, or do anything which will ask too much of it. Surely, if you know any child with a weak heart, you will help him to have a good time without rough play, just as you would want him to be thoughtful of you if you were trying to give your heart a chance to mend itself.

What things can you do to get the best work from your circulation? Exercise every day in the open air. Give your body the materials for building good red blood by drinking plenty of water and eating foods rich in building material and iron. (What are they?) Spend ten hours out of every twenty-four in sleep with your windows open, and give your heart the extra rest which it gets while you are sleeping. If your heart should ever need to be "laid up for repairs," be cheerful and sensible in doing only the things which your doctor says you may.

Questions to Answer

1. What does the body take from the air?
2. How is oxygen carried to all parts of the body? What is the carrier system called?
3. What do the red corpuscles carry from the lungs to the body? What do they bring back to the lungs? How does this waste substance escape from the body?
4. What mineral substance is contained in the red corpuscles? Where does the body get this substance?
5. What are the tubes which carry blood from the heart, and what are the ones which carry it to the heart?
6. What do the white blood corpuscles do for the body? How does alcohol affect them?
7. What is the pulse? Where is it usually taken?
8. How is the heart strengthened?
9. What is the difference between the way the blood moves in the arteries and the way it moves in the veins?
10. What things can you do to keep your circulatory system in good condition?

Things to Do

1. Have some one bring in an atomizer and study how the valve in the bulb opens and shuts when it is squeezed and released.
2. Complete the following statements:
   Certain foods and vegetables supply _____ for good red blood. The heart is a _____ which sends the _____ to all parts of the body. The _____ blood corpuscles carry _____ from the lungs to all parts of the _____. Exercise makes you _____ deeply and makes the _____ beat faster. The _____ may be injured by the use of _____ and _____.

XXIV

EXERCISE

WORK AND PLAY

No matter how beautifully a ship is built, it is of no value except as it is used by man for service or pleasure. The real value of having a good body is in being able to use it for work and play.

If a ship had been in dry dock for a long time without being used, the owners would hesitate to depend upon it to make a long voyage immediately. If an automobile had been in storage for some time, you would not trust it to take a long trip. In the same way, the human body cannot be depended upon to do the vigorous things of life unless it is constantly in use. That means having real exercise every day.

The track athlete who is practicing for a race does not rest for a week before the race. He keeps himself in training. A person who competes in any kind of games must keep up practice constantly. The chief object of exercise, however, is not to get one ready for some athletic test, but to keep the body fit for the ordinary work and play of everyday life. Exercise is one of Nature's ways of keeping the body in trim.

Kittens and puppies spend most of their waking hours in play. Even full-grown animals show the natural desire for exercise. Did you ever see a dog run as though his life depended upon getting to a cer-

tain point in a given time? Suddenly he turns and runs back. He is not going anywhere in particular. But he feels that he must run.

Have you watched caged animals at the Zoo? Even years in close captivity cannot wholly curb their longing for exercise and freedom. The wild creature satisfies his craving somewhat by stretching, twisting, and turning, or by pushing against the bars of his cage and pacing up and down. In this way he keeps himself in good physical condition for years.

The love of exercise is found not alone in animals. It is found also in man. Watch a baby, and see how he spends most of his time reaching and stretching to play with fingers, toes, or anything else that comes within reach of his chubby hands. Before you began school, you spent most of your waking hours in play. You still spend a great deal of time every day playing, and it is right that you should. You like to be out of doors in the fresh air and sunshine. It makes you happy and helps to keep you well and strong. Would you like to understand some of the reasons why?

Boys know that exercise trains the muscles. The boy who can run fast, climb quickly, swim well, or make a home run, is the boy with well-trained muscles. A good muscular system is indeed a thing to be proud of, not merely because it enables you to do certain stunts, but because it helps you in everyday living. A well-built man has a better chance of doing the day's work without getting overtired. He has energy

enough not only to do his work, but to play and enjoy life as well.

Theodore Roosevelt once said that he believed more good in athletics came to the men who were not top men in any sport, who were never better than second-rate, but who were strengthened in every way by the training. In speaking of college men whom he had known, he said, "Nothing has impressed me more than the fact that on the average the men who have counted most have been those who had sound bodies."

Exercise strengthens the heart as well as the muscles. When you are playing or working hard, your blood circulates more rapidly. You feel warm, and your face gets flushed. The heart is working faster. If a person lives so quietly that the heart never has to speed up, he cannot be sure that it will be able to meet any sudden strain put upon it in some time of need. A famous race horse was spoken of by his trainer as having the "heart of a great racer." The heart plays a great part in making a sturdy, vigorous body, and the best way to train it is by plenty of exercise every day. It is not enough to avoid things which injure the heart like harmful drugs, alcohol and tobacco.

Exercise makes you breathe deeply, too, so that your lungs expand and are filled with the good fresh air. In ordinary breathing, fresh air does not fill every part of your lungs. The practice of deep breathing every day helps to develop your chest and keep your lungs healthy. It also stimulates circulation.

The circulatory system is the carrier system which takes air and food to all parts of the body and brings away the wastes. Think what happens, then, when the circulation is increased during exercise. You breathe faster, your blood flows more rapidly, and your body gets more air. Waste material is carried away through the blood and through the pores of the skin.

Do you ever notice how hungry you are after playing out of doors? Another splendid benefit of exercise

is that it increases the appetite and helps digestion. People who do hard physical work rarely have trouble with indigestion. Daily exercise helps them to make good use of their food. Digestive troubles more commonly occur among people employed in positions where they get very little exercise during the day's work. Such people should use a part of their time every day for vigorous outdoor exercise.

After you have been sitting most of the day in school, what is more jolly than to go outdoors and play! It is one of the easiest health habits to keep, isn't it? Talk over some of the games you play, and see which are the favorites. In nearly every country of the world boys and girls play various kinds of running games, hide-and-seek games, and tag games. Then there are special sports for the different seasons, too. If you live where winters are cold, you have skating, coasting, snowshoeing, and skiing. Swimming and baseball come in summer, and football in the fall. Do you enjoy them all?

You get exercise not only through play but through work as well. Gardening, chopping wood, and doing errands are good for you. Girls who help with housework get a great variety of exercise through stretching, twisting, bending, and walking.

Regular setting-up exercises are valuable, too. Some day when you are grown up and very busy, you may find it hard to keep your muscles in trim except as you train them in setting-up exercises at home or in the gym-

nasium. It is possible, however, to keep yourself in good condition in this way, just as the caged animal does by his movements within the cage. If, in addition to your setting-up drill, you take an hour's walk in the open air every day, you can give your body all the exercise it needs, though you will miss the fun that comes from games and play.

Games have other value besides the actual exercise you get. You may learn many things from them. First of all, you learn obedience. A boy who does not play according to rule, and abide by the referee's decision, loses in the end. He may even be taken out of the game.

You learn team spirit. That is, you become willing to sacrifice your own pleasure for the sake of your

team. A baseball player who thinks only of showing off his ability will never be the best man on the team. The important thing is not that he should make a clever hit, but that his team should win.

You learn fair play. People who want to cheat and do mean things cannot last long in games. They are found out and punished. If they do not mend their ways, they are put out of the game. A good athlete is more proud of playing a clean, fair game than he is of winning.

You learn to work hard—to put all the strength and skill you can into the game. You are ashamed to do less than your best when the honor of your team is at stake.

Think for a minute of your own spirit in games. Do you obey without complaining or being grouchy? Are you willing to do things that are hard in order that the team may win? Do you take pride in playing fair? Do you always do your best? Learn these valuable lessons well, for they will help to make you happy and useful your whole life long.

Here, then, are the benefits of exercise. It trains the muscles; it strengthens the heart; it increases the circulation, gives the body more air, and carries away body wastes; it improves the appetite and helps digestion; and through games it teaches obedience, team spirit, fair play, and hard work.

Another benefit from outdoor play is that which comes from being in the sunshine. Sunlight helps the

bones to grow straight and strong. It helps people to keep well. If you have a chance to play outdoors in a bathing suit in summer, you can get a good coat of tan by exposing your skin a short time at first, and then increasing the exposure as the tan develops. Sunburn is harmful, and should be avoided.

Is it any wonder that children who spend some hours daily in outdoor play grow fast, are happy, and do good work?

Questions to Answer

1. Give some illustrations of the ways in which animals exercise.
2. How do babies exercise their muscles?
3. What kind of outdoor play do you like best? How many hours a day do you play outdoors?
4. Explain the effect of exercise upon the heart.
5. How does exercise improve the circulation?
6. What is the effect of exercise upon the appetite and digestion?
7. In what other ways do you get exercise besides in play?
8. How does sunlight benefit the body?

Things to Do

1. List on the board all the effects of exercise that have been mentioned in this chapter.
2. Keep a record of the number of hours you spend in exercise, both at work and play, each day for two weeks.
3. Make some posters showing your favorite outdoor sports.
4. Make statements about exercise, using the following words: caged animal, training, hungry, circulates, waste material, exposing, vigorous, fair play, housework, gardening.

XXV

HOW YOUR BODY KEEPS THE SAME TEMPERATURE

The temperature of your body is always just the same, no matter whether the weather is hot or cold. That is why the doctor uses his thermometer when you are sick. When you are well, your temperature is ninety-eight and six tenths degrees. If he finds it higher than that, it is a sure sign that something is wrong.

The body keeps the same temperature all the time, because it balances the heat it produces and the heat it gives off. It is always burning up food and producing heat. It is also continually giving off heat. It can produce heat faster when it needs to, or give off heat faster when it becomes too warm. Let us see how this happens.

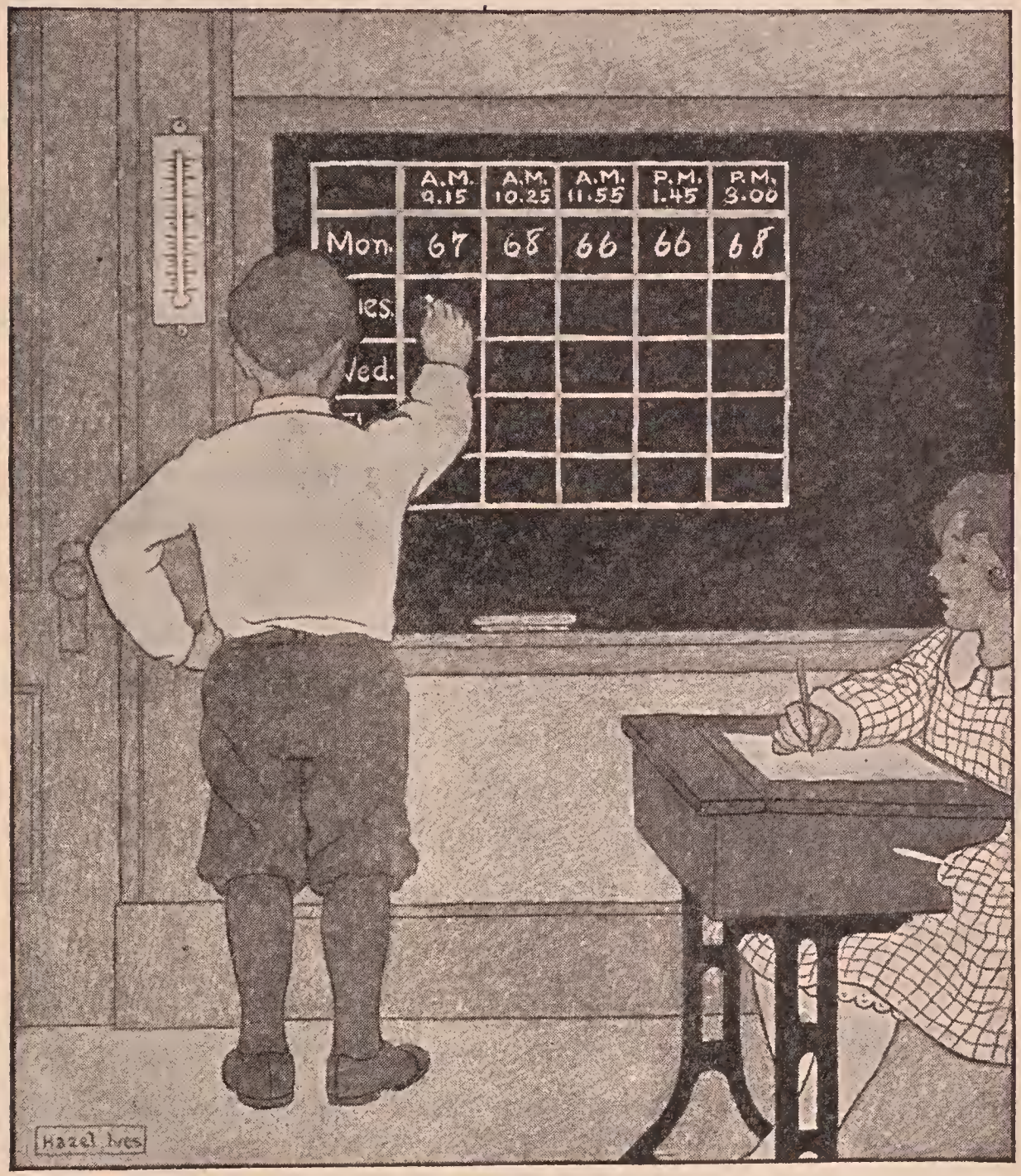
The heat of your body is given off chiefly through the skin. When you are cold, your skin is tight and shows "goose flesh." The blood is driven farther away from the surface, it is cooled less rapidly, and your body gives off as little heat as possible. When you get chilly, you must dance around to keep warm or else you will shiver. In either case, your muscles begin work, burn up fuel, and produce more heat. It is not very pleasant to shiver, so you usually prefer warming up by exercise, or by putting on more clothes to hold the heat in.

When you are warm, the skin is loose and soft. It is so well supplied with blood that heat is given off rapidly. If you get too warm, you begin to sweat, and more body heat is used in evaporating the moisture from your skin. You wear less clothing, too, in warm weather or in a warm room, so that heat may be given off freely. You feel less like exercising because your body is warm already, and the extra heat produced by exercise makes you uncomfortable.

You can see from this why you feel differently in different kinds of weather. In summer, when it is warm, you feel tired and lazy. You do not care to work or play, but enjoy lying still and doing nothing. When you go out of doors in winter, the cold air makes you feel lively. You want to run and play.

You are affected in the same way by the air in a room. If it is too warm, you do not feel like work. The pores of your skin are open and you begin to perspire. If a room is too cold, you are uncomfortable, too. You must get up and move around, or put on more clothes. It is perhaps easier to get comfortable again after you have been a little chilly than after you have been too warm. Moreover, you are not so likely to get chilled when you go out of doors from a cool room. You see, in stepping from a hot room into cold, winter weather, the body has been giving off heat so fast that it cannot stop quickly enough to save you from losing too much.

This tells you why it is better to keep a school or



house cool enough in cold weather. If you have very hot rooms, you are always in danger of being chilled and catching cold when you go out into the winter air. If you do not get used to hot rooms, you are more comfortable, too, both indoors and out. If the body

is not kept too warm while you are in the house, you get more enjoyment from cold weather.

You feel more like working, too, if your room temperature is kept at sixty-five to sixty-eight degrees. You should never let it go above the higher figure, and you will probably find the lower temperatures more comfortable. See that your room is kept within these limits all the time. It will help you to do better work in school and to keep free from colds. Some pupil may act as a thermometer inspector and record the temperature four times a day on the blackboard.

You will feel better, too, if you can have some fresh air coming into the room all the time. It is partly this effect of fresh air moving over the surface of the skin which makes you feel better when you sleep with open windows or when you sleep out of doors. If your school heating system will permit, keep a window partly open all the time. Be sure, of course, that no one sits in a draft.

We keep our bodies warm in winter, not only by heating our houses, but also by wearing the proper kind of clothes. It is possible to make yourself uncomfortably warm and lazy with too many clothes, just as with too much heat. Heavy woolen underwear makes the body perspire indoors. It may become wet with perspiration, so that when you go outdoors the wet garment feels chilly. Woolen underwear is all right for people who spend much of the day outdoors. Those who are inside most of the time should wear

light underwear and put on extra clothes when going out. Extra wraps should also be used when one is warm after exercise.

Wear only enough clothing indoors to make you comfortable. Some boys and girls wear heavy sweaters in the classroom or put sleeveless sweaters over their blouses and dresses. It is harder for them to do their best work in school, and they are more likely to catch cold than the other boys and girls who dress lightly. Try to plan your clothing so that you need not wear too much in the classroom, and have extra wraps to put on when you go out.

Use the right kind of clothes for stormy weather—rubbers, rubber boots, raincoats, umbrellas, and wraps—to keep yourself dry and warm. Proper wraps out of doors will keep your indoor clothing dry, so that you will not run the risk of getting chilled by sitting indoors with wet clothing. If you get caught in the rain and come in with wet feet or damp clothing, what should you do?

Do not be afraid to play out of doors in cold weather if you are dressed properly. Exercise in the cold air makes your body burn more food and gives you a good appetite. It makes your whole body more alive. Probably it even makes you grow faster.

Make friends with cold water, too. Splashing it over your face, throat, and chest every morning wakes you up and makes you feel better. It also tightens your skin, which helps to keep you from feeling chilly on a

The water's cold, but I am bold
And put it on with glee.
It's lots of fun when it is done,
It gives me pep, you see.

wintry morning. Another way to improve the circulation in the skin is to have a dry rub all over with a rough towel.

Sometimes people have thought that alcoholic drinks help to keep them warm in cold weather. Alcohol makes them *feel* warm at first, because it makes the heart beat faster and dilates all of the surface blood vessels so that more blood flows into the skin. But that is not Nature's way of saving heat. Indeed, it is her way of giving off heat. So the real effect of drinking alcohol in cold weather is to allow the body to give off more heat than it would have given off otherwise.

Try to practice in daily living these rules which help your body to regulate its temperature so that you may enjoy all kinds of weather without catching cold so easily.

1. Keep the temperature of your rooms at home and at school between sixty-five and sixty-eight.
2. Have some fresh air coming in all the time if you can.
3. Wear light clothes indoors.
4. Put on extra clothes when you go outdoors in cold weather.
5. Dress so as to be warm and dry in stormy weather.
6. Play outdoors all the year round.
7. Use cold water on your face, throat, and chest in the morning.
8. Have your windows open at night.

You may like to keep a record in your class to see if any of you can go through the winter without a cold. Do not be too discouraged if you catch cold when you think you have been taking the best possible care of yourself. "Cold-in-the-head" is a rascal, and sometimes he catches us in spite of all we can do. Perhaps he would have treated you much worse, if you had not been on your guard.

Questions to Answer

1. What is the normal temperature of the body? Under what conditions does the body temperature go above or below this point?
2. How does the body keep the same temperature in spite of changes in hot or cold weather?
3. How do you feel in warm weather? Why?
4. How does cold weather affect you?
5. What is the proper room temperature? What reasons can you give for keeping the room temperature at the right point?
6. Why do you feel better when there is fresh air coming constantly into the room?

7. What kind of clothing should be worn indoors? Outdoors?
8. What benefits come from a cold splash or bath in the morning?
9. Does drinking alcohol help to keep one warm? Explain what happens.

Things to Do

1. List on the board the rules that help you regulate the body temperature and prevent you from catching cold.
2. Appoint some one to keep a chart showing the temperature of your classroom during the day. Record temperature once an hour. Discuss with your teacher how to regulate the temperature when it becomes too high or too low.
3. Keep a class record for the next month showing how many days are "missed" by boys and girls sick with colds. At the end of the month list on the board the names of all those who have not had a cold.
4. Include in your inspection every morning the removal of rubbers, overshoes, rubber boots, and heavy sweaters or coats.
5. Complete the following sentences:

   _____ water in the morning _____ you up and helps to _____ you against colds. The proper temperature for a room is from _____ to _____ degrees. If rooms are too _____, you are more likely to feel _____ out of doors. When the body is very warm, you begin to _____. Perspiration helps to _____ the body. Put on a _____ when you are warm after _____, so that you will not catch _____.

XXVI

EYES AND EARS

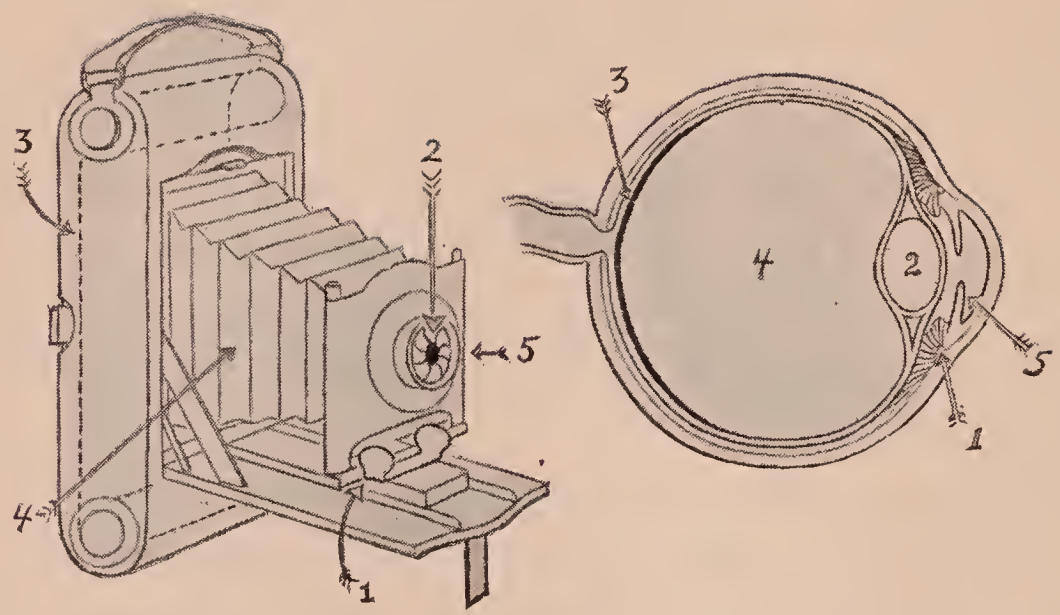
Did you ever look up at the pilot house of a ship and wish that you could be there, looking out ahead with the pilot? A pilot house would be of little use to a ship if it had no windows. In the pilot-house of your human ship are very important windows, too. What do you call them?

Think what precious windows the eyes are! Without them you could not do most of the things you enjoy. If anything happens to them, you can never replace them as you could the windows in the pilot house of the ship. Surely they deserve the best of care.

Your eye is much like a camera. It really takes a picture of whatever is in front of it. When a picture is made at the back of the eye, you call it "seeing." Perhaps some one will bring a camera into class so that you can look at the different parts to see how they work.

The diagram on page 204 may also be helpful. Each part of the eye is numbered exactly the same as the corresponding part in the camera. In studying the diagrams, look for the same number in each picture and see how the two parts are alike.

After using a camera to take pictures of distant objects, you must change the focus if you want to take



The eye is like a camera. The numbered arrows point to five parts of the eye that are like five parts of the camera.

pictures of the things near by. Number one in the diagram of the camera shows the device by which the lens is focused. The same number in the diagram of the eye shows the little muscle by which the focusing of the eye is done. Your eye is planned so that it takes pictures of things at a distance without using the focusing muscle. When you want to look at something very near, however, as in reading, writing, or sewing, this muscle changes the shape of the lens so as to focus your eye on the thing you want to see.

Number two shows the lens in the camera and the one in the eye. They are very much alike in shape. They collect the rays of light which make the picture

at the back of the camera or the eye. Of course the lens in the eye is not made of glass, as is the lens of the camera, but it is just as transparent.

Number three in the diagram of the camera shows the film or plate on which the picture is taken. In the eye it is the retina, a dark, sensitive place at the back of the eyeball. This is the place where you really "see."

Number four is the hollow part of the camera and the eye. In the camera it is just a boxful of air, but the round space in the eye is filled with a clear liquid.

Number five is the diaphragm in the camera which opens and closes to let in more or less light, as you wish. The iris of the eye does the same thing without your thinking about it.

Try this experiment which will show you how the eye changes its focus. Stand near a window which has a screen and look out across the street. Notice that when you look directly at the screen, you cannot see clearly what is outside the window. On the other hand, when you look through at some object on the other side, you do not see the screen clearly. That is, your eye cannot focus at the same time on the screen, which is near, and on an object outside, which is distant.

Remember that the focusing of your eyes is accomplished by tiny muscles. Like other muscles, it is good for them to have exercise, but they should not be overworked. When people read or do close work too con-

stantly, they tire their eyes. One way to rest the eyes when doing close work is to close them for a few minutes or to look away at some distant object. Which is better for you—to sit down and read after school, or to go outdoors and play? Why?

The eye changes its focus so easily that sometimes, without thinking about it, you keep moving nearer and nearer to your writing or reading. By getting so close, you put a hard strain on the muscles of your eyes. Your work should be about fifteen inches away from your eyes. Measure this on a string and see if you usually have such a distance between your work and your eyes. If not, try to improve your habits of reading and writing so that you may save yourself the needless strain.

Of course, if anything is wrong with the eye, it does not focus well. If you had a camera with a lens not properly made, or a box which was not built right, you would be always trying to focus it and yet be unable to get a good picture. If something is wrong with the eye, its muscles get tired trying to focus, and still one cannot see well. In such a case, the eyes need to be treated or fitted with glasses. If neglected, they will become very tired, and may ache so much as to make one quite uncomfortable.

The diaphragm of the camera, which controls the amount of light, is another part which must be carefully adjusted. When the light is very bright, the diaphragm is nearly closed. When there is only a little light, it is wide open.

In the eye this work is done by a muscle called the iris, which is the pretty colored part. In the center of the iris is a little black spot called the pupil. It is the opening through which the light passes, and looks black because the inside of the eye has a black lining.

The diaphragm in the camera is closed by hand in order to change the size of the opening. In the eye your iris changes the size of the pupil without your thinking about it. With every change in the amount of light the iris opens or closes a little. Isn't it easy to see why your eyes get tired when you try to read with a flickering light?

On a sunny day when snow is on the ground, the light is so strong that it is difficult to take a picture with a camera without spoiling the film. The eyes, also, may be injured by too much light. This may happen when you sit facing the sun, or with the light from a lamp shining directly upon your face. When you read, be sure the light comes over your shoulder and does not shine directly into your eyes. It is better, too, to have dull paper, because paper which is shiny reflects too much light and produces a glare.

People often get tired eyes and headaches from reading when they are lying down. This is probably because the light is not good, or because it is hard to hold the book in the right position. Reading on moving cars is very tiring, too, because the book cannot be held steady and the eyes have difficulty in seeing the print clearly.

Frequently an eyelash or a bit of dirt gets into the eye. This should be removed at once, but in such a way as not to cause injury. Do not let any one try to remove a speck from your eye unless you are sure he knows how to do it carefully. Often, if you close your eye, the tears wash the dirt out. There is a little tube running from your eye into your nose where tears find their way. If you blow your nose, it may help the tears to wash across the eye and carry away the dirt. Do not try to get it out by rubbing. You will only irritate the eye and make it worse. There is another danger, too, in rubbing, because your fingers may carry germs into your eye, causing a sore. Fingers, pencils, and other articles should always be kept away from the eyes.

You know how easy it is to break or harm a delicate thing like a camera. It is also very easy to injure the eye. Sometimes children in play throw things into each other's faces, or strike at each other in fun, so that an eye is seriously hurt. Never do anything in play which may spoil some one's eyesight for life.

Since prohibition became a law in the United States,

many men have been willing to take poorly made alcoholic drinks. These drinks often contain wood alcohol, which is a strong poison. It may even produce blindness.

If you cannot see well, if you have headaches constantly, or if for any other reason you think there is trouble with your eyes, go to an eye doctor and have them examined. If the doctor gives you glasses, use them regularly, or your eyes will not improve. "A pair of glasses on the eyes is worth two in the pocket!"

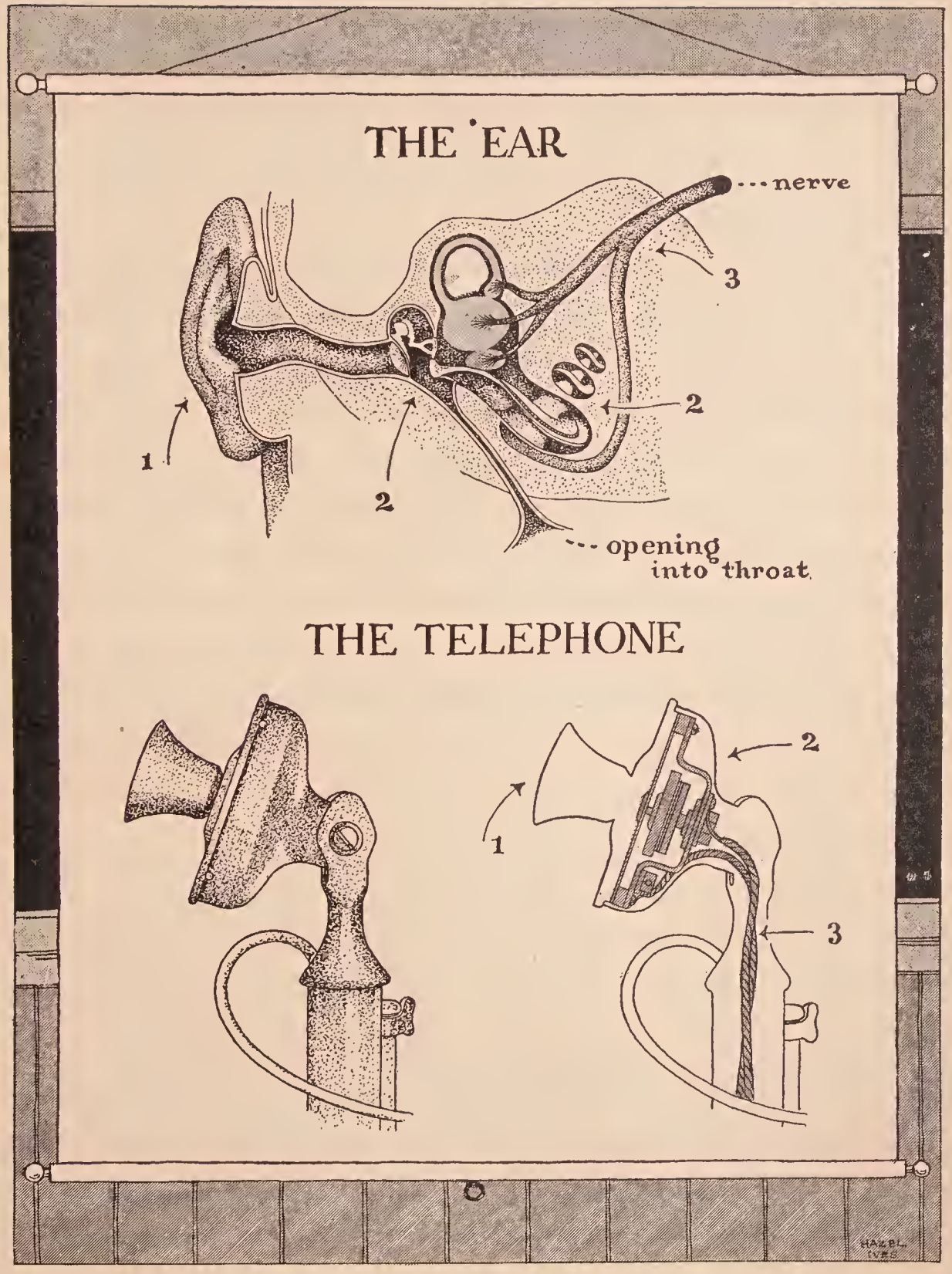
Your eyes are so important that if they suffer, you will surely feel tired and uncomfortable. Neglecting your eyes, when they need attention, may keep you from doing your best work in school, and even from growing as fast as you should. Are you giving your eyes good care by following these rules?

1. Do not read in a dim or flickering light.
2. In doing close work, sit so that the light can come over your shoulder.
3. Never allow a bright light to shine directly into your eyes.
4. Be careful not to injure the eye in any way.
5. Wear glasses if you need them.

The ear, like the eye, is a wonderful instrument. Through it we have the sense of hearing. Every sense organ tells us something about the world around us. The ear tells us about the different kinds of sounds or noises. These sounds are caught by the ear and sent to the brain over a special nerve.

You have all spoken to some one over the telephone. Probably each of you has spoken to some one by whispering in his ear softly, or to a deaf person by putting your mouth close to his ear. In some respects the ear and the telephone are alike. Each consists of three important parts which are numbered in the picture. The section numbered one is for the purpose of catching the sound. In the telephone it is the mouthpiece, and in the ear it is the part which you see, with the opening extending inward. The part numbered two in each case is a delicate and complicated structure for receiving the sound. Part three (the nerve of the ear and the wire of the telephone) is the means of carrying the message from the ear to the brain or from the telephone to the person at the other end of the telephone line.

The nature of the outer ear and that of the nerve are easily understood. Perhaps we ought to know a little more about that part of the ear which receives the sound and passes it on to the nerve. At the end of the passage from the outer ear is the eardrum. This is a delicate membrane which receives sound waves from the air and vibrates as the head of a drum vibrates when one beats upon it. On the other side of the eardrum is the middle ear. This is a hollow space, or tube, which is connected with the throat and filled with air which gets into it from the throat. Three little bones reach across this open space and carry the vibrations from the eardrum to another delicate membrane which separates the middle ear from the inner ear.



In the inner ear there is a marvelous structure which transmits these vibrations to the nerve. Sometime you

may have a chance to study this structure, which even the greatest scientists do not entirely understand at present. One part of the inner ear is not related to hearing, but sends messages to the brain to give one a sense of balance.

Hearing is so important and the ear is so delicate that we do not want to take any chances of injuring our sense of hearing. We wash the ears carefully and refrain from putting anything into them. We are careful not to pull the ears of another person or to shout into them. You have just learned that the middle ear is connected with the throat. When one blows the nose forcibly and improperly, he may force fluid from the throat into the middle ear. As a matter of fact, earache is usually caused by germs getting into the middle ear from the throat. The middle ear and the structures near it are delicate. Either earache or deafness deserves the careful attention of a physician.

In most schools hearing is tested regularly. Any child who finds that he does not hear well should go to his doctor at once. Sometimes it may be that wax has gathered in the ear passage outside the eardrum. If this is the case, the doctor is the person to remove it. If it is something more serious, prompt medical advice is particularly important.

Questions to Answer

1. How is the human eye like a camera?
2. How does the eye change its focus?

3. Why do the eyes become tired from too much close work? How can they be rested?
4. What is the proper distance between your eyes and your work? Do you keep this distance?
5. What does the diaphragm of the camera do?
6. What part of the eye acts like the diaphragm in the camera? Explain how it works.
7. Why do the eyes get tired from working in a flickering light?
8. Why is it important not to throw a shadow upon your work?
9. How are the eyes sometimes injured?
10. What are the rules in this chapter for the care of the eyes?
11. How is the ear like the telephone?
12. How is it possible for a throat cold to make its way into the middle ear?
13. How is the proper blowing of the nose related to the care of the ears?

Things to Do

1. Bring a camera to the class and examine the parts. Discuss each part and tell what part of the eye it is like.
2. Try the experiment described in this chapter to show that the eye cannot focus on near and distant objects at the same time.
3. Using a movable chair at the front of the room, demonstrate sitting in correct position for reading with light coming from the right direction and your book or work held at the correct distance from the eyes.
4. Add pages to your scrapbook to illustrate the proper care of the eyes.
5. Ask your teacher or nurse to find out from your class records whether all the eye defects in the class have been corrected. If they have, put a statement on the black-

board saying, "Our eye defects have been corrected one hundred per cent."

6. Make a list of rules for the care of the ears.
7. Make true statements about the eyes or ears, using the following words: focus, distance, retina, iris, lens, glare, oculist, eyesight, glasses, eardrum, middle ear, injury, earache.

XXVII

SAFETY

You would think a ship captain very foolish if he kept his boat in excellent condition and then carelessly wrecked it upon a rocky ledge. In piloting your living ship, safety habits are quite as important as health habits. In fact, avoiding accident and injury is part of the Health Game.

Boys and girls sometimes do reckless things thinking they are brave. Here's a story of an American boy in the World War who lost his chance to do brave deeds because he did not believe in being careful.

He was a splendid chap at heart, but he was always endangering himself and other people by the foolish things he did, even when he was just a little boy. He played with matches and fire until an accident nearly cost his little sister's life. He climbed the steepest cliffs in his neighborhood and many times barely escaped serious injury. Still he did not learn that such tricks are dangerous, and that life is too precious to be so carelessly risked.

When he went into camp with the other fellows, he soon won for himself the nickname of "Smarty." Many of the boys disliked him because he played practical jokes, such as pulling chairs out from under them, or fooling with his rifle just to scare them. Several

times some one was slightly hurt, but even this taught him nothing.

After months of training "Smarty" was among the lucky ones ordered off to New York, which probably meant off to France. The special train was crowded. The platform of the station was filled with those who came to say good-by. Boys in khaki were everywhere. The air was full of shouts and laughter. All too soon came the loud call of the trainman, "All aboard! All aboard!" Then there were hurried farewells. The last few stragglers rushed aboard. From open windows and crowded platforms they called their cheery good-bys, and threw last kisses to the mothers, sisters, wives, and sweethearts they were leaving behind.

The train was well under way, when suddenly from the forward steps of a car dropped "Smarty." He threw his cap into the air, caught it again, and then with a wild spring jumped for the steps of the last car as it rushed past him. He missed! There was a heavy thud as his body struck. A great cry went up from the crowd. Those who were near closed their eyes that they might not see.

When "Smarty" regained consciousness, he was lying in a white bed at the hospital. He couldn't move, and his body was one terrible ache. A nurse came to him, fixed his pillows, and brought him water. Both his legs were broken, she said, and his back was injured, too. With all his heart he wished he were

dead! To be lying in a hospital crippled by a foolish accident when his company was off for France! Can you understand a little of what it meant to him?

For weeks he lay there, helpless, and for months afterward he got about only on crutches. The doctors did their best to help him, but there was no hope of his return to the service for a long, long time. In the meantime news came from France that his company had gone into active service. He was wild to be with them, but because of his own foolishness he had lost his chance.

How different is the story of another boy—a quiet lad who also enlisted early and trained hard. He was rather cautious and timid, and never cared to take part in rough, dangerous stunts with the others. "Lefty," the boys called him, because he was left-handed. Although everybody liked him, no one supposed he would ever do anything remarkable.

"Lefty's" company, too, was among the first to go to France, where they were soon detailed to the region of heavy fighting. It did not matter much to "Lefty" where they went, for he had no real idea what hard fighting meant. He knew only that he was an enlisted man, trained to fight for his country, and ready to follow anywhere after his big, brave captain whom he worshiped.

One night "Lefty's" company took part in a big attack. The daring rush, the long, hard fight, and the forced retreat are matters of history. Hundreds of

men were slain, and hundreds more were wounded. "Lefty" had scratches here and there, but nothing serious. As he sat in the corner of a dugout, half asleep with the weariness of the fight, he heard the news that his captain was missing.

His captain missing! No time to lose! "I could find him, sir!" he said, as he touched his hat in salute to the officer near. "I saw him slightly wounded, but I could not stay to help him." What a proud moment for "Lefty" when he set forth to bring back his captain!

Out he crept into the darkness of No-Man's-Land. An occasional star-shell burst over head, and he flattened his body against the friendly earth, while his heart pounded with terror at the thought that each moment might be his last. It was horrible enough for him creeping about out there alone, but it was more horrible still to think that somewhere out there his captain was lying, wounded and cold—perhaps dead.

Minutes were like hours, each more frightful than the last. Finally, in a shell hole, he came upon the familiar figure which he was seeking. Imagine the renewed strength and courage with which he crawled back to the trench, dragging with him his beloved captain!

"Lefty" was daring enough when the big moment came! A brave man will risk his life when the need is great enough, but only a fool is willing to risk his life for nothing. History is full of the stories of men

who have done daring deeds, at the same time being as cautious as possible in protecting themselves from danger. Look up some of these tales and tell them in class. They will impress upon you the fact that bravery is entirely different from carelessness.

It actually pays to be a real common-sense sort of person. You may have heard about the man who wanted to hire a coachman. He asked each of three men, who applied for the job, how near he could drive to the edge of a certain steep cliff and yet be sure he was safe. The first man said he could drive within four feet of the edge. The second said he could drive one foot from it. The third said he would drive as far from it as possible. And he got the job!

You would not be comfortable to ride with a man who is willing to drive as near as possible to danger. Neither would you care to take a long voyage on a ship with a captain who is always taking chances, for you feel sure that some day he will get into trouble. He may even wreck his ship. What chances are you taking with your living ship?

Do you look both ways before crossing a street? Do you wait for the signal of the traffic officer at a busy crossing? Do you choose safe places for roller skating, coasting, and ball playing? Do you refuse to do dangerous swimming and diving stunts in deep water? Do you respect fire and electricity as wonderful servants of man, but as dangerous playthings?

Boys and girls who are careless of their own safety

are often careless of the safety of others, too. They sometimes do things which injure other children for life. One boy throws sand in another's face so that the other's eyes are injured. Or a girl is seriously hurt because her brother pulls a chair from under her as she is about to sit down. A child playfully pushes his playmate's head down on a bubbler fountain and a tooth is broken. Many accidents happen every day in factories, on the street, and in every place where numbers of people come together. A great many of these can be prevented if people will be more careful to practice constantly the habit of "Safety First." The number of accidents is greatly increased where people use alcohol. You can easily understand why this happens, because you know that alcohol affects the mind and nervous system very quickly so that a man can't think as well, and has less control of his body. There are many places where men who use alcohol are never employed, because of the danger of serious accidents.

Perhaps you can make a list in your notebook of "Safety First" habits that boys and girls in your class need every day—at school, at home, at play, and on the street. Let your list include things you *should* do, as well as things you *should not* do. Illustrate some of these rules by pictures.

Many classes have a Safety Committee, or some organization in which every member of the class has a particular responsibility. Let *every one* be a scout for safety!

Remember, however, that while health and safety are of great importance, they are not the end and aim of life. Health is only a means by which we prepare ourselves for usefulness and good citizenship. Our health ideals are beautifully expressed by "A Health Creed" given to Massachusetts boys and girls by their State Department of Health:

"MY BODY IS THE TEMPLE OF MY SOUL

Therefore:

I will keep my body clean within and without;
I will breathe pure air and I will live in the sunlight;
I will do no act that might endanger the health of others;
I will try to learn and practice the rules of healthy living;
I will work and rest and play at the right time and in the right way, so that my mind will be strong and my body healthy and so that I will lead a useful life and be an honor to my parents, to my friends and to my country."

Questions to Answer

1. How should one cross a busy street?
2. What are the traffic rules in the neighborhood of your home and school? Do you follow these rules?
3. Do you help the smaller children on your street and in your neighborhood to get to school safely or play in safe places? Tell how you have helped in this way.
4. Is a boy who is always "daring" some one to do dangerous things really brave? Why?
5. Can you think of some practical joke some one once played that was dangerous or did some harm? Tell about it in the class.

Things to Do

1. Tell the story of the man who hired the coachman.
2. Make a list on the blackboard of all the safety rules that are important for your own neighborhood.
3. Discuss the places in your neighborhood that are safe and those that are not safe for play.
4. Tell some story to the class about an act of real bravery. You may take this story from history or it may be a true story which you know about yourself.
5. Make a list on the blackboard of different kinds of accidents and tell how each can be prevented.
6. On the last page of your scrapbook, copy the "Health Creed" given at the end of this chapter. Learn this creed and recite it together in class.

Appendix

DIRECTIONS FOR WEIGHING AND MEASURING

Every child is interested in growing. The best way to watch growth is by determining the weight each month and the height two or three times during the school year. The increase in weight and height during these periods will not be great. Therefore, the weighing and measuring must be done in a definite and standard way in order that the results shall be true and accurate.

Sometimes we determine how a child's weight compares with that of the average child of his height and age. We must recognize, however, that the child's interest in growth is universal. It is entirely feasible to use weighing and measuring as a means of interesting children in their growth without using the class statistics to determine the number of underweight children.

In any case, however, careless weighing and measuring will produce so many errors that the figures will not only be worthless from the statistical viewpoint, but they will also be worthless as a method of interesting the child, because his growth record will be inaccurate and unreliable. Age is taken to the nearest birthday.

In weighing, any standard, reliable scale can be used. It should be balanced for accuracy at each weighing period, or whenever it has been moved from one room to another. It is better to have the weighing done in the classroom if possible.

A child should be weighed in indoor clothing with coat or sweater removed. He should stand quietly on the middle of the scale platform with hands at the sides. Both weight and height should be taken in the stocking feet; but if there is such prejudice as to make this impossible, it is better to weigh and measure with shoes on rather than to give up the project. The inaccuracy in-

troduced because of wearing different kinds of shoes is more or less standard, and will not interfere with the child's interest in his growth record.

Measuring Standing Height

Two instruments are necessary for measuring standing height —an accurate scale and some leveling device which may be placed on top of the head to indicate the exact height on the scale.

The best measuring scale is made of the finest type of inextensible and unshrinkable paper. It was originally suggested by the Committee on Anthropology of the National Research Council, and is available from the American Child Health Association, 370 Seventh Avenue, New York. The right edge of the scale is divided in centimeters and millimeters, and the left edge is divided in feet, inches, and fractions of an inch. The scale may be tacked or pasted to a wall or specially prepared board.

Yardsticks fastened one above the other on a smooth wall, or tapes tacked to the wall, may be used; but they are much less satisfactory, and care must be taken that they are accurately placed. Such a scale should be checked by a standard measure.

In order to locate on the vertical measuring scale the point exactly level with the top of the head, some sort of leveling device is needed. A book or similar flat surface cannot be used accurately because it is difficult to be sure that it is held horizontal. The device commonly used is made of two pieces of well-seasoned wood, each about five inches wide and seven inches long, fastened together at the five-inch ends so that one piece is at right angles to the other, like the bottom and end of a box. If the shop department makes this device, a triangular brace piece may be added to stiffen the right angle, and a slot may be cut through this brace to provide a convenient handle. In use, one surface is kept against the scale while the other rests on the head of the person measured.

The person stands with heels together. The heels, the upper back, and the head are against the wall to which the scale is at-

tached. The arms are at the sides in a natural position, and the head is in such a position that the visual axis is horizontal. The leveling device should be brought down two or three times in succession on the top of the head, with enough force to feel the impact on the skull, the reading being taken from the last position.

The Morning Health Review

It has become common practice to use about five minutes each morning in checking evidences of good or poor health habits. The class is usually organized with captains or inspectors to check the cleanliness of hands, faces, teeth, nails, handkerchiefs, and shoes, as well as the neatness of hair and clothing. At the same time the teacher looks for symptoms of illness, such as colds and other communicable diseases, and sends at once to the nurse or doctor any child who is coughing or sneezing, or who has flushed face, red and watery eyes, a running nose, or a skin rash.

This morning health review is also used to carry on campaigns for the establishment of particular practices not subject to check by the morning inspection. Most teachers prefer to emphasize one or two habits at a time. Stories, discussions, and special reports may be introduced briefly.

The teacher takes care not to embarrass unfortunate children and protects them from the thoughtlessness of their classmates. Pupil activity and responsibility are developed as far as practicable.

A daily record of inspection, kept by rows or individually, adds interest because it provides a measure of accomplishment.

The Relaxation Period

At 10 o'clock in the morning or at 2:30 in the afternoon, if there has been no physical training or relief period up to that time, some schools allow pupils to stand by their desks, facing the open windows, for two minutes of stretching exercises followed by brief, complete relaxation in their seats.

The School Lunch

Many schools serve a mid-morning lunch of milk and crackers. This is usually served not later than 10:15, in order that it may not interfere with the child's appetite for the noon meal. Most school systems allow any child to have this lunch, and urge extremely thin children to do so. In many places children bring their noon lunches to school with them.

The educational opportunities in connection with any lunch at school should be utilized. Children should develop proper habits of hand-washing in preparing for the lunch. The lunch should be served with the maintenance of proper cleanliness. The lunch period should be pleasant and happy. The child learns to eat slowly. He develops good table manners and courtesy.

The Recording of Health Habits

When any plan for recording health practices is used, the child should understand that this recording is done to serve as a reminder. The results of his health program will be measured by his growth, his success on the playground or in the classroom, or by other actual accomplishments. A perfect health score card or record chart is not an end in itself, but rather an aid in attaining an end.

Each habit record should be kept for a period of at least two weeks, being recorded either upon sheets of ruled paper or upon the blackboard. The records may be kept by individual children or for rows, teams, or other groupings of the pupils.

Classroom Activities

The regular health or hygiene period should be used to orient, organize, and systematize the whole health-training program—not merely to provide an isolated instruction period for the giving of information. Health training requires continued interest and repetition. These can be best secured by making hygiene a part

of the curriculum and providing a fresh approach in each succeeding grade. The regular monthly weighing of the class usually takes the place of a hygiene period. It is a most valuable type of health lesson. Pupil activities, including the making of scrapbooks and posters, may be developed in connection with the regular hygiene periods.

In many school systems a large part of the health program will be developed through long teaching units and through correlation between health and other subjects of instruction. It is believed that the material and suggestions in this book will lead to the development of classroom activities of this type.

Coördination of Health Activities

The school health program gains by coördination of effort and activities. With such coördination, the children come to recognize that the doctor and nurse are their friends, and the correction of physical defects becomes an important classroom project. Physical education and health education are mutually strengthened by such relationship.

WEIGHT—HEIGHT—AGE TABLE FOR GIRLS

Height Inches	5 Yrs.	6 Yrs.	7 Yrs.	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	14 Yrs.	15 Yrs.	16 Yrs.	17 Yrs.	18 Yrs.
38	33	33												
39	34	34												
40	36	36	36											
41	37	37	37											
42	39	39	39											
43	41	41	41	41										
44	42	42	42	42										
45	45	45	45	45	45									
46	47	47	47	48	48									
47	49	50	50	50	50	50								
48		52	52	52	52	53	53							
49		54	54	55	55	56	56							
50		56	56	57	58	59	61	62						
51			59	60	61	61	63	65						
52			63	64	64	64	65	67						
53			66	67	67	68	68	69	71					
54				69	70	70	71	71	73					
55				72	74	74	74	75	77	78				
56					76	78	78	79	81	83				
57					80	82	82	82	84	88	92			
58						84	86	86	88	93	96	101		
59						87	90	90	92	96	100	103	104	
60						91	95	95	97	101	105	108	109	111
61							99	100	101	105	108	112	113	116
62							104	105	106	109	113	115	117	118
63								110	110	112	116	117	119	120
64								114	115	117	119	120	122	123
65								118	120	121	122	123	125	126
66									124	124	125	128	129	130
67									128	130	131	133	133	135
68									131	133	135	136	138	138
69										135	137	138	140	142
70										136	138	140	142	144
71										138	140	142	144	145

Prepared by Bird T. Baldwin, Ph.D., and Thomas D. Wood, M.D.

About what a G I R L should gain each month.

Age		Age	
5 yrs. to 8 yrs	6 oz.	14 yrs to 16 yrs	8 oz.
8 " " 11 "	8 "	16 " " 18 "	4 "
11 " " 14 "	12 "		

Courtesy of the American Child Health Association

WEIGHT—HEIGHT—AGE TABLE FOR BOYS

Height Inches	5 Yrs.	6 Yrs.	7 Yrs.	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	14 Yrs.	15 Yrs.	16 Yrs.	17 Yrs.	18 Yrs.	19 Yrs.
38	34	34													
39	35	35													
40	36	36													
41	38	38	38												
42	39	39	39	39											
43	41	41	41	41											
44	44	44	44	44											
45	46	46	46	46	46										
46	47	48	48	48	48										
47	49	50	50	50	50	50									
48		52	53	53	53	53									
49		55	55	55	55	55	55								
50		57	58	58	58	58	58	58							
51			61	61	61	61	61	61							
52			63	64	64	64	64	64	64						
53			66	67	67	67	67	68	68						
54				70	70	70	70	71	71	72					
55				72	72	73	73	74	74	74					
56				75	76	77	77	77	78	78	80				
57					79	80	81	81	82	83	83				
58					83	84	84	85	85	86	87				
59						87	88	89	89	90	90	90			
60						91	92	92	93	94	95	96			
61							95	96	97	99	100	103	106		
62							100	101	102	103	104	107	111	116	
63							105	106	107	108	110	113	118	123	127
64								109	111	113	115	117	121	126	130
65								114	117	118	120	122	127	131	134
66									119	122	125	128	132	136	139
67									124	128	130	134	136	139	142
68										134	134	137	141	143	147
69										137	139	143	146	149	152
70										143	144	145	148	151	155
71										148	150	151	152	154	159
72											153	155	156	158	163
73											157	160	162	164	167
74											160	164	168	170	171

Prepared by Bird T. Baldwin, Ph.D., and Thomas D. Wood, M.D.

About what a B O Y should gain each month.

Age		Age	
5 yrs. to 8 yrs.	6 oz.	12 yrs. to 16 yrs.	16 oz.
8 " " 12 "	8 "	16 " " 18 "	8 "

Courtesy of the American Child Health Association

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