THE YOUNG AMERICAN READERS

JANE EAYRE FRYER

COMMUNITY INTEREST AND PUBLIC SPIRIT

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BY

Mrs. JANE EAYRE FRYER

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ILLUSTRATIONS BY EDWIN JOHN PRITTIE AND FROM PHOTOGRAPHS

In these vital tasks of acquiring a broader view of human possibilities the common school must have a large part. I urge that teachers and other school officers increase materially the time and attention devoted to instruction bearing directly on the problems of community and national life.—WOODROW WILSON.

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CIVICS FOR AMERICAN CHILDREN

In the two preceding volumes of The Young American Readers, "Our Home and Personal Duty," and "Our Town and Civic Duty," studies were made of some of the people who render services to the community.

In this volume, "Community Interest and Public Spirit," study is made of some of the *things* which are civic in their nature, and about which every intelligent citizen should have some knowledge.

It is not intended that a detailed study be made of the various topics. The principal object in view is to have the children thinking about civic affairs and interested in them.

As Doctor J. Lynn Barnard well says: "The aim of early civic training, no matter what the locality or method pursued, is clear and definite. It is to make intelligent, interested, practical citizens, who will know what good government is, and how to co-operate with public officials to get it. The younger generation are learning to think straight and true in public matters, whether of city, state, or nation. They really want to be good citizens, and are coming to see that 'the test of good citizenship lies in the existence of an intelligent, continued interest in the question of good government.'" In this connection, it would be well to read Dr. Barnard's helpful introduction to the Young American Reader, "Our Home and Personal Duty."

The work covered in Part I of the present volume aims to arouse the interest of the children in such matters of a civic nature as water, gas, electricity, and the telephone; that of Part II aims to give the children an intimate knowledge of the places and activities of civic interest in the

neighborhood; and that of Part III aims to give them an understanding of the Junior Membership and School Activities of the American Red Cross.

As in the earlier grades* the work should be informal, consisting of reading and conversation, visits to various city plants, and reports by the children. The division of this reader into Parts I, II, and III is for convenience, and does not imply that the work should be completed in any given term.

The study of the services rendered by such public utilities as Water, Gas, Electricity, and the Telephone is well adapted to create interest in the many questions of community welfare.

The study of the Neighborhood and the City Beautiful affords an opportunity for constructive work by the children, who should be encouraged to take an active part in this movement, for an interest in their own City Beautiful is one of the most inspiring and valuable incentives to boys and girls for good citizenship.

The question of Safety should be discussed freely by the children, and they of themselves should point out the practical application of Safety-first in their own lives. Our public schools afford possibilities for educational work in impressing upon the children the necessity of caution in protecting themselves and others against the common, every-day dangers of street and home. If we provide such instruction we shall have taken a long step forward in conserving life and limb, and in increasing industrial safety.

The study of the service of the Junior Red Cross will give the children an interest in the great and inspiring movement which is so deeply affecting our community and national life.

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* The teacher should make herself familiar with the work which is covered in the two volumes of The Young American Readers preceding this.

The author gratefully acknowledges her indebtedness to Doctor J. Lynn Barnard, whose practical advice and assistance in the making of this series of readers have been invaluable.

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A BIRD'S-EYE VIEW OF THE PLAN OF THE YOUNG AMERICAN READERS

It may be said that a child's life and experience move forward in ever widening circles, beginning with the closest intimate home relations, and broadening out into knowledge of community, of city, and finally of national life.

A glance at the above diagram will show the working plan of the Young American Readers. This plan follows the natural growth and development of the child's mind, and aims by teaching the civic virtues and simplest community relations to lay the foundations of good citizenship. See Outline of Work.

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PART I

PUBLIC UTILITIES

Some of the Services Rendered by such Community Servants as Water, Gas, Electricity, the Telephone.

WATER

Nature has given to man many useful servants, but none more useful than water. Without water we could not quench our thirst, cook our food, wash our clothing, sprinkle our gardens, lay the dust in the street, or extinguish a large fire. Indeed, without water there would be no life on this earth.

INDIANS FILLING WATER JARS. See page 18.

OUR NEED OF WATER

The Water Hole

Probably you have all been to the Zoo. What wild animals did you see there? Did you see them fed? Did they have water?

Where do you suppose they used to get water before they were caged? Did you ever read about the water holes in Africa?

At a certain time of the year water is not plentiful in the central parts of Africa. This is called the dry season. The little rivers and water courses dry up and disappear and the wild animals suffer from thirst. What do you think they do then?

They visit the water holes, or springy places where the water collects even in the dry season. Often they travel far to reach the water holes, for there are not many such places. Sometimes even these are only

damp spots. Then what do you think they do? They dig a hole with their paws and hoofs into which the water will run and form a little well.

Can't you imagine how jealously the different animals watch the watering places? Some of the more timid wait for hours before they dare venture to get a drink. It must be an awful thing to wait so long when thirsty.

Brave men have made moving pictures of some famous water holes in Africa. It is a very dangerous business, as you may guess. In setting up the camera the men have to be careful that the wind blows away from the water hole, or the wild animals coming there for a drink may scent them, and—well, it would not be any fun to be chased by a wild African lion, would it? By working carefully, however, some wonderful pictures have been made.

In one picture many harmless little animals are drinking, when along comes a mother elephant followed at quite a distance by her big baby. The mother looks cautiously around, her tiny bright eyes twinkling. After she sees that it is quite safe, she tells the baby to come nearer. The mother elephant drinks a trunkful of water, then she dashes another trunkful over her back. The baby plays around but doesn't stop to take a drink. Suddenly, the mother hears a strange noise or scents a wild beast—a lion, perhaps, for she turns to the baby and pushes him back.

The baby does not want to go, evidently, for he tries to run away and dig a drinking well. But the mother knows that it is best for children to mind, and right before everybody, right out in the moving

picture, she gives the baby a whipping with her big strong trunk, and away he goes scampering through the thicket, crying too perhaps, for probably he must wait a long time before getting a drink.

All the other little animals run away also, but they need not have been frightened, for the newcomers are two tall giraffes.

Did you ever see a giraffe drink? His forelegs are

so long that he cannot reach the water as a horse does. So he spreads his legs wide apart in a most awkward manner and drinks just as you see in this picture.

While the giraffes are drinking, some antelopes come to the water hole. They seem to know that the big giraffes will not harm them. No sooner have the giraffes gone than a group of little monkeys appear. They seem hurried, and drink quickly.

After a long, long wait, at sunset, the photographers hear stealthy soft footsteps, and a lion and lioness

creep up to the drinking hole. They lap quarts and quarts of water eagerly, forgetting for a while to sniff the air for prey. All the time the camera man has been snapping the picture.

All through the dry season there are many such scenes at the water holes. Day and night the wild animals of the forest, both big and little, come singly and in groups to drink. Even the most timid will brave lions and tigers to quench their thirst, for every living animal must have air, food, and water in order to live.

The Ancient Mariner

In a very remarkable poem, "The Ancient Mariner," written in 1797, Samuel Taylor Coleridge, the English poet, describes the horror of being in midocean without a drink of fresh water.

The ancient mariner, so the story runs, killed a large bird, an albatross, which rested on his sailing vessel. Suddenly the ship was becalmed in the midst of the deep Pacific Ocean.

In the following lines, the poet lets the sailor tell his story to a man who is on his way as a guest to a wedding:

Down dropt the breeze, the sails dropt down,
'Twas sad as sad could be,
And we did speak only to break
The silence of the sea.

All in a hot and copper sky,
  The bloody sun, at noon,
Right up above the mast did stand
  No bigger than the moon.

Day after day, day after day,
  We stuck, nor breath nor motion;
As idle as a painted ship
  Upon a painted ocean.

Water, water, everywhere
  And all the boards did shrink;
Water, water, everywhere,
  Nor any drop to drink.

And every tongue, through utter drought,
Was withered at the root;
We could not speak, no more than if
We had been choked with soot.

The sailor goes on to tell the wedding guest how, in a miraculous way, after the other men aboard die of thirst, and after long, weary, terrible experiences, he is brought to firm land; and how ever afterward he must travel from place to place telling some one the lessons he has learned.

In these words he sums up the lessons:

Farewell, farewell! but this I tell
To thee, thou wedding guest,–
He prayeth well, who loveth well,
Both man and bird and beast.

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

Paul Kruger's Hat

Do you know who Paul Kruger was?

He was the president of the South African Republic, and the leader of his people in the Boer War.

His people thought so much of him that they erected a statue in the public square at Pretoria to perpetuate

his memory and to show him honor. This statue was a bronze figure of President Kruger wearing a long coat and a tall hat.

When the design was shown to Mrs. Kruger for her approval, the only suggestion she made was that the flat top of the tall hat be hollowed out like a saucer—in order that the rain water might collect there for the birds to drink.

This was accordingly done, and as long as the statue of Paul Kruger stands, the birds will have a drinking place in the top of his hat.

If all the land were bread and cheese,
And all the water were ink—
What would the creatures of this earth,
What would they have to drink?

—*Old Rhyme.*

Dobbin Likes Water

If you ever drive a horse, here are some of the ways in which you can help make him glad that you are his driver:

First: Load lightly and drive slowly.

Second: Stop in the shade if possible.

Third: Water your horse as often as possible. So long as a horse is working, water in small quantities will not hurt him. But let him drink only a few swallows if he is going to stand still. Do not fail to water him at night after he has eaten his hay.

Fourth: When he comes in after work, sponge off the harness marks and sweat from his eyes, his nose and mouth and neck.

Fifth: Do not use a horse hat, unless it is a canopy-top hat. The ordinary bell-shaped hat does more harm than good. A sponge on top of the head, or even a cloth is good if kept wet. If dry it is worse than nothing.

Sixth: If the horse is overcome by heat, get him into the shade, remove harness and bridle, shower his legs and give him two ounces of aromatic spirit of ammonia or two ounces of sweet spirit of nitre in a pint of water; or give him a pint of warm coffee. Cool his head at once, using cold water, or, if possible, chopped ice wrapped in a cloth.

Seventh: Watch your horse. If he stops sweating suddenly or if his breath is short and quick, or if his ears droop, or if he stands with his legs braced sideways, he is in danger of a heat stroke and needs attention at once.

Eighth: If it is so hot that the horse sweats in the stable at night, tie him outside, with bedding under him. Unless he cools off during the night he cannot well stand the next day's heat.
—*Rules of the Boston Work Horse Relief Association.*

QUESTIONS

Have you ever been dreadfully thirsty?
How did the Ancient Mariner feel when thirsty?
How do sailors get water now?
Do animals ever suffer from thirst?
Do you think it is wise for the government to pass laws protecting horses? Why?
Can you repeat the last two stanzas of the poem about the Ancient Mariner?

It's no use to grumble and complain,
  It's just as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
  Why, rain's my choice!

—*James Whitcomb Riley*

HOW WATER SERVES US

Without water, human beings, animals, and plants could not live. The human body is four-fifths water. If your body weighs one hundred pounds, about eighty pounds of the hundred are water, and about twenty pounds are solid matter. A grown man consumes, either in his food or as a beverage, nearly a ton of water each year.

All plants contain much water. Potatoes are three-quarters water; apples are four-fifths water, and watermelons are nearly all water. Even a loaf of bread is almost one-half water.

Water climbs, in the form of sap, through the delicate tubes of the plant and tree, and supplies the leaves with food for growth. Water flows through our bodies as blood, carrying food for repairs to the various parts "of the house we live in."

In summer, water comes from the clouds as rain to water every living thing. In winter it comes as a blanket of snow over the earth and a covering of ice over the lakes and rivers to keep the fishes warm and comfortable underneath.

The streams turn water wheels which drive the machinery of mills and factories, or speed the great dynamos which generate electricity.

As the ocean, water bears on its bosom the mighty ships which sail from port to port and carry on the commerce of the world.

These are only a few of the uses of water. Perhaps you can name others.

QUESTIONS

Can you imagine what kind of place this earth would be if we had no more rain?

What would happen to the trees and plants?

What would happen to the birds and animals?

What would become of men and women, and boys and girls?

Did you ever have a garden? Could your plants grow without water?

If a piece of watermelon lies in the sun's rays until thoroughly dry, how much of it will be left? What does that show?

What do you think about the value of water?

Is it of more value to us than diamonds? Than gold or silver? Than iron? Why?

The rain is raining all around,
  It falls on field and tree,
It rains on the umbrellas here,
  And on the ships at sea.

—*Robert Louis Stevenson.*

How beautiful is the rain!
After the dust and heat,
In the broad and fiery street,
In the narrow lane,
How beautiful is the rain!

In the country, on every side,
Where far and wide,
Like a leopard's tawny and spotted hide,
Stretches the plain,
To the dry grass and the drier grain
How welcome is the rain!

—*Longfellow.*

THE CITY'S WATER SUPPLY

1. In Colonial Days

In Colonial times each household had to provide its own water supply. Sometimes this was taken from a nearby stream or lake, but more frequently from a well. These wells were dug by hand and lined with stones or bricks to keep the sides from falling in. Sometimes the water was drawn up by means of a pump, and sometimes by hand with a rope tied to the pail.

Another method of securing water was by using the well-sweep. The well-sweep was a long heavy pole. The center of the pole was fastened to a forked stick, forming a kind of see-saw. To one end of the sweep was fastened a heavy weight, and to the other an oaken bucket. When the bucket was dropped down into the well and filled, the weight helped to lift the bucket out. To have a good well of water in your own home was considered a luxury in Colonial times.

Besides private wells, a village often had a public well and pump, which was called the town pump.

From this, the villagers filled their pails. Sometimes they used a yoke to carry the water home. The yoke was a piece of wood resting over the shoulders. To each end of the yoke was fastened a chain or strap with a hook on which hung the pails.

To-day many villages and small towns have their own waterworks which supply water to the people just as the water systems of large cities do.

In the country districts where the houses are widely scattered each household must still provide its own supply. Great care must be taken to prevent the water from becoming impure. If the well is too near the barn and outhouses there is always danger that unclean water will drain into it. Many cases of disease have been traced to this source.

2. Zuni Indians Visit New York

A story is told of a group of Zuni Indians who once visited New York. They were shown all the wonderful sights of the city. After they had seen everything that was to be seen, they were asked what was the most wonderful thing that the white man had shown them.

What do you think was their answer? "The great bridges across the East River; the fifty-story buildings; the Statue of Liberty;" perhaps you reply.

No, none of these things; the Indians said that the

most wonderful thing, the strangest thing, to them, was to be able to open a tap anywhere in the city and have a stream of water flow from it.

That seems a small thing to us because we have always been able to get water in this way ever since we can remember. But the Zunis lived in the dry regions of New Mexico where the rain-fall was scant. Their dwellings were in the high rocks and cliffs. When they wanted water they had to climb down several hundred feet into the canyon below. There they would place their water jars under an opening from which the water trickled slowly—sometimes drop by drop. When the jars were full, they would have to climb back up the steep sides of the canyon to their homes. So to the Indians the flowing water in every house was a great marvel, as it would be to us if we had never seen it before.

3. The Waterworks

Yes, the Indians were right. The most important thing for every city is an abundant supply of pure water. Without it the people could not live in health and comfort and do their work.

Every community needs water for drinking, cooking, bathing, washing clothing, house cleaning, and other domestic uses; for sprinkling streets and lawns, for fire protection, and for manufacturing purposes.

Water is supplied to the people of the city through the waterworks—sometimes called the water system or water service. Every water system is made up of many parts. There must be large reservoirs to store

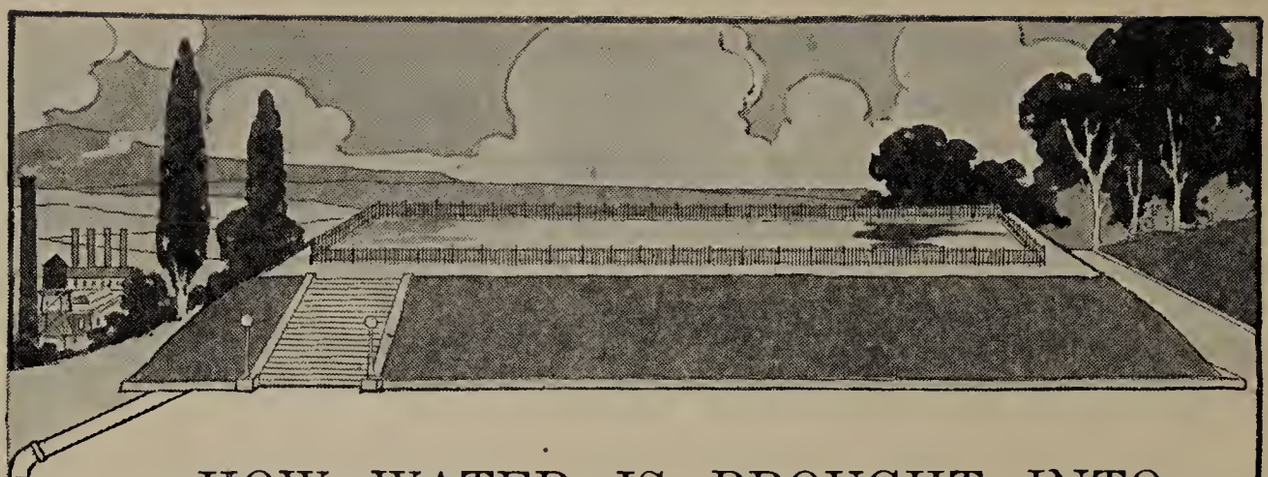
the water as it comes from the river, the lake, or the artesian well. There must be pumping stations to pump the water into the reservoirs and through the mains of the city. There must be filter beds to purify the water when necessary. There must be street mains and service pipes to lead the water to the different parts of the city and into the houses.

Most important of all, there must be many faithful workers, for without them the waterworks would be useless. These workers build the reservoirs, dig the trenches for the water mains, lay the pipes and mend them when they break, operate the pumps, and see that a constant supply of water is ready for every need.

Nature provides water freely, just as she does air and sunshine. The sun waterworks never cease working day or night. The heat of the sun constantly draws moisture into the air, where it forms clouds of vapor. When the moisture-laden clouds are cooled rapidly, the rain falls and waters every living thing.

But nature does not provide the waterworks by means of which water is brought into our homes. She does not provide the water system by which each person in a large city is supplied with more than one hundred gallons per day. This system must be provided by the city at great expense, and for this reason water is too precious to waste.

Suppose your city has one hundred thousand houses in it, with five spigots in each house; that would be half a million spigots from which water could be drawn day or night. Of course, this would cost a great deal of money. How could you help reduce the cost?



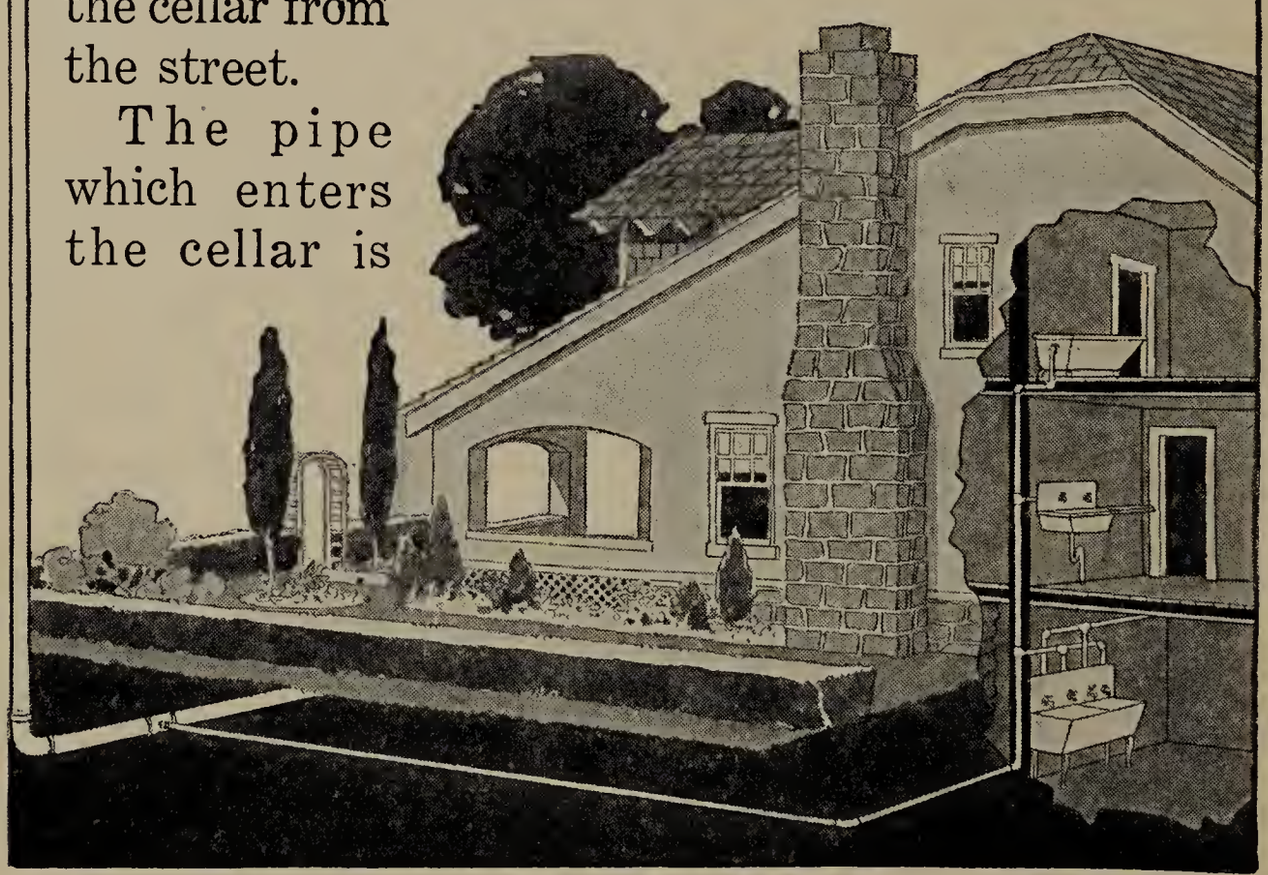
HOW WATER IS BROUGHT INTO OUR HOUSES

1. The Reservoir

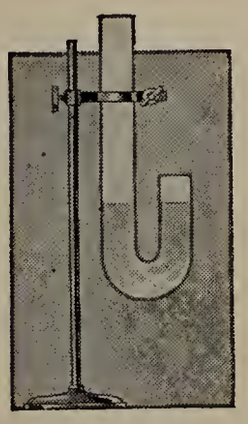
When you turn a tap and fill your glass with cool sparkling water, do you ever wonder where the water comes from?

If you trace the pipe from which the water flows, you will see that it enters the house through the cellar from the street.

The pipe which enters the cellar is



called the service pipe because it serves the house with water. It is connected with the street main, which is a larger pipe running under the street. The street main serves all the houses on the street with water, and all the streets of the city have street mains. The street mains run into a trunk main, and the trunk main runs into the reservoir.



The reservoir is an artificial lake where the city water supply is kept. When you turn a tap and draw a glass of water, the water in the reservoir sinks just a little. The reservoir is built on high land so that the water will flow down hill. If all the taps or outlets in the city are lower than the water in the reservoir, the water flows easily into the main and the houses and out at the tap.

2. The Village Standpipe

A large city usually needs several reservoirs to store its water supply. In the small towns and villages a standpipe, or water tower, is often used. This is really a small reservoir.

The standpipe is a huge circular water tank of iron or steel. It may be twenty feet across, and one hundred feet high, or even larger. Like the reservoir, the standpipe is always placed on a high spot of ground, so that the water will flow freely into the houses. If the water in the standpipe is kept at the proper height, the pressure will be great enough to throw it over the housetops in case of fire.

Sometimes a water tank of wood is set high in the

air on a framework of steel to hold the water supply for a small village.

City reservoir, village standpipe, water tower or tank have only one purpose, and that is to store a plentiful supply of pure water for all the people of the community.

3. The Pumping Station

Whether the water supply comes from a lake or river or artesian well, powerful pumps are needed to pump the water into the reservoir and through the water mains. The place where the pumps are located is called the pumping station. The pumps are usually driven by great steam engines and will pump many millions of gallons every day.

Sometimes the water instead of being pumped into the reservoir is pumped directly from the source of supply into the water pipes of the city.

This is done in Chicago where the city water comes from Lake Michigan. The supply is drawn from the lake several miles out from shore and is forced through the mains by means of great pumping stations. Water from artesian wells is often sent into the houses in the same way. Where the water is impure it must first be filtered.

HOW WATER IS FILTERED

Did you ever make a filter?

It is not a difficult thing to do. Pack a layer of pebbles or gravel in the bottom of a six-inch earthen flower pot. Place on the pebbles a layer of clean sand two or three inches deep.

If you fill the flower pot with muddy water, and let it trickle slowly through the bottom, you will be surprised at its clearness as it comes out. This is exactly what the large filters of the waterworks do for water which is not clean enough to drink.

You have noticed how clear and sparkling spring water is. Can you tell why this is so? If you think about it a moment you will see that water which is strained through the ground is filtered and purified.

Sometimes even clear water is not safe to drink. This is because even clear water may contain germs of disease.

People who live along streams and lakes which are used for water supply should be careful not to allow sewage and other impurities to drain into the water. By so doing they protect their own health and the health of others. If you are not sure that the water you use is pure it should be boiled, because boiling kills the germs and makes the water safe for drinking. By observing this rule many lives have been saved.

QUESTIONS

I

Can you imagine the great network of pipes underlying our city streets?

How does the water get into big city reservoirs?

Tell something about the great pumps which force the water.

What is a filter?

Have you ever seen a filtration plant?

Why should everything be done to keep the water supply clean and pure?

Make a list of the ways in which water is used,

(*a*) In the house; in large factories.

(*b*) In the streets.

Where can you get water in your house?

Can you tell about the journey of a mouse which started at the kitchen water faucet in your house, and ran along the pipes until it reached the city reservoir?

Try to draw a picture of the water pipes under your own house and street, remembering that they get larger as they near the reservoir.

II

Why is the reservoir or standpipe always placed on high ground?

What does the picture on page 21 show?

Can you explain what is meant by, "Water seeks its own level?"

Have you ever visited your city waterworks?

Where does your city's water supply come from?

When water is heated to the boiling point it expands into steam; If steam is not allowed to escape, its expansive force will burst the boiler which holds it. This expansive force of steam is called steam power, and is used to run the steam engine. Can you think of a more wonderful use of water than this?

NEW YORK'S WATER SUPPLY

The city of New York obtains its water supply from mountain streams and lakes. At first the water was brought from Croton Lake, forty miles away.

As the city grew, it was found that the Croton supply was not sufficient. New York needed more water for its five million inhabitants, and so the wonderful Catskill Aqueduct was built. If you look at a map of the state of New York you will see that the Catskill Mountains are about one hundred miles north of the city, near the Hudson River. The Catskills are covered with forests, and many streams of pure water rush down the mountain sides into the valleys below.

The water from the streams is gathered into a great reservoir known as the Ashokan Reservoir. From this reservoir a mighty river of mountain water flows through a huge tunnel down into New York City. This river and tunnel are called the Catskill Aqueduct. The aqueduct is ninety-two miles long from the reservoir to the city line.

When the aqueduct reaches the Hudson River, how do you suppose it crosses it? The point of crossing is at Storm King, near West Point. Here the aqueduct passes below the bed of the Hudson River at a depth of 1140 feet below the river's surface. High above the aqueduct the great river flows on undisturbed.

After crossing the river the aqueduct keeps on its way to the city reservoirs. From these reservoirs the water is sent through the mains and pipe lines to the

different parts of the city, and from these mains it is piped to the houses.

The water supply from Croton Lake and the Catskill Mountains is sufficient to provide every one of the five million people of New York with more than a hundred gallons of water daily. Think of being able to hold your glass under a city tap and to fill it with pure water from a mountain stream one hundred miles away.

THE BROOK

I come from haunts of coot and hern,
I make a sudden sally
And sparkle out among the fern,
To bicker down a valley.

By thirty hills I hurry down,
Or slip between the ridges,
By twenty thorps, a little town,
And half a hundred bridges.

Till last by Philip's farm I flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

I chatter over stony ways,
In little sharps and trebles,
I bubble into eddying bays,
I babble on the pebbles.

With many a curve my banks I fret
By many a field and fallow,
And many a fairy foreland set
With willow-weed and mallow.

I chatter, chatter, as I flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

I steal by lawns and grassy plots,
I slide by hazel covers;
I move the sweet forget-me-nots
That grow for happy lovers.

I slip, I slide, I gloom, I glance,
Among my skimming swallows;
I make the netted sunbeam dance
Against my sandy shallows.

I murmur under moon and stars
In brambly wildernesses;
I linger by my shingly bars;
I loiter round my cresses.

And out again I curve and flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

—*Alfred Tennyson.*

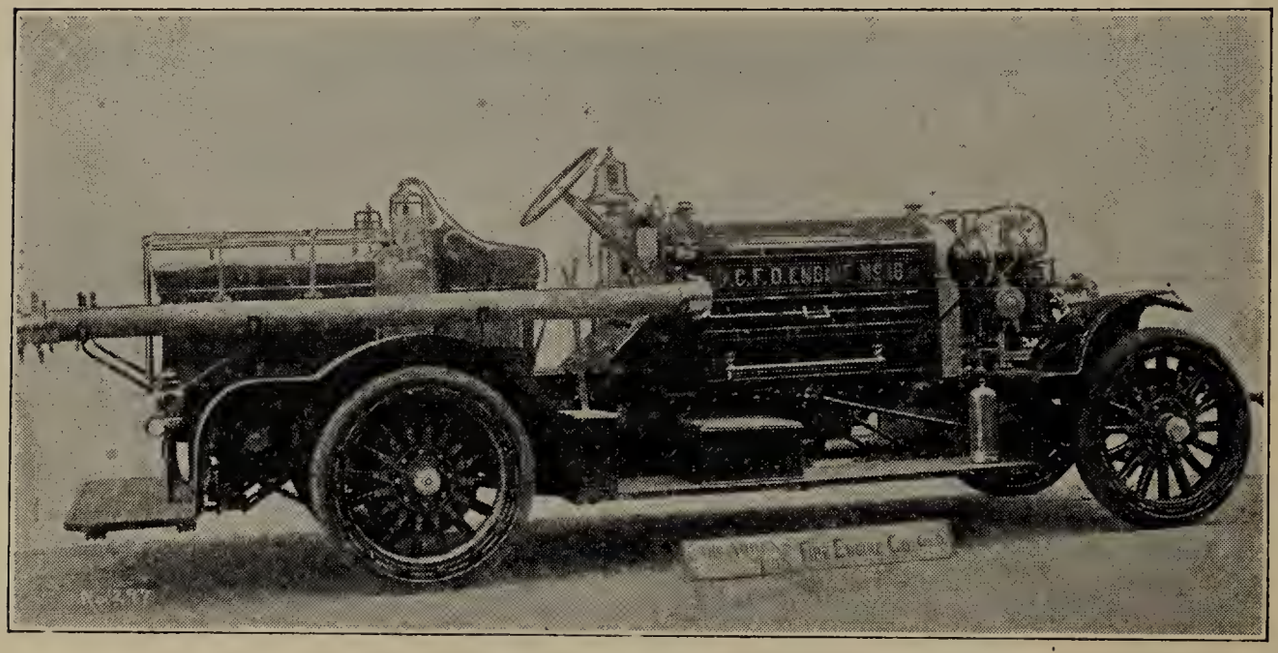
HOW WATER IS USED IN FIGHTING FIRES

1. The Fire-Engines

Did you ever see a fire? How was it put out?

To put out a fire there must be plenty of water because the water smothers the fire by drowning. The water must also be thrown with force or pressure, so that it will reach the roofs of dwelling houses and high buildings.

This is generally done by means of the fire-engine. The fire-engine is a strong force-pump driven by steam.



It is set up on wheels so that it can be taken wherever there is a fire.

The firemen fasten one end of a hose to the engine and the other end to the fire-hydrant on the curb. Another hose is stretched from the engine to the burning building. The engine is started pumping and the water is thrown on the flames.

The largest fire-engines will pump eight or nine

hundred gallons a minute and will throw a stream of water over a building several stories high.

The force of the water is made greater still in another way. As soon as a fire breaks out, the men at the pumping station begin to send water through the pipes very much faster. This gives the firemen a greater supply of water to work with.

2. The High-Pressure Service

The fire-engine does very well where the buildings are not too large and tall. When the very tall buildings began to spring up in the cities, something better than the fire-engine had to be thought of. It was found that even the best of fire-engines could not pump enough water to master the great fires that occurred. So a high-pressure service was planned. High-pressure service supplies a great force of water without the aid of fire-engines.

To give high-pressure service a great pumping station is built near a river, or lake, or reservoir. Large water pipes run from the pumping station under the streets to the center of the city where the high buildings are. These pipes are used for fire only and are separate from the other water pipes of the city.

The pressure from the pumps is so great that a hose can be attached to a hydrant and turned on the flames at once without the help of a fire-engine. No engine is needed because the force of water is much greater than even the strongest fire-engine could give.

The high-pressure hose is made larger and stronger than the ordinary fire-hose to prevent it from bursting.

The force of water in it is often so great that it takes four or five firemen to hold the nozzle while they are throwing the water on the flames.

Fighting fire is only one of the many ways in which water serves the city.

QUESTIONS

How does water put out fire?

How did the people of Colonial days manage in case of fire?

Can you tell something about the high-pressure system of fire fighting of to-day?

What would happen if suddenly the water supply of your city should be shut off for twenty-four hours?

WATER AND FIRE

Water and Fire had a quarrel.

Fire said, "I am stronger than you."

Water said, "I am stronger than you."

"Let us try to prove it," they agreed.

So Fire fell upon one of the dry forests of the earth and burned great tracts of woodland.

Rain fell, but the fire grew.

Its sparks reached a city and fell upon the roofs of some of the houses. Soon the houses were aflame.

Rain fell, but the fire grew.

Suddenly there came the clang of bells, and up the street dashed the fire-engines. Men threw great streams of water and put out the fire.

When Water and Fire met, Water said to Fire, "I conquered; you see I am more powerful than you."

Was Water right ?

UNDERGROUND WATERS

Not all the water that falls on the earth flows into the rivers, or remains in the lakes, or goes back into the clouds. Much of it sinks into the earth and forms lakes and reservoirs in the caverns underground. Here nature stores it up for the use of man.

In the Mammoth Cave of Kentucky, which is the largest cave in the world, there flows a deep underground stream, named the Echo River. On its surface boats are kept in which visitors may ride. In its dark waters are found blind fishes which need no eyes since there is no light.

All our springs and wells have their sources in these underground waters. It is said that three-fourths of the people in the United States obtain their water supply in this way. Usually it is necessary to sink a well either by hand digging or by boring in order to reach it. Often the water breaks through the surface of the ground and bubbles up in the form of a natural spring.

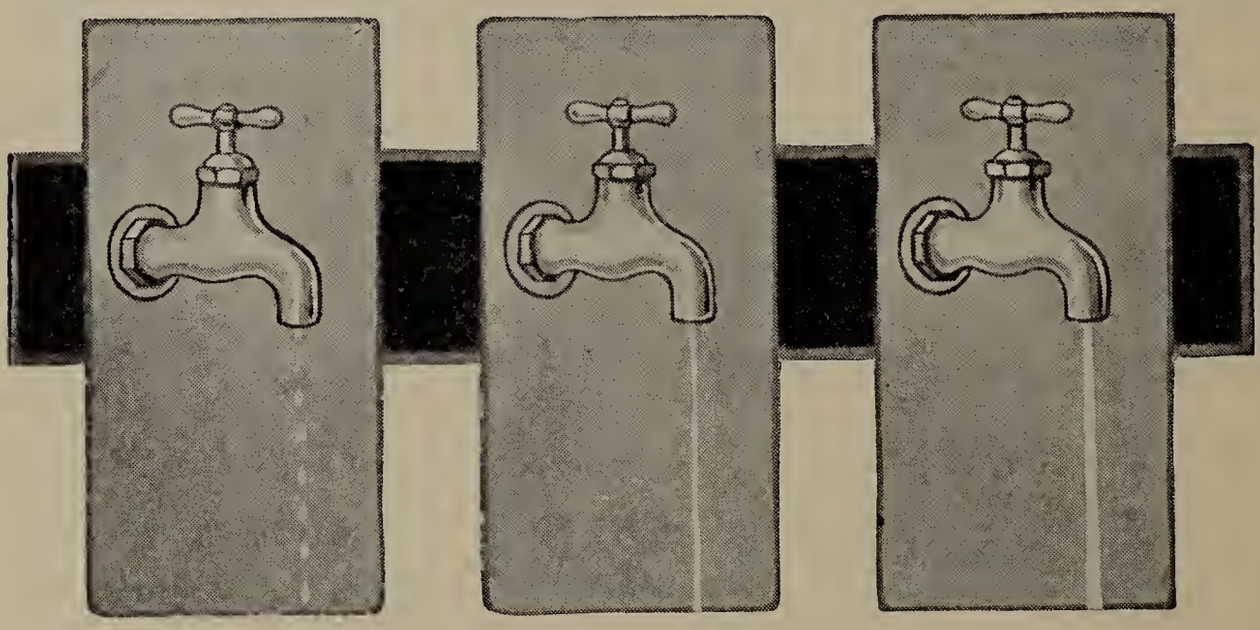
These springs are sometimes found in very unusual places. The island of Moharek in the Persian Gulf gets its water from fresh springs that bubble up below the sea level. The water bursts through the sea bed with such force as to retain its freshness although surrounded by salt water. From this supply the natives fill their goat-skin water bottles.

It has been estimated that there are eleven thousand cubic miles of underground waters in our country; enough to cover the United States to a depth of seventeen feet if the water were all on the surface.

OUR DUTY IN REGARD TO THE WATER SUPPLY

1. How to Save Water

We have seen how important a plentiful supply of water is to the comfort and happiness of our daily life. This plentiful supply is made possible only by the co-operation of all the officers and employes of the



15 gallons per day	264 gallons per day	835 gallons per day
105 gallons per week	1,848 gallons per week	5,845 gallons per week
5,460 gallons per year	96,096 gallons per year	303,940 gallons per year

Water Bureau, of the men who lay the water pipes and man the pumps, and of all the people of the city.

The cost of furnishing all the water needed by a large city amounts to a very large sum, often to many millions of dollars. When this sum is divided among all the citizens, the tax which each pays is very small compared with the great comfort and convenience of running water for every household purpose. The cost would be still less if people were more careful not to waste the water.

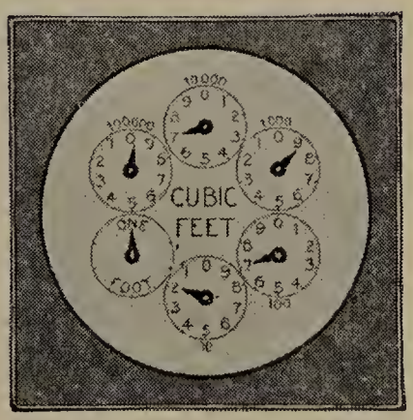
It is so easy to allow the spigot to drip and the water to run to waste. If careless people waste water, the supply may run short and place the city in great danger, for when a fire breaks out the only thing that can save the city from burning is a plentiful supply of water.

There are many ways of saving water, but the most important is for each one to use no more than is necessary, and to make sure that it is properly turned off and that the spigots do not leak.

Another way of saving water is by using the water meter or water measure. By passing through the water meter, water can be measured just as gas and electricity have always been. The meter shows how many gallons of water are being used, and whether the water is being wasted either through a leak or by leaving the spigots open.

The three leaking spigots in the picture show that even small leaks may mean a great loss. Just a steady drip, one drop at a time, amounts to fifteen gallons a day.

2. How to Read the Water Meter



This is a picture of the counter of a water meter.

It registers the number of cubic feet of water used.

One cubic foot equals seven and one-half gallons.

Let us study each circle separately.

Let us begin with the circle marked 100,000.

The little pointer shows how many ten thousand cubic feet of water have been used, because the space between each figure indicates 10,000 feet. (Of course when the pointer fully completes the circle, it will show that 100,000 cubic feet have been used.)

In the next circle at the right the pointer shows how many thousand cubic feet have been used, because the space between each figure indicates 1,000 feet.

In the next circle the pointer shows how many hundred feet have been used, because the space between each figure indicates 100 feet.

The next circle shows how many tens of cubic feet have been used, because the space between each figure indicates ten feet.

The next circle shows how many units, because the space between each figure indicates one foot.

Every time the pointer on the circle without figures goes around it means that one cubic foot of water has been used, but this circle is not used in reading the meter.

With this explanation you can read the meter yourself, always remembering that if the little hand is pointing between two numbers, the *lower* or *smaller number* is used.

If the pointer seems to indicate a number exactly do not use that number unless the pointer in the next circle has reached 0.

For instance, in the "10,000 circle" the pointer seems to

indicate 7 exactly, but in looking at the "1,000 circle" you find that the pointer has not reached 0; so you will use the 6 instead of the 7.

Filling out the following form, we find that this water meter counter reads: 96,872 cubic feet.

EXPLANATION OF READING OF WATER METER.

				
The space between each figure on this dial indicates 10,000 cubic feet.	The space between each figure on this dial indicates 1,000 cubic feet.	The space between each figure on this dial indicates 100 cubic feet.	The space between each figure on this dial indicates 10 cubic feet.	The space between each figure on this dial indicates 1 cubic foot.
This dial reads: 9 ten thousand cubic feet, or 90,000 cu. ft.	This dial reads: 6 one thousand cubic feet, or 6,000 cu. ft.	This dial reads: 8 one hundred cubic feet, or 800 cu. ft.	This dial reads: 7 ten cubic feet, or 70 cu. ft.	This dial reads: 2 cu. ft.

90,000 + 6,000 + 800 + 70 + 2 = 96,872 cu. ft.

RULE—To find out how many gallons of water have been used, subtract the number of cubic feet in the last reading from the number of cubic feet in the present reading. Multiply the difference by 7½. Since 7½ gallons equals 1 cubic foot, the result will be the number of gallons used between the two readings.

If a meter suddenly shows an increase in consumption, with no apparent cause—one of two things has happened—a leak has started, or water has been allowed to run to waste.

The existence of a leak may be proved by reading the meter at night, after all use of water has ceased, and again in the morning before any use begins; a difference between the readings is a measure of the leakage.

How do you help other people by not wasting water?

Do you know how much it costs your city a year to supply water?

ARTESIAN WELLS

In some parts of the country water is very scarce, or perhaps the water in the lakes and rivers is very impure. What are the people to do then? Nature has provided an abundant supply in the underground waters. These are reached by means of artesian wells.

First a test pipe two inches in diameter is driven into the earth by machinery. This is the search pipe. If water is found in this way a four inch, or even a much larger pipe, may be driven down.

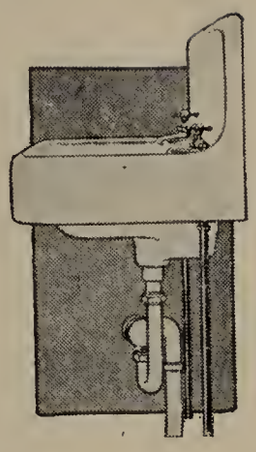
Sometimes when the pipe is freed from dirt, a fountain of water will gush up through the pipe into the air from the underground reservoir. Sometimes the water flows slowly and has to be pumped up.

It may not be necessary to bore more than a hundred feet, but some artesian wells have to be sunk three and even four thousand feet deep before water is reached.

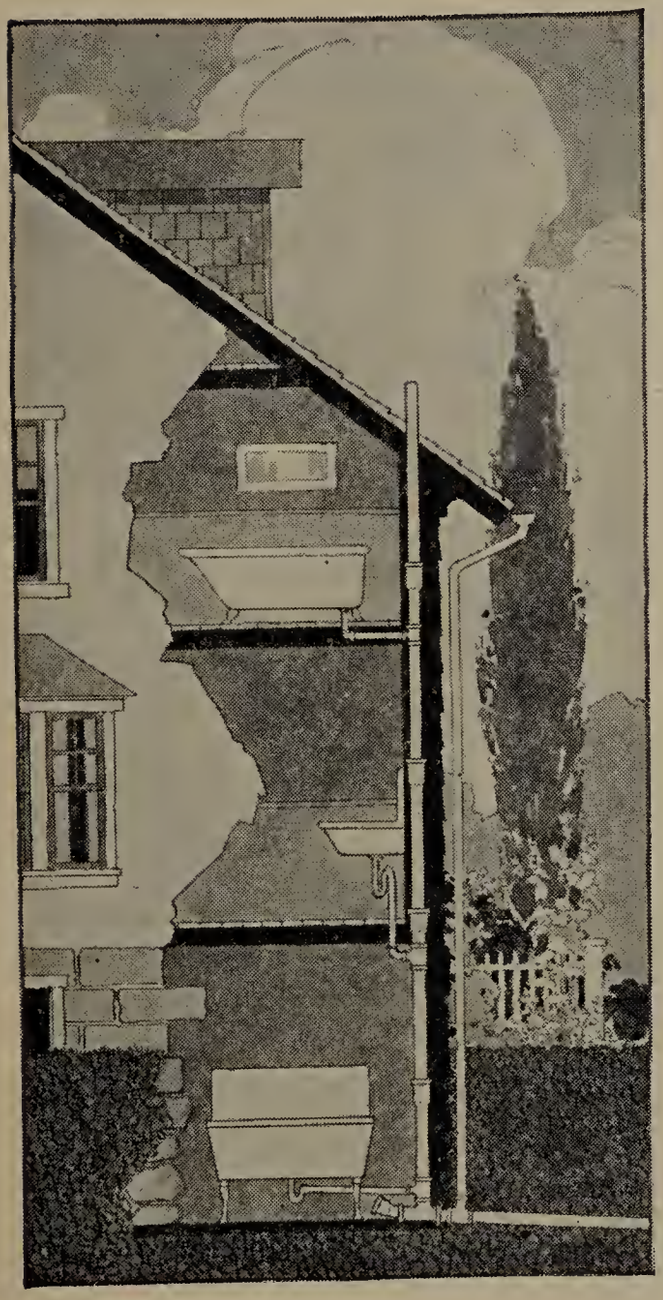
Artesian water is usually much purer than lake or river water, and can be conducted to the reservoir or stand pipe and supplied direct to the users. Sometimes it contains particles of iron or mineral matter which are removed by filtering through sand. Generally the artesian water does not contain air enough to make it taste pleasant, and it must be aerated. This is done by forcing it through pipes with small holes in them. The water rises in a spray like a fountain and absorbs the air as it falls.

When a greater supply of water is needed all that is necessary is to drive down another pipe into the underground reservoir.

WHERE WASTE WATER GOES



If you look underneath the clean white enameled kitchen sink which so many houses now have, you will see a bend like the letter U, in the pipe. This bend is called a trap, because it catches or traps the last water that is poured down. This water remains in the trap and forms a water-seal which prevents sewer gas and bad odors from coming back into the house.



All the other pipes in the house which carry waste water off are trapped in the same way as the kitchen sink.

Where does the waste water go? If you look in the cellar, you will see a large iron pipe which comes down through the ceiling and runs out through the wall or cellar floor. This is the house drain pipe which carries the waste water from the house into the main sewer pipe which runs under the street.

All the waste water pipes from the kitchen, laundry and bath room are connected with the house drain pipe which empties into the sewer.

Before sewer pipes were laid, the waste water ran into the street gutters. These gutters were very dangerous to people's health, because they were just the kind of places in which mosquitoes and the dreadful disease germs of typhoid and malaria like to live.

QUESTIONS

I

If each house had to find its own water supply and dispose of its own waste, do you think our people would have as good health as they now have?

Where does the waste water of your city go?

How does the fresh water supply help dispose of waste or sewage?

Why is the disposal of waste as important as the supplying of good water? How does it affect health?

Make a list of the ways in which we may prevent the waste of water.

II

Do you think it right that people should be limited as to the amount of water that they use?

When water is so plentiful, why do we have to pay for it? Why do we have water meters?

Why are most towns and cities on rivers, lakes or bays? How do the bodies of water serve the cities?

See what you can find out about the first water pipes laid in your city.

How do the men who lay the pipes and attend to the pumping engines help you and your family?

WHITE COAL

We have seen that water has many uses. As a liquid it becomes rain and washes the earth. As a powder it becomes snow and covers the fields and forests with a white coat. As a solid it forms ice and preserves our food. As a vapor it becomes steam and drives our steam engines and machinery.

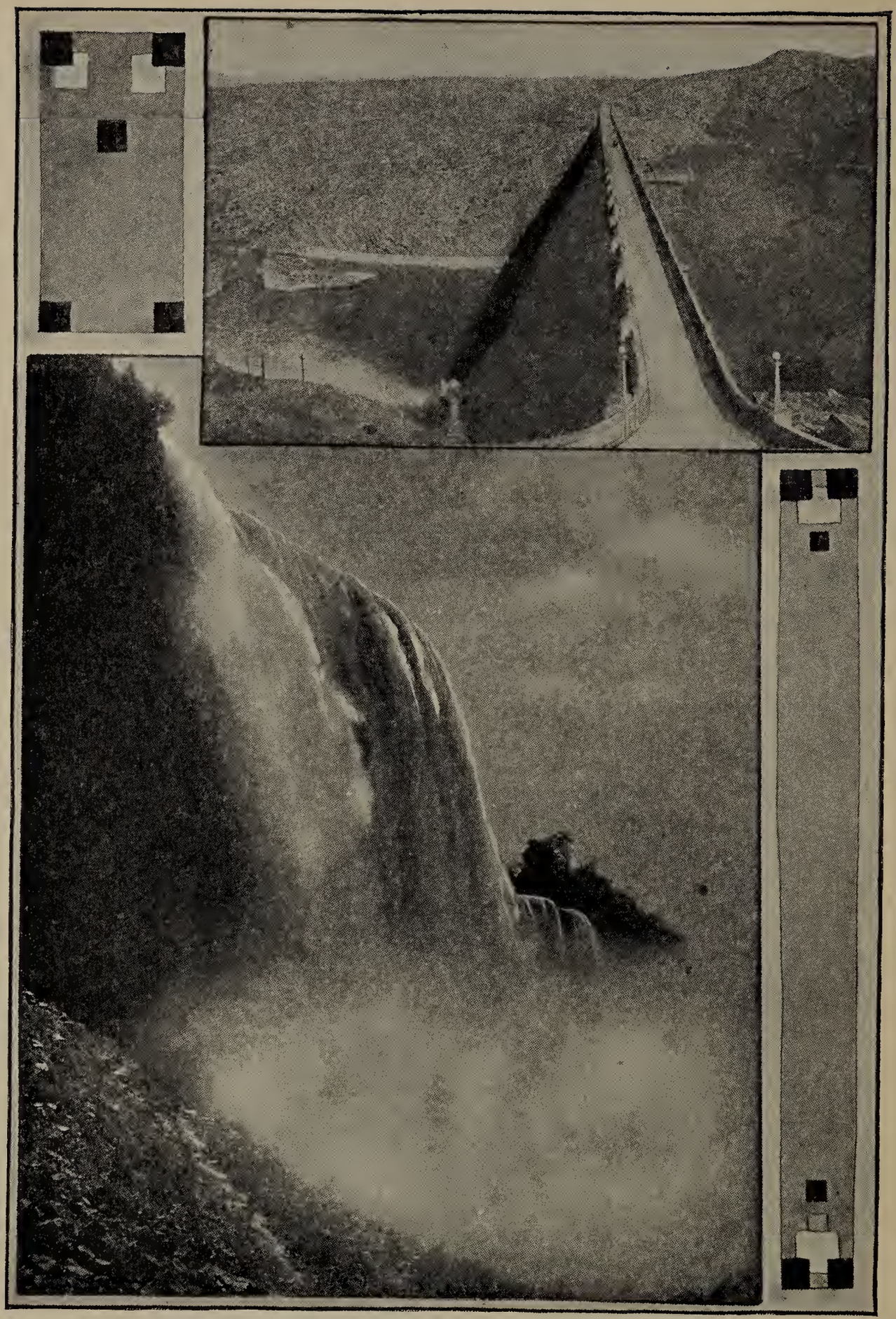
But have you ever heard that water can be used in place of coal? It can and often is, and when so used it may be called white coal.

Black coal, as everyone knows, comes from mines in the earth. It can be made to run railroad engines, drive the machines in our mills and factories and produce electricity for light and power.

Water, like coal, can be made to do all these things. A stream of water rushing down the mountain side or pouring over a dam or waterfall can be made to turn great water wheels. These water wheels can be used to drive the machinery of mills and factories. They can be made to generate electricity which will pull railroad trains and street cars and light cities.

In all parts of the United States there are many mountain streams and swift-flowing rivers that can be made to supply power for all kinds of machinery. At present much of this power is going to waste, because we have not learned to use it. It is estimated that the water power of the United States amounts to 30,000,000 horse power—more than enough to operate every mill, electric plant and railway in the country.

More and more we are learning to use white coal to save black coal. Isn't this a splendid saving? Why?



The Elephant Butte Dam, and Niagara Falls.

WATER AS USED FOR INDUSTRIAL POWER

Niagara Falls

These falls are nearly three-quarters of a mile wide, and over 150 feet in height.

Waterfalls have long been used for turning the wheels of machinery for manufacturing purposes. At the city of Niagara Falls, New York, a portion of the tremendous water power of these great falls is used to generate electrical current having over 300,000 horse power. Part of this is used in running street cars and factories and for lighting the city. The remainder is carried to Buffalo and other cities.

In order to use the water power of Niagara the water has to be led away in canals from the river above, which lessens the amount of water going over the Falls. Therefore the government has restricted the amount of water to be used for such purposes, and the Falls are preserved in their wonderful beauty.

WATER AS USED FOR IRRIGATION

The Elephant Butte Dam

This dam extends across the Rio Grande River at Elephant Butte, New Mexico, 110 miles north of El Paso, Texas. It was completed in 1913 and measures 1250 feet at the top, and is 318 feet in height. The water in the reservoir formed by this dam is sufficient to cover more than 2,500,000 acres of land to a depth of one foot. From this great supply the farmers can water their growing crops.

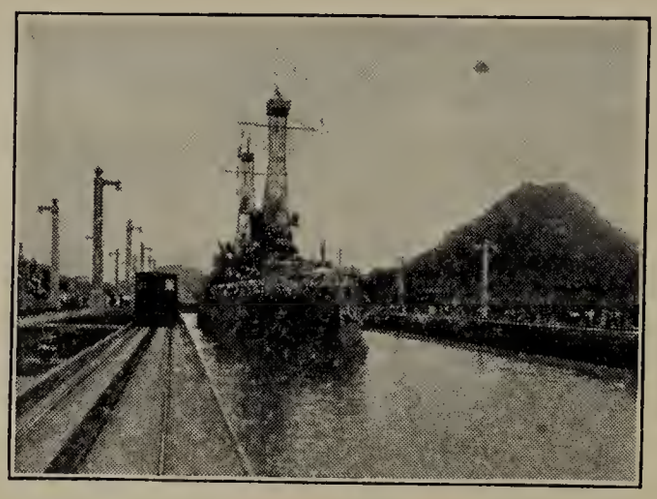
WATER AS USED FOR NAVIGATION AND COMMERCE

The Panama Canal

The great Panama Canal extends from the Atlantic Ocean to the Pacific Ocean across the Isthmus of Panama. It cost nearly four hundred million dollars, and nine years were required to complete the work.

The first ocean-going vessel passed through the Panama Canal in June, 1914.

The distance from the Carribean Sea to the Pacific Ocean is nearly 44 miles, and it takes a ship about ten hours to make the trip. Before the canal was built vessels sailing from New York to San Francisco had to go around South America by way of stormy and dangerous Cape Horn. Steaming at the rate of 300 miles a day the voyage took from forty-one to forty-five days. Now, these same vessels make the trip to San Francisco through the canal in sixteen to twenty days, steaming at the same rate of speed.



The Panama Canal
The U. S. Battleship "Ohio" is passing through one of the locks.

GAS

"Every seven householders shall unite to pay the expense of burning a candle in a lantern suspended on a pole from the window of every seventh house on nights when there is no moon."—*The First Street Lighting Law passed in New York, in 1697.*

THE TWO GREAT LIGHTS

In the beginning God created the heaven and the earth.

And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.

And God said, Let there be light: and there was light.

And God saw the light, that it was good: and God divided the light from the darkness.

And God called the light Day, and the darkness he called Night.

. . . . . .

And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years:

And let them be for lights in the firmament of the heaven to give light upon the earth: and it was so.

And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also.

And God set them in the firmament of the heaven to give light upon the earth, and to rule over the day and over the night, and to divide the light from the darkness: and God saw that it was good.

LIGHTING IN COLONIAL DAYS

1. Early Lamplighters

In early Colonial times the streets of the cities were not brilliantly lighted as they are today. When the people of New York, Boston, or Philadelphia went about the streets after dark they carried their lanterns with them. Sometimes torches were used. These torches were made of twigs of pine wood tied together and fastened to a tall pole.

In his autobiography, Benjamin Franklin tells about the first street lights of Philadelphia. He says:

"It was by a private person, the late Mr. John Clifton, giving a sample of the utility of lamps, by placing one at his door, that the people were first impressed with the idea of lighting all the city. The honor of this public benefit has also been ascribed to me, but it belongs truly to that gentleman, I did but follow his example."

When the other citizens of Philadelphia saw the lamps at the front doors of John Clifton and Benjamin Franklin they too placed lamps at the front doors of their houses. In this way it was not long before the streets were lighted, and thereby made safer for people who were out of doors at night.

Very soon after this, in the year 1762, public street lamp posts of wood were erected in New York. These posts held lamps which burned oil, and oil lamps were

continued in use in New York up to the year 1823 when gas lighting was first introduced.

It is interesting to read about the early lamplighters who tended the oil lamps. Each morning the lamplighters went about carrying a small ladder, a can of oil, scissors, and a supply of wicks. Mounting the ladder, the lamplighter blew out the lamp and trimmed it for the next night's service. At dusk he made his rounds again and lighted the lamps by means of a torch.

2. Indoor Lighting

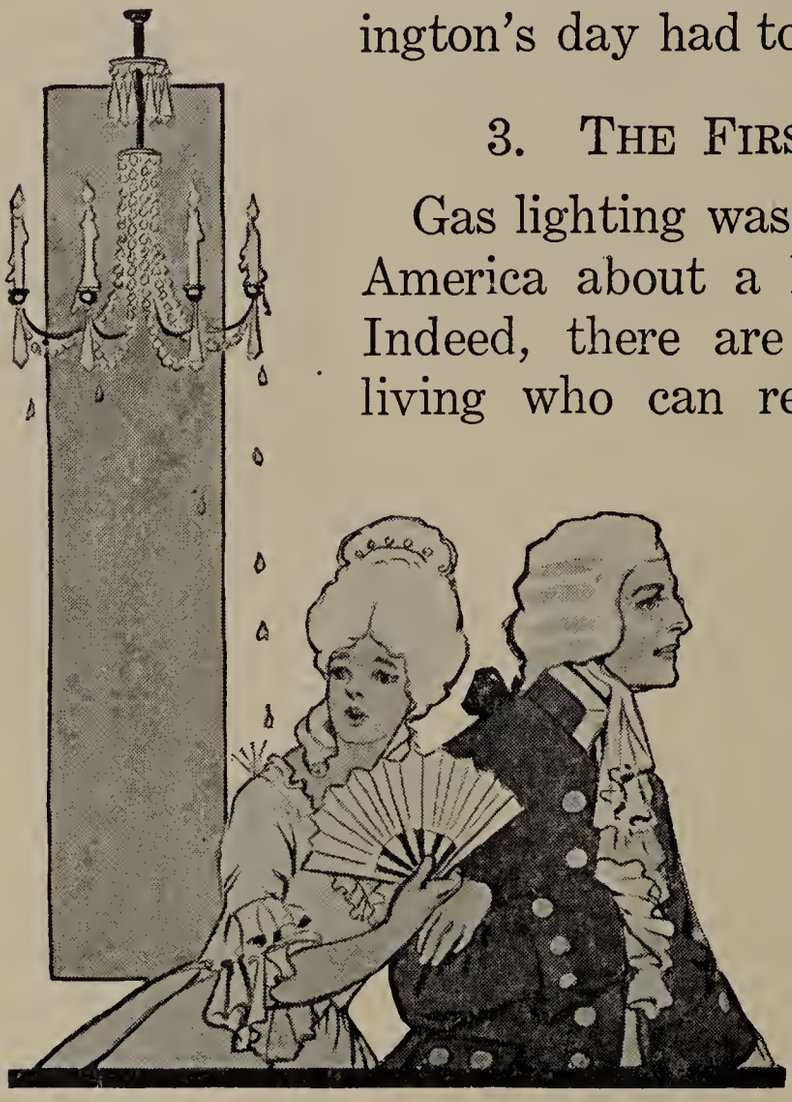
When darkness came on in the Colonial home the housewife lighted either an oil lamp or a candle. There were no bright kerosene oil lamps such as we have today. The kerosene lamp did not come into use until just before the Civil War.

The Colonial oil lamp was a small earthen-ware cup filled with animal or vegetable oil, in which a wick of flax or oakum was used. At its best it gave little light and required constant attention to keep it from smoking.

The candles were made of tallow or spermaceti. These needed repeated snuffing and would often run and drip. Large rooms, halls, and churches were frequently lighted by chandeliers which held a great

number of candles. These would sometimes run and drip on the dresses of the ladies who happened to be sitting underneath.

Such were some of the inconveniences that the Colonial housewives of Martha Washington's day had to endure.



3. The First Gas Light

Gas lighting was first introduced in America about a hundred years ago. Indeed, there are many people now living who can remember when gas came into general use for lighting homes. In the year 1792 Thomas Murdock first illuminated his house in England with gas. It was almost twenty years later that the street lamps of London were lighted with gas. It was still later that gas came into general use for street lighting in New York, Philadelphia, and other American cities. At first people were terribly afraid of the new light, and it required many years to overcome their fears.

One of the first great structures to be lighted by gas was Westminster Bridge in London. This was in

1813. It is said that great crowds gathered nightly to watch the burning gas jets. The people thought that the gas pipes were filled with fire, and that the jets were openings through which the flames in the pipes escaped. It was difficult to remove this belief from their minds. They sometimes touched the pipes, expecting to find them hot. At first, when the pipes were put into houses they were placed several feet from the walls lest they set fire to the building.

4. Matches

Can you imagine a house without matches? Everyone is familiar with the little splint of wood, with its red, blue or brown tip. Everyone knows that it will produce fire instantly, at any moment of the day or night. What other servant of man is so useful and so ready to serve as the ordinary friction match?

In America alone, it is said, the demand for this useful article amounts to more than a billion a day. What would the world do for fire without matches? Yet in Colonial days, and for fifty years after the signing of the Declaration of Independence, matches were unknown in America. The only reliable method of getting fire was by means of a tinder box and flint and steel. Then a new way was discovered. John Walker, an English chemist, invented the friction match, a match which would light easily when scratched on a rough surface. This was in 1827, about the time that illuminating gas was coming into use. Very soon people threw away their tinder boxes and matches became popular all over the civilized world.

"It's getting dark, George; light the gas, please," said Mrs. Hunter, who was preparing the evening meal over the gas range.

George took a match from the box, struck it on the side, reached up to the gas jet, held the lighted match to the tip, and turned the key. Suddenly the flame blazed up and the dark room was flooded with light.

George had done the same thing many times before, but nevertheless the bright flame startled him. For the first time in his eleven years of life it seemed to him that he really saw a gas light.

What was the wonderful thing called gas? When he had turned the key he saw nothing come out of the tip, yet something did come out instantly and catch fire and blaze up into a bright steady flame. What was this mysterious thing? George had never thought of it before and he determined to find out.

All his life there had been gas in the house, just as there had been water. When he was thirsty he turned the tap and water flowed out. When it was dark he turned on the gas, held a match, and there was light. Water was water and gas was gas—that was all he knew. But now George began to think about it, and when he began to think he knew he would find out.

George was like the Scotch boy, James Watt—all curiosity. Just as the steaming tea kettle fascinated James Watt, so the gas light fascinated George Hunter. The Scotch boy would watch the water in the tea kettle boil, then he would hold a spoon over the spout

and watch the steam condense into water again; then he would catch the drops as they fell into a cup. He wondered what made the water boil and turn into steam and then turn back into water again. He kept on wondering until he became a man and invented the steam engine.

George Hunter was like that. He wanted to know where the gas light came from, and determined to find out. He said nothing to anybody about his determination, but went on a still hunt.

II

With his eye George followed the gas pipe and saw that it disappeared into the ceiling plaster. Then he explored every room in the house, downstairs and up. Every room had one or more gas lights, and the pipe from each led into the ceiling or into the side walls.

Each opening was concealed by a neat collar which prevented his tracing the pipe farther.

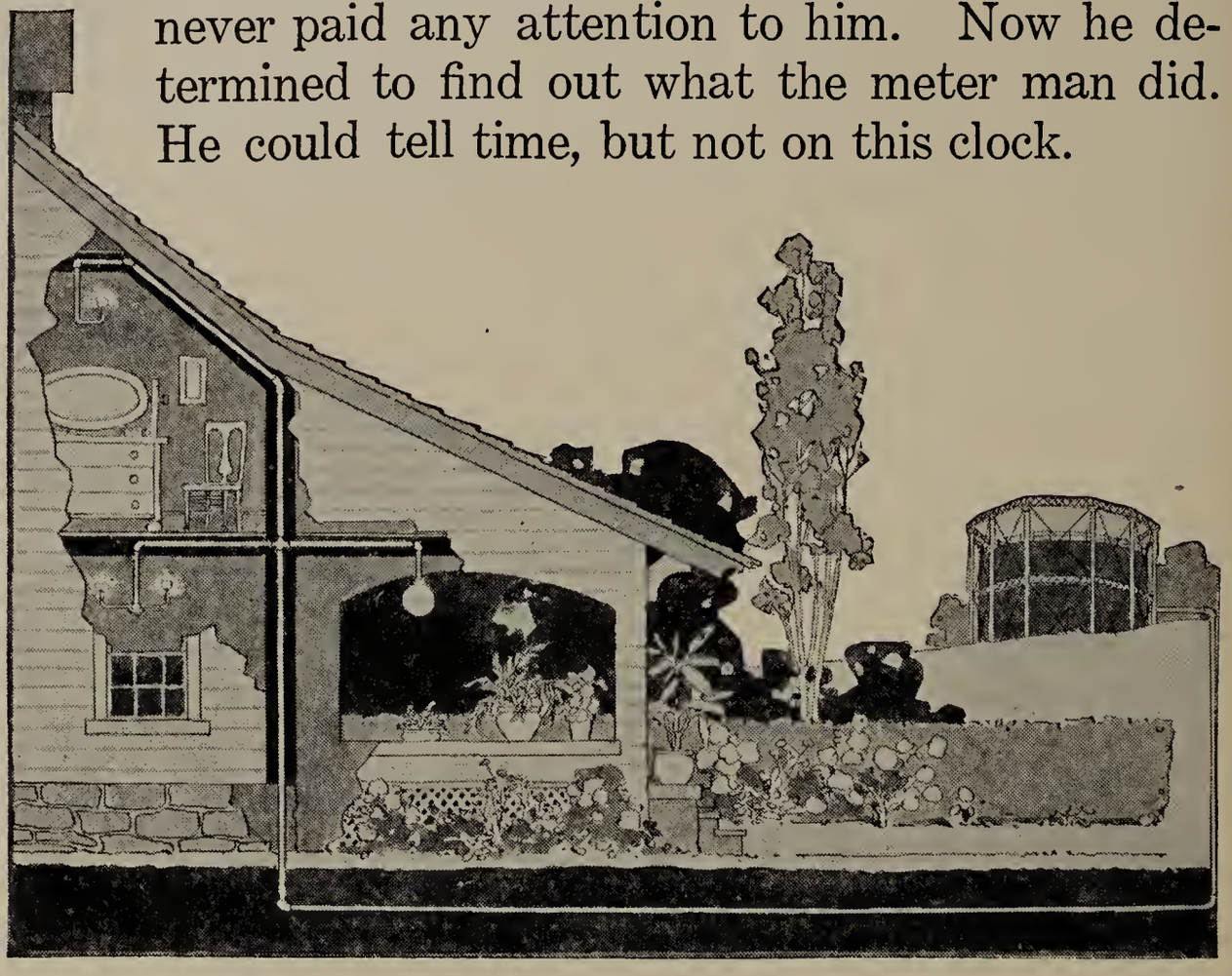
Returning to the kitchen, where his mother was still busy cooking on the gas range, George glanced at the gas range supply pipe. It disappeared through the floor into the cellar.

Going into the cellar, he lit the gas and found the pipe which came from the range. Tracing this back he saw that it ran to a larger pipe about an inch across. He was surprised to see a lot of smaller pipes coming through the floor and connecting with the main pipe. He counted seven.

"They must lead up to the rooms above," said George to himself.

Following the larger pipe to the front of the cellar, George found it led into a large Japanned tin box fastened to the wall. The box had little clock-like faces set in the front.

"This is the meter," said George. He knew that a man came every month to read the meter, but he had never paid any attention to him. Now he determined to find out what the meter man did. He could tell time, but not on this clock.



On the other side of the meter a pipe ran out. Following this with his hand George saw that it entered the cellar wall below the level of the ground outside.

"It's like a rabbit track," said George to himself. "It runs into a hole in the ground. To-morrow I'll dig it out."

"Mother," asked George, when they were seated

around the brightly lighted table that evening, "what did people do for light before they had gas?"

"Why, they burned lamps and candles," replied Mrs. Hunter.

"What did they do before they had lamps and candles?"

Mrs. Hunter laughed. "Why, they went to bed with the birds and chickens."

George laughed too, and asked no more questions.

Before getting into bed that night he turned out the light, drew up the curtain, and looked out of his bedroom window. The house was on a hill overlooking the city. Hundreds of lights were shining on the streets and in the windows of the houses, lighting up the darkness.

"What a lot of lights, and what a lot of gas it must take on a dark night," said George to himself. "I never thought of it before. The world must have been an awful dark place before people found out about gas."

QUESTIONS

It seems strange that men did not discover how to make and use coal gas before they did, does it not?

Do you suppose there are other servants of man waiting to be used?

Diligence is the mother of good luck, and God gives all things to industry.—*Franklin*.

Everything good may be better, and every better may be best.

The next day after school George saw two men working in a deep hole they had dug in front of a new house that was being built on his street.

George stopped and looked in. One man was boring a hole in a big iron pipe and the other man was holding a smaller pipe ready to put into the opening.

"What pipe is that?" inquired George.

"That's the gas main," replied one of the men.

"What are you doing?" asked George.

"We are tapping the main," said the man good-naturedly.

"Where does the gas main run to?" queried the eager boy, who realized that he was on the scent of the rabbit hole.

"Well, son," replied the man, "if you could crawl along through that pipe alive you would come out at the gas works.'

George knew the gas works were in the lower part of the city near the river. He had often seen them but had never paid any attention to them. Now he made up his mind to see them for himself the first chance he had.

"Where does the pipe in your hand lead to?" he asked.

"It connects up with the meter in the cellar. It is called the service pipe."

Now George felt as if he had made a real discovery, as indeed he had.

"Can I go in and see the meter?" asked George.

"Certainly, go ahead; but be careful and do not touch it," said the man, who was getting rather tired of answering curious questions.

George watched the men work until the hole was bored and the house pipe deftly inserted. Then he went into the house.

The boy gave a cry of surprise and delight as he entered. The walls were bare of plaster so that he could see exactly what was inside of them.

In the living room a small pipe ran up the wall to the ceiling and then turned at a right angle and ran between the beams to the center of the ceiling. The dining room was piped in the same manner and also the kitchen. He went quickly down the cellar steps to see the meter.

"Hello, George! What brings you here?" said a voice from the front of the cellar.

"How do you do, Mr. Brown?" said George, recognizing Mr. Brown, who had a plumbing shop in the next street. "I wanted to see the gas meter. The men outside said I might look at it."

"Certainly," said Mr. Brown, "but be careful not to touch anything. We are going to test the gas pipes for leaks."

"May I stay and see you do it?" asked George.

"Certainly, my boy," said Mr. Brown, who liked George and was pleased at his interest.

"I want to see how the pipes run to the jets," said George.

Mr. Brown showed him the main pipes and the branches that ran through the floor and upstairs.

Then he went with him into each room and showed him how the outlets were placed so as to have the light in the most convenient spot. Mr. Brown was a workman who was proud of a good job and liked to explain it to any one who was interested.

"It cannot be an easy job to set every jet just right," said George.

"No, we have to be very careful that the piping is good and that the joints are tight, because a gas leak is a dangerous thing. Escaping gas is very poisonous. Now we are ready to test the pipes."

George watched very carefully while Mr. Brown and his helper attached the air pressure gauge to an outlet in the cellar. This was a glass gauge with mercury in it to show the air pressure in the pipes. Soon Mr. Brown began to force air into the pipes, using the air pump attached to another outlet.

After he had filled the pipe system with air he remarked: "Now watch the mercury in the gauge. If it remains stationary there is no leak. If it falls, the air is escaping through a leak somewhere."

Eagerly George watched the mercury. "It doesn't move!" he cried, after a time.

"Then the system is safe," said Mr. Brown. "Now the plasterers can go ahead and cover the walls and pipes."

QUESTIONS

Why did the plumber test the pipes so carefully?
Why is the pipe entering the house called the service pipe?
Name other uses of gas besides lighting.

A VISIT TO THE GAS WORKS

I

One day George went to the lower part of the city along the river front to see the gas works. He did not tell even his mother where he was going and he went alone. His idea was to walk around the outside and look at the works.

Although he knew where the big gas tanks were, he had really never seen them because he had paid no attention to them. First he saw three great circular tanks—small, middle-sized, and large—rising one story, two stories, three stories in height. They filled nearly a whole city square and there was a high fence around them.

In the next square was the gas plant itself as shown by the great clouds of smoke through which could be seen a tall chimney and iron bridge work. Around the plant also was a high fence, in which was a wide gate, guarded by a watchman. Peering through the gateway George saw enormous piles of coal and coke, and many small buildings.

"Hello, George, are you looking for someone?" asked a pleasant voice behind him.

Turning quickly, he saw Mr. Drake, a neighbor who lived across the street. He knew that Mr. Drake was employed at the gas works, but he did not know that he was the manager.

"How do you do, Mr. Drake? No, I am not looking for anyone. I am trying to find out how gas is made," replied George seriously.

Mr. Drake laughed. "Well, you have certainly come to the right place to learn."

Encouraged by Mr. Drake's interested manner, George eagerly told him of his search.

"Well done, George," said Mr. Drake. "That is the way to find out things. I like that. Come with me and I will show you just how we make the very gas which your family uses in your house."

As he walked past the watchman through the gate George felt like Christopher Columbus discovering America.

"Wait here a few minutes, and I shall be at liberty," said Mr. Drake, stepping into his office. In a short time he returned.

II

"Now then, we are ready to begin at the beginning," he said. "See that pile of coal; that is bituminous coal from which we make coal gas." He pointed to a little mountain of coal as high as a four story house.

"Where does the coal get its gas from?" asked George.

"Well, George," said Mr. Drake, "that is going a step farther back than we go here, but it is a good question. Your teacher will tell you that all light and heat come from the sun, and that coal is stored-up sunshine. You can read in books how the sun makes the coal. Now, here are the coke ovens, or retorts. There are fifty in that bank," he explained.

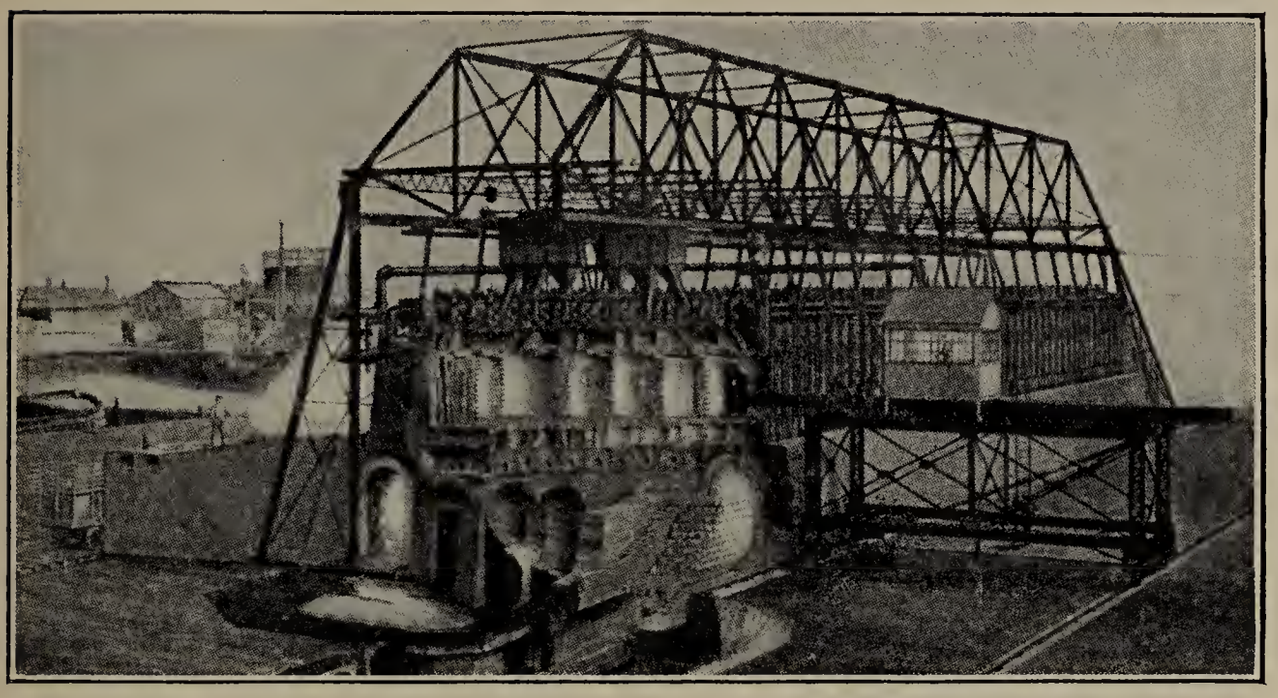
George saw a huge bank of ovens about a hundred

feet long and about fifteen feet high. A red fire glowed under each oven.

"The coal is first ground, and then put into the oven and sealed up. We do not set fire to it. The fire is underneath the oven. When the fires are started, the soft coal in the ovens becomes red hot and begins to give off coal gas."

"Where does the gas go?" asked George.

"Well, you have seen coal burn in stoves. The



blue flames and gases escape up the chimney. Instead of letting them escape we catch them."

"How big are the ovens?"

"Ours are about thirty feet long and six feet high and seventeen inches wide. Each is charged with seven or more tons of coal. Now watch; here is an oven going to be emptied."

George saw the grimy oven men open the oven door. At once the red hot coke began to tumble out.

"All the gas is burned off that coal, and what we

have left is coke," said Mr. Drake. "Coke is coal with all the gases burned out. That is why coke, when burned, does not give off gas as coal does."

"What becomes of the gas?" asked George.

"After being purified it is measured and then forced into the gas holders, which are the large circular tanks you see over there."

"How does it get from the tanks into the houses?" asked George.

"Through the gas main. There is an enormous pipe leading from the tank down underground below the principal streets. Branch mains lead off from it up the cross streets, until there is a gas main under every street in the city or district. These mains are tapped for each house, just as you saw in the new house in our street."

"Why, they spread out like the roots of a big tree," said George.

"That is it exactly," replied Mr. Drake.

"And the ends of the little roots come out into the rooms of the houses," added George.

"That is right; you have the idea."

"And you can put a match to the tip of every root and get a light out of it," finished George.

"Good for you, George. Now you have traced the gas all the way home and back again."

George thanked Mr. Drake and hurried away full of his newly-found discoveries.

Mr. Drake went back to his office thinking that some day there would be a good opening for just such a boy as George in the gas works.

GEORGE LEARNS HOW TO MAKE AN EXPERIMENT

Seeing Mr. Drake seated on his porch one evening, George went over to talk with him. "Well, what do you think of gas making now?" asked Mr. Drake.

"I think it is wonderful," replied the boy.

After they had talked awhile, Mr. Drake said, "George, do you happen to have a clay pipe?"

"Yes, I have one that I used to blow soap bubbles with," replied George.

"Good; go get it, and I will show you a little experiment. Bring about a spoonful of damp earth, too, the more like clay the better."

In a minute George returned with the clay pipe and a small handful of earth.

"That will do nicely," said Mr. Drake, taking the pipe and blowing through it to see if the stem was clear. "Now we will go into the kitchen and try to make some real gas."

Mr. Drake selected from the hod a piece of soft coal about the size of a hazel nut and handed it to George. "Put that in the bowl of the pipe," he said.

George did so.

"Now moisten a little of the earth and make it as near like clay as possible, and then seal up the coal in the pipe, making the damp earth level with the top of the pipe. Clay would make a better seal, but this will do."

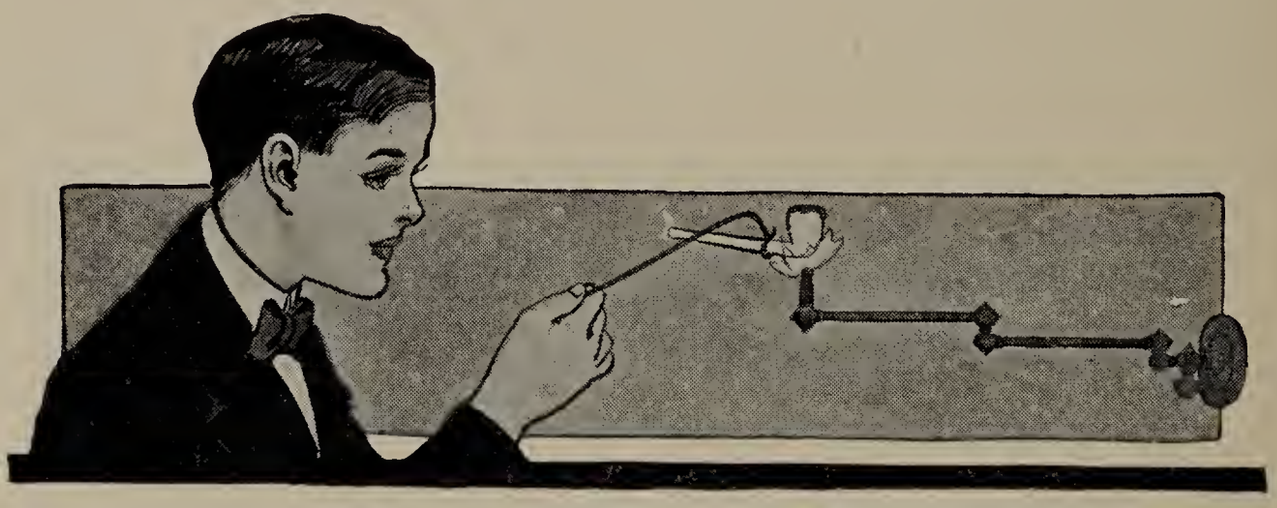
"Now we have a gas retort," he added, after George had carried out his directions. "As soon as we apply heat we shall have real gas."

They arranged a stiff wire in such a way that the pipe would be suspended directly over the flame of a gas jet.

When the pipe was in position over the jet Mr. Drake said, "Now you may light the gas and see what happens."

George applied a match and the flame sprang up about the bowl.

"Of course we could put the bowl of the pipe into a



hot coal fire, but the gas jet is handier," remarked Mr. Drake.

"Another way to make this experiment," he continued, "is to put the coal in a glass test tube and seal it with a cork through which a glass pipe is inserted to carry off the gas. It is a prettier experiment because you can see just what goes on inside the tube, but a clay pipe answers the purpose."

By this time a little wreath of vapor began to curl out of the stem of the pipe.

"Look," cried George excitedly, "the gas is escaping!"

"That is mostly steam," replied Mr. Drake, almost as excited as George himself. "Watch for the smoke!"

In a minute a light smoke began to pour out of the stem in a little cloud. Suddenly, it grew darker in color.

"Now strike a match and light the gas, George," said Mr. Drake.

The boy held the lighted match to the end of the pipe stem. At first a little light flashed up, then sputtered and went out. He held the match nearer. The gas caught again, and blazed into a flame about as large around as a lead pencil.

The little blue flame burned steadily for several minutes, then grew smaller and went out.

"That flame comes from exactly the same kind of gas as the flame underneath the bowl," said Mr. Drake, turning off the gas jet. "The only difference is that the household gas has been purified. All the impurities contained in such smoke as came from the pipe stem have been washed and filtered out."

He then lifted the little gas retort from the wire and handed it to George.

"If you will open the pipe when it is cold," he added, "you will find a lump of coke inside. Coke is almost pure carbon. It will burn bright red with little smoke or gas because the smoke and gas have already been burned out of it."

"Thank you, Mr. Drake," said George. "This is another time that I went hunting and found out something."

"That is right, my boy; finding out things is the best hunting in the world."

NATURAL GAS

In many parts of the United States and Canada the gas used for heating, lighting and cooking is found in a natural state. This gas is not manufactured from coal, but comes directly out of the ground, and is therefore called natural gas.

History tells us that the first white men who crossed the Alleghany Mountains were taken by the Indians to places where gas was escaping from crevices in the rocks. The Indians held it in great awe, because when they applied fire it burst into flames.

Natural gas occurs in parts of the country where petroleum is found. In the United States the principal sources are West Virginia, Pennsylvania, Oklahoma, Ohio, Louisiana, Kansas, California, Texas and New York; and in Canada, Ontario and Alberta. It is obtained by boring wells, very much in the same manner as petroleum, and carried by pipe lines to nearby and distant towns and cities. Some of the wells are only a few hundred feet deep, while others go to a depth of over three thousand feet.

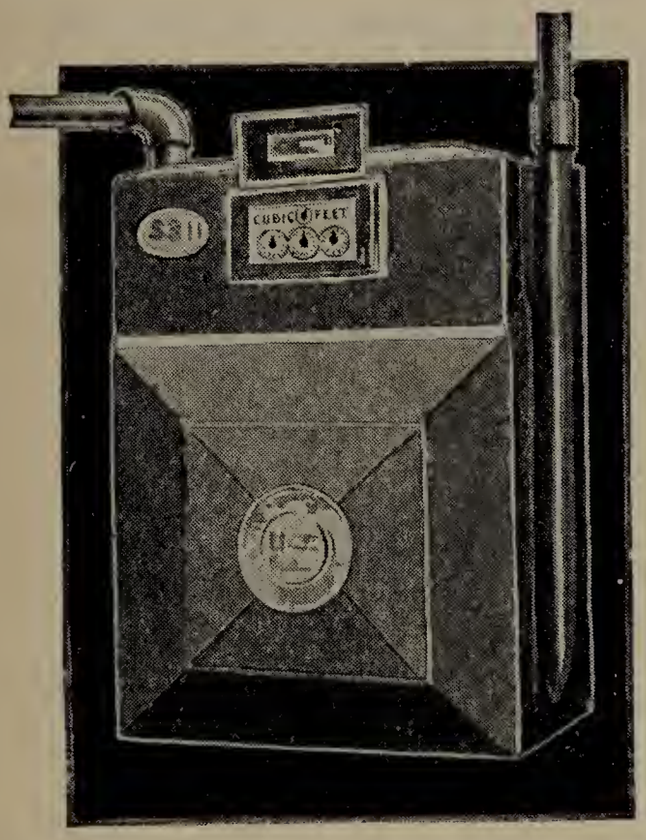
Natural gas is very similar to gas made from coal and produces about the same amount of heat, but does not give as good light. In the United States there are over two million domestic consumers. These use only one third of the amount produced; the remainder goes to mills, factories and other manufacturing plants. For many years this free gift of nature was neglected. Even today much of it is allowed to escape and go to waste. How can this waste be stopped?

THE METER READER

I

A few mornings after his visit to the gas plant, George was up earlier than usual. There came a tap on the door.

"See who that is, George," said his mother, who was getting breakfast.



George unlocked the door. There stood an alert young man in a blue uniform with a book in his hand.

"Good-morning. I want to read the gas meter," said the young man.

"Good-morning," said George. "Come in."

The meter reader followed George to the front of the cellar, opened his book, put down the number of the meter, and then looked at the clock faces.

"68900 cubic feet," he read, while George watched him with interest.

"How many feet of gas have we used in the month?" asked George.

"Let me see. One month ago the meter registered 66400. Subtracting this from 68900 leaves 2500 cubic feet burned during the month."

"Will you show me how to read it myself?" asked George.

"Certainly," replied the meter man. "Most people do not care anything about a meter except to make a complaint when the bill seems large."

"Do you ever make a mistake?" asked George.

"Very seldom. If the meter measures the gas correctly there is no room for mistakes. All we have to do is to copy the figures accurately."

"Do the meters ever get out of order?"

"Very rarely. When there is any sign of that we test them. If each family would read its own meter and keep the record from month to month there would be fewer complaints."

"I think I should like to do that," said George.

"It's not hard to learn. All it requires is a little attention. Now I'll show you just how it is done," said the young man.

The boy listened attentively and found the reading of a meter much easier than he had expected.

II

Directions for Reading the Meter as Given to George by the Meter Reader

100 thousand

10 thousand

1 thousand

September 1 Meter

100 thousand 10 thousand 1 thousand

OCTOBER 1 METER

Three circles are used in reading the family meter.

Each space on the right hand circle measures 100 cubic feet; each space on the center circle measures 1000 cubic feet, and each space on the left hand circle measures 10,000 cubic feet.

To read the meter begin at the left hand circle and set down the lowest figure next to the pointer on each circle. Note that the pointers of the right and left hand circles move in the same direction as the hands of a clock. The center circle moves in the opposite direction as shown by the figures on the clock face.

For example, the October 1st meter in the sketch reads:

$$60{,}000 + 8000 + 900 = 68{,}900$$

The September 1st meter reads:

$$60{,}000 + 6000 + 400 = 66{,}400$$

$$2{,}500 \text{ cubic feet}$$

Subtracting we have 2,500 cubic feet, which is the amount of gas used between the two dates.

Rule: The difference between today's reading and the last reading equals the cubic feet of gas used between the two dates.

NOTE.—The small circle *at the top* on the face of the meter measures one cubic foot of gas. This circle is used to show if there is a leak. Close all the outlets in the house. If the hand does not move while the outlets are closed, there is no leak, or at least not one large enough to make the meter register.

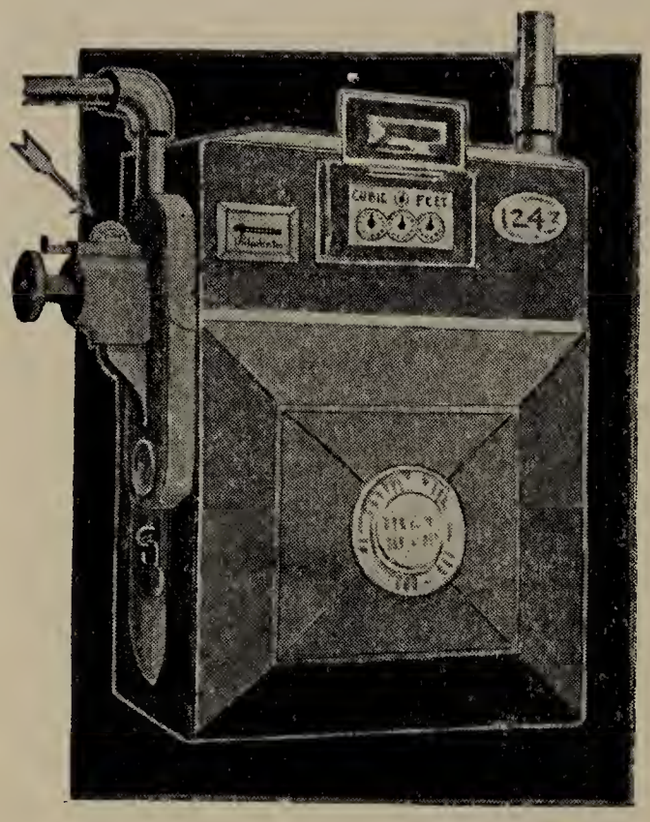
If the price of gas were $1.00 per 1000 cubic feet, what would be the bill for the month as shown by the above meter readings?

If the price were 80 cents, what would be the amount.

THE DANGEROUS COIN METER

This is sometimes called the slot meter. Still another name is the prepayment meter.

As soon as a coin is dropped into the box, the gas begins to flow into the house pipes. When the amount paid for is used, the meter shuts off the gas until another payment is made.



If the meter turned off the gas at the jets when it stopped serving, there would be little danger. But it does not do this. The jets in use remain open unless some one thinks to turn them off. Few things could be more dangerous, as the following little story shows.

A slot meter ran out in an apartment after the household had gone to bed. A lady visiting the family went to sleep with the light burning. Of course, when the meter ran out the light went out and the burner in her room remained open.

In the early morning one of the men of the family, on rising, put a coin in the meter and shortly afterwards left the house for his work. As soon as the meter was started, gas began to escape through the open burner and soon filled the visitor's bedroom.

When the household was aroused by the odor of escaping gas, the victim was found unconscious. She was quickly removed to the hospital, but died a few hours later.

CARE IN THE USE OF GAS

If a few simple rules are observed, gas may be used in the home with safety and economy. To neglect these rules is dangerous. The most important are:

Be sure that all burners not in use are shut off.

Don't let your gas range be set too close to a wooden wall or partition.

Don't use the space between the range and the wall as a place to store brooms, clothes, or anything that will catch fire.

Don't hang clothes over a gas range to dry.

Don't let the flames blaze up around the outside of a vessel or pot. Turn the flame down to the proper height and save money.

Don't fail to turn off and relight a burner which has flashed back. This is shown by a roaring sound and a yellow flame.

Don't fill your oven with gas and apply a match or light. Gas will explode under such conditions.

Don't forget to open the oven door before lighting the oven burners.

Don't turn on the gas until you have a match ready.

Don't leave the gas turned on while looking for another match.

Don't turn off the pilot light before the oven burners are lighted.

Don't turn the burners too low.

Don't sleep in a room with burning gas turned low. It may go out.

Don't hang window curtains where they can be blown over the gas jet and set on fire.

Don't use an open gas flame for light if you can help it; use a gas mantle and save money.

Never search for a gas leak with a candle or match. If the leak is in your home open windows and doors until help arrives. If the leak is in the street or outside call the nearest policeman's attention to it.

QUESTIONS

What kind of fuel is used for cooking in your home?

What kind of light is used?

Have you ever used a gas heater?

Can you draw a picture of the pipes which lead the gas through a house?

Where does the gas come from?

What did our great great grandparents use for lighting, and for cooking?

How many people can you name who serve in bringing gas into the houses of our city?

Draw a sketch of the great network of pipes leading water and gas along one city street.

Why is it dangerous to use an open gas light? Why is it wasteful?

Why is it best to use a gas mantle?

Should a slot meter be used to supply burners located in bedrooms?

If you were building a house, what kind of meter would you prefer to put in it?

THE GAS RANGE

Before the days of coal, wood was the common fuel used in the household for heating and cooking. The old-fashioned open fireplace with its wide chimney and blazing wood fire not only heated the house, but did most of the family cooking as well. An iron crane was hinged at the back of the chimney, and from this the pots and kettles were hung over the fire by means of iron hooks and chains.

Coal began to be brought into the cities from the mines of Pennsylvania about the year 1820. Gradually people learned to use the new fuel in their kitchens, and in time the fireplace was abandoned for the coal range.

While the coal range is still widely used, and no doubt will continue to be for some time to come, the most popular method of cooking today is by gas fuel. Of course gas is not obtainable in many places, but where it can be had housekeepers are coming more and more to recognize its advantages.

If properly handled gas is less expensive than coal, although few things can be wasted more easily. If turned on only when needed and turned off at once after being used, there is no waste to pay for. If the user forgets and leaves the gas burning, the meter does not forget and the wasted gas is charged for in the bill.

The gas range is a ready and willing servant, and as a means of labor saving is almost as much superior to the coal range as the coal range was to the fireplace of our great grandmothers.

ELECTRICITY

Electricity is a wonderful gift of nature which we are just learning to use. It gives us light, heat, and power; and every day we are finding out new ways of using this marvelous gift.

FRANKLIN'S KITE

1. Electricity and Lightning

Did you ever stop to think how many wonderful servants we have today that were unknown or unused when Benjamin Franklin lived? Among them are gas, coal, petroleum and electricity. Perhaps the most wonderful of all and the most mysterious is electricity. In Franklin's day there were no electric lights to light the streets and houses, no telegraph and telephone to send messages, and no electric cars to carry the people from place to place.

Before Franklin's day men knew little about electricity. They knew less about lightning. They did not even know that electricity and lightning were the same thing. Benjamin Franklin believed that they were and determined to prove it. He knew from his

experiments that electricity was attracted to a point. If a glass rod is rubbed sharply with a piece of silk the electricity caused by the friction will gather at the tip of the rod. This rod will pick up small pieces of dry paper in almost the way a magnet will pick up iron nails.

Franklin also knew that tall chimneys, church steeples, and high buildings were often struck by lightning. He thought that if a metal rod were erected above the building, the point would attract the lightning and protect the building from harm. This led him to the invention of the lightning rod, which is used on many tall buildings today. Unfortunately for Franklin, at that time there were no tall chimneys, nor church steeples, nor high buildings in the city of Philadelphia where he lived.

This however did not discourage Franklin. He believed that "where there is a will there is a way," and so he made his famous kite.

2. Flying the Kite

Franklin thought that a kite, if flown in a thunderstorm, would be more likely to attract lightning than a tall chimney or a church steeple. He tied a sharp-pointed wire about a foot long to the top of his kite to draw the lightning, and then waited for a thunderstorm.

He did not have long to wait. One day in June, 1752, a great thunderstorm arose. For fear of ridicule he said nothing to anyone about what he intended to do. Taking his little son, William, with him he went into the fields and stood under a cowshed.

They managed to get the kite flying in the air before the rain began. A piece of silk ribbon was tied to the end of the string. Franklin held the silk ribbon in his hand. He used silk because it is a poor conductor of electricity. He did not dare hold the string for fear of receiving an electric charge in his body. A metal door key was fastened to the place where the ribbon and the string joined. The purpose of the key was to discharge into a Leyden jar the lightning which came down the string. The Leyden jar was the only form of storage battery then known.

Soon the lightning began to play about the kite which was flying in the thunder clouds. Franklin touched his knuckle to the key but felt no shock. The lightning did not run down the string and out at the key as he had expected it would.

Still the father and son waited. After a while the rain began to pour down, wetting the kite and the string thoroughly.

Again Franklin touched his knuckle to the key. This time there was a slight shock and a spark. Immediately he held a small lamp to the tip of the key. The electric spark lighted the lamp and Franklin knew that he was right. Electricity and lightning were the same. Quickly he held the Leyden jar to the key to charge it with electricity. When fully charged he had a jar stored with electricity which he could take home for experimenting.

Benjamin Franklin was a very brave man and this was one of the bravest and most daring things he ever did. To find out the truth he risked the danger of

being struck by lightning and of losing his life. If anything had gone wrong he might have been electrocuted, although the word was not then known.

About this time a Russian professor named Richman, who had heard of Franklin's experiments, tried to draw lightning from the clouds and succeeded only too well. He drew down an electric charge which killed him instantly on the roof of his house in Petrograd.

Franklin's discoveries made him famous as the father of modern electricity. In the following words Franklin tells—

3. How the Kite was Made

"Make a small cross of two light strips of cedar wood. These strips of wood should be long enough to reach to the four corners of a large thin silk handkerchief when extended. Fasten the corners of the handkerchief to the extremities of the crossed sticks so as to form the body of a kite. When the kite is properly fitted with a tail, loop, and string, it will rise in the air like those made of paper. This being made of silk is better able to bear the wet and wind of a thunder storm without tearing.

"To the top of the upright stick of the cross fasten a very sharp-pointed wire, rising a foot or more above the wood. To the end of the string next to the hand a silk ribbon is to be tied. Where the ribbon and twine join, a key may be fastened.

"This kite is to be flown when a thunderstorm appears to be coming on, and the person who holds the string must stand within a door or window or under

some cover, so that the silk ribbon may not be wet. Care must be taken that the string does not touch the frame of the door or window.

"As soon as any of the thunder clouds come over the kite the pointed wire will draw the electric fire from them, and the kite with all the string will be electrified. When the rain has wet the kite and string, so that they can conduct the electric fire freely, you will find it stream out plentifully from the key on the approach of your knuckle."—*From a letter written by Benjamin Franklin to Peter Collinson in 1752.*

When Lightning Strikes

Have you ever seen a lightning rod? Tell about it.
Do you think a lightning rod would have saved this chimney?

SERVANTS OF MAN

1. Early Inventions

You remember that when Robinson Crusoe was cast up by the sea on the shore of his lonely island, his ship was wrecked and lost. All his possessions were gone, except some very few saved from the wreck. In that desolate spot he had to begin life over again with little to help him. What was he to do?

At once he began to look about him. He began to use the materials he found on the island as servants to provide for his needs. He made them supply him with food, clothing, and shelter. The story of his efforts forms one of the most interesting books in print, "The Adventures of Robinson Crusoe."

Our ancestors began life on this earth, which after all is only an island floating in space, very much as Crusoe did on his island. Only he was better off than they because he knew many things of which they were ignorant. For example, he knew how to start a fire and cook food, which they did not. He knew how to make and sail a boat, and many many other things of which they had not even dreamed.

The story of the way in which our ancestors turned the things they found into servants to provide for their needs is even more fascinating than the adventures of Robinson Crusoe. One book will not hold all the story, nor will even a library. It is a continued story going on from day to day, and no one knows when it will be finished.

But it is worth while to get an idea of some of the

TELL THE STORY OF THIS PICTURE.

servants of our ancestors because most of them are still our servants to-day. These are a few of the things that our ancestors did

They made axes, hammers and arrow-heads of stone. They learned to rub two dry sticks together until the friction set them on fire. With their weapons of stone they slew dangerous animals and used their skins for clothing. They tamed and learned to ride the wild horse. A savage with an inventive mind noticed that a round stone would roll, and invented the wheel. Before that people carried all their burdens on their own backs or on the backs of animals. The wheel was a very great invention, one of the greatest discoveries of man. It lifted burdens from the shoulders and carried them on wheels.

Later, metals were discovered, and sharper axes, knives, and other implements were made of bronze. Our ancestors learned to build bridges to carry them over streams dryshod. They found out how to make the water carry them on its surface, and how to make the wind fill their sails and drive them along. Today men are learning to make the air carry their ships more easily than the water does.

After a time they began to find out how to make better tools and weapons of iron and steel. They began to cut down forests and till the open spaces. Instead of using caves and cliffs for dwellings they began to build houses.

By and by they invented the art of writing and still later the art of printing.

Coming down to our own time, men have turned

water into steam to drive railway trains and machinery. They have discovered coal and turned it into gas to light their houses. They have discovered coal oil from which comes the gasoline to drive our automobiles and flying machines.

All these and many more materials and forces of nature have been conquered and are now being used in the service of man

2. The Electric Giant

Yet through all these centuries one great power of nature, the lightning, had defied man. Like an angry giant bellowing in the clouds, he would tear them asunder and shoot down his thunderbolt. This giant

never showed his power save to destroy some beautiful tree, some lofty church spire or tall chimney or fine building, or perchance a lone traveler caught in the storm.

Men have always feared the lightning, hiding from it in caves and cellars. Even today the bravest hesitate, and rightly, to expose themselves to its fury.

But this giant, the most powerful of all, has been conquered. He has become the obedient, useful servant of man. Every day we find some new work for him to do, and we do not know even yet all the wonders he is capable of performing.

Not so many years ago Franklin proved that the tiny electric spark and the giant flash of lightning are the same thing. Since then we have made this giant turn night into day. At our bidding he will provide light for one million or ten million electric lamps for our houses and city streets.

We have asked him to carry our messages around the earth, and he does it in a fraction of a second. He will carry not only dots and dashes, but the words of the human voice, and that not only with wires, but even without.

We have tamed him like the horse and harnessed him to our street railways, to our express trains, to our elevators and other machinery.

All the time, while we have been afraid of him, he has been able and ready and willing to serve us. Now that we are learning to use him there seems to be no end to the things that he will do, this wonderful electric giant, in the service of man.

HOW ELECTRICITY IS CARRIED

1. The Wires

Electricity will travel easily through substances such as iron, copper, gold, silver, and all other metals, and through most liquids. These are called conductors of electricity.

It will not travel through glass, china, rubber, dry air, silk or wool. These are called non-conductors. It will pass through a wet string, but not through a dry one. You remember that Franklin could get no electric spark from the kite string when it was dry. As soon as the storm arose and wet the string, the electric current flowed down it and gave a spark at the touch of Franklin's knuckle.

When electricity is needed for work it is always carried along an iron or copper wire. By means of wires our houses are supplied with the telephone and electric light service.

This is entirely different from the water and gas supply which comes in by means of pipes. The water is confined to the inside of the pipe and so is the gas, and in the same manner. Neither can escape except through a leak or at the outlet. There is no danger from the water or the gas so long as the pipes do not leak and are not left open at the outlets.

2. Danger of Exposed Wires

With the electric current the case is different. The current covers and charges the wire. If an exposed wire is touched by anyone, it means a severe shock and

perhaps sudden death. If touched by anything inflammable there is danger of fire. An uncovered wire is called a "live wire," and live wires are dangerous.

For this reason the electric wires which are brought into our houses are covered or insulated. If you examine a small piece of electric light wire you will see that the wire is enclosed in a sheath. This sheath is made of material which will not conduct electricity. In this way the current is confined to the wire and cannot escape unless the covering is broken.

If you go into the cellar and examine the electric light wires you will see porcelain tubes passing through the joists and woodwork. Through these the wires are passed as a further protection. Not an inch of live wire is exposed anywhere in the walls or under the floors. The wires must be fully insulated and inspected, and a permit must be obtained before the current is turned on.

If it were not for these precautions electricity could not be used with safety. If we become familiar with them it will help us not only to avoid shocks and burns to ourselves, but also to warn others of electrical dangers. Electricity, like fire, is a splendid servant but a dangerous master.

QUESTIONS

Which is the most easily handled—water, gas, or electricity?

What makes you think so?

Which of the three do we know most about?

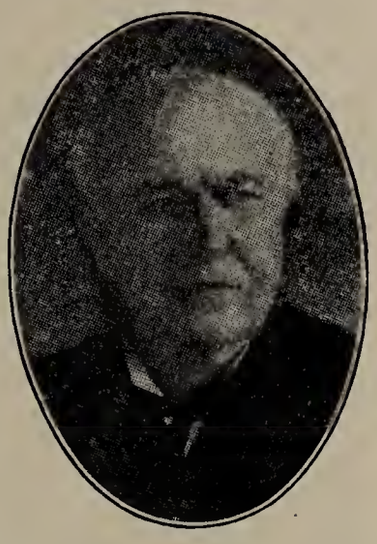
Which serves us best?

Can you tell whether a fallen wire is "alive" or not by looking at it?

THE INCANDESCENT LAMP

1. The Inventor

One of our greatest public servants is Thomas A. Edison, the electrician and inventor. A good-sized library could be made out of the books which describe the wonderful inventions of this great man.



When you listen to the phonograph, or speak through a megaphone, or see a moving picture, or turn on the light in the electric bulb —do you think who invented them? It was Thomas A. Edison, and these are only a few of the useful things which he has given to the world.

But Edison was not always a great inventor. He began life as a poor boy and rose to be one of the most useful servants of the country by his own efforts. All that he had to help him was a strong healthy body, a good mind, and a great love for his work. His ambition seems to be to work harder than anyone else and to find out things that will be useful to his fellow men.

One of Edison's favorite phrases about an invention is: "It must be useful when obtained." If an invention is not useful at first, Edison will work night and day to make it of service to others; but if it cannot be made useful, he abandons it.

Some one asked Edison one day about genius. Genius is supposed by some people to be a peculiar

gift by which things can be done without working Edison replied:

"Two per cent is genius, ninety-eight per cent is hard work."

Edison believes in hard work most of all. Sometimes he will work night and day for three or four weeks, scarcely stopping to eat and sleep. Do you wonder that he finds out so many useful and wonderful things? Co-operating with him all the time are many loyal and enthusiastic workers. Can you see why they like to help him?

2. What the Incandescent Lamp Is

In 1879 Edison was granted a patent for the incandescent lamp. For nearly forty years before this, electrical men had been working on the idea of such a lamp. These workers deserve a great deal of credit for their efforts, which should never be forgotten. Indeed, the great inventor would be the first to confess his debt to them. Edison, however, invented the first incandescent lamp which was of universal service, a lamp which could be used at any time, anywhere.

Incandescent means white hot. You have seen a wire heated until it was red hot. If the wire is made still hotter it becomes white hot. A red hot metal glows red; a white hot metal gives a white light and is said to be incandescent.

If you examine an electric bulb you will see inside it a small network of fine wires. These wires are of tungsten metal. They offer great resistance to the electric current and become white hot when the current is

turned on. As soon as they become white hot they give off the beautiful white incandescent light with which we are familiar.

One would think that such a fine wire would burn up and melt under the intense heat. And so it would if it were not for the simple fact that there is no air in the bulb. All the air, including the oxygen, has been

exhausted and the bulb made air-tight. Nothing can burn or melt, not even a white hot wire, without the fire-supporting oxygen which is always present in the air.

3. What this Lamp Does for Us

It drives away darkness and turns night into day. It illuminates our streets, our homes, our stores, our workshops. It lights our railway trains, street cars, carriages, automobiles, and flying machines.

It shines just as brightly down in the African mine,

or on the helmet of the diver on the bottom of the ocean, as it does on the page of the book we are reading.

It lights the steamships at night as they plow through the darkness of the sea. It illuminates the submarine as it sinks under the dark waters, and helps the aviator to guide his flying machine as it ascends thousands of feet into the air.

If we had the magic lamp of the fairy tale, do you think it would be half as useful as the electric lamp of to-day?

Can you name some other ways in which this lamp serves us?

Necessity is the mother of invention.

Useful inventions seldom come by chance. They are the reward of patience, perseverance, long study, and hard work.—*Selected.*

The heights by great men reached and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night.

—*Longfellow.*

We are living, we are dwelling
In a grand eventful time,
In an age on ages telling—
To be living is sublime.

—*Selected*

HOW ELECTRICITY LIGHTS THE CITY

1. The Dark Day of 1780

May 19, 1780, is known in American history as "The Dark Day" on account of the remarkable darkness that extended over all New England. The darkness began about ten o'clock in the morning and increased as the day wore on.

In some places persons could not see to read common print in the open air at noon. Birds sang their evening song, disappeared and became silent. Domestic fowls went to their roosts, cattle sought the barnyard, and candles were lighted in the houses. Many people thought the day of judgment had come.

The legislature of Connecticut was then in session at Hartford. The house of representatives adjourned, and in the council it was proposed to do likewise.

Colonel Davenport, a veteran of the Colonial wars, arose and objected, saying: "The day of judgment is either approaching, or it is not. If it is not, there is no cause for adjourning; if it is, I choose to be found in my place doing my duty. I move, therefore, that candles be brought and that we proceed with the business in hand."

2. The Dark Day of 1917

In 1917 the city of Philadelphia had a dark day. The exact date was Thursday, March the first.

Without the warning which nature usually gives, a great cloud of darkness came down and enveloped the central portion of the city. The darkness began at ten o'clock, soon grew to almost midnight blackness, and continued until about three o'clock in the afternoon.

The cloud did not come from the north, south, east, or west; it dropped down like a thick blanket from the zenith.

According to the director of the weather bureau, it was one mile deep, covered an area of twenty-five square miles in the most densely populated portion of the city, and weighed 550,000 tons.

Usually large clouds are reported by sentinels who are electrical operators in the outskirts and suburbs of the city, ten to thirty miles distant. But on this day the darkness came unheralded and unannounced.

If the city had been in the candle age of 1780 the

people at work in the stores, workshops, and offices would have had to abandon their work. Traffic in the streets would have been at a standstill. Business could have been carried on only at great danger to life and limb.

3. What Happened in the City

But none of these things happened; in Philadelphia there was no danger and no stopping of work. Neither would there have been any stopping in New York, or Boston, or Chicago, or San Francisco, or any other great American city, because modern cities live and work in the electrical age. What really did happen in Philadelphia is interesting.

When the darkness began to fall, the workers began to press electric buttons. Within fifteen minutes over a quarter of a million lights had been turned on.

Immediately offices, stores, factories, and streets were flooded with light. Darkness was turned into day, and the people continued about their duties almost as if nothing unusual had occurred. What ten million candles could not have done, electricity had accomplished in the twinkling of an eye or the pressing of a button, and without the striking of a match.

Where did the light come from? It came from the great central electric power plant of the city. From the great electrical machines it came silently underground over copper wires and cables into the center of the midnight blackness. One of these machines will supply a steady current of electricity sufficient to light and keep burning more than a million lamps.

4. What Happened in the Power House

What happened in the power houses when the unusual demand for electricity asserted itself? There was no disorder, no rushing about. Each man knew what to do in the emergency and did it.

The fires under the boilers in operation were forced. The boilers that held banked fires in readiness for just such an emergency were turned on full blast. In each hour while the darkness lasted enough extra coal was shoveled into the furnaces to heat the average city home for a period of eight years.

This excess coal was not shoveled by human stokers stripped to the waist, as is often pictured in the hold of steam vessels. The work was done by automatic stokers. The man in charge by the pushing of a lever speeded up the electric motors which ram the coal into the furnaces.

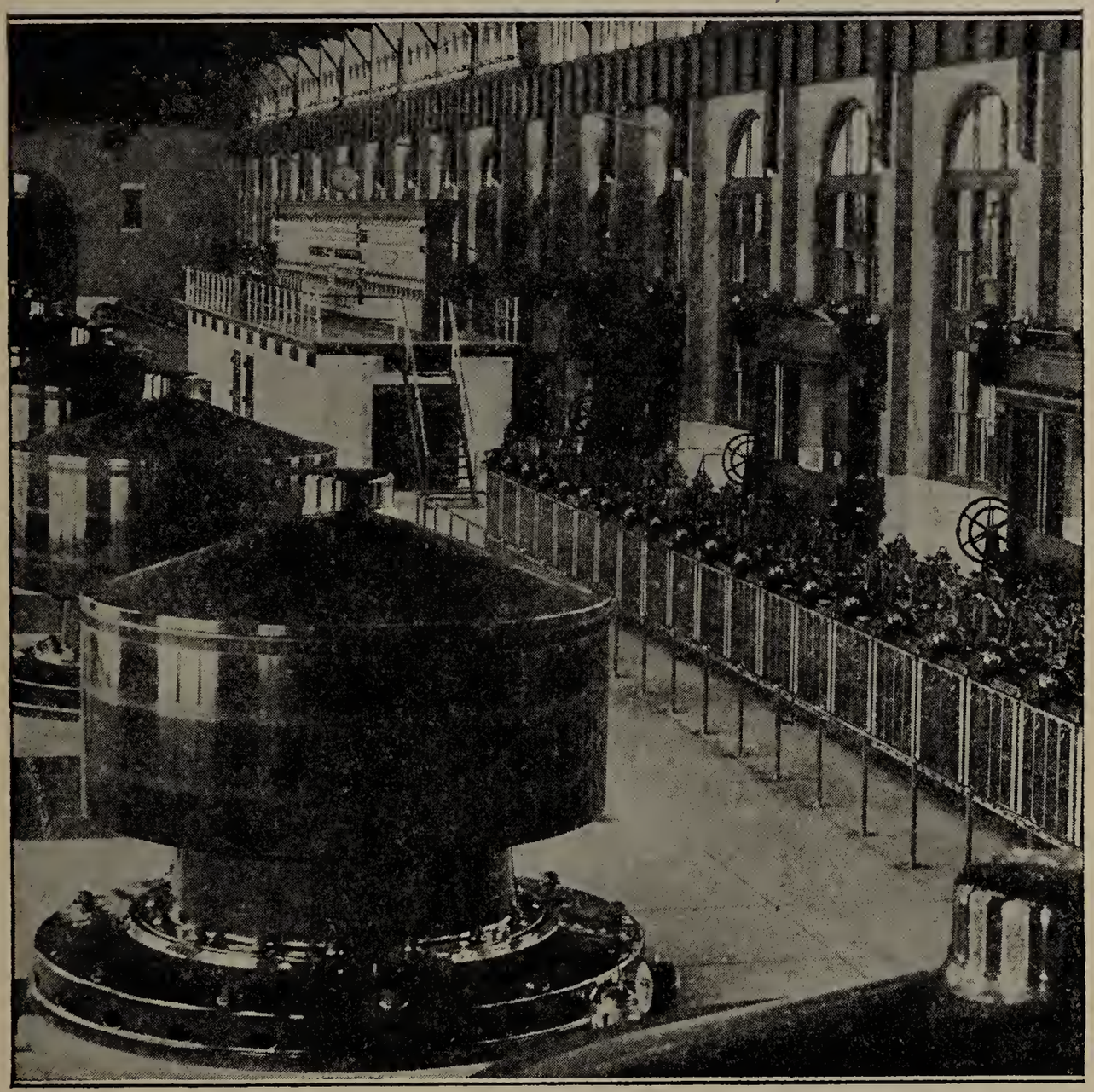
What happened to the increased power generated in the boiler room? It issued from the boiler room as steam, traveling at the rate of nearly two miles per minute through the pipes leading to the turbines. The turbines are the great wheels which run the dynamos which make the electricity.

In some of these weird rotating machines the steam travels at the rate of sixty miles per minute—not sixty miles per hour. This speed is sixty times faster than the fastest express train; it is twice that of a shell from a twelve-inch gun.

All this is a very wonderful and marvelous achievement. But if the darkness had covered an area five

times as great it would have been dispelled, for this power plant had a reserve of 42,000 horse-power ready to meet an even greater emergency.

These great electrical machines are the servants of the people, ever ready as a defense against darkness.



INTERIOR OF A HUGE POWER HOUSE AT NIAGARA FALLS

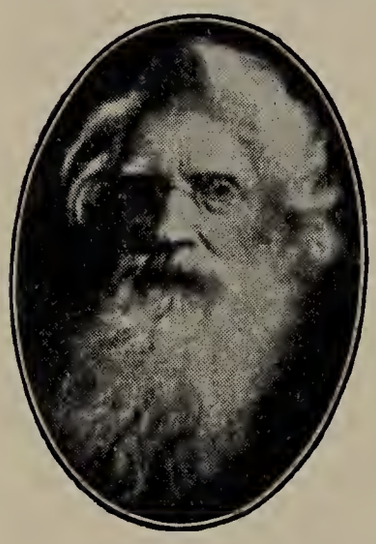
At the left are shown the great dynamos which are driven by the water power of Niagara.

THE ELECTRIC TELEGRAPH

1. The Inventor

The honor of inventing the first practical electric telegraph belongs to Samuel Finley Breese Morse. He was born at Charlestown, Massachusetts, in 1791.

Morse was an artist and sculptor and later a professor of designing in New York. He began his experiments in 1832. For twelve years he had a terrible struggle. Painting was his only support and all his interest was centered in his invention. In order to economize his scanty means he slept and took his meals, which he prepared himself, in his studio. When he showed his friends the crude telegraph he had invented they laughed at him for spending all of his meager income on a useless toy.



He exhibited the telegraph in Washington and tried to secure the sum of $30,000 from Congress to build an experimental line of fifty miles, but failed. For two years he wandered over Europe trying to secure patents and assistance, but without success.

Again he went to Washington, in 1841, and set up his instruments and strung his wires. The congressmen to whom he explained his invention were amused. They regarded it merely as a toy. Finally, when reduced to dire poverty, he secured sufficient money from Congress for the test. This was in 1843.

Now Morse had an opportunity to show what he

could do. After many delays a line was built from Washington to Baltimore and the wires were strung on poles.

In May, 1844, the first message was sent over the line. It was—

What hath God wrought?"

The question became famous throughout the land; it is not yet fully answered.

Professor Morse lived to be eighty years old, and died greatly honored by everyone for his services to his country and to the world.

2. The Use of the Telegraph

The telegraph uses an alphabet all its own. This is called the Morse alphabet or telegraph code. Instead of letters and figures it employs dots and dashes. Thus the letter A is represented by a dot and a dash (. —); the figure 1 by a dot, two dashes, and a dot (. — — .).

All telegraph offices throughout the country are connected by means of wires.

The wires are supported on poles twenty feet or more in height, and are attached to them by glass or porcelain insulators to prevent the electric current from escaping. Sometimes they are carried underground.

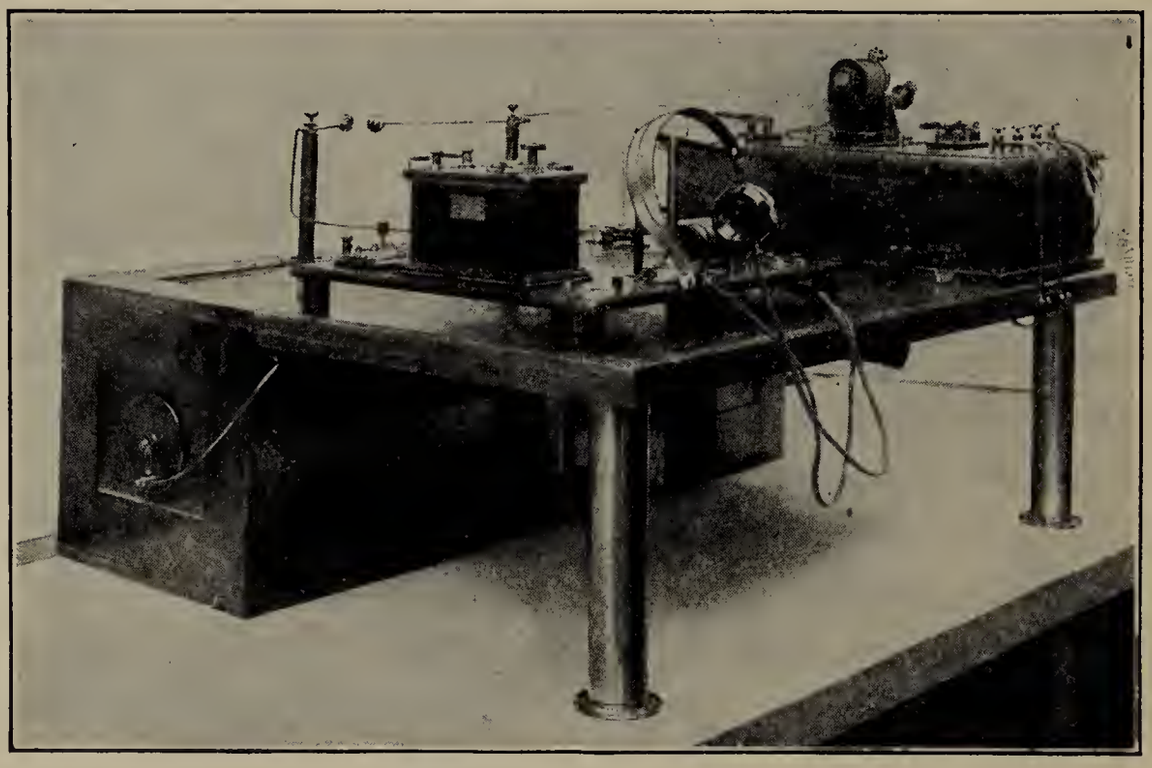
We will suppose that an operator in Chicago wants to send a message to an operator in New York. Each telegraph instrument is fitted with a key and a sounder. When the Chicago operator presses down the key an electric current is sent over the wire to New York,

which causes the sounder in the New York office to strike upon a metallic point with a sharp click.

The New York operator reads the sounds as fast as they come over the wire and takes the message. Every time the key is pressed in Chicago the sound is heard and read in New York in that same second.

By the use of this wonderful invention a message can be sent to a friend one thousand miles distant in less than two hours. If the message were sent by mail, it would take perhaps two days. The time spent in sending the telegram is not spent by the telegraph, which is almost instantaneous, but in taking the message to the office and delivering it your friend.

While at the office it is most interesting to watch the operator sending messages and to listen to the ticking of the sounder receiving them.



Wireless Apparatus

WIRELESS

1. How it Works

Even more marvelous than the telegraph is the method of sending messages by wireless. We can understand how a message can be flashed over a wire between two points. But when there is no wire, nothing but open space, it seems almost impossible, yet we know that it is being done every day.

Everyone has seen the tall wireless masts, now so common everywhere. Sometimes we see them on ships, sometimes on housetops, and again built on the ground and reaching up into the air.

How does a wireless message travel through the air without wires to conduct it?

What happens when you drop a stone into a pool of water? Little waves and ripples travel outward in all directions in a circular form. The waves keep on going until the force of the blow on the water is spent

or until they strike the edge of the pool. The larger the stone the faster and farther the waves will travel.

Very much the same thing happens in sending a wireless message. In place of a stone the operator uses an electric spark and in place of the water he uses the air.

When an electric spark or a series of sparks is discharged in a wireless station, electric waves roll outward from the top of the mast. These waves travel out and onward through the air in all directions. The stronger the spark the farther they travel. On and on they go until they find the mast they are looking for. The wireless message is made up of dots and dashes or long and short waves similar to those of the wire telegraph and is just as easily read.

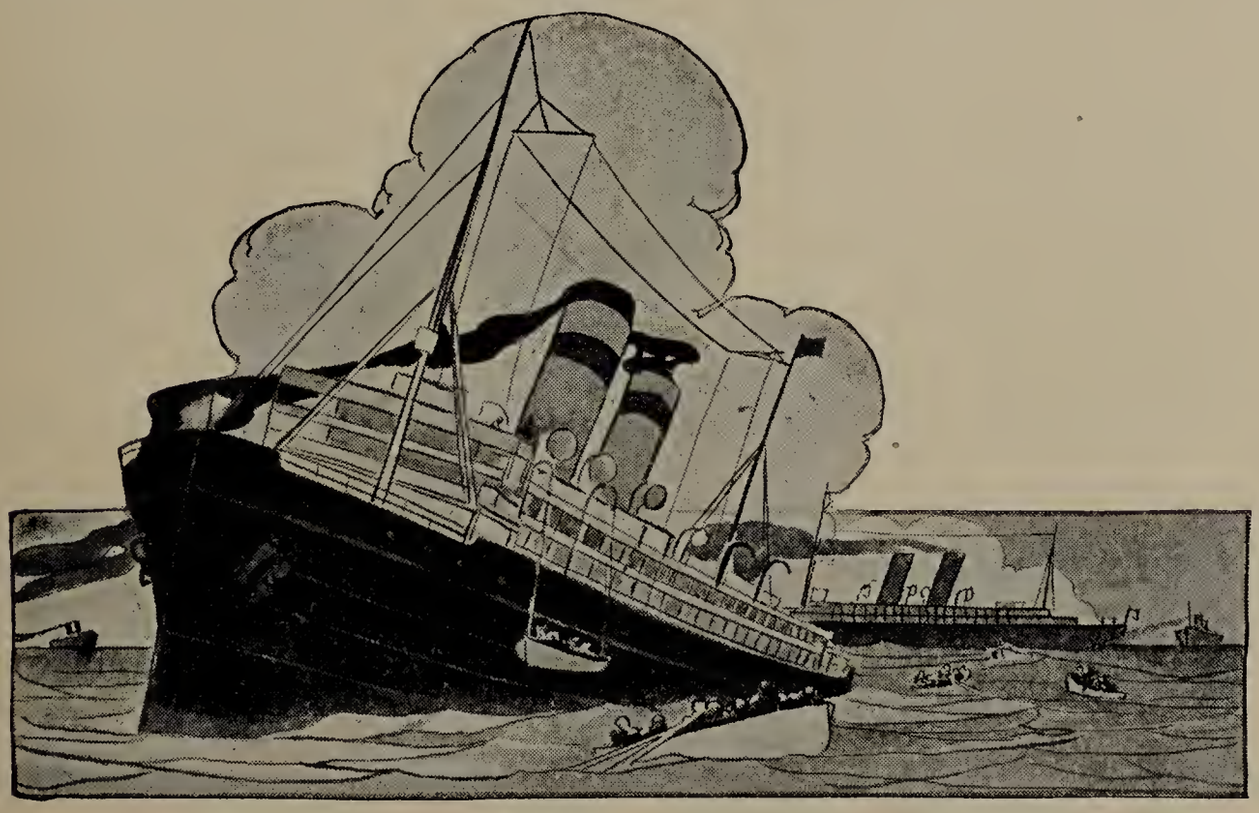
2. How it Helps the Ships at Sea

All along the coast are wireless shore stations. Suppose a ship at sea has not been heard from and her owner wants to find out where she is. When he sends a message to the captain, this is what is done: the operator looks up his list of ships and notes the call signal and wave lengths of that particular ship.

He then adjusts or tunes his instrument to correspond to the ship's call. Now he is ready. The sparks flash the message, sending the electric waves far out over the ocean. On and on they go past other ships until they find the particular ship they are intended for. When they strike the wireless mast of that ship they are received. The ship replies, and the owner knows where his ship is and just what she is doing.

Today every ocean-going vessel is equipped with wireless. These slender web-like structures rising above the deck often save ships from destruction. If an iceberg is found in the steamer paths, warning signals are flashed to all other vessels in the vicinity. If a ship is on fire or in other danger it can send out its S O S signals and call to its aid all vessels within reach.

The S O S signal is a call to be used only by ships in times of distress. In the ocean telegraph alphabet the letter S is represented by three dots and the letter O by three dashes. When the wireless operator sends the S O S signal he flashes three dots, three dashes, three dots; thus ". . . — — — . . . " When a ship at sea receives this signal it knows that the ship sending it is in danger, perhaps sinking, and needs help immediately.



Transatlantic steamers now print newspapers for their passengers, giving the news of the day received by wireless when the ship is in mid ocean.

The wireless telegraph sends messages from continent to continent, from steamship to steamship, and from flying machines thousands of feet in the air to the military commander on the battlefield.

There appears to be no limit to the distance which a wireless message can be sent. As early as 1910 Marconi, the inventor of wireless, sent a message from Clifden, Ireland, to Buenos Aires, Argentina, a distance of 6700 miles.

In 1918 a message was sent from the Marconi Station at Carnarvon, Wales, to the wireless station in Sidney, Australia. The distance was 12,000 miles, practically half way around the world, and the message was received with perfect clearness.

QUESTIONS

Why did men laugh at Professor Morse and call his invention a "toy"?

Would you be willing to be laughed at if you could invent something that would be of great service to your city, state or country?

Did you ever try to invent anything? Why not try?

The reason most men do not achieve more is because they do not attempt more.—*Sheldon.*

They can, who think they can.

OTHER USES OF ELECTRICITY

1. The Electric Street Car

The first street car was much like the old-fashioned stage coach. These cars were drawn by horses over tracks laid in the city streets, very much as we have them now.

When the cars were made larger to carry more people, the work of pulling them became terribly hard. Many people now living can remember how sorry they were for the poor horses toiling over miles of track with their heavy loads.

Many methods of relieving the horses were tried, the cable being the most successful. The cable was an endless wire rope which ran underground between the tracks and pulled the cable cars along very rapidly.

But the happiest day came for the car horses when they were taken off the tracks entirely and the giant, electricity, was harnessed in their place. Equally glad were the people who rode and the kind-hearted horse-car drivers, who lost little time in learning to drive the new electric motor from which they get the name "motormen."

How easily the powerful electric current flows down the trolley pole from the wire above and drives the heaviest cars almost without an effort! What a pleasure it is to ride even long distances, behind the swift electric horse! Wherever you wish to go this willing horse carries you, sometimes on the surface, sometimes overhead, sometimes underground, and never tires.

2. The Electric Train

How would you like to ride over three great mountain ranges on an electric train—on the wonderful train that crosses the Rocky Mountains in Montana, the Bitter Root Mountains in Idaho, and the Cascade Mountains in Washington.

Let us board the cars at a little station in Montana

and take a ride. "All aboard!" shouts the conductor, and the train begins to move toward the west. Across the level plain we go at a speed of sixty miles an hour. Soon we leave the plain behind and begin to climb the hills. Looking out of the car window as the train sweeps around a curve we see the slender trolley wire stretching over the track. We wonder how such a

thin thread of copper wire can pull the long train so easily.

Now we begin to climb the steep sides of the mountains and the train slows down to twenty-five miles an hour. On one side great rocks reach up into the sky. On the other side a swift river dashes along in the valley hundreds of feet below. Just to look down almost takes our breath away.

In a short time we arrive at Donald, a little station at the top of the Rocky Mountains. Donald is more than six thousand feet above the sea.

Passing over the crest of the Rockies we begin to run down the western slope. On we go past snow-covered peaks, past tall forests of pine and fir, past deep river gorges, past gold and silver and copper mines, past Butte, Deer Lodge, and Missoula, to St. Regis.

Now the Bitter Root Mountains come into view. Now we are nearing their snow-capped tops. Now we are speeding down their western slopes into Idaho. On and on we go until the beautiful Cascade Mountains come into sight. Soon we have crossed them and our electric ride ends on the Pacific coast in the state of Washington.

Did you ever hear of a scenic railway like that?

3. Electric-Driven Machinery

Have you ever visited a large factory or workshop where the machinery was run by steam power? Overhead were long shafts attached to the ceiling, with whirling pulley wheels and leather belts running down to the machines. Such clumsy devices are

getting fewer, as the electric giant has entered to take the place of steam power. The shafts have been taken down, the maze of whirling wheels and belts has been removed. All you see now are a few electric wires which have taken their places. Each machine has its own electric motor, a little iron box fastened to it. Into this a wire carries the current which drives the separate machine.

4. Domestic Uses of Electricity

Electricity has entered the home, not only to light it, but to perform the work of a servant. Press a button in the electric sweeper and you have a broom which removes dust by the simple process of eating it up. Press a button and electricity will run your sewing machine. If you wish, electricity will turn the washing machine and wash the clothes and wring them out. Then it will heat the iron with which to iron them when dry.

Can you name other domestic services performed by electricity?

QUESTIONS

I

Name some of the animals which men have used like slaves because of their great strength.

How does the giant slave, electricity, help horses, those faithful slaves who have helped people throughout so many ages?

Mention some of the heavy work which this giant slave does like play.

How is electricity carried from one place to another?

II

Have you ever played with a toy magnet?

Have you ever seen the immense magnets which are used at the power plant in making electricity?

If the men at the power plant should fail to do their work, what would happen to our houses, our streets, our electric cars and factories?

Will you make a prophecy about what kinds of work the giant, electricity, will be doing for people twenty years from now?

III

What can you tell about the work of the linemen? How do they serve everyone in our city?

Why is it necessary to insulate electric wires?

Why does our city have a law requiring that all new wiring be inspected by proper authorities?

What is the danger in touching fallen wires in the street?

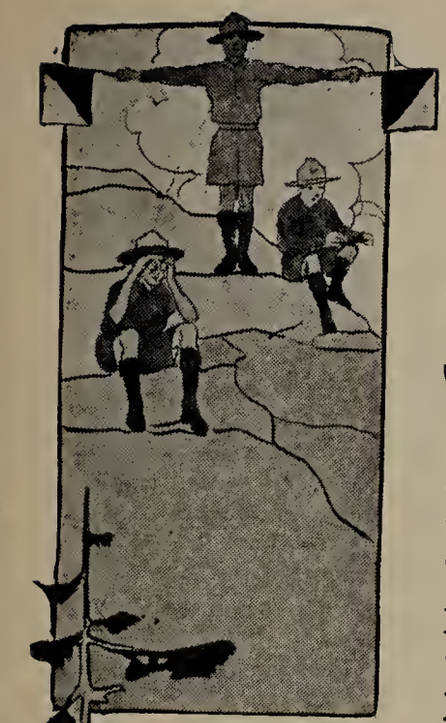
What is the danger in climbing a pole on which electric wires are fastened?

Why is it dangerous to stand under a solitary tree during a thunderstorm?

What do you know about the danger from the third rail on electric railroads?

THE TELEPHONE

The telephone has annihilated distance, wrapped a network of quivering wire nerves about the globe and brought the hundreds of millions of the human race mouth to ear.—*Frank G. Carpenter.*

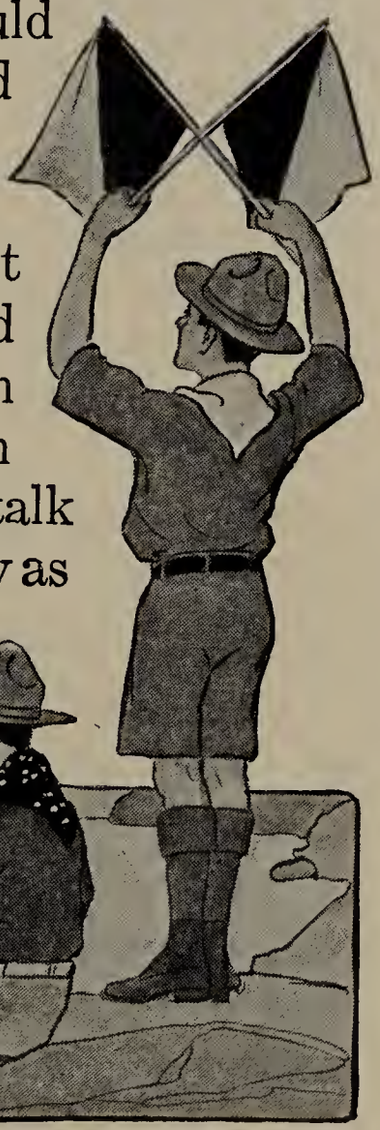


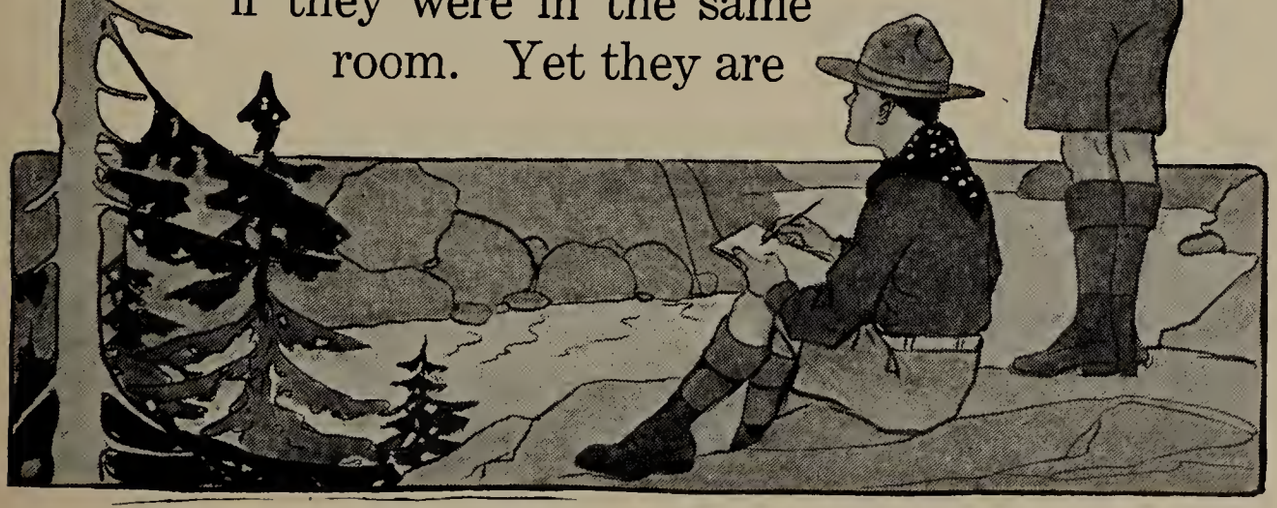
DISTANT SPEAKING

If the American people who lived when General Grant was president had been told that it was possible for two men ten miles apart to talk with each other, they would not have believed it. They would have replied: "That is impossible. Men can talk with each other only face to face, and within speaking distance. No one can shout loud enough to be heard ten miles."

That is true. No man could shout loud enough to be heard one mile—much less ten.

Yet we know that today it is possible for a man to sit in a room in New York and call up an entire stranger in Chicago, or Denver, or San Francisco. These men can talk with each other almost as easily as if they were in the same room. Yet they are





separated by hundreds or thousands of miles. They do not see each other, yet they talk as friend to friend. Some day, perhaps, they will see each other over the telephone just as easily as they now hear each other. That is an invention still to be made—perhaps by some one who is now an American school boy.

The wonderful invention by which distant speaking is done is the telephone. The first telephone was exhibited at the Centennial Exposition in Philadelphia in 1876. Many people who are now living saw it there. Before that time the only way for two people to talk together was to meet face to face. If a man wanted to talk with a friend ten miles distant, he must travel ten miles to him. Today he can talk with him without leaving his home.

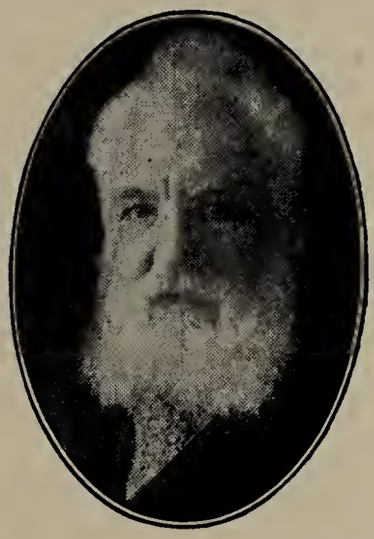
There are now over one hundred millions of people in the United States. The long-distance telephone brings them all within speaking distance of each other and makes them neighbors.

Men have always found means of communicating with each other at a distance. The Indian way of sending messages was by smoke signals. The natives of Africa relayed the news of the day across the country by the simple method of beating drums. The Signal Corps of the Army uses flags and the heliograph to telegraph orders from one point to another; and the letter courier and carrier pigeon are as old as history. It remained for the electric telegraph and telephone to carry messages "as quick as lightning."

THE STORY OF THE INVENTION OF THE TELEPHONE

1. The Inventor of the Telephone

In the year 1870 there came to America a young Scotchman from Edinburgh, where he had been born twenty-three years before. He had few friends, little money, and poor health. In fact, he had crossed the ocean in the hope that the climate of the New World would make him well and strong.



This young man was Alexander Graham Bell, afterwards to win fame and fortune as the inventor of the speaking telephone. At this time young Bell was a teacher of "visible speech" to deaf mutes. Visible speech is the method of teaching the deaf and dumb to speak by imitating the motion of the lips of the teacher, instead of by the finger alphabet.

After a year spent in Canada, the young teacher regained his health and began to teach visible speech in the deaf-and-dumb schools of Boston. For several years he devoted himself to this work with great success. So well did he succeed that he might have continued as a teacher all his life had it not been for his interest in electricity and the electric telegraph.

The young professor knew how sound waves were carried from the throat to the ear, and how the electric impulse was sent over the telegraph wires. He

believed it possible to send the voice over a wire a long distance, so that a person listening at the other end of the wire could hear spoken words. Was not that a wonderful idea?

2. The Little Workshop

To carry out his experiments he fitted up a little workshop near his school. The place was littered with tuning forks, magnets, batteries, coils of wire, tin cans, strange chemicals, and other contrivances never seen before.

He had working with him a young mechanic, Thomas A. Watson, who made the apparatus which Bell invented. Here in his spare hours he worked at his invention and struggled with failure after failure to make sound travel over wires. Night after night Bell and Watson worked together, trying first one plan and then another with little success. Often they were discouraged and almost ready to give up in despair, but still they kept on trying, and at last their efforts were rewarded.

One hot summer afternoon Watson was sitting at the work bench in front of an instrument fitted with vibrating steel springs. A wire stretched from this instrument into the next room where Bell was listening with the receiver at his ear as Watson snapped the springs. One of the springs stopped vibrating and Watson snapped it again. Still it did not start and he kept on idly snapping it. Suddenly he heard a shout from the next room and Bell came rushing in, pale with excitement.

"Snap that spring again, Watson! Don't change anything! Let me see what you did!"

Bell had heard a strange sound at his end of the wire. It was only a faint echo, but fortunately the right man had his ear at the receiver at the right moment and caught it. Instantly he knew that the faint sound had been carried by electricity.

The speaking telephone was born in that second. But that was only the beginning. It required many trials and many heart-breaking months of experimenting before they were able to send and hear a complete sentence over the telephone.

When the little box telephone was first shown to the public at the Centennial Exhibition in 1876, little notice was taken of it. It seemed too absurd.

3. The Emperor of Brazil

One day, Dom Pedro, who was then the Emperor of Brazil, walked through the exhibition. He was deeply interested in scientific questions and at once put the telephone to the test. He held the iron box receiver to his ear and listened, while Bell talked from another part of the building. When Bell's voice began to come over the wire, the emperor put down the instrument and cried excitedly, "It speaks! It speaks!" The scientists and foreign visitors who had gathered were greatly impressed. The telephone exhibit was saved, and from then on was one of the chief wonders of the exhibition.

Many and prolonged were the struggles of Professor Bell before the telephone came into use. In

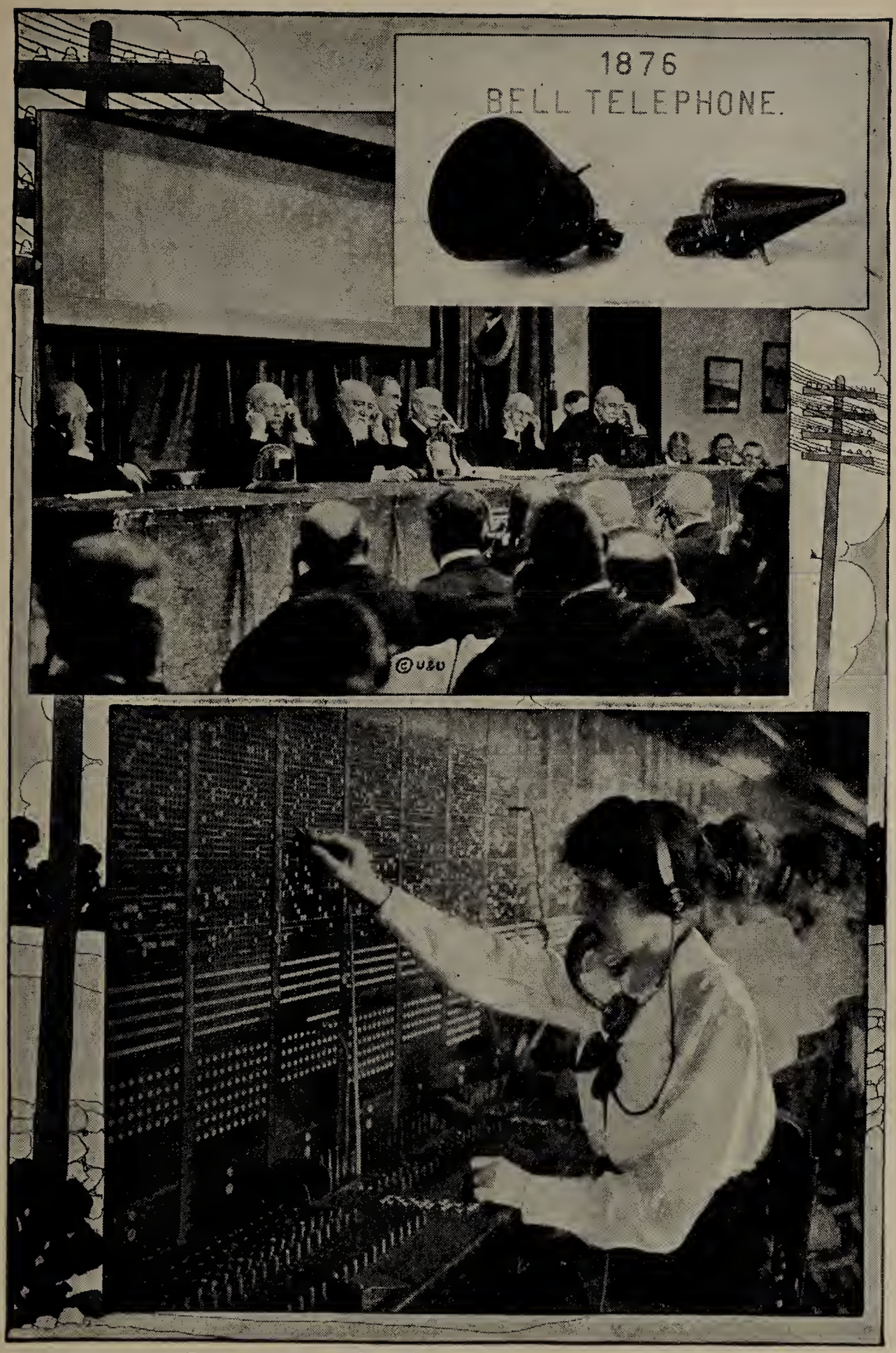
1877 he exhibited the telephone before an audience in Salem, Massachusetts. The instrument had been connected by means of a telegraph line with Boston. At the Boston end of the line Watson sent messages to various members of the Salem audience. The newspapers told about the feat, the like of which was never before attempted, the sending of news over the space of sixteen miles by the human voice.

In 1917 there were nearly fourteen million telephones in the world, and the human voice had been sent nearly ten thousand miles.

QUESTIONS

How was word sent quickly before the telephone was invented?
Has the telephone ever saved life?
Can you think of an instance where it was so used?

When Benjamin Franklin was postmaster of Philadelphia, an answer by mail to a letter to Boston required three weeks. Now an answer may be had in forty-eight hours or less by return post. By telephone a reply may be had in a few short minutes.



PHILADELPHIA LISTENING TO SAN FRANCISCO. TELEPHONE CENTRAL.

THE TRANSCONTINENTAL TELEPHONE

The first telephones were not very powerful. They could carry the voice only a short distance. Patiently and persistently Dr. Bell and his assistants kept at work inventing and planning to extend the distance.

When New York first talked to Chicago, a thousand miles away, over the long-distance line, people thought that it was a wonderful thing, as indeed it was. Yet it was a far more wonderful thing when the human voice was made to leap three thousand miles across the continent, and the cities of New York and San Francisco were connected by the long-distance telephone.

In the presence of the mayor and other public officials of New York City, telephone officials, and invited guests, the ocean-to-ocean telephone line was opened on January 25, 1915. At the New York terminal was Dr. Alexander Graham Bell; at the San Francisco terminal was Thomas A. Watson, who had assisted Dr. Bell in the invention of the first telephone.

It was a thrilling moment when Dr. Bell called into the transmitter:

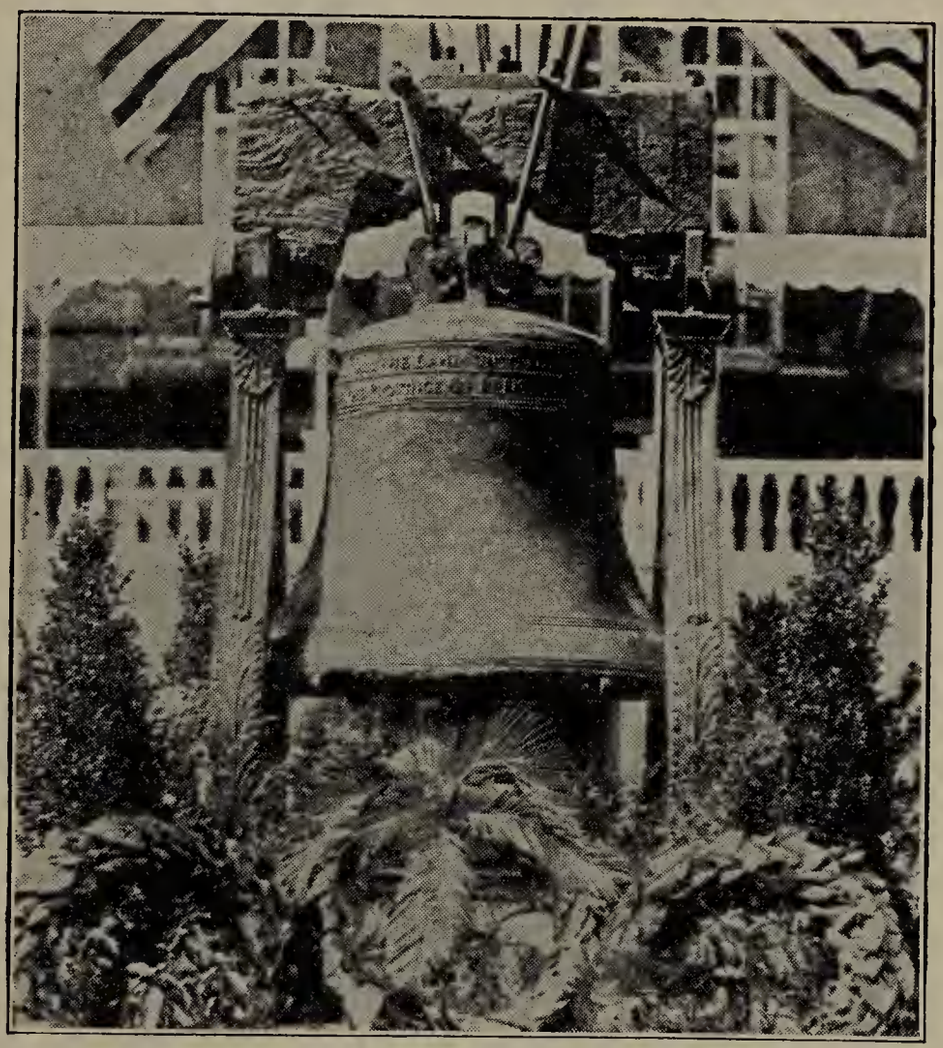
"Ahoy! Ahoy! Mr. Watson, can you hear me?" using the very language that he had used almost forty years before, when the first spoken words sped across the wire.

"Yes, I hear you perfectly, Dr. Bell," was the reply of Thomas A. Watson at San Francisco.

Another thrilling moment occurred on February 11, 1915, when the transcontinental line was opened for

Philadelphia in the presence of the mayor and city officials. This time not only the voice of man, but the voice of the Liberty Bell, known and revered by every American, was sent from Independence Hall across the country. At the mayor's signal the bell was struck and the note was distinctly heard in San Francisco.

When our forefathers put the famous motto on the old bell, little did they dream that its brave message would one day be flashed across the entire continent in an instant of time.



The Liberty Bell Surrounded by Wreaths and Floral Tributes in Independence Hall Square, July Fourth, 1919.

FLYING WORDS

If the boys and girls of today should live a thousand years they would see many marvelous inventions, but none would be likely to lessen the marvel of talking over the telephone.

Imagine for a moment what happens when a person in New York talks with a person in San Francisco. After the operator has gotten the proper connection the New York party speaks. Let us imagine that you are speaking.

"Good-morning, San Francisco."

What happens? The words, spoken within sound of the boisterous Atlantic Ocean, leap in one-fifteenth of a second to the Pacific coast. Fast as thought they fly. In much less time than it would take you

to throw a ball across the playground the words have sped over more than three thousand miles.

Let us follow in imagination their marvelous flight. It will take much longer for us to mention a few of the places they would pass than it would take them to go in reality.

Out from New York goes the message, "Good-morning, San Francisco." In an instant it flashes under the steel and stone buildings of New York, over northern New Jersey, across the Delaware River. Never pausing, on it leaps across Pennsylvania's blue Alleghany mountains, and down into the smoke of Pittsburgh. In less than a wink of an eye, the words cross the fertile prairie lands of Ohio and Indiana, and reach Chicago. Past the Windy City and over its hum of busy traffic in an atom of time, on they travel over the great wheat belts to Omaha, and never stopping, onward, onward, past the mighty canyons of the Colorado River to Denver.

Over the Great Divide and snow caps of the Sierra Mountains they fly, on, on, on, and Salt Lake City is left behind. Now they have passed the blistering desert, and stretches of sage-brush and sand of the western plains.

In another twinkle the white-capped mountains are left behind and they are in California, the land of summer. The flying words have alighted in San Francisco, on the shores of the Pacific Ocean—and a distance of thirty-four hundred miles of continent has been spanned in one-fifteenth of a second.

No wishing carpet ever sailed as fast. Your words

have reached San Francisco just as soon as your shout would reach a boy around the corner.

Traveling at that rate of speed would take your breath away. If you had been whirled across the continent so swiftly as that you could not gasp out words to tell the tale.

THE FAMILY TELEPHONE

Of the many modern conveniences that science has given to the home perhaps none is more useful than the telephone. It keeps the family in constant touch with the community, and is a ready and convenient helper in almost every emergency.

If the housewife cannot go to the store herself and has no one to send, the telephone takes her to the stores where she buys her provisions and supplies in a minute's time, and that without leaving her house.

The telephone keeps the family in touch with neighbors, as well as with friends who live at a distance. Small engagements and social calls can often be made by 'phone, thus saving needed time and the trouble of letter writing or of dressing for the street.

The telephone is always ready for an emergency; it reaches the doctor's office in case of sudden illness, the police and fire stations in case of danger, and is a convenient means of protection in time of need.

These are only a few of the services which this useful invention renders the modern family. Can you give examples of ways in which you have known the telephone to save: Time, energy, money, property, life?

THE VOICES OF TWO OCEANS

Has the thought ever occurred to you of how many weary tiresome days must have been spent by Balboa before he came within sight of the Pacific Ocean? How wonderful it would have seemed to him if he could have sent word of his discovery back to his home in Spain within a month's time! If he had written a message he would perhaps have tried to describe the difference between the newly found ocean and the familiar Atlantic Ocean.

He would hardly have been able to imagine the possibility of sending a letter across the Atlantic, and never in his wildest dreamings could he have imagined that anyone could ever hear the surge-voices of both oceans at the same time. Yet that is just what happened in 1915, when a group of telephone officials and invited guests were gathered in a telephone exchange in New York City.

When the proper connection had been secured, the telephone bell rang. One of the New York men unhooked the receiver, placed it to his ear and listened.

"Good afternoon. This is the Cliff House, San Francisco," said a voice at the other end of the wire.

"Good afternoon, this is New York City," replied the New York man.

"Do you hear me?" asked the voice at San Francisco.

"Yes, I hear you distinctly," answered the New Yorker.

"Then, listen!" was the reply.

A look of surprise and wonder crept over the listener's face. Silently he passed the receiver to the next man, who in turn passed it to the next, until all the men in the room had listened.

What was the mysterious message? Simply this: a man was sitting in a room overlooking the Pacific Ocean; he had thrown up his window and allowed the Pacific Ocean to speak through the mouthpiece of his telephone to the men in New York.

Slowly the great breakers rolled in from the sea and dashed against the cliffs under his window with a mighty roar. That roar filled the mouth of the telephone, and running over the wires across the continent filled the ears of the men in New York. They had heard the voice of the Pacific Ocean.

Soon another telephone rang in the New York office. "Good afternoon, this is the Beach House at Coney Island," said a voice.

"Good afternoon, this is New York," was the reply.

"Do you hear me?"

"Yes, plainly."

"Then, listen!"

The officer listened. Again the noise of water was heard. It was the rush of the surf rolling up the beach from the Atlantic Ocean. The man at Coney Island had done the same thing that the man at San Francisco had done. He had allowed the Atlantic to speak to the man in the New York office.

Then the officer placed the San Francisco receiver to his left ear, and held the Coney Island receiver to

his right ear. The two great oceans were speaking to him, both at the same time. In that quiet office he could hear plainly the dash of the Pacific breakers and the roll of the Atlantic surf.

The two oceans were more than three thousand miles apart, separated by the width of the American Continent; but the telephone had reached out and brought their voices together, into one room. The sound of their waves met in the ears of one man.

Every other man in the room had in turn the same wonderful experience—had heard "deep calling unto deep." Then, through-connection was made from Coney Island to San Francisco, and the listener in California heard the white sea horses of the Atlantic and the breakers of the Pacific at the same time, just as plainly as the men in New York had heard them.

If some one had told this story several years ago, few people would have believed it possible; yet it is now true.

Strange as it may seem, the actual sound of the voice does not travel over the telephone wire. A glance into the mouthpiece of the transmitter and into the ear-hole of the receiver will show a thin sheet of dark shiny metal. This disk of metal is the ear-drum of the telephone. When the sound waves of the voice strike this and enter the transmitter, they become electrical waves and flow silently over the wire until they reach the receiver at the other end. In the receiver the electrical waves again become sound waves and the listener hears the words of the person speaking.

TELEPHONING BY WIRELESS

At first all telegrams were sent over wires. This was before the great Italian inventor, Marconi, invented the wireless telegraph. With the wireless Marconi was able to send messages for thousands of miles, with nothing that the human eye could see to carry them.

The wireless telegraph uses sounds, not words, to carry the message. Could spoken words be sent by wireless? This was a far harder thing. The telephone workers began to wonder if it could be done. At first it was only a dream, but they set to work to make their dream come true.

Soon they were able to telephone short distances without wires. From a shore radio station they talked with the captain of a ship fifty miles at sea. They not only sent a message, but actually talked with him as we do with our friends over the telephone. But there were no wires between, nothing but open space.

Gradually the range of the wireless telephone increased. Soon after the transcontinental telephone was opened, in 1915, the telephone workers accomplished something even more wonderful than talking from coast to coast over the wires. They telephoned without wires from coast to coast and to points still more distant.

The United States Government has a very powerful radio station at Arlington, Virginia, near Washington. From this station spoken words were flashed to the wireless station at Darien, on the Isthmus of Panama, 2100 miles away. Next the telephone men talked with

San Diego, California, and then with San Francisco, 2500 miles distant. Not content with this, they talked with Honolulu, far out in the Pacific Ocean, 4900 miles from Arlington. Later they talked with French officers in the Eiffel Tower in Paris, on the other side of the Atlantic Ocean.

At one time the cities of Honolulu and Paris, nearly 9000 miles apart, were linked with Washington and the three cities talked together for a period of fifteen minutes, hearing each other perfectly.

During the World War, many airplanes were fitted with wireless telephones. By means of these, flight leaders were able to direct their squadrons, and to communicate with the commander in the field. Today an airplane making a flight of any long distance carries a wireless operator.

For thousands of years electricity and the air that surrounds the earth had been quietly waiting for men to use them to carry their messages. Only recently we have found out how to do it. Are there not other things quite as useful waiting to be discovered?

QUESTIONS

How long do you think it will be before we shall be able to telephone around the earth? How many miles is that?

If the people of America and Europe and Asia and Africa could talk to each other by telephone, do you think they would understand and like each other better? Why?

I'll put a girdle about the earth in forty minutes.

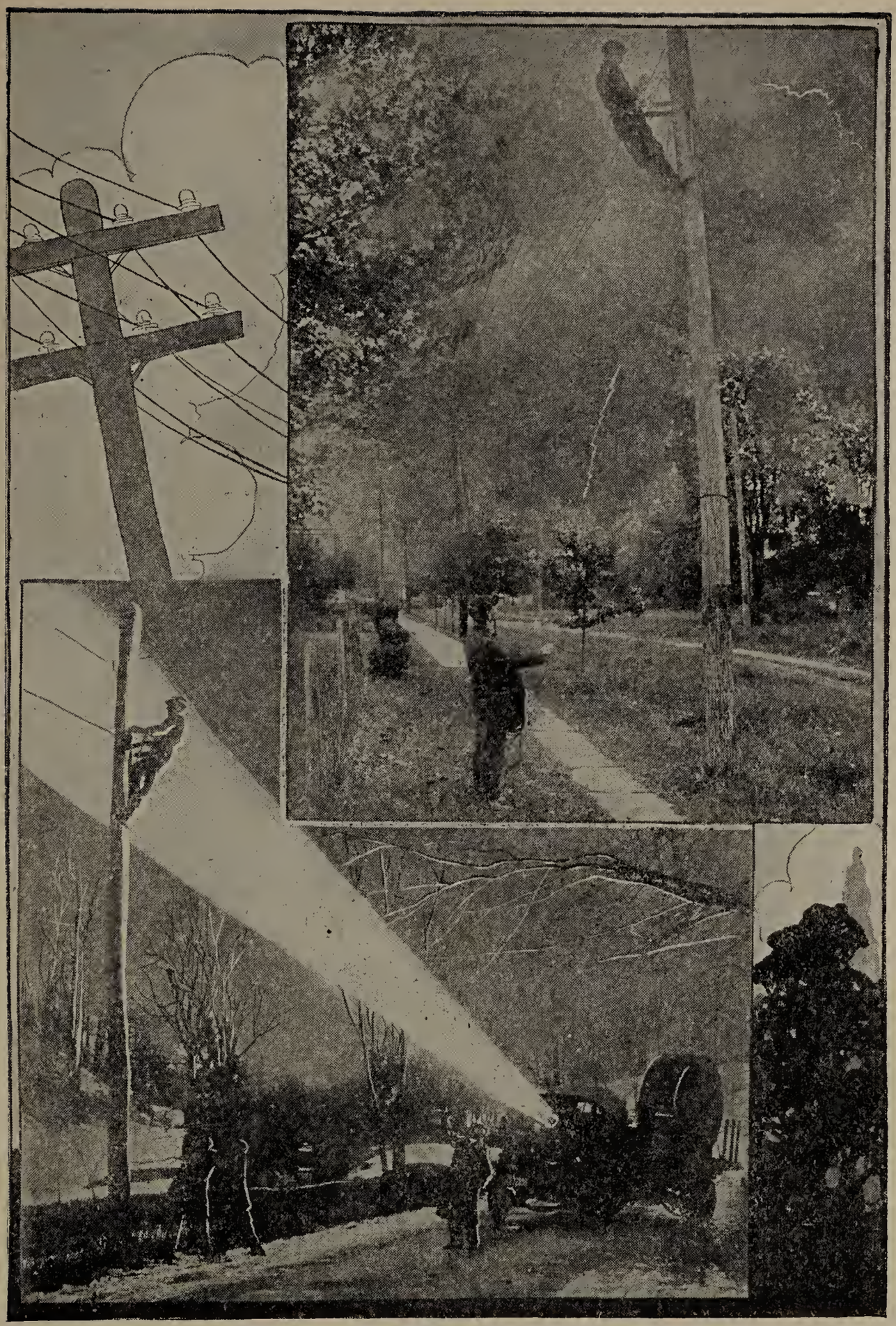
—*Shakespeare*

THE NETWORK OF TELEPHONE WIRES

When you talk over the transcontinental telephone from coast to coast the sound of your voice is carried through 1480 tons of copper wire, strung on more than 130,000 poles.

Wherever possible the wires, not only of the transcontinental line but of all lines, are placed underground as a protection from storms, fires and other dangers. The long-distance telephone uniting Boston, New York, Philadelphia, Baltimore and Washington is a good example. These cities are connected by telephone subway, the wires being run through conduits underground. This is the longest underground line in the world and required the digging of a trench 660 miles long between the cities.

The telephone has woven a network over the continent with twenty-two million miles of copper wire,



LINEMEN AT WORK ON THE POLES

connecting every city and hamlet, bringing the West to the East and the East to the West, the North to the South and the South to the North. Twenty-two million miles of copper wire is sufficient to coil around the earth at the equator over 800 times. It is long enough to run from the earth to the moon and back again forty times.

The poles stretch the wires and cables across the country in all directions, and the conduits carry them underground beneath the great cities to central offices, and to millions of individual telephones; and the whole vast system is kept in running order so that anybody may talk at any time to anyone, anywhere.

America is the land of the telephone, with an average of one telephone for every ten people. It is estimated that nearly three-fourths of the whole number of telephones in the world are in use in the United States.

The heavens declare the glory of God;
And the firmament sheweth his handiwork.

Day unto day uttereth speech,
And night unto night sheweth knowledge.

There is no speech nor language
Where their voice is not heard.

Their line is gone out through all the earth
And their words to the end of the world.

A VISIT TO A TELEPHONE CENTRAL OFFICE

Let us enter a busy central office in any large American city to see a telephone switchboard at work.

The great switchboard extends the length of the bright and airy room. This switchboard is sometimes called "the brain of the telephone system." Here the telephone girls work. Perhaps eighty or ninety of them are seated at regular intervals before it, busily answering calls.

The switchboard sparkles with tiny lights, each one a call for instant service. The operators' arms flash here and there as they answer the calls as fast as they come in.

The switchboard, a picture of which is shown on page 117, is used to connect the telephones of persons who wish to talk with each other. The work of the operator is to make the connection between the two 'phones. When a caller removes his receiver from the hook, a tiny light springs up beside his number on the switchboard. When the operator sees the light, she lifts a cord and inserts its end or plug in the small hole next the light, presses the "listening key" on the keyboard and says, "Number please?"

The caller gives the number, for example, Main 1-2-6-8." The operator inserts another cord in the hole next to this number, and presses a key which rings the bell of the person wanted. She then places the key in position for talking, and two people far apart may talk with each other as if face to face.

The alert and busy operators sit quietly at their tasks, never raising their voices above a conversational tone. Each caller receives the proper share of attention, and each is answered pleasantly and courteously.

The telephone central office never takes a holiday. It is always at work, from noon to midnight and from midnight again to noon. In some of the larger cities as many as 1,000,000 calls are handled daily.

The small force of operators on duty at three or four o'clock in the morning have comparatively few calls to answer, but it is very necessary that "Central" be awake. Perhaps there may be an alarm of fire, or a hurry call for the doctor from some mother whose child has been taken suddenly ill, or a police call for the patrol. These are but a few of the emergency calls which often arise when the city is asleep.

Before five o'clock the operators would know when the city is awakening, even if they had no clocks, for more and more signal lights on the switchboard begin to glow. By eight o'clock the city is wide awake and hundreds of calls are pouring in. By nine o'clock the number of calls has tripled; ten o'clock sees six times the number, and by noon there is a rush of talk which tingles every wire of the system. News of armies, of business, and of sport, messages of joy and sorrow, of births and deaths, leap across the brass-tipped connecting cords almost as fast as the twinkling signals flash into light on the great switchboard.

Thus the telephone brings people within speaking distance of each other in a manner unknown and almost undreamed of half a century ago.

THE TELEPHONE GIRL

Do you know this telephone girl? You probably would not recognize her on the street. But is it not true that you are on speaking terms with her? She is a person whom all of us have heard speak, but whom few of us have seen.

She is just a voice, but she speaks millions of times every twenty-four hours. In the United States alone she answers over 30,000,000 calls every day. Without her the telephone system could not operate.

The telephone girl's calling list contains the names of the greatest men of the country. The President, the governors of all the states, all the senators and members of Congress, all judges, doctors, lawyers, ministers and business men are included. There is no state, no institution or business house that can carry on business a single day without her helpful service.

She has become very numerous. If we count the girls employed in the exchanges of all the telephone companies, there are fully 120,000 of them earning their living as telephone girls. If all telephone girls should suddenly decide to go to college they would fill one hundred colleges like Vassar. If they were gathered in one place they would equal the population of cities like Fall River, Massachusetts; or Dayton, Ohio.

The work of the telephone girl requires a clear mind, quick action and strict attention to duty. During the busy hours she must be doing and thinking of half a dozen different things at once without becoming confused. Above all she must learn to exercise patience with the demands of a great variety of people.

The telephone girl is always polite and courteous in speech. Rudeness on her part is almost unknown—which is perhaps more than can be said for some of those who talk to her. People with bad memories sometimes call the wrong numbers, and then blame the operator for the delay due to their own mistakes. Of course they are not wholly to blame for their impatience, because they cannot see her at work, nor can they see the other subscribers who are waiting their turn.

If we understood the speed with which the telephone girl works we would not be in quite such a hurry when we telephone. As a matter of fact, the telephone girl almost always answers our call in less than four seconds. The average time is three and one-half seconds. She will often answer our call in one second, which is as near perfection as anyone has a right to expect. But it is not always possible for her to do this because subscribers do not call one at a time. Perhaps if we could see her when really busy, we should cease to be impatient, and wonder that she answers so quickly.

Do you think it must be hard sometimes for the telephone operator to answer politely and pleasantly? Why?

STORIES OF THE TELEPHONE GIRL

Among workers the telephone girl stands in the front rank because of thorough training, high efficiency, constant courtesy, and courage in time of danger.

1. The Hotel Fire

When fire broke out in the Jackson House, the leading hotel of an eastern city, Miss Martina Smith, the night telephone operator, proved herself a heroine. By her coolness and courage she prevented a panic and almost certain loss of life.

The telephone switchboard was near the clerk's desk and within plain view of the hotel lobby. Standing at the desk were half a dozen travelers who had just arrived. In one corner waiting for taxicabs were a group of ladies and their escorts laughing and chatting gaily. The hands of the clock pointed to twelve and at that late hour most of the guests had retired for the night.

This was the scene when someone flashed word to Miss Smith that the hotel was threatened with flames. On receiving this terrifying news, the quiet girl seated behind the switchboard did not lose her presence of mind. She made no frantic gestures and no outcry. Her first step was to call the fire exchange, which she did in a voice scarcely audible.

"Quick!" she whispered, "the Jackson House is on fire!"

Not one of the men standing at the hotel register heard her send in the alarm. The clerk, who was within

a foot of the board was the only one who heard and he gave no outward sign. He merely requested the guests to be patient as the hotel was crowded and there was a slight confusion in the room numbers.

Meanwhile the operator was working with both hands, ringing the room telephones in that section of the hotel which was in greatest danger. Every cord was up and every telephone ringing. As fast as her calls were answered the calm and assuring voice of Miss Smith replied, "Please come downstairs at once; there is a fire in your part of the building."

From one room to another she sent in her warning calls. In rooms where she received no immediate answers she kept the cords up and the telephone bells ringing. No one in the lobby knew of the fire until the first load of hastily clad men and women poured out of the elevator and spread the news.

While the clerk was trying to calm the frightened people now rapidly coming downstairs, the automatic fire alarms throughout the building began ringing, the fire engines arrived and the uproar increased. In the midst of the excitement Miss Smith sat calmly at the switchboard and kept at her task of ringing up every room in the hotel.

As the flames spread, dense clouds of smoke filled the lobby and began choking her, but the brave girl stuck to her post until she had warned every guest of the danger. When her task was finished she fainted from sheer exhaustion. On reviving she would not leave the hotel until she was assured that every one of the hundred and fifty guests was safe. To her

was clearly due the credit that no lives were lost in the fire.

2. The Bank Robbers

If it had not been for the prompt action of Mary Elizabeth Neil, night telephone operator, the People's Savings Bank at Westfield would have been robbed of a large sum of money.

Night calls were few in Westfield, and Miss Neil was permitted to sleep in the rooms of the local telephone exchange. One morning about two o'clock she was awakened by a heavy report and the sound of broken glass falling from a window of the bank building across the street. At once she realized that something was wrong. A moment's thought told her that an attempt was being made to rob the bank. Quickly she seated herself at the switchboard and rang up the town marshal and the officers of the bank and notified them of the danger.

While calling them she kept thinking, "What else can I do to foil the robbers?" Her mind worked rapidly. In imagination she could see the thieves removing the contents of the great bank vault. There

was no time to lose. In a flash she inserted the plug in the board and set the telephone ringing in the bank. She could almost hear the shrill peal of the bell as it echoed and re-echoed against the high ceiling. She could almost see the look of fear that came into the faces of the startled robbers as the bell broke the stillness of the quiet room.

When the officers arrived at the bank the bell was still ringing, but the robbers had fled. An examination showed that they had forced open the door of the safe, but had been interrupted before getting possession of the money and valuables. In their haste to escape they even forgot to take their burglar tools away with them, and these articles afterward led to their capture.

For her intelligent action in the presence of danger, Miss Neil received two rewards, one a sum of money from the bank, the other a handsome gold watch from the company which carried the bank's burglar insurance. On the watch was engraved:

"Presented to Mary Elizabeth Neil by the Fidelity Company in recognition of services rendered September 15, 1915."

3. The Drowning Man

By knowing how to think and act quickly telephone operators often save valuable lives. This is the story of two telephone girls who helped to save a man from drowning.

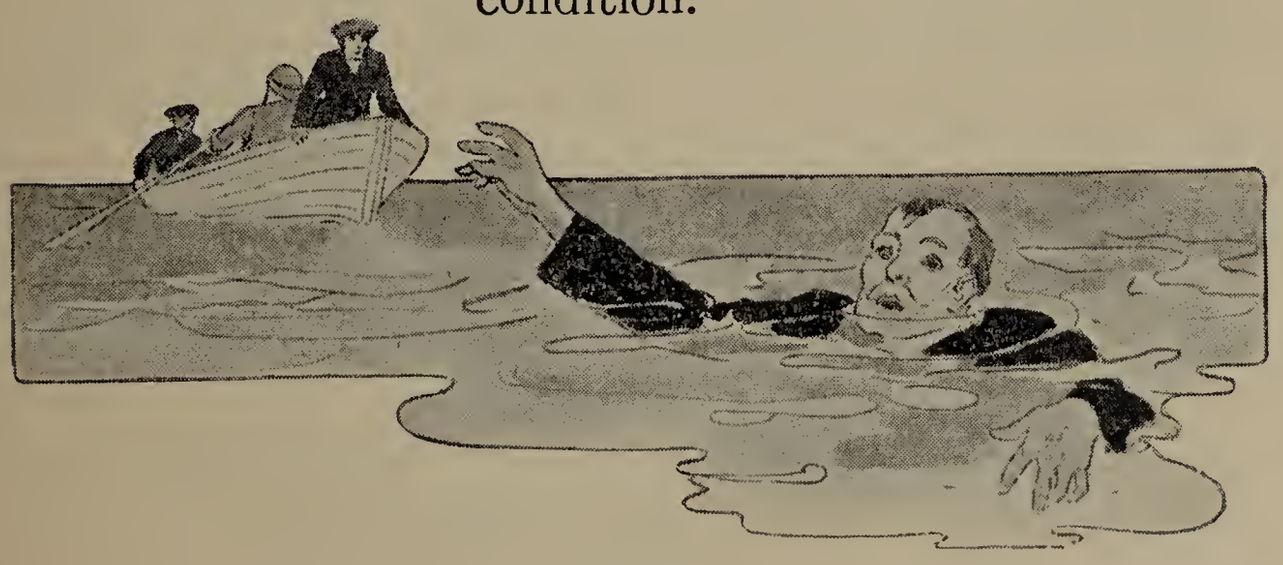
One cold, stormy day in January an operator in the Fall River exchange received this message over the

telephone, "Give me the toll operator! There is a man drowning! I must have help at once!"

In his excitement the person calling did not wait to tell where he was, but hung up the receiver immediately.

The operator realized that this was an emergency call—but what could she do? Where had the call come from? She knew it was from a pay station and that was all. There was a pay station at the West Isle Club, a lonely spot on the Rhode Island shore, near the Sakonnet Point lighthouse. Quickly she rang the number and again the excited voice replied, "There is a man struggling in the water and unless some one from Little Compton or Sakonnet Point can help us he will be drowned."

At once the operator called up Little Compton and with the assistance of the operator at that point reached several persons living near the water front and asked them to go out in a boat to the assistance of the drowning man. In a few minutes he was rescued and brought ashore in an exhausted and unconscious condition.



The rescued man proved to be a keeper of the Sakonnet Point lighthouse, whose boat had capsized while he was on his way to the mainland.

While the rescuers were at work, the Fall River operator did not remain idle. There was still another duty to perform. Calling a physician who lived near the scene of the accident, she told him what had happened. When the rescuer's boat came ashore the doctor was there to meet it, prepared to aid in reviving the exhausted man.

If it had not been for the quick wit and efficient efforts of the Fall River and Little Compton operators, probably the lighthouse keeper would have perished.

The other day the Wabash Railroad freight houses in Chicago were destroyed by fire, with a loss of $500,000 worth of property and two lives. Miss Mae Donnelly was the telephone operator at the buildings, and though the little room in which she worked was soon wrapped in flames, she heroically remained at her post and would have been burned to death, had not her screams brought rescuers just in the nick of time. Before she fainted away, Miss Donnelly called the fire department, notified the officials of the road, and urged every yardmaster she could reach to send engines and move out the freight cars. The engines came and removed to places of safety nearly a million dollars' worth of freight, thus averting further loss. It was an exhibition of coolness and presence of mind worthy of a veteran soldier.—*On Telephone Duty.*

CORRECT METHOD OF USING THE TELEPHONE

How we may help those who render us this service:

Before Calling

Be sure the number is correct before calling. Refer to the latest directory.

When Calling.

Remove the receiver from the hook. When you do this a tiny light springs up beside your number on the switchboard in the telephone exchange.

When the operator asks, "Number, please?" reply distinctly, giving the name and number wanted. Always give number in units—in other words, separate the figures thus: Three-seven-one-nine.

Speak into the mouthpiece in a clear tone of voice, slowly and distinctly. Do not shout.

To attract the operator's special attention, move the telephone hook slowly up and down two or three times, and then listen.

Do not replace the receiver on the hook until the conversation is finished. To do so is to signal the operator for disconnection.

Answering.

Answer calls promptly and cordially. Failure to do this keeps your caller waiting and may result in the loss of an important message.

In replying give your name; for instance, "Robert White speaking," rather than "Well" or "Hello."

When the conversation is finished, replace the receiver on the hook. Failure to do this may cause inconvenience and delay to other subscribers.

Free Messages

On calls from private or public telephones no charge is made for the following calls:

1. An alarm of fire.
2. To summon police assistance.
3. To notify local hospitals in case of accident, sickness, or similar emergency.

The person calling must explain to the operator that the call is an *emergency* one.

Information

Numbers of persons who have installed telephones since the last directory was issued may be obtained by calling "Information" and giving the person's name and address.

Telephone Manners

Respond with the same courtesy as you would if speaking to a person face-to-face, instead of telephone-to-telephone.

The human voice is so wonderful that it will carry a smile on the telephone if you put the smile into your voice.

A genial telephone voice promotes successful business and real friendship.

Good telephone service depends largely upon the cheerful co-operation of the persons calling and the operator.

QUESTIONS

I

About how far does the whistle on a railroad send its sound?

If you should shout in the loudest possible voice, about how far away do you think you could be heard?

Why are sounding boards used in large buildings?

How far will the telephone carry a voice?

II

Will you look up the exact meaning of the word telephone?

Tell the story of the telephone briefly.

Suppose a person who died a hundred years ago should suddenly come to life today, what do you think would seem most wonderful to him—the automobile, the airship, the electric car, or the telephone?

III

How is the school telephone one of our useful servants?

Name some of the people who serve you when you talk over the telephone.

How is the telephone operator one of our most helpful public servants?

How does the telephone save money, property, life?

Have you ever visited a telephone exchange?

Can you tell a little about the work of the operator?

Suppose you are calling "Local 3741"—how shall you ask the operator for the number?

Have you any idea how much wire is used by the telephone companies in the great network of wires in your city?

An automatic switchboard has been invented, by means of which the caller makes his own connection without the aid of an operator. Can you tell something about it?

ALADDIN'S LAMP

You have read of Aladdin in the Arabian Nights, haven't you?

The boys and girls in a large city of the United States today live just such a fairy-tale life.

Do you wish for a drink of water?

"Rub-your-lamp," or turn a tap. Out flows a clear stream of water, with not so much effort on your part as Aladdin made in rubbing his lamp.

Do you wish light?

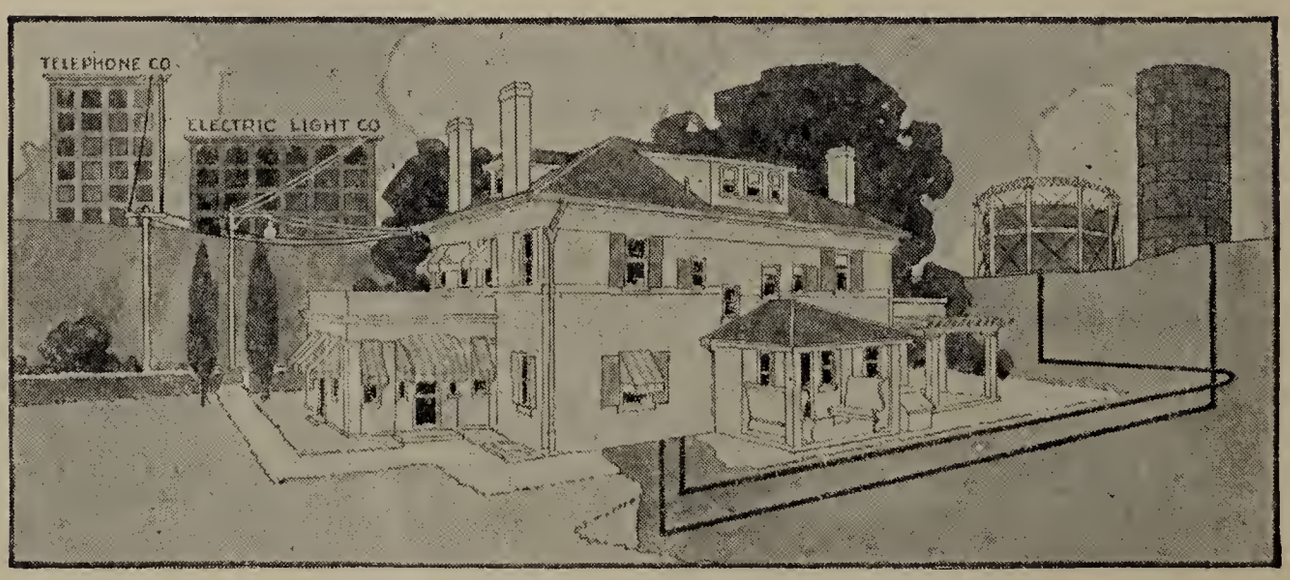
"Rub-your-lamp," or turn a key—you have gas or electric light, like day. Aladdin could not have imagined such light.

Do you wish to talk with people miles away?

"Rub-your-lamp," or put your ear and mouth to the telephone; you hear and speak with people across space.

Aladdin's magic servants could not have done that for him.

Who does it for you?



What Does This Picture Show?


EDWIN
JOHN
PRITTIE

PART II

COMMUNITY INTEREST

The Neighborhood. The City Beautiful.
Safety First.

THE NEIGHBORHOOD

The Public School. The Playground. The Library.
Other Places of General Interest.

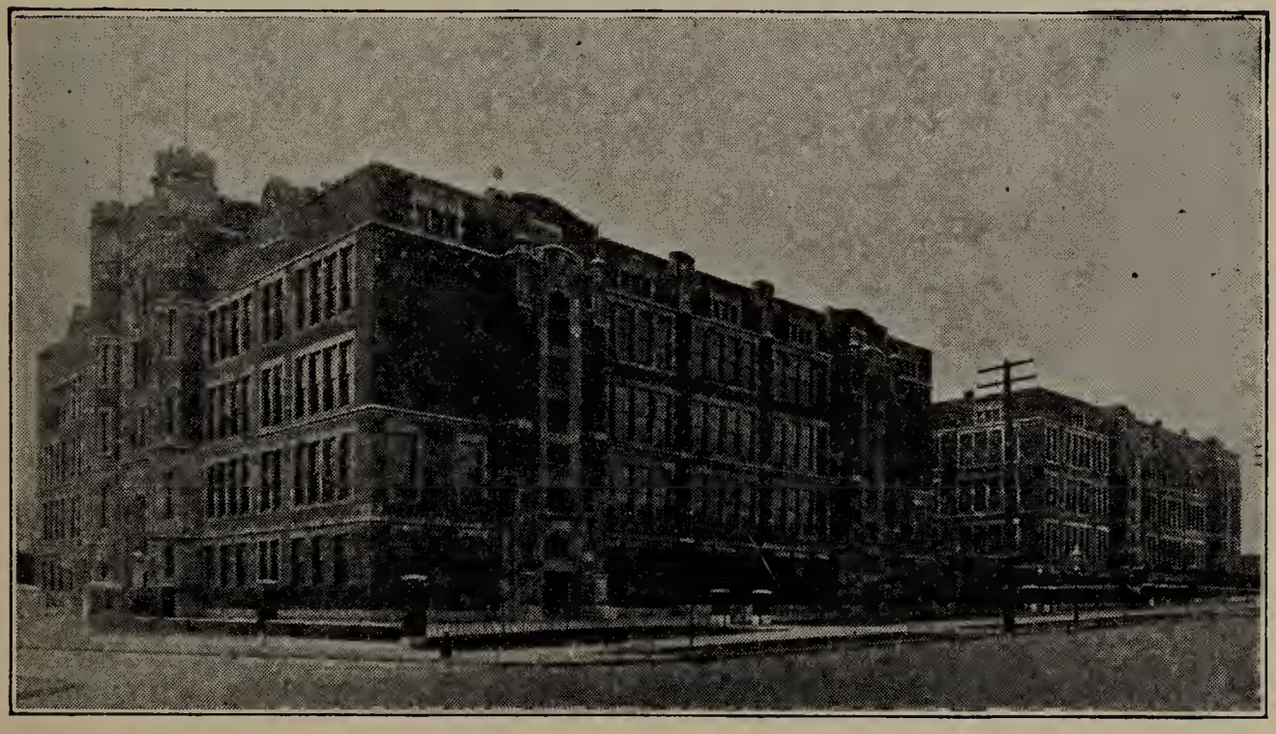
THE PUBLIC SCHOOL

1. The Children's Building

One day a stranger stopped a boy on his way to school and said, "I want to find the children's building. Can you direct me to it?"

"Yes, sir, I can," the boy replied, and quickly showed him the way to the schoolhouse

If this question were asked in any other city or town



or village in America the answer would be the same. Public schools are everywhere, and everywhere they belong to the children. Sometimes they are called common schools. This is because they are free to all children. It makes no difference whether the parents are rich or poor; the school doors swing open freely to every child in the United States.

The right to enter the public school and receive an education is a right that comes to them by birth.

Every child born in the United States has a birthright of freedom. So likewise every child born in the United States has a birthright of education. Even foreign children who live here are entitled to a free education, simply because they live in a free country. Is not this a wonderful privilege?

2. The Children's Army

Did you ever think how many school children there are in the United States? The census shows that there are more than twenty-two millions enrolled in the common schools. What a great army of children that is.

Let us try to get an idea of how many twenty-two millions are. You have read about the Lincoln Highway. This great roadway stretches across the country from the Atlantic to the Pacific Ocean. It is named after Abraham Lincoln. The Lincoln Highway starts at New York and runs across New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Iowa, Nebraska, Colorado, Wyoming, Utah, Nevada and California, until it reaches San Francisco, 3500 miles away.

If all the public school children were formed in single file on one side of the Lincoln Highway, each standing close to the next one, the line would stretch across the continent to the Pacific Ocean and far back on the other side of the road.

Suppose that this great army of children were brought together in one city. It would require a city four times the size of New York, which is the largest city in the country, to hold them.

Their teachers alone number more than a half-million, and would fill twelve cities like Lincoln, Nebraska.

This will help you to understand to what a great army of children you belong.

3. Armories and Forts

Do you know what an armory is? Perhaps you have visited one. An armory is a building where arms are kept and where soldier-citizens drill. Here soldiers are taught the use of weapons or arms, and are trained for future service. When the time of danger comes they are prepared.

The schools are something like armories. They are armories where great armies of children are trained to be useful citizens. We have no kings or despots to rule us in this free country. So we have to learn to govern ourselves. The best place to learn this is in school. The school is the armory where we learn to love knowledge and hate ignornance, to do what is right and to shun what is wrong, to be loyal to our country and our flag.

Sometimes the public school is compared to a fort. You know the names of some of our famous forts—Fort Mifflin, Fort Adams, Fort Sheridan, Fortress Monroe. Perhaps you can think of others. Forts are erected by the national government to defend the country.

Public schools are something like forts; only they are erected to protect our country against ignorance and crime. Armory and fort—do you see what a wonderful place your school is?

4. Citizens Who Will Rule the Future

Is not the school army a splendid army? Think a moment of the citizens in its ranks. Think what the boys and girls in this army have to do when they grow up.

Who will be president some day?

Who will be our future congressmen, governors of states, and officers of the government?

Who will manage the railroads, telegraphs, telephones, waterworks, and post-offices?

Who will be the teachers, doctors, nurses, clergymen, writers of books, and workers of the future?

You know the answer. They will be the children who are now attending our public schools. Some day they will be called upon to fill these or equally important positions.

The public schools are now training them to be ready. Will you be ready when your turn comes?

"The public school is the fortress of American liberty." Can you explain the meaning of that saying?

QUESTIONS

When you grow up, what do you want to be?

Do you want to be able to earn good wages?

Which man would you rather be—Spencer who left school before reaching the seventh grade, or Henry who "finished" grammar school, or Elbert who was graduated from high school?

Which woman would you rather be—Nina who left school when ten years old, Anna who studied until she was fifteen, or Eunice who was graduated from the high school? Why?

Do you know that only six out of every ten children in some of our large city schools ever reach the seventh grade, and only two reach even the first year of high school?

Why are their teachers sorry for them?

What is meant by "Knowledge is power"?

What do educated people have which the uneducated do not have?

Yes, a better chance. Why?

MY COUNTRY'S GIFT

She gives to me an open school
That's governed by the golden rule,
And love of truth that makes us free—
This my country gives to me.

A school that trains my hands to do,
My heart to keep steadfast and true,
My mind to think, my eyes to see—
This my country gives to me.

A school in which, by simple plan,
She trains the true American;
And this she asks that I will be,
For her precious gift to me.

BEFORE THE DAYS OF PUBLIC SCHOOLS

You are so accustomed to going to school that you will be surprised to learn that children did not always go to school. In the early days of America there were no free schools such as we now have. Of course, there were schools in the larger towns, but they were not free. They were private schools, and only those children whose parents could afford to pay the teachers could attend them. As most of the people of the colonies were very poor, but few children were able to attend private schools.

With no free schools, few teachers, and few books, it is not strange that many boys and girls grew to be men and women without even learning to read, or to write their own names. Think of not being able to sign one's own name! When a man who could not

write sold a piece of land and wished to sign his name to the deed, this is what he had to do. Someone who had had school advantages wrote his name for him. The man would then sign a cross like the letter X under his name on the paper. This cross was called his X mark. It stood for the signer's name, and made it lawful.

Even in these days of free education, there are many people in our country who cannot read, and who have to sign their names in this way.

As you may suppose, the free people of America did not like to have their children grow up in ignorance. As far back as 1637 the colony of Massachusetts passed a law that every fifty families must form a common, or free, school. In time, all the states established public or common schools.

"A sound mind in a sound body" is the birthright of every American child.

A NATION'S BUILDERS

Not gold, but only men can make
  A people great and strong—
Men who, for truth and honor's sake
  Stand fast and suffer long.

Brave men, who work while others sleep,
  Who dare while others fly—
They build a nation's pillars deep
  And lift them to the sky.

—*Ralph Waldo Emerson*

WHY SCHOOLS ARE FREE

The people tax themselves to pay for free schools. As you know, a tax is a sum of money paid by each citizen for the support of the government. The tax for the support of the schools is called a school tax. With these taxes school houses are built in every city and village of the country. School books are bought, teachers are trained, and the school doors are opened for all. To do this took a long time in such a great country as ours, and it was not until after the Civil War that free schools were finally established in all the states in the Union.

WHY HASN'T THIS GIRL A BETTER CHANCE?

Today America offers a free education to all the children of all the people. We have schools everywhere, teachers everywhere. All the citizens share in the support of the schools and all may share in their benefits.

The Colonial children were not to blame because they were not educated. Today the excuse is taken away. If boys and girls grow up in ignorance it shows

that they have neglected their opportunity. They have refused to take the free gift of education which their country offers them.

QUESTIONS

I

The girl whose picture is shown on page 158 is one of the many girls who know only enough to run errands.

Do you imagine that she "finished" grammar school? High school? In what grade do you suppose she was when she left school to earn her living?

How much do you think she is paid a week?

Why doesn't she have a better chance?

Did a person who could not read or write ever ask you to read or write a letter?

Were you glad or sorry that you could do it?

Do you realize that in the years to come you will be just as glad for every bit of knowledge you have gained?

II

Where is your school?

Draw a map of the streets you travel when you come to school.

Do you think you could study so well if you were alone in your schoolroom with no other boys and girls doing the same things?

Do you feel proud when your room has the best record for good work?

Could your room hold the best record if there were many "pull-backs" or children who do not like to help?

How can this school make a good record?

Suppose you were a teacher, how would you want the boys and girls to act?

Will you bring to the next lesson period some suggestions for a classroom motto?

III

Is the high school a public school?
To whom do public schools belong?
Why do we have public schools?
Who pay for the public schools?
Do you owe them anything?
Name some things you can do for your school.
What is the name of your school?
What can you tell about how it came to be so named?
Tell about some important people who have visited the school.
Where is the nearest high school?
How many public schools are there in your city?
How many children attend these schools?
How many children attend your school?

TEACHER AND PUPIL

Next after their parents, the best friends of boys and girls are their teachers. Teachers help their pupils to prepare for the future by teaching them:—

How to study;
To love the truth;
To act with courtesy;
To be loyal and helpful;
To love their country.

Pupils help their teachers by being:

Studious and anxious to learn;
Truthful in everything;
Courteous to all;
Loyal and helpful to others;
Patriotic.

Name some other ways in which teachers and pupils can help each other.

America Needs Educated Citizens

WIDER USE OF SCHOOL BUILDINGS

School houses should not only be open in the daytime for the teaching of children; but in the evenings they should be open for the use of all the people of the community. In them should be held the meetings which are of interest to all the families of the neighborhood. Here the people should meet to hear lectures, to study, and to talk over public questions.

The school building should be used for social meetings, like receptions to the teachers; for civic meetings, like the election of the school board; for "good-time" or recreational meetings.

Auditoriums, workshops, and playroom spaces are needed for these purposes, and school houses should be planned and built with this thought in mind.

With such buildings the school will become one of the greatest helps in the life of the people of the community, a real center of community interest and public spirit. It will become a common meeting place where community ideals are born, and where true democracy exists.

HOME AND SCHOOL SHOULD BE HAND-IN-HAND TO HELP EACH OTHER

QUESTIONS

I

Do the public schools belong to the children only?

How can they help mothers and fathers?

Do you have a "Home and School League", or a "Parent-Teachers' Association," in your school?

Tell how such leagues help pupils, parents, teachers.

Every home in the community should be interested in the school and what it is doing. The school should be interested in every home. Together they will make the community a better place. Name some of the ways in which they help each other.

Is there an evening school in your school building?

How does an evening school help bring the school and the home together?

Many country schools are ungraded, and all the younger and older children are in one large room. Tell of some advantages the graded city school has over the country school.

In many country school houses meetings are held for mothers from time to time. Here they are taught the best methods of canning and preserving. Sometimes the evenings are devoted to showing moving pictures. Does your school help your home in some such way?

II

Name some reasons why you are glad that you did not live in the days when there were no public schools.

How do the public schools of the United States help to make it the best country in the world for boys and girls?

If a boy or girl is compelled by necessity to leave day-school, how can he or she obtain a further education?

Do you think it would be as easy to study in the evening as in the daytime?

What is the school law of your state concerning child labor? Why is it a wise and helpful law?

STAY IN SCHOOL

True education makes every one a better and a more useful citizen. At the same time it increases one's earning ability. Lack of education never helps, but always hinders success. If young people understood this better, they would seek to obtain the best education possible. They would seldom make the serious mistake of leaving school too early; a mistake which they are likely to regret when it is too late.

A table prepared by the United States Bureau of Education compares the wages of a group of children who left school at fourteen, at the end of the grammar school, with another group who left at eighteen, at the end of the high school. This table shows that at the age of twenty-five the average high school boy was earning over $900 a year more than the average grammar school boy of the same age. In total wages up to that time the high school boy had earned over $2,000 more than the grammar school boy. When both had reached the age of twenty-five, the one who remained in school until eighteen had received four years more schooling and more wages; the one who left school at fourteen had received four years less schooling and less wages.

The time and the opportunity to go to school belong to youth. If time and opportunity are lost or wasted they can never be regained. Those who neglect school are losers in pocket, in health, in education, in opportunity; and their country loses the greater service they otherwise could give. In every way it pays to train for the future.

THE PLAYGROUND

Fair Play

I

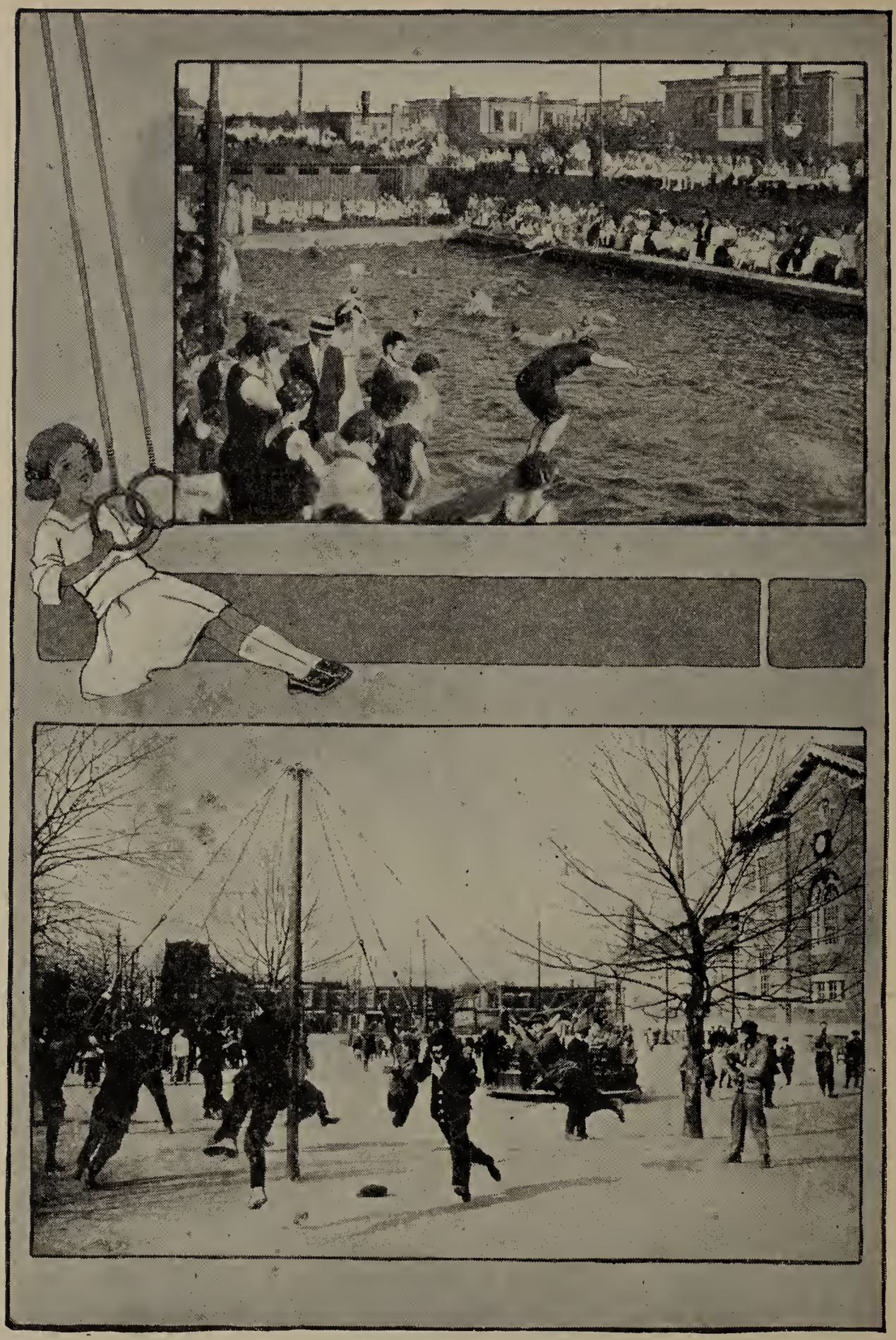
Arthur Woods, who was at one time Police Commissioner of New York, is a man who believes in fair play. All American boys and girls who have any interest in the affairs of their country will be glad to read what he "wished for New Year's" not long ago. "I wish," he said, "that every man and boy in the United States would make a New Year's resolution. And I wish that the resolution might be this:

"'I will play the game fairly and according to its rules. I will play hard and keep on playing, whether I am hurt or tired or not. I will remember that I am one of a team and that I must work for the good of that team and not merely for my own selfish interests. I will be absolutely fair to the other side, but I will make them fight for every inch they gain.'

"Every boy and every man knows that there is no fun in a game unless you have rules and play strictly according to them. A man is a poor sport not merely if he cheats at games or plays foul in football, but if he fails in any way to keep the laws of the community in which he lives."

II

"Why is there any law?" Mr. Woods continued. "How could we avoid laws? Suppose we were in a group of five hundred people cast ashore on some island



PUBLIC PLAYGROUNDS

in the Pacific Ocean, far from the mainland and out of the path of steamers. Let us suppose there is plenty of fresh water on the island, that fruit and vegetables grow in profusion, that there are enough wild animals to supply us with meat. We are perfectly happy in this isolated paradise—we have no need of laws and courts and policemen.

"But don't we need these things, after all? Let us think what would happen. You see a big juicy cocoanut at the top of a tree. You clamber up the trunk after it. You reach it and it falls to the ground. I happen to be walking by. I pick up the cocoanut and start away with it.

"'That is my cocoanut,' you say. 'Give it back to me.'

"'It is my cocoanut,' I reply. 'I've got it.'

"Well, you try to take the cocoanut away from me, and there is a fight. Your friends join in to help you and my friends join in to help me. And the peace of that island paradise is pretty thoroughly broken up.

"At last, all five hundred of us get together and resolve that there shall be no fighting over cocoanuts or anything else. And there you have a law established already."

III

"So now we have laws in our community. Two days later you step on the tail of my pet monkey. I find fault and soon we are fighting again. Now we have made a law against fighting, so you and I should not be fighting, but who is there to stop us? The

whole community cannot assemble and stop us. Instead, some one man does the work of the whole community and stops our fight. In doing this he becomes our first policeman.

"Now we have law and police. How do we get a court? Well, some one says that the policeman hit him over the head with a club. The policeman says that he did nothing of the sort. Who is to decide which is right? Surely there must be a judge to question the person accused and the one who accuses him and the witnesses. So we have our court established.

"Now our island community has its laws and police and court. And so it continues to be a place wherein people may live together in safety and happiness.

"The reason for obeying the law is that the man who does not obey the law is a poor sport. He is selfish, and plays the game regardless of the rules of the team."

QUESTIONS

Do these stories help to explain the rules of your school?

Write some rules which you think would be good in your playground.

Why are laws and rules a help toward "fair play?"

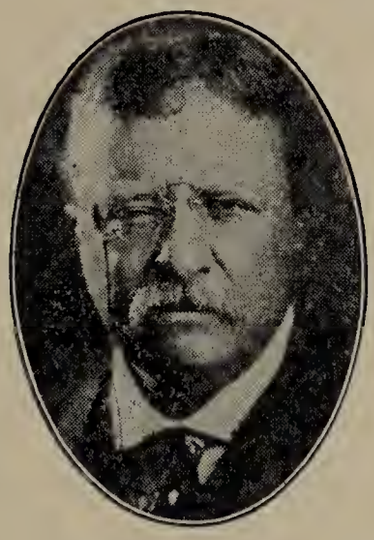
How would you treat anyone who refused to play fair?

True liberty consists in the privilege of enjoying our own rights, not in the destruction of the rights of others. The love of true liberty, of justice, and of fair play is implanted deeply in the heart of every true American.

THE AMERICAN BOY

Everybody knows about Theodore Roosevelt, and hundreds of thousands of Americans have been made better by his splendid fights for what is right. Here is what he said about the American boy:

"What we have a right to expect of the American boy is that he shall turn out to be a good American man. The boy can best become a good man by being a good boy—not a goody-goody boy, but just a plain good boy. 'Good,' in the largest sense, should include whatever is fine, straightforward, clean, brave and manly. The best boys I know—the best men I know—are good at their studies or their business, fearless and stalwart, hated and feared by all that is wicked and depraved, incapable of submitting to wrongdoing, and equally incapable of being aught but tender to the weak and helpless.



"Of course, the effect that a thoroughly manly, thoroughly straight and upright boy can have upon the companions of his own age, and upon those who are younger, is incalculable. If he is not thoroughly manly, then they will not respect him, and his good qualities will count for but little; while, of course, if he is mean, cruel or wicked, then his physical strength and force of mind merely make him so much the more objectionable a member of society.

"He cannot do good work if he is not strong and does

not try with his whole heart and soul to count in any contest; and his strength will be a curse to himself and to every one else if he does not have a thorough command over himself and over his own evil passions, and if he does not use his strength on the side of decency, justice and fair dealing.

In short, in life, as in a football game, the principle to follow is: Hit the line hard; don't foul and don't shirk, but hit the line hard!"

PUBLIC PLAYGROUNDS

Play is a necessary part of education. The boy or girl who would study well must learn to play well. That is why all school houses have playgrounds around them. But school playgrounds are not enough, even when they are kept open all the year round, as they should be. Young people who have left school, and older people as well, need opportunities to play; and so playgrounds and recreation centers have been opened in most of the cities of the United States. These keep the children off the dangerous streets and provide a place where young and old can play and exercise in safety. The best playgrounds have swings, slides, see-saws, sand boxes, a baseball diamond, basket-ball courts, and many other means of recreation· and a play teacher who directs the games.

Play in the open air promotes good health, and teaches co-operation and loyalty, which is another way of saying that people who learn to play together will become better neighbors and better citizens.

QUESTIONS

I

Did you ever watch a puppy or kitten at play? Why is a colt "frisky?"

How does play help all young beings to grow?

Why should every school provide for play, or recreation, for the pupils?

Name some of the games you play in your school yard.

Which do you like best? Why?

Why do you not like to play with children who do not "play fair"? What is fair play?

What kind of game do you imagine George Washington or Abraham Lincoln played? What makes you think so?

Name some other noted people who you think would have liked a "square" game.

II

Can you tell something about what happens during the summer in the playground?

Name some other places besides the school yard where children play together.

FESTIVAL OF PLAYGROUND CHILDREN

THE LIBRARY

The Story of the Little Giants

I

Once upon a time, long years ago, there lived a great magician, so an old tale runs, who was always wishing and looking for something more wonderful to possess. He lived in a castle which was decorated with precious stones. Rich silken draperies hung upon the walls, and thick rugs covered the polished floors. So he did not wish for riches, but he did long for fame.

One day a stranger arrived in the town where the magician lived. This man had traveled far and wide. The magician wanted to hear about some of his adventures, so he invited him to the castle for a visit. The next day after dinner the two men were seated in a great green and gold room talking.

"I have indeed had many adventures and have met many interesting people," the stranger was saying. "But I think I never found any people more interesting than a company of good giants who live in a forest high on the side of the Myth Mountains. The most remarkable thing about them is that some one of them knows the answer to any question you can ask."

"Could one of them tell the names of all the animals in the world and describe them?" asked the magician.

"I am certain that at least one could, if not more," answered the stranger.

"Could another tell all about the herbs that heal the sick?"

"They can tell about almost anything in the world," the stranger said.

"I should think they would be the richest of men," said the magician. "People would be willing to pay much to gain knowledge from them."

"They do not seem to think about riches; they seem only glad to help others to find out what they want to know."

The magician then questioned the stranger closely

as to the exact place where the giants lived, and soon began to talk of something else. After the stranger had gone the magician prepared for a long journey.

II

Perhaps you have guessed where he was going. Yes; to the home of the giants. He took with him many servants, and many camels laden with rich tapestries and rugs. Many, many miles the magician and his servants traveled until finally they came to a mountain

near the giants' home. The magician ordered his servants to unpack his treasures and spread them about an immense cave in the side of the mountain. As soon as this was done he sent a messenger inviting all the giants to a party in his cave.

The giants talked the matter over and decided to accept the invitation; but fearing that a man of ordinary size would be frightened if all should arrive at once, they planned to go one at a time. When the first giant was shown into the great cave, he saw the magician seated on a high throne—so high that it brought his head level with that of the giant.

After welcoming his guest, the magician told him that he had heard that he and his brother giants knew almost everything worth knowing in the world.

"What wonderful thing do you know?" the magician asked him.

"I know the names of all the animals in the world, and can tell you about the habits of each of them," answered the giant.

"Very good," said the magician, and he waved his magic wand, crying, "Abracadabra! Grow smaller! Grow smaller! Grow smaller!"

Down, down, down went the giant. When he had grown small enough the magician seized him and put him into a bottle. He labeled the bottle "Animals," and put it on a shelf.

By this time the next giant was at the door.

"What wonderful thing do you know?" the magician asked him.

"I can tell about all the people who have lived on

Can You Tell the Story of This Picture?

this earth; about their customs and laws, their dress and manner of living," replied the giant.

"Splendid!" cried the magician, "Abracadabra! Grow smaller! Grow smaller! Grow smaller!" and when the giant was little enough he seized him and put him into a bottle.

He labeled that bottle "History," and put it on the shelf.

Similar treatment was given to the other giants as they entered—those who could cure the sick, tell interesting stories, explain how to build large buildings, speak different languages, and so forth. When all the giants had been bottled and labeled the servants of the magician packed them carefully, and they were carried to the magician's home on the backs of his camels.

Whenever the magician desired to know anything he would lift down the proper bottle, uncork it and let the giant out, make him grow larger with his magic wand, ask him the question and receive the correct answer; make him grow smaller, and finally put him back into the bottle.

So the magician became famous for his knowledge and power.

. . . . . .

You can be that magician—how?

Who learns and learns and learns,
  And acts not what he knows,
Is one who plows and plows and plows,
  But never sows.

How Books Grew

I

Long years ago, even many hundreds of years before the birth of Christ, it is known that there were libraries in the lands of Egypt and Assyria.

Perhaps you know that the ancient cities of those faraway lands have been buried for hundreds of years, and you are wondering how we have found out that they had libraries.

Men who were curious to know how the people of those olden days used to live, dug up some of their cities and in this way they have learned many things.

Among the interesting things which they discovered are the libraries, for many old books have been unearthed. You would think that the books would have been ruined after being buried all these years, would you not? Strange as it may seem, some of them are as perfect as in the days when they were written; for the books of those days were very different from our books. In the first place, they were not printed on paper, for the people did not have paper. They used other materials for their books. The Egyptians engraved their stories on slabs, or tablets, of stone. Sometimes they used stone columns

or the walls of their monuments. These were their books.

Perhaps you have seen the great obelisk or monument brought from Egypt to our country. This obelisk stands in Central Park in New York City and is known by the name of Cleopatra's Needle. It is a shaft, or column, of rose-red granite sixty-nine feet high, and weighs two hundred tons. It is more than three thousand years old. On the sides are strange looking pictures and figures, called hieroglyphics, which tell stories about events that happened thousands of years ago.

The Assyrians pressed their writings upon tablets of clay, which they hardened by baking. The early Greeks and Romans used tablets of ivory and metal and wood. You can imagine how much the people needed more convenient books. So as the years passed they tried to find something lighter in weight, and some quicker method of writing than

engraving their words upon the heavy materials which they used.

II

Now there grew along the banks of the rivers in Egypt a plant called papyrus. The Egyptians found that they could separate the strong layers of the triangular stem of the plant and weave them into thin sheets. Then they found that they could make marks upon the sheets, so they thought that papyrus would be just the thing to use for their books.

The Egyptians made their ink out of animal charcoal. When a long story was written, the lengths of papyrus sheets were fastened together and rolled upon a stick. Sometimes the books measure yards when unrolled. Later, people used parchment made of dried sheepskin in the same way.

Many such rolls, or books, have been found. The earliest books which seem like ours at all are the old wooden ones of the Greeks and Romans. They were made by covering two wooden tablets with wax, and writing into the wax with a sharp pointed instrument called a stylus. The two tablets were fastened together with wires.

How much more convenient a roll of papyrus or

parchment must have seemed than tablets of wood, stone, or clay; how much easier to lift to its place on the shelves.

As you may imagine, papyrus and parchment were expensive, and when people wanted new volumes they often erased the writing on one roll and used it again. In this way much interesting history has been lost.

III

Can you see how our own word "paper" comes from the word "papyrus?"

Do you know what our paper is made from?

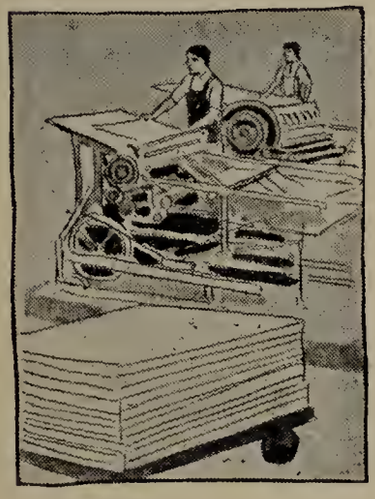
It was not until nearly a thousand years after the birth of Christ that paper was made from cotton. Later, in Europe paper was made from linen. Because cotton and linen were more plentiful and paper was more easily made than parchment, more books were written. Although the paper was of poor quality, rough and brown in color, the books were very beautiful.

The writing was all done by hand, chiefly by monks. If you have ever visited a museum where some of the early manuscript books are preserved, you were delighted with the beautiful capital letters used for headings, beginnings of chapters and paragraphs. It often took a monk a year to copy one book in this way. The price of such books was, therefore, very high, and few except the wealthy were able to buy them.

About fifteen hundred years after Christ was born people learned how to print books from wooden types. Before this time every book was written by hand. Of course, only one could be done at a time.

When books were printed, hundreds of volumes could be made in the length of time it would have taken to write one by hand, and of course they did not cost as much. So you see that the invention of printing made it possible for many more people to own books.

The first printed books were the Bible and other religious volumes which the people gladly bought. In this way education spread among the people who eagerly sought for more books. But books were still so costly that only the well-to-do could have them. For this reason public libraries were found so helpful that they were established in most of the large cities of Europe toward the end of the fifteenth century.



IV

The idea of having libraries was not new, as you know; but, until after the invention of printing, the books were so expensive that only the very wealthy homes and the monasteries could have a large collection of books.

No one knows how many books there are in the

world today, but we do know that many millions of books are to be found in the large libraries of Europe and America. In the National Library in Paris there are over 3,500,000 books; the British Museum Library in London has more than 2,000,000 books; and our own Congressional Library in Washington has over

A Town Library

2,000,000 books. The cities of New York and Boston each have over 1,000,000 volumes in their libraries.

All good books lift our thoughts to better things. Books are among the best treasures handed down to us by the people who have lived and died, for in them are the lessons which it took ages to learn. We can learn many of these lessons by reading, and then go on to find out new things to help ourselves and the children who will live after us.

QUESTIONS

I

What do you like most to receive for a Christmas gift?

Will you try to collect books to start a library of your own?

What kind of books do you prefer to read?

Have you read any book more than once? Do you own it? Would you enjoy owning it?

II

What can you tell about the first public library in your city?

Where is the nearest library to your school?

When did you last visit it?

What book did you take out?

How does a person become a member of the library?

If you are not already a member will you sign a card this week and take out a book?

Can you explain how to find the book you want?

When you do this, how does it help the librarian?

In what other ways can we help the librarian?

At what times are the story telling hours in your library?

When you go to the library next time, will you read the story of the invention of printing?

III

How should a borrowed article be treated?

Does this apply to books from the free public library?

How does such care of borrowed books help the librarian? How does it help other people?

Are you not always glad when a new book is handed to you for your school work?

How should such a book look at the end of the term?

IV

To whom does the library belong?

Who support it?

If it were your very own library, how would you wish people to act when they went there to read?

How would you wish them to treat the books?

Are you not one of the partners who own the Free Public Library?

How do libraries help people who are through with going to school to continue their education?

A List of Books You Will Enjoy Reading

Alice in Wonderland.....*Lewis Carroll*
Water Babies.....*Charles Kingsley*
Dame Wiggins of Lee.....*John Ruskin*
Grandfather's Chair.....*Nathaniel Hawthorne*
The Cricket on the Hearth.....*Charles Dickens*
The Gold Bug.....*Edgar Allan Poe*
Gulliver's Travels.....*Jonathan Swift*
The Crofton Boy.....*Harriet Martin*
Ten Boys Who Traveled on the Road
from Long Ago to Now.....*Jane Andrews*
Little Lame Prince.....*Dinah Mulock Craik*
At the Back of the North Wind.....*George Macdonald*
Animal Story Book.....*Ernest Thompson Seton*
Story of a Bad Boy.....*Thomas Bailey Aldrich*
The Heroes.....*Charles Kingsley*
Robinson Crusoe.....*Daniel Defoe*
True Bear Stories.....*Joaquin Miller*
Squirrels and Other Fur-Bearers.....*John Burroughs*
Treasure Island.....*Robert Louis Stevenson*
In the Boyhood of Lincoln.....*Hezekiah Butterworth*
Tales Out of School.....*Frank Stockton*
Hoosier Schoolmaster.....*Edward Eggleston*
Story of King Arthur and His Knights..*Howard Pyle*
Sarah Crewe.....*Frances Hodgson Burnett*
The Mary Frances Books.....*Jane Eayre Fryer*

OTHER PLACES OF GENERAL INTEREST

Besides the school, the playground and library, there are many other places in the community in which everyone should take interest and pride.

There are public buildings, like the city hall and post office; the police and fire stations which look after our safety; the churches where people gather for worship; the factories, offices and stores where the people are employed; the banks to care for our money and savings; and the hospitals to nurse the sick. There are also many beauty spots, such as handsome streets, squares, lakes and parks.

A British officer who spent much time with the American soldiers in France said, "I like the young American's deep affection for his country, and his determination to boost everything connected with her." To illustrate, he tells this story. "One day I was waiting in a French village for an American staff car which was being sent for me from American headquarters at Chaumont. I found a car standing at the corner of the street. Thinking it might be from headquarters, I asked the chauffeur, 'Where are you from?' He sat up and replied all in one breath, 'Sir, I am from Marion, Ohio, the greatest steam-shovel producing center in the world!' That is what I call the right spirit," added the officer.

The young American was proud of his native place, and therefore showed the right spirit in his reply. Boys and girls who take interest and pride in their own community show the same spirit.

THE CITY BEAUTIFUL

Trees, Flowers, Clean-up Week, Public Squares and Parks

The City Beautiful is your city, as clean and healthful and happy and prosperous as you can possibly hope for it to become. Your city will some day be a City Beautiful if all its citizens work together to make it such a delightful place.

TREES FOR OUR CITY

Charney's Weed*

I

Do you remember the story of the French nobleman, named Charney, who was arrested and imprisoned in a great fortress in the southern part of France? He had done no wrong, but his enemies were very powerful and had taken this means of getting him out of their way.

How wretched and unhappy he must have been in his lonely prison cell. There were no books in the prison to read and no pens and paper with which to write. There was no living person to talk with except the grim jailer who brought his food.

A winding stone staircase led from his cell into a little courtyard. Here he was allowed to exercise a short time each day. You can imagine how terribly he suffered, for he had nothing to do to help pass the time.

The weary days dragged by, and Charney grew more and more despairing and downcast.

One day he was walking to and fro in the little court, counting for the hundredth time the flagstones which covered the ground. Hope had gone from his heart. He wondered that he could live when his suffering was so terrible. The breath of spring was in the air. He could smell its soft sweetness as it

---

* Adapted from the story of "Picciola," by Joseph Xavier Boniface, a famous French author.

blew into the prison yard from the great free out-of-doors, but it brought no hope to the lonely prisoner.

II

Suddenly he stood still, for he saw something between two stones which made his heart beat fast. It was a little mound of earth. You see, Charney imagined for one wild moment that some of his friends were trying to dig an underground passage to his cell to help him escape, but he soon laughed at himself for having such a foolish hope.

He wondered, however, how the little pile of earth came there. Stooping down, he saw that it was not made by an insect or animal, but by a pale little plant which was struggling to break through the hard soil.

Charney was about to crush the weed with his heel when a new thought made him stop.

"If such a weak, tiny thing can struggle to live, why would a man give up hope?" he asked himself. So he let it live.

The next day the plant had grown stronger. It was taller, and its leaves were quite green instead of pale and sickly looking.

Charney began to have something to live for. Most of his time was spent at the little window of his cell watching the weed grow.

One day he saw the jailer, who was crossing the yard, almost step on the little plant. Charney spoke to him about it.

"I would not harm it," said the jailer, "for I have noticed how you cared for it, and I have watered it often."

Charney thanked the man for his kindness, and after that he always saved part of his drinking water for the little plant.

One day a heavy storm arose, and beat down upon the little courtyard. Charney looked around his cell for something to use as a cover for his plant, but everything was clamped to the stone walls of his prison. Hail began to fall; something must be done! So Charney bent down over the little plant, and protected it from the storm with his own body. He was soon drenched with the rain, but his little plant was saved.

And so day by day the plant grew in the sun until it had a glossy heavy stem, and needed no protection from the storm.

At last the time came when Charney was set free. When he left his prison he had the plant carefully removed to his home, where it continued to grow and flourish, tenderly cared for by the man who would have died of a hopeless heart had he not been cheered by the brave Picciola—for that was the name Charney had given his plant.

Arbor Day

I

You know that Arbor Day is a day set aside for the planting of trees. Perhaps you think that school children have always observed Arbor Day, but that is not true.

The first Arbor Day was observed in Nebraska in 1874. How proud Nebraska school children must be of that fact. Since then nearly every state in the United States has established such a day, and many states have also established Bird Day, because, as you know, birds are of so great importance to our trees

As you take a part in the exercises of Arbor Day, do you think of the pleasure the trees you help to plant will give the children who will live after you? Do you ever stop to think how glad we should be that the people who lived before us thought of planting many of the shade and fruit trees which we enjoy today?

II

Here is an interesting experiment for you to try when the spring comes. Take a twig or small branch of a pussy-willow tree. Keep it in a bottle of water until all the soft furry buds fall off and the stem sends out several tiny rootlets. When the roots look quite strong dig a deep hole in the ground and remove a good deal of the soil, for the rootlets will need a very comfortable bed.

Next lift the little plant into place, gently putting the soil around it until the hole is almost full. Then pour in a large pail of water. After the water has soaked away, fill up the hole, packing the earth firmly to hold the little stem and roots in place. Water it once again, and leave it to the sunshine. Each spring its soft little blossoms will tell you when the cold weather is over.

"Who will sing in the Spring?
Pussy-will-ow! Pussy-will-ow!"

All willow slips take root quite readily if planted in damp places. Branches of the cotton-wood, or poplar tree, root even more easily. Many shrubs or bushes will do likewise; so almost anyone can have the pleasure of watching a tree or plant grow.

Caring for Trees

I

Thousands of trees are destroyed every year through carelessness. If people only realized that trees are really alive they would try to help them grow.

You see, a tree, although alive, cannot move to find what it needs. The tree must wait until the things it needs come to it, for it has only roots, a trunk, and branches in place of legs and body.

Perhaps you think that the very kindest thing you can do for a young tree is to water it freely. But if the tree were given its choice it would prefer having

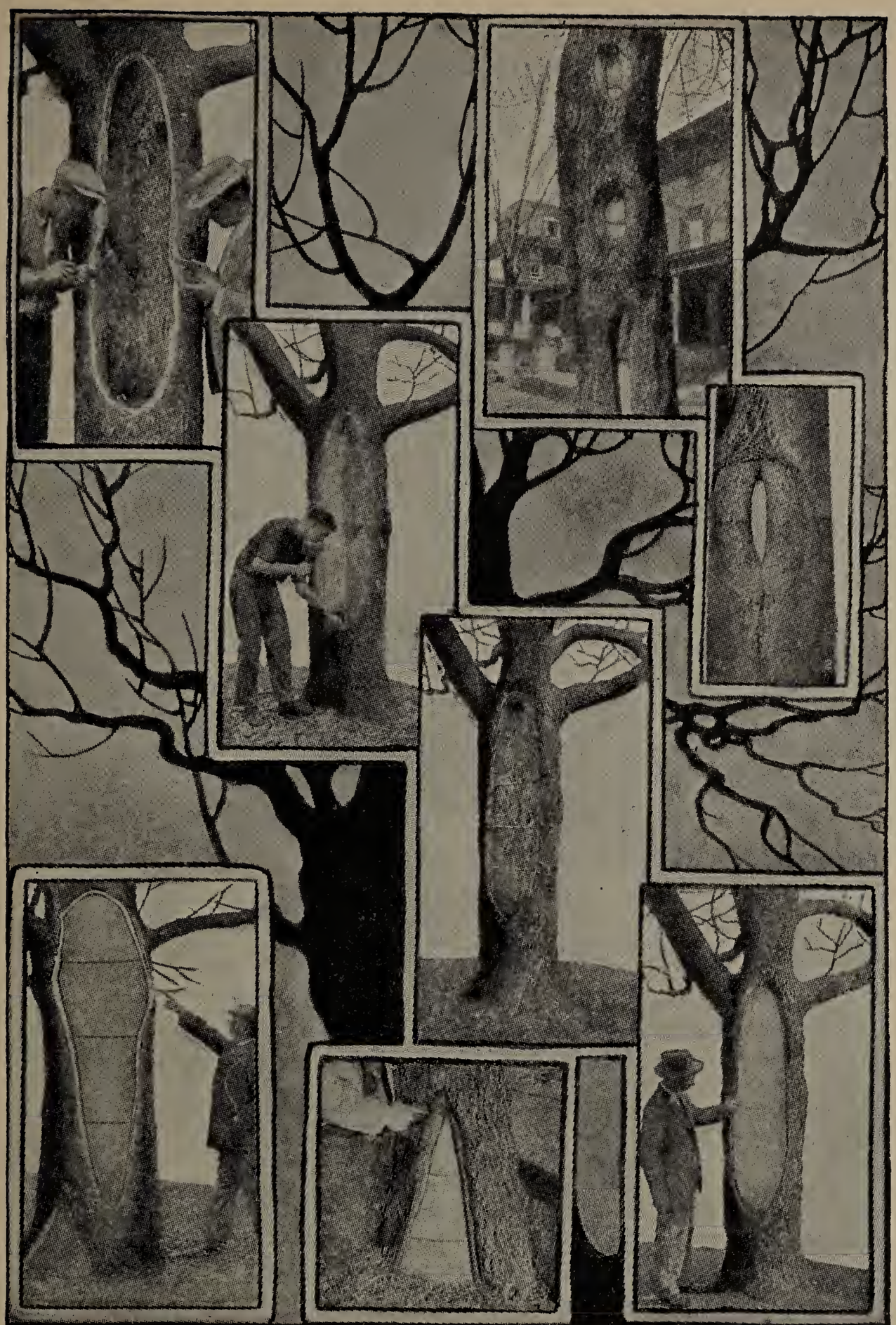
he soil loosened about its roots, for if the soil is loose and porous, air and moisture are admitted more easily than if the soil is hard. So if you want to help a young tree do not let the soil about the roots become hard. Keep it loose so that the tree can drink and breathe.

If we want to help trees we should see to it that their enemies are prevented from harming them. Our friends, the birds, will help us keep insects from injuring the trees, but they cannot do all the work. Not every bird likes to eat fuzzy caterpillars, so we fasten bands of tanglefoot flypaper around the tree trunks. When the caterpillars of the tussock moth, and of other moths, crawl up the trunks to find a place to spin their cocoons they will be caught in our sticky traps.

II

Of course you know that many of our city trees wear boxes around their trunks, or tall collars of wire netting, so that horses will not gnaw and injure the bark. Have you ever seen a tree trying to heal itself after an injury of this kind? It grows new bark from the outer edges until the wound is covered up.

If the wound covers too great a surface the tree cannot heal itself. It is like the beautiful beech tree which some thoughtless city boys who were visiting in the country had doomed to die. About five or six feet from the ground they had cut away the bark in a broad band which circled the trunk. Poor helpless tree! It had probably taken fifty years to grow.



HELPING TREES TO HEAL THEMSELVES

In a year it had died a slow death, and today it stands a dreary skeleton, and will finally crumble away to dust and mold.

You see, it is this way with trees; they are covered with their protecting bark just as the body is covered with a protecting skin. The skin does not heed a slight wound, for it soon heals. It is so with a slight injury to the bark of a tree. It can grow new bark over the bare spot if it is not too large. Sometimes you will see trees with a score of such wart-like scars, but a tree cannot heal a place where the the wound encircles the trunk, nor where it exposes too great a surface.

Sap is the blood of the tree, and oozes from a wound just as blood runs from a wound in one's own body, only the sap runs more slowly. If the inner bark, where the sap runs, is cut all around, the sap can no longer find its way up and down the trunk, and the tree dies.

Protecting our City's Trees

Would you like to form a league for the purpose of protecting the trees and shrubbery of your streets and parks?

The members of the Park Commission and the City Forester would be greatly pleased with such help.

The duty of the members of such a league is to keep watch over the trees and shrubs, to detect any enemies and to report any decay in the trees. When there is

decay or disease the "tree doctors" are sent to treat the patients.

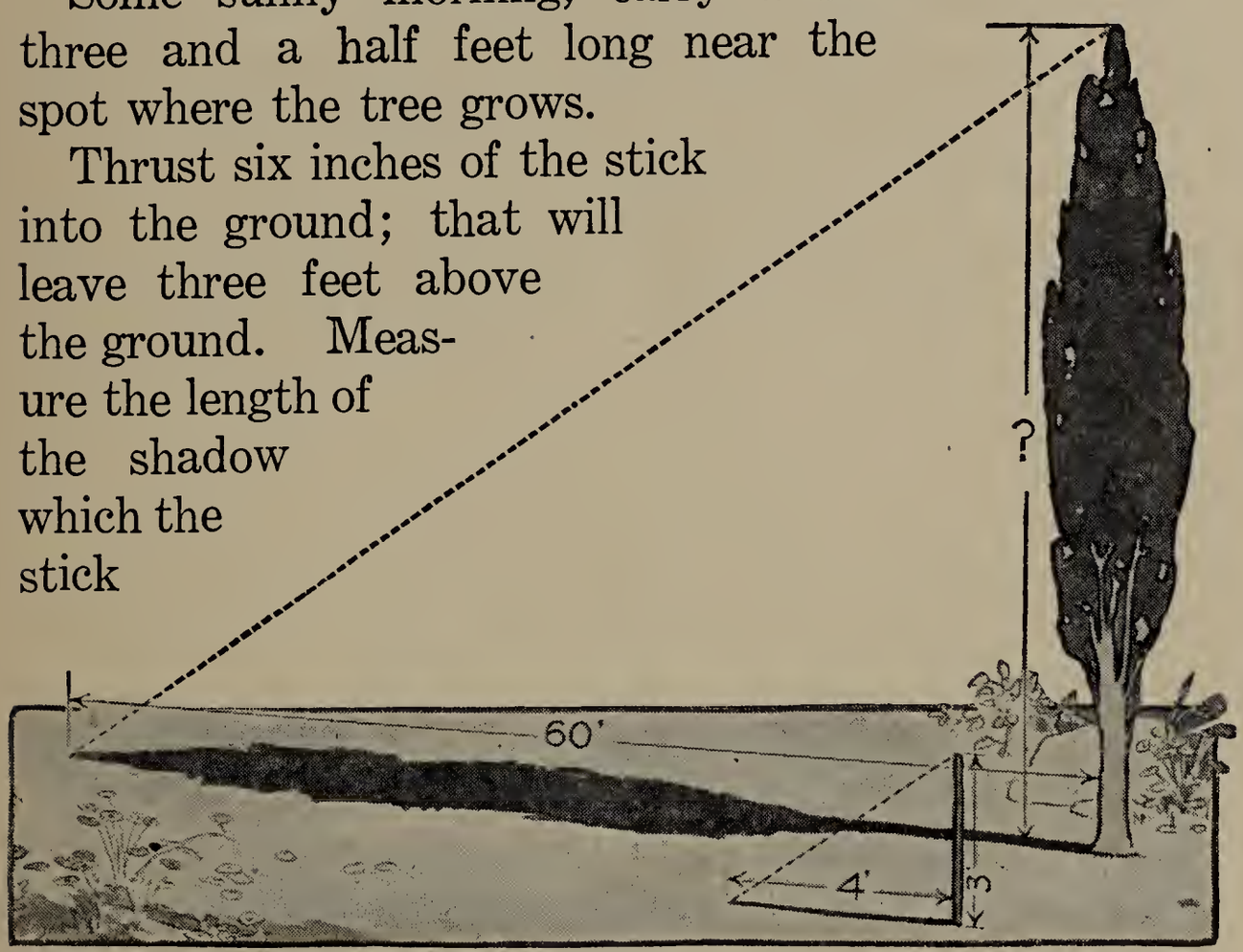
In many of our cities the Boy Scouts have taken up the work of protecting the city trees with enthusiasm. Already those cities show the effect of their work, for the streets and parks are much more attractive and beautiful than ever before.

How to Measure the Height of a Tree

When you take a walk in the park you may wish to know how tall some tree is. You may find its measure in a very simple way. No, you need not climb it.

Some sunny morning, carry a stick three and a half feet long near the spot where the tree grows.

Thrust six inches of the stick into the ground; that will leave three feet above the ground. Measure the length of the shadow which the stick



casts. Next measure the shadow which the tree casts.

Suppose the shadow from the stick is four feet long, and the shadow from the tree is sixty feet long.

Now, make an example to read like this:

4 ft.:3 ft.:60 ft.: (?) the height of the tree.

This example is worked out in this way:

$$\frac{3 \times 60}{4} = 45 \text{ ft.}$$

or $3 \times 60 = 180$ ft.

$180 \div 4 = 45$ ft., the height of the tree.

Should you wish to know how thick the trunk of the tree is, measure the distance around. The diameter, or distance through the trunk, is a little less than one-third the distance around it.

Suppose the trunk measures six feet around. Its thickness through will be a little less than two feet.

Autumn Leaves

The beauty of the autumn leaves is one of the wonderful sights of the fall of the year. In October the forests are decked in brown and red and gold, and the setting sun seems almost to set the trees aflame. Then is the time to gather the most brilliant leaves that can be found, and "wax" them for future use.

Do you know how to "wax" leaves? It is a very easy thing to do. All you need is a little beeswax or

a bit of paraffine and a warm iron. The dull glossy waxed surface will preserve the leaf many months.

At Thanksgiving time the waxed leaves can be used to decorate the table. Some of the sprays, when placed in a hollowed-out pumpkin, will form a very pretty centerpiece which will well repay you for the small trouble of "waxing" the leaves.

QUESTIONS

How many different kinds of shade trees do you know? Fruit trees? Can you name a spot near your home where you think a tree should be planted?

Name some of the birds that live in the city trees.

Have you ever made a collection of leaves, one from each of the different trees in your neighborhood?

Will you press them between the leaves of an old book, and paste them on sheets of paper?

Outline them with a pencil so that you will have a picture of them.

If you do not know their names, ask some one to tell you, or go to the library and look them up in a tree book. Make a record on each sheet giving:

Name.....

Date.....

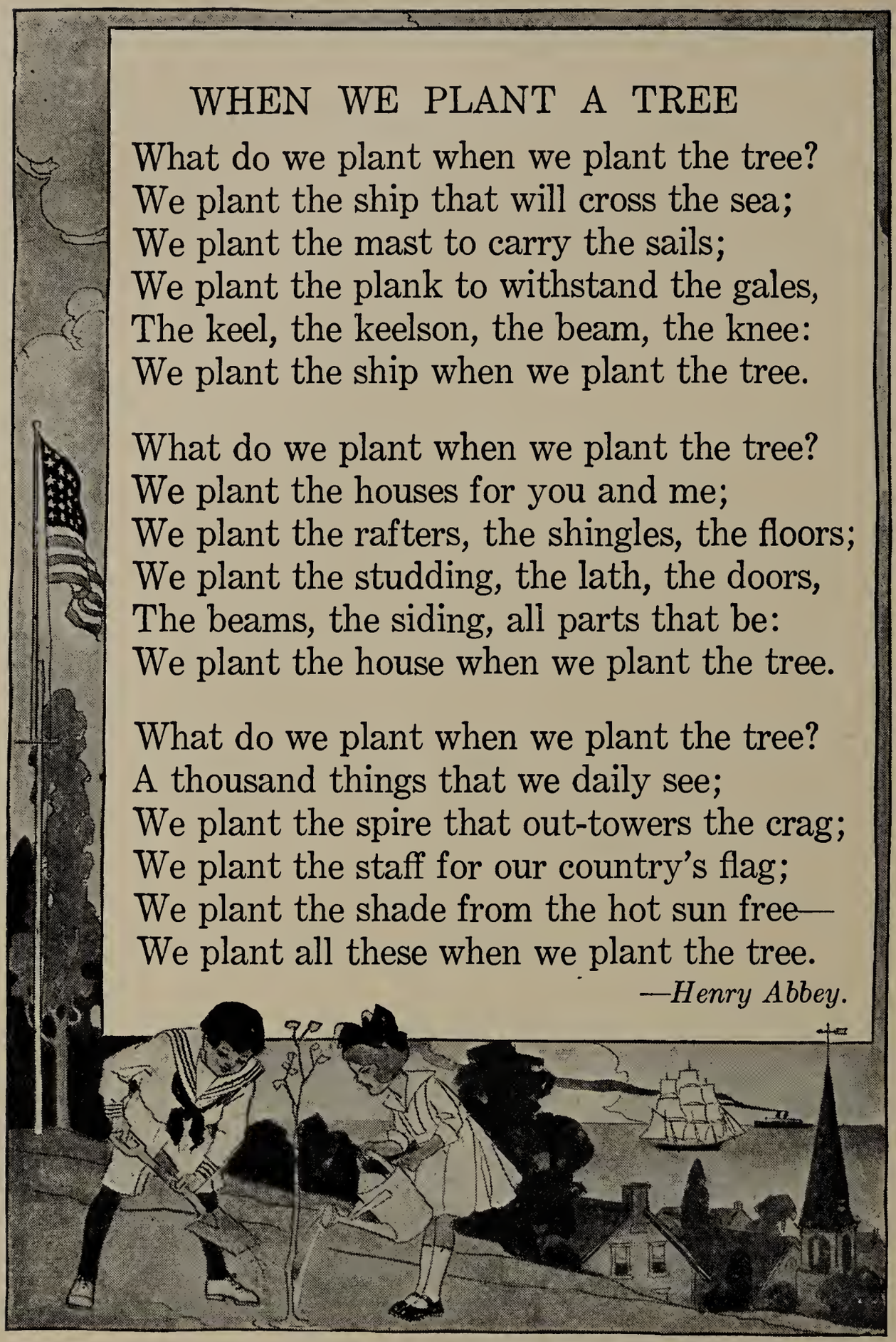
Where growing.....

Condition of tree.....

What might be done to help its growth.....

Will you select a tree, or several trees, which you will care for this year, giving each one a name and reporting their condition to your teacher from time to time?

Will you read about the making of paper from wood pulp?



WHEN WE PLANT A TREE

What do we plant when we plant the tree?
We plant the ship that will cross the sea;
We plant the mast to carry the sails;
We plant the plank to withstand the gales,
The keel, the keelson, the beam, the knee:
We plant the ship when we plant the tree.

What do we plant when we plant the tree?
We plant the houses for you and me;
We plant the rafters, the shingles, the floors;
We plant the studding, the lath, the doors,
The beams, the siding, all parts that be:
We plant the house when we plant the tree.

What do we plant when we plant the tree?
A thousand things that we daily see;
We plant the spire that out-towers the crag;
We plant the staff for our country's flag;
We plant the shade from the hot sun free—
We plant all these when we plant the tree.

—*Henry Abbey.*

CARING FOR OUR ALLIES, THE BIRDS

I

"Save our birds, or lose our trees," is the slogan, or motto, of the United States Bureau of Agriculture. All thoughtful people understand the need of preserving the trees for the welfare of the nation; but not everyone understands the need of protecting the birds which live in the trees.

Birds perform an important work in caring for trees, for they destroy the harmful insects which attack the trees. If these insects were allowed to grow unchecked, they would in time kill not only the trees, but all vegetable life. So you see how needful it is to protect the birds as well as the trees which shelter them.

Our public school children have for some time done excellent civic work during the spring and summer in caring for our common birds; but too often little or nothing has been done to help our little feathered friends during the long cold winter months.

Many children think that all of the birds which they see in winter are able to take care of themselves, and need no attention from human beings. When they are taught differently, they are anxious to learn how to make friends with the birds that stay over cold weather, and to help them to pass a happy winter. Sometimes they really save their lives by providing food when the ground is frozen and covered with snow.

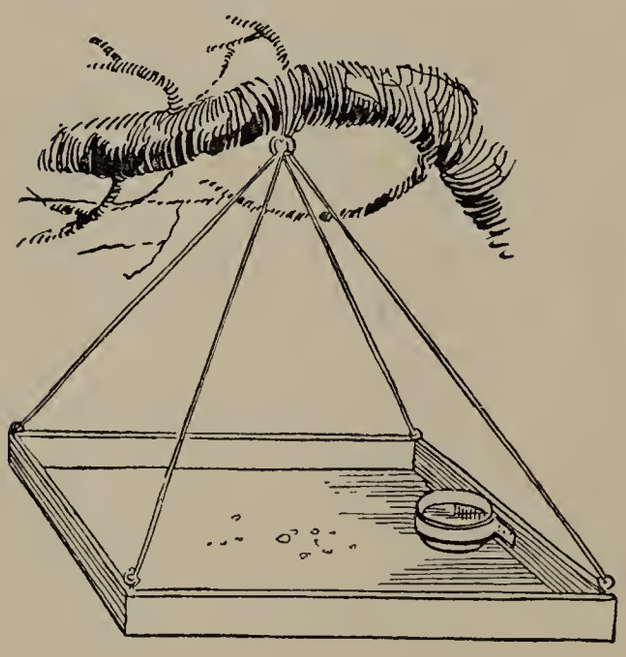
Food is the winter birds' most serious problem, for often the severe cold and hard snowstorms make it impossible for them to find insects and their eggs; and

too often these little defenders of our trees and gardens die of starvation during the winter.

Our little feathered helpers, and allies in our fight against insect enemies, surely deserve our protection. We cannot give aid to them in any better way than by making feeding places for them near our homes.

II

The making of and caring for bird-tables gives great pleasure to children. A well-cared-for bird-table soon increases the number of birds in any community. When the children see their little bird-guests flock to the banquet prepared for them on the trays, they feel well repaid for their efforts in behalf of the little creatures.



When making a bird-table here are some of the problems that must be decided:

What shall we use for the table?

How large shall it be?

How shall it be protected from cats?

What kind of food shall be placed on it, and how shall the food be prepared?

Where shall it be placed?

This is what one boy wrote of his bird-table:

My bird-table brings me lots of enjoyment. It is made of a board about twelve inches long, eight

inches wide and one inch thick. I bored a hole in each of the four corners. Then I fastened wire in each of these holes and tied them together about twelve inches above the board. In one corner I fastened the cover of a baking powder can securely. This is the birds' drinking cup. They love to have me fill it with milk and let it freeze, for they love frozen milk. I use crumbs, and seeds which I gather in summer, for food. Pieces of fat and bits of bacon must be chopped fine for hungry birds.

I take good care of my table. It is hung on the side of the house out of the reach of the cat. I sweep my table off after every snowstorm.

—*Alice M. Burley (Adapted).*

A four room house for martins

A wren house surmounting a post

These are excellent homes for birds because they are cat-proof. Thorny rose bushes trained about the posts would keep cats from climbing. Strips of tin or

zinc, eight to ten inches wide, tacked around the posts as guards will also prevent puss from making a call.

The wren house measures ten by fourteen inches. The floor projects four inches on each side of the house, so that the cat cannot gain a foothold. The entrance is just the size of a silver quarter, so that English sparrows are excluded. The martin house is divided by partitions into a four family house.

THE PLANTING OF THE APPLE TREE

Come, let us plant the apple tree.
Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mould with kindly care,
And press it over them tenderly,
As, round the sleeping infant's feet
We softly fold the cradle sheet;
So plant we the apple tree.

What plant we in this apple tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs where the thrush with crimson breast,
Shall haunt and sing and hide her nest;
We plant upon the summer lea
A shadow for the noontide hour,
A shelter from the summer shower,
When we plant the apple tree.

—*William Cullen Bryant.*

FLOWERS FOR OUR CITY

When you pass a jeweler's shop window you often stop to look at the brilliant colors of the precious stones, do you not? The rich red of rubies, the deep blue of sapphires, the restful green of the emeralds, and the radiant colors of other gems so delight the hearts of men and women that they have always longed to possess such beautiful jewels

Mother Nature is very fond of the colors of the ruby, the sapphire, the emerald, as you can readily see when you take a walk in the park any day in warm weather. There in the flower beds you will find some of her living jewels. In the country she plants and tends many of them herself, but in cities she has very little chance to do so without help.

Do you ever notice how much more attractive the streets are where flowers bloom in the windows and flower beds? When you see how little room some of them take up, it seems as if any boy or girl who really wanted one could have a garden.

You see, a garden may be as large as a public square, or it may be but six inches square. Either garden will give a certain kind of pleasure which nothing else can give, because it is a place filled with living things.

You have read of the great Hanging Gardens of Babylon, which were called one of the seven wonders of the world. King Nebuchadnezzer, who lived more than 3000 years before the birth of Christ, or nearly 5000 years ago, had them built to please his beautiful queen, Amytis.

Queen Amytis was a native of Media. When she came to Babylon she longed for something to remind her of her mountain home. So the king, we read, "reared near the palace a series of majestic arches which rose seventy-five feet from the ground."

These arches supported a series of terraces which were filled with earth, and planted with trees, flowers and shrubs. The Hanging Gardens, as the terraces were called, were so large that they formed a park in mid-air, and there the king and queen feasted with their courtiers and enjoyed the evening breezes.

1. Window Boxes

Of course, no one would want such gardens today, but a little hanging garden at a kitchen window will often give as much pleasure to its owner as the

Hanging Gardens of Babylon gave to Queen Amytis. A six-inch flower-pot garden will cheer a little invalid for many months. So you see, even if you cannot have a large garden space you can still have a garden.

Here is a list of some freely blooming plants for window boxes: Petunias; Zinnias; Ageratum, sometimes called "Floss Flower;" Verbenas; Geraniums; Sweet Alyssum; and Variegated Periwinkle for trailing over the edges of the window boxes.

2. Flower Beds

There is one class of flowers which require so little care that almost all they need is planting. Year after year they will push their green leaves out of the earth and raise their gay blossoms of cheer. These flowers grow from bulbs. A bulb resembles an onion, and the reason bulbous flowers require so little of our care is that Mother Nature stores in the thick bulbs the food which the plants need in the spring.

Probably you know the names of some such flowers. You remember the little song of the daffodil you learned in kindergarten days—

"Daffy-down-dilly has come up to town
In a green petticoat and a gold gown."

The bulbs of narcissus or daffodils, crocuses and tulips, and the roots of "blue flags" or iris, cost very little. Plant a few of these out-of-doors in the fall. Almost before the snow is gone in the spring the crocuses will bloom. They will soon be followed by the daffodils and later by the tulips and iris. When

they die down, leave them in the ground to come again another spring. After the first frost cover the ground with leaves.

In the parks the bulbs are taken up and dried when through blooming to make room for other plants, but it is not necessary to follow such a plan.

Annuals and Perennials

The plants whose roots die in the fall are called Annuals. The plants whose roots live on from season to season, or "winter over," are called Hardy Perennials.

Since most annuals do not bloom until summer or early fall, hardy perennials are much more satisfactory than annuals to plant in your garden; but the snowy dwarf sweet alyssum and the gay dwarf nasturtium, both of which are annuals, make charming edging plants or "borders."

Try planting such borders as these about your vegetable patches this year.

Following are lists of some of the most satisfactory of our American flowers:

Hardy Perennials

Aster	Coreopsis	Hardy Phlox
Bergamot	Hollyhock	Yellow Sweet Alyssum
Chrysanthemum	Hardy Pinks	Sweet William
Columbine	Poppy	Viola

Hardy Perennials, if raised from seeds, seldom bloom until the second year after being sowed.

Annuals

Ageratum	Petunia	Verbena
Cosmos	Scarlet Sage	Zinnia
Nasturtium	Sweet Alyssum (White)	Corn Flower

For house plants, geraniums and begonias bloom almost continuously if kept in a sunny window. Every flower growing in our homes, our schools, our public squares and parks helps to make our city more beautiful, and a pleasanter place in which to live.

If you ever plant and learn to love a flower you will love all flowers, and will take great care not to injure or destroy any flowers in the streets and parks, and you will not allow anyone else to do so. You will become one of the helpers in the "Flowers for Our City" movement.—*From The Mary Frances Garden Book.*

With the kiss of the sun for pardon,
And the song of the birds for mirth,
One is nearer God's heart in a garden
Than anywhere else on earth.

—*Selected.*

Who loves fair flowers
And shady bowers,
And all the joy a garden brings,
Has sweet content
And merriment,
And best of all, a heart that sings.

—*Selected.*

MY PLANT

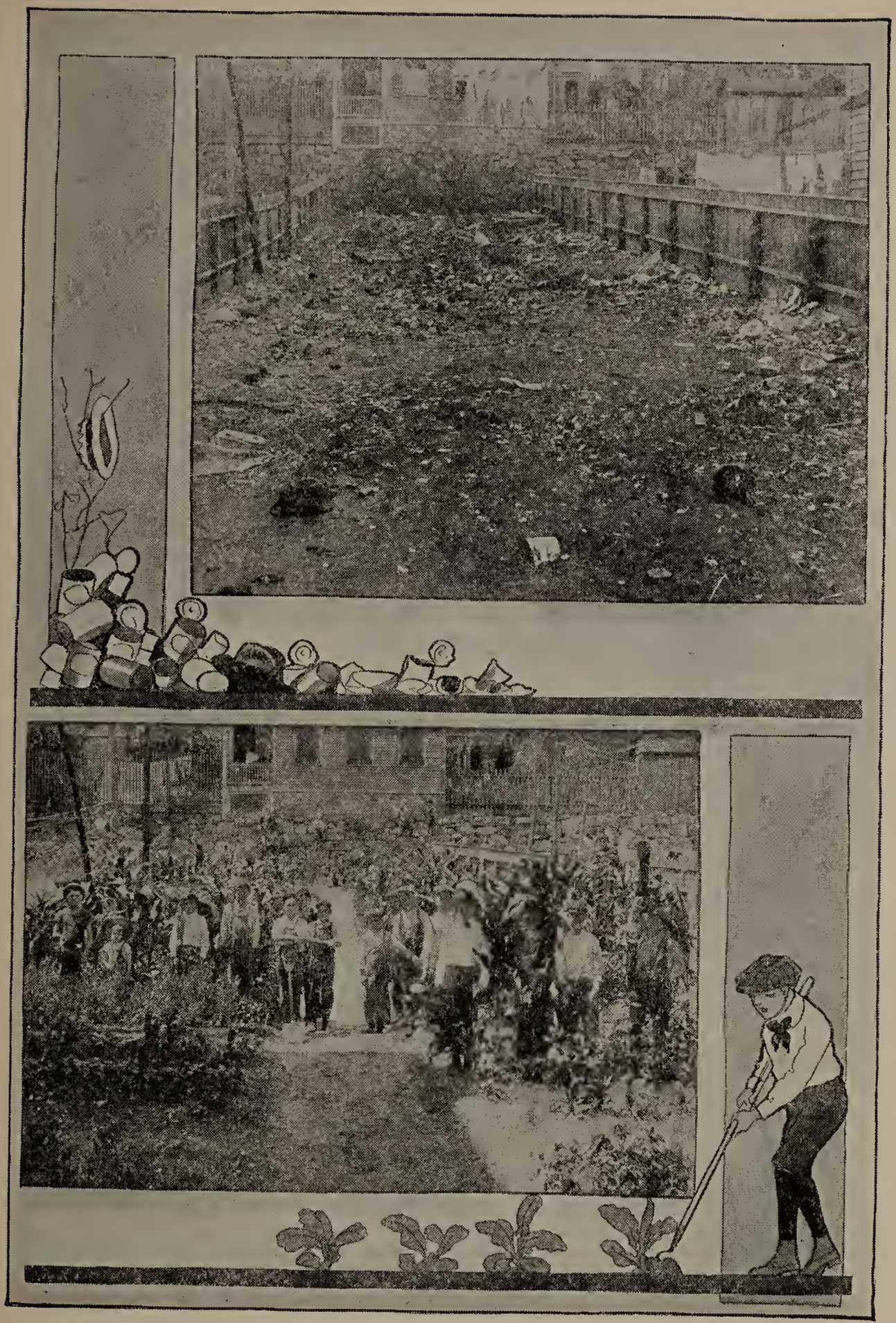
I dropped a seed into the earth. It grew and the plant was mine.

It was a wonderful thing, this plant of mine. It did not bloom and I did not know its name. All I know is that I planted something apparently lifeless as a grain of sand and there came forth a green and living thing unlike the seed, unlike the soil in which it stood, unlike the air into which it grew. No one could tell me why it grew, nor how. It had secrets all its own, secrets that baffle the wisest men; yet this plant was my friend. It faded when I withheld the light, it wilted when I neglected to give it water, it flourished when I supplied its simple needs. One week I went away on a vacation, and when I returned the plant was dead; and I missed it.

Although my little plant had died so soon, it had taught me a lesson, and the lesson is that it is worth while to have a plant.—*L. H. Bailey.*

God made the flowers to beautify
The earth, and cheer man's careless mood;
And he is happiest who hath power
To gather wisdom from a flower,
And wake his heart in every hour
To pleasant gratitude. —*Wordsworth.*

I always think the flowers can see us and know what we are thinking about.—*George Eliot.*



Two Views of the Same Lot. What has Happened?

VACANT-LOT GARDENS

In many cities vacant lots are being used for gardens by the families who live near them. The land on which these gardens are cultivated is idle land, loaned by the owners with the understanding that it will be returned to them at any time that they sell the land or desire to use it in any other way.

The land is first prepared for cultivation by plowing and harrowing, then divided into gardens about one-sixth of an acre in size and assigned to the different families who want a garden plot. Fertilizer and good seed are furnished to the gardeners and improved methods of gardening are shown to them.

The families are charged nothing for the use of the garden, as the idle land is loaned without cost. The Vacant-Lots Association which plans the work divides the cost of preparing the land and providing the seeds among the gardeners, so the expense of each is not very large.

The gardeners spread the fertilizer, plant the seeds, cultivate the growing plants, and gather the crops. After supplying their family needs they sell anything that remains. Can you think of any better way of using a vacant lot than for a city garden?

I know a place where the sun is like gold,
And the cherry blooms burst with snow,
And down underneath is the loveliest nook
Where the four-leaf clovers grow.

—Ella Higginson.

CLEAN-UP WEEK

Spotless Town

I

The mayor of every city in the United States wishes that he were the mayor of Spotless Town, and he hopes that some day his city will have that for another name. He knows that the citizens of such a city would be healthy and strong and happy. Of course you know why. It is because cleanliness means health and strength and happiness.

Cleanliness also means beauty, for nothing that is dirty can be beautiful. "Dirt is matter out of place." That is a very good definition of dirt, and if you think about it a moment you will see that it is a correct one.

In other words, there is a place for everything, and everyone should try to put everything in its place, especially dirt. That is the way our own city may become as nearly a spotless town as possible. If everyone did this every day, every day would be a clean-up day. Of course there would have to be general clean-up days from time to time, just as there must be house-cleaning days in the best managed homes.

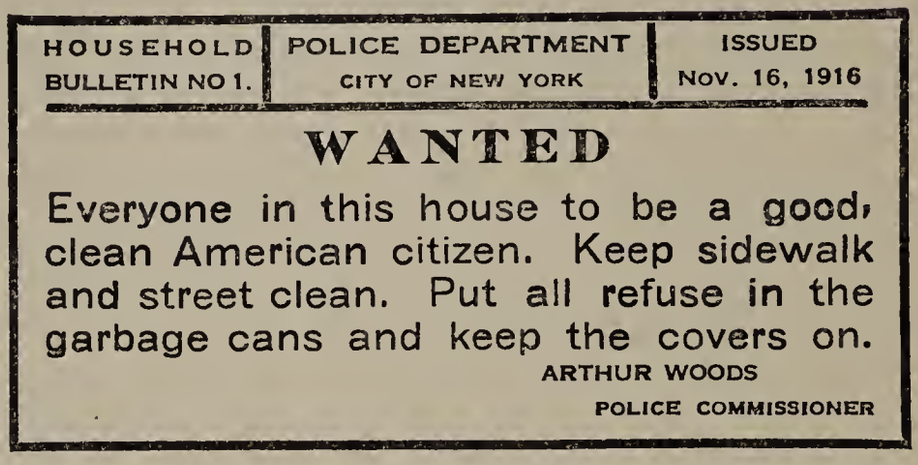
The mother is the housekeeper of the home, but she cannot keep the house in the best of order unless every member of the family does his share to help.

The city is the home of all its citizens and the mayor is the city housekeeper. But even the mayor of Spotless Town could not keep his city in the best of

order without the daily assistance of all the citizens, both young and old.

Tell some ways in which you can help.

II


HOUSEHOLD BULLETIN NO 1. | POLICE DEPARTMENT CITY OF NEW YORK | ISSUED NOV. 16, 1916

WANTED

Everyone in this house to be a good, clean American citizen. Keep sidewalk and street clean. Put all refuse in the garbage cans and keep the covers on.

ARTHUR WOODS
POLICE COMMISSIONER

This is a picture of a bulletin which was distributed some time ago to the households of New York City. It was part of a great safety campaign.

Do you think the word safety is the wrong word to use?

It is not. If you stop to think you will readily see why.

A Letter From a Tennessee Girl

I

Some time ago prizes were offered by a magazine to children sixteen years of age, and under, for the best letters on the subject of a clean-up campaign. One of the letters which received a special prize was written by a girl of sixteen. This is part of the letter:

"First, let us consider the question of Clean-up Day

from the physical standpoint. What is health and how do we value it?

"Upon the health and strength of our children the glory and greatness of our nation depend. In a few years the children will be men and women; what kind will they be? Healthy and strong, or narrow-chested, weak, dependent? Are they to be leaders among men, wise and healthy mothers, or the reverse?

"If children are brought up properly and are taught the principles of health, truth, and honor, they will make us a nation of healthy, clean men and women, with clean homes and honest hearts. As children we should be taught the relation of cleanliness to health, and cleanliness begins with personal cleanliness.

"We must also get plenty of fresh air. Many people are living in closed houses breathing over and over again the same air which contains little or no oxygen. Nothing so quickly lowers vitality as lack of fresh air, and we are easily overcome by disease germs if the house is not properly ventilated. Teach a child to demand fresh air and sunshine, for sunshine kills disease germs.

"We must be sure that our water is clean and pure. Never drink out of a public drinking cup. This is one of the most common ways in which diseases are spread.

II

"On Clean-up Day we can remove the unclean things which attract flies, and thus prevent many diseases and deaths. When the children and community are

aroused and interested in this matter, there will be so few flies left that it will be a pleasure rather than a trouble to "swat" those that remain.

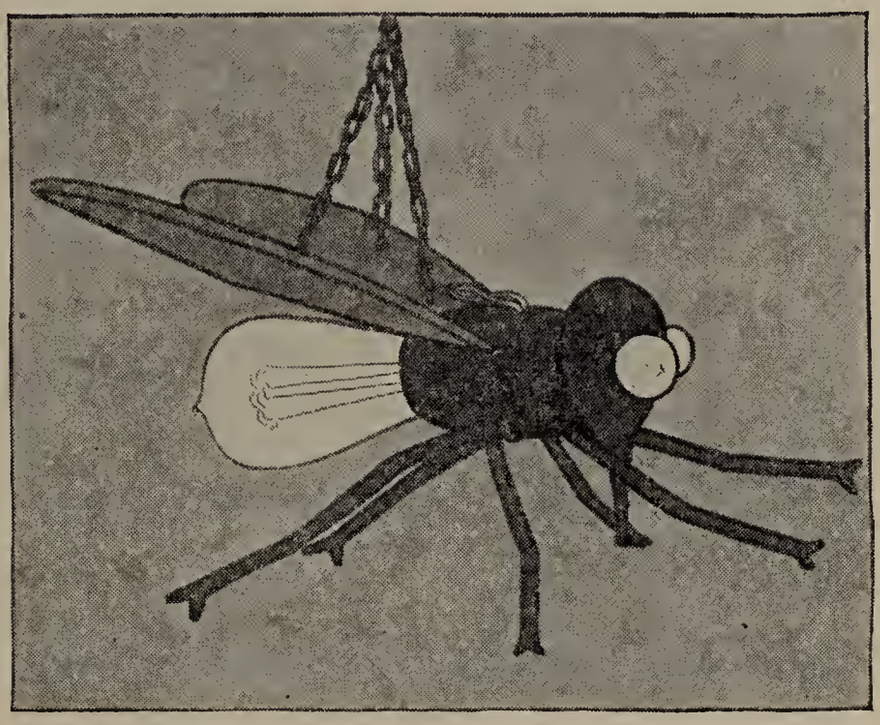
"We must eat plain, simple, and pure food. When the children and other citizens let the merchant know that they will not buy from him unless his store is clean and his foods are kept under cover, then and then only, will we have better and cleaner stores.

"As children we should know the value of clean, fresh, pure foods, pure water, pure air; and the harmfulness of unclean foods, impure water and impure air. We should know what causes diseases and should work on Clean-up Day to remove the causes. In this way, we shall prevent disease and death, and improve our own health as well as our neighbors'.

"Children can help their city. Children are very much like grown people in many ways. They are often not given much credit for what they really know and can accomplish." —*A Tennessee Girl.*

Clean-up Days or Clean-up Weeks are now observed in thousands of towns and cities throughout the country. They are days set apart for public housecleaning by the people of the community. Their purpose is to bring order and cleanliness into the streets, alleys, vacant lots and back yards of the city, thus improving the general health and comfort of the citizens. Usually clean-up days are observed in the spring, but people who take pride in their neighborhood will make every day a clean-up day.

The department of health of Spokane, Washington, is an enemy of the fly.



Not long ago it exhibited a large fly to show one way of preventing the death of babies. The fly's eyes blinked once in every ten seconds. The words below were printed in large letters:

"Death follows in my wake: watch me blink! Every time I do, a baby dies from a preventable cause. Observer! What are you doing to help prevent this?"

Flies are poisonous and deadly; destroy them, and help to save life.

Everyone knows that the habit of spitting is dangerous to public health, because of the spreading of disease from the germs contained in saliva.

This poster shows how Spokane tried to prevent spitting in the street-cars and on the street and in other public places.

WARNING!

Look!! **Listen!!**

La Grippe Pneumonia

NO SPITTING

NO CONSUMPTION

Diphtheria Tuberculosis

STOP SPITTING
Under Penalty of Disease

Ordinance No. A722 prohibits expectoration in public places and provides a penalty

Help us Enforce this Ordinance

Department of Health and Sanitation

The Filthy Flies

House flies are not only filthy; they are dangerous to human life. Born in filth, reared in filth, they feed upon filth and carry filth with them, not only causing annoyance, but marking a trail of disease and death wherever they go.

They carry disease germs on the outside of their bodies just as a dog carries fleas. As many as 350,000 germs have come from a single fly while it was wallowing in liquid food. They also carry many more germs inside their bodies, with which they pollute the food on which they light.

They come into our kitchens and dining rooms loaded with filth and germs from the street, from the garbage can, from decaying animal and vegetable matter, and from the sick room, carrying sickness and death with them.

The fly must have undisturbed filth in which to grow from the egg, and this growth usually takes about eight days. If all filth is removed or destroyed every day the fly will have little chance to breed. Therefore the easiest way to get rid of flies is to destroy their breeding places.

Garbage cans should be kept tightly covered, and yards and streets should be kept clean and free from decaying animal and vegetable matter. All doors and windows of dwelling houses, stores and markets should be screened; and no food supplies should be exposed for sale unless protected by netting. Kill every fly as quickly as it appears; do not allow this menace to health to exist for a moment in your home.

Midget Murderers

I

There are thousands of murders in our country every year, and we never even try to catch the murderers. We do not think of putting them in prison. Once in a great while we do kill a few of them, but we let millions go about, carrying swords in their mouths, which they thrust into anyone who gives them a chance. These midget murderers are mosquitoes.

Of course not every mosquito is a murderer, nevertheless we are in great danger whenever we are bitten by a mosquito. As you know, the mosquito does not bite in the way an animal does. It does not have a mouth, but uses a hollow tube somewhat like a round file. With this tube it pierces the skin of animals and sucks their blood.

Now, if the person whom the mosquito bit before biting you was ill, the mosquito will put into your blood the germs of the disease of the ill person; and, unless you are very well so that you can resist the poison of the germs, you will be sick yourself.

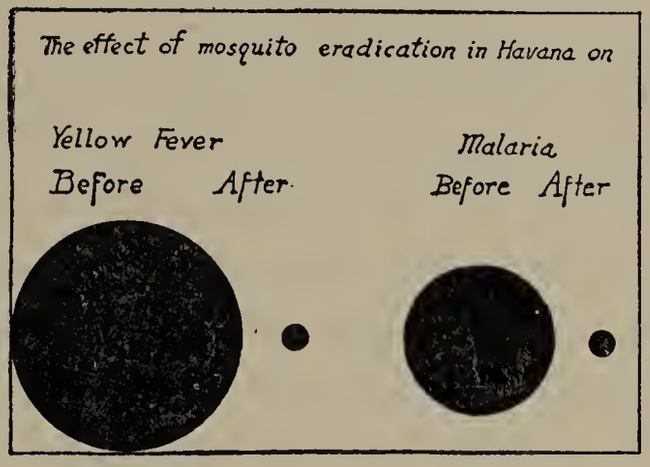
Of course the mosquito does not know anything about this, and is only hunting food. It was not until a few years ago that people found out the danger of being bitten by mosquitoes.

II

In 1900 some doctors made a very interesting experiment. These doctors were very anxious to

find out why yellow fever spread so rapidly. Often people who had not been near a fever patient came down with this terrible disease and died.

Two rooms were used for the experiment. In one room were seven beds in which yellow fever patients had been ill. The bedding was not changed; the same sheets and pillow cases were left on the beds. Seven well people were placed in these beds. The windows were screened and no mosquitoes were allowed to enter. Not one person "caught" the fever.



In the other room seven perfectly clean beds were placed. Seven well people were put into these beds. The windows were not screened. Mosquitoes were allowed to enter and bite the people. All but one of the seven came down with yellow fever. What does that show?

When the doctors realized that mosquitoes carry such diseases they began to clean up Havana, Cuba, where yellow fever was then raging. First they had the marshes drained; and then had kerosene oil sprayed on all stagnant water. The government passed laws punishing people who had stagnant water on their grounds. They did all these things because stagnant water is necessary for mosquito babies to live. Without it they never exist. When the breeding places were destroyed in Havana, the mosquitoes disappeared and the yellow fever with them.

III

The Panama Canal could never have been built if the mosquitoes had not been exterminated, for it is impossible for white men to live and work where yellow fever rages as it does in such warm countries. Under the direction of General W. C. Gorgas, who had learned how to fight mosquitoes in Cuba, yellow fever and malaria were practically wiped out in the Canal Zone.

General Gorgas and his helpers knew just what was needed to drive the disease-carrying mosquitoes out of the plague-stricken cities of Panama and Colon. They filled the swamps, pools and drains with the earth that had been dug out of the canal. They used petroleum to destroy the mosquito wrigglers in stagnant water that could not be drained off. They built sewers, garbage plants and water supply systems; they cleaned and paved the streets and screened the houses, killing the insect pests by destroying their breeding places. Fever patients were so carefully protected that mosquitoes could not reach them, and vigorous rules of health and cleanliness were enforced among the people.

As a result, the death rate in the Canal Zone from malaria and yellow fever is actually lower than that of New York or Washington, and a mosquito is said to be almost a curiosity. The conquering of this disease carrier in the tropical area of the Panama Canal is perhaps as great a triumph as the building of the canal itself.

The mosquito is the only known means of spreading malaria, or "chills and fever." Malaria is caused by germs which live in the blood of persons suffering from that disease.

The mosquito, in sucking the blood of a malaria patient, takes into its stomach millions of the malaria germs. When it bites another person it throws some of these germs into the blood of that person.

When the mosquito bites a person it throws its own saliva into the wound to thin the blood of the person it is biting. It does this because blood is too thick for it to suck up through the tiny tube in its bill. So you see if it has bitten a sick person, its saliva is full of germs, and it throws disease germs into the blood of the person it bites next.

In this way the germs which cause malaria get into the blood, and probably in no other known way.

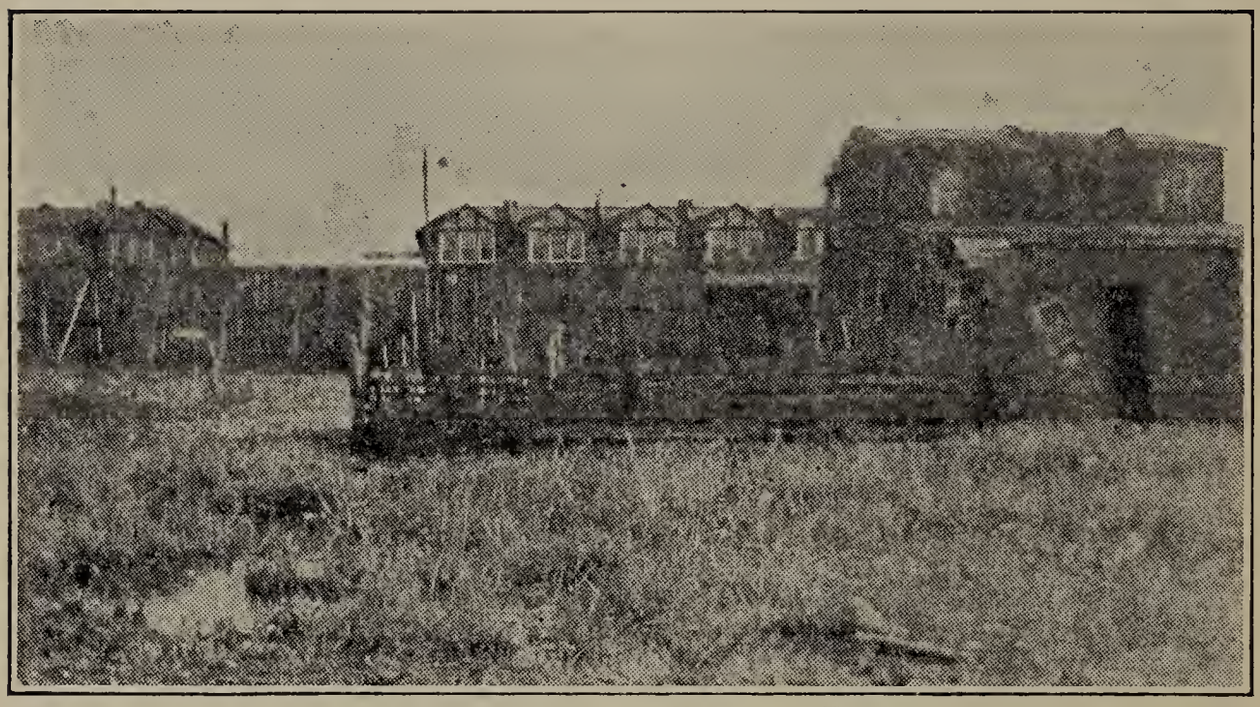
It seems strange that such tiny little insects could kill people and animals, doesn't it? Let everyone do his part in destroying the water cradles of all baby mosquito wrigglers.

What Happened in a Broken Bowl in one Back-yard

NO STANDING WATER, NO MOSQUITOES

Mosquitoes will not breed in running water. The eggs require standing water for their development, and cannot hatch in any other way.

A mosquito lays from 200 to 300 eggs at a time. No amount of filth in the water prevents the eggs from developing where the mother mosquito has placed



WHERE MOSQUITOES LIKE TO BREED

them. Tin cans and dirty water are just as good for the mosquito as the clearest pond or the rain barrel.

Examine your yard carefully and make sure that it is free from any place that might possibly serve as a breeding spot. Loose bricks in the yard, buckets, barrels, chicken's drinking pans, watering troughs, broken bottles and china, tin cans, flower pots, a swampy yard—any place or anything that will hold water long enough, will serve as a breeding place for mosquitoes. It does not matter where the water

happens to be, for mosquitoes will breed just as readily indoors as outdoors.

Tanks, barrels, or other vessels in which it is necessary to keep standing water should be covered with fine screen cloth or cheese-cloth. Swamps and other standing water that cannot be drained or screened should have their surfaces covered with a film of kerosene oil. The film of oil cuts off the air supply of the young mosquitoes or wigglers and they choke to death. Two tablespoonfuls of oil will cover fifteen square feet of water.

The way to destroy mosquitoes is to destroy their breeding places. If there are no breeding places, there will be no mosquitoes.

Of course, you will kill every mosquito you see about the house, especially in the winter and early spring. Why?

QUESTIONS

Why do we have a Clean-up Day?

Why is Fire-Prevention Day, if properly observed, really a Clean-up Day?

Make a list of the things in your own neighborhood which might be improved.

How could these things be accomplished?

What would you suggest that our school could do to help the ash and rubbish collector on Clean-up Day?

What can everyone do at home?

What can each family in the neighborhood do to make their city beautiful?

How will such co-operation help the health of the school children?

How can you help fight flies and mosquitoes?

PUBLIC SQUARES AND PARKS

1. The Public Square

This picture shows a public square. It is called public because it belongs to the people. Another name for it would be the people's square.

The grass is for the children to play on. The benches are for the people to rest on. The trees

provide shade and homes for the squirrels and birds.

The public square is sometimes called a beauty spot. Can you name a square that has flower beds? A fountain? The statue of a great man? A band-stand for concerts?

The square is an open space, a breathing spot. How does that help our health?

Public squares are often named after great men, as Washington Square, Franklin Square, Madison Square. Can you name others?

QUESTIONS

What are the names of some of the squares in your city?

Tell about the squares nearest to your school, or your home.

Who pays the taxes for the public squares?

Who pays the taxes for the other squares which are covered with buildings?

Sometimes in the early spring you see a sign in the square which reads, "Please keep off the grass." What is that for?

How do public squares add to the beauty of a city?

2. The Public Park

The park is a great public playground for the people of the city.

Can you think of anything that brings more happiness to all the people than a beautiful park? "Let us go out to the park," everybody says when a holiday comes. All the people enjoy it because all the people own it and have a right there.

The park is a great open breathing space covering acres, and sometimes many square miles of ground. When you ride along the broad driveways or walk through the woodland paths, or play on the grass, you are not crowded as in the city. There is plenty of room to run and jump and exercise.

The park is a wonderfully interesting place. If you wish to play games there are ball fields, tennis courts, and playgrounds. If you want to have a picnic, there are shady nooks in the woods with benches and tables.

If you like the water, there are fountains, lakes and brooks; or perhaps a river where you can row your boats and go swimming. If you love flowers,

there are flower beds and gardens and greenhouses. If you like wild animals you can go to the Zoo and see lions and tigers. If there is no Zoo in your park there are birds and squirrels in the trees.

These are only a few of the interesting things in the parks.

The park is a place to learn about nature. Almost

A Scene of Beauty in a City Park

all kinds of trees are there—strange trees, plants, and flowers that you can see nowhere else. In the greenhouses are tropical plants and rare flowers. Can you name some of them?

QUESTIONS

Name some of the different kinds of animals, birds, and insects to be seen in the park.

Did you ever attend a play festival in the park? A concert, or any other celebration? Tell about them.

Tell about the statues and the great men they represent.

If everything in the park belongs to you, why are you not allowed to pick the flowers?

Why are you not allowed to dig up plants and take them home?

It costs the city a large sum of money to keep up the park. Name some of the things the money is spent for. Who pays for for them?

What does the park gardener do? The park guard?

How can you enjoy the park in the winter time?

How does the park benefit your health and the health of the people?

How does the park help to make the city beautiful?

3. The Band Concert in the Park

(A composition written by a school boy)

What a dreary place our city would be if we had no public parks! In the fresh air of such open breathing spaces a person soon becomes rested and forgets how tired he was. What would the people who live in crowded districts where the air is close and stale do without parks?

Any evening during the summer, on concert day, you will see entire families enjoying the music in the free open air. There will be a hard-working father listening to classic music, and quietly resting after a long day's labor. Next to him will be sitting his wife, who for an hour or two may forget her household cares. About them will be the young people and children who enjoy the freedom of the open air most of all.

No one who listens to good music can help being better for it, because music speaks a language which all can understand. Then, too, these concerts make the people who were born in foreign countries feel at home. They make them feel that the city in which they live and work has a real interest in their welfare and happiness.

If people had to pay admission to a concert hall to hear such music very few would be able to attend. It costs our city a large sum of money to provide the free open air concerts, but the authorities say that the cost is small compared with the good they accomplish.

QUESTIONS

I

How far is your home from the nearest public square?
Does your family go there often?
How far do you live from the largest park?
To whom does the park belong?
Do you go to the park often?
What interesting things do you see there?
What animals live in the park?
Do you ever feed them?
What is your favorite animal?
Do the animals live there in winter?

Do you know why the keepers of the menageries find it best to keep the monkeys out of doors all winter instead of bringing them into the buildings?

If fresh air is so necessary to prevent animals from having tuberculosis, how should people feel about good ventilation?

II

Will you write a story about your latest visit to the park?

The next time you visit the park will you make notes of the different kinds of trees and flowers you see?

Is a city of contented happy people more prosperous than one filled with unhappy people? Why?

Does it pay the city to spend money in keeping parks, public gardens, public baths, and playgrounds for the people? Why?

The Beautiful Public Buildings of Springfield, Mass.

WHAT MAKES A CITY BEAUTIFUL

Everyone likes to be proud of the city or town in which he lives. The people who live in New York, Boston, Philadelphia, Washington, Chicago, St. Louis, San Francisco, and other great centers are proud of their cities.

You may be just as proud of your city or town, for every place has its own points of interest and beauty. Have you ever taken a ride in a sight-seeing automobile? The sight-seeing automobile takes visitors to the show-places of the city. The conductor calls attention to the well-laid out streets and avenues, the smooth paving, the comfortable houses, the green lawns and shade trees. He points out the public buildings, the City Hall, the Court House, the Post Office, the Library, the Museum, the Art Gallery, the Hospital, the tall business buildings, the historic sites.

He shows you the school buildings, the playgrounds, the recreation parks, the bathhouses, the public squares and statues of noted men. The sight-seeing auto carries you through the parks and along the river or lake near which the city is built. When you return you say, "What a beautiful city!"

Your town or city may not be large enough to have all the points of interest of a metropolis, but it will have many of them.

Make a list of the things that your city is proud of.

Make a list of the things that can be done to make it more beautiful.

Perhaps you can help now, and when you grow up you can help still more to make your city beautiful.

QUESTIONS

I

Do you think our city would have to spend so much money for police stations and jails if we had a truly clean city? Why?

How will doing away with saloons help our City Beautiful?

Write a word-picture of your idea of a City Beautiful telling how its streets and houses would appear; describing its public buildings and its parks; giving some of its laws and the reasons for such laws, making mention of the kind of people who would be found in such a city. Would the people be healthy? Would they be happy? Would they be prosperous, and earn good wages? Would the public school buildings be beautiful and sanitary? Why would the children have excellent chances for education? Would there be any breweries and saloons? Would the people be interested in every good thing their city was trying to accomplish? Would they demand good services from the people who held public office? Would they work together and be generous and kind, and help one another in making their city comfortable, prosperous and happy—in making their city truly a City Beautiful?

Write a story about your neighborhood as you hope it will be ten years from now, telling what changes you hope will be made.

II

In what way do all American children have servants? Name some of their servants.

In what way do the people of American cities resemble Aladdin?

What can all children do to show their appreciation of the benefits given them by the American flag?

I believe in boys and girls—the men and women of a great tomorrow. —*E. O. Grover.*

SAFETY FIRST

"He is free from danger who, even when safe, is on his guard."—*Publius Syrus.*

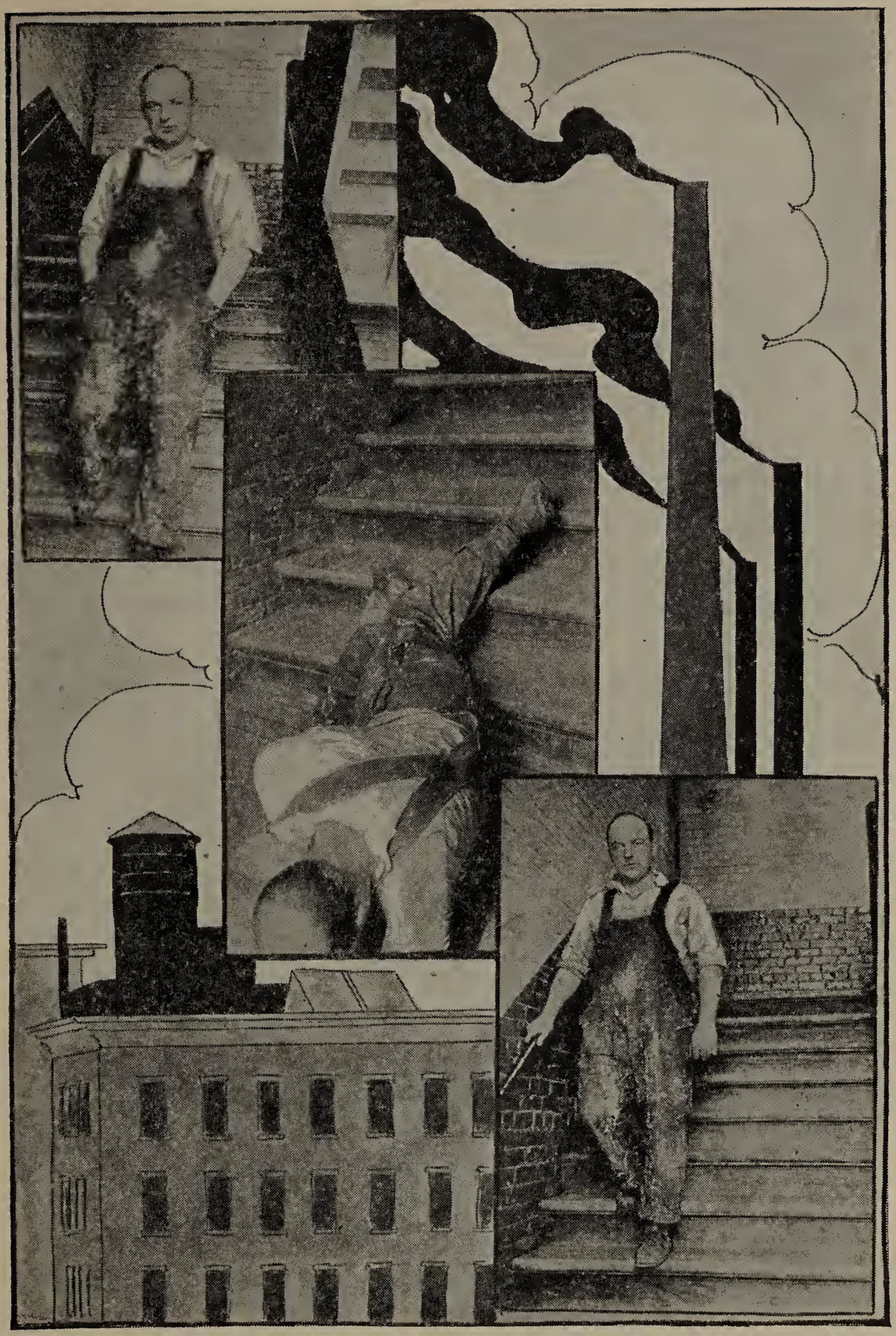
How the City Protects Us

Every day we run many risks in going about our daily tasks. In crowded places the dangers of fire and of accident from trolley cars and street traffic are always present. Therefore the city makes rules and does many other things to protect its citizens. If it were not for these safeguards, accidents would be much more frequent than they are.

The rules regarding automobiles are a familiar example. Every automobile must carry two headlights in front to light the road and to warn others of its approach. It must carry a red danger light at the rear, and must be equipped with a brake so that it can stop quickly and a signal horn to announce its coming. All along the road are signs directing the driver to go slowly because there is a railroad crossing, a sharp turn or a bad curve, or some other dangerous spot ahead.

These rules are safety-first rules for the protection of both those who ride and those who walk. Likewise there are rules for other street traffic and officers to enforce them. If these rules were fully obeyed there would be very few accidents and still fewer people killed.

If we use our eyes we shall see many other ways in which we are protected. The fire-station, the fire-hydrant on the curb. the fire-alarm box on the corner,



TELL THE STORY OF THESE PICTURES

the fire-escape on the tall buildings, the exit doors in public halls, are all safeguards from fire, placed where they are by the city authorities for our safety.

All around us are these safeguards for our protection from danger. They are everywhere—in our homes, at school and on the street.

How We May Protect Ourselves

We have seen how the city does its part in protecting its citizens from danger and in preventing accidents and loss of life. Still more important is it that citizens, both young and old, should do their part in protecting themselves.

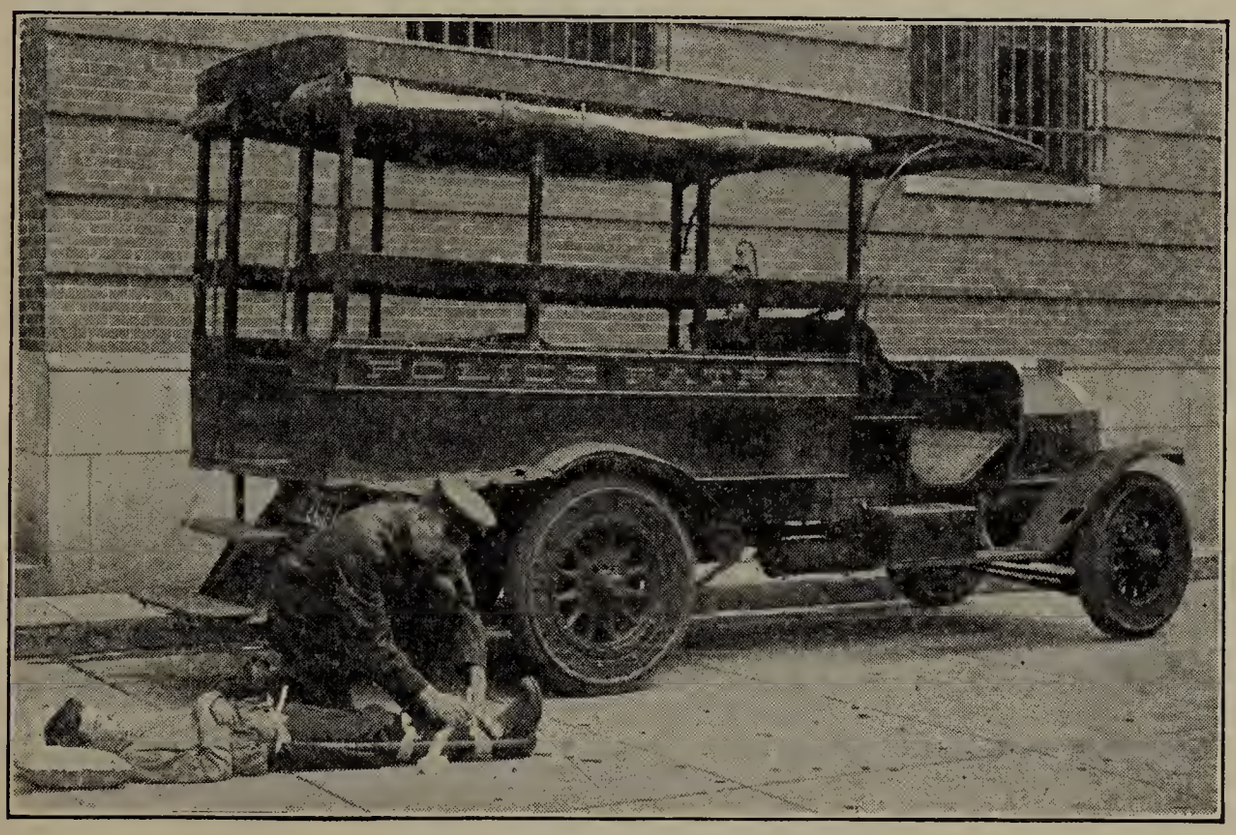
Perhaps you can tell of many narrow escapes that you have had; of the many times that you have just missed being seriously hurt on the street or at play. These escapes should make you think; they should be lessons in carefulness.

Of what use are safety rules if you do not heed them? If you run in front of moving trolley cars and automobiles, whose fault is it if you are hurt? Of what use is the danger sign on the thin ice of the skating pond if you go too near and break through? If you are careless and take chances and are injured, no one is to blame but the chance-taker—yourself.

The good citizen obeys the rules and regulations for his safety, and in so doing he helps protect himself and others. He understands that safety rules are not made just because the city authorities like to make them; they are made to protect all the citizens and to prevent loss of life and limb.

Every day we see or hear of all kinds of accidents. In a large city the most numerous are caused by falls, automobiles, trolley cars, falling objects, fires, burns, suffocation, machinery, firearms, motorcycles, bicycles, and defects in the streets and sidewalks. The city authorities are able to prevent many accidents, but even the best safeguards cannot always protect us from our own carelessness. The surest means of safety is personal carefulness. The safe rule is: "When in places of danger, be on your guard."

Learn the rules of safety first and obey them; help protect yourself and others. Be careful and warn your friends to be careful, too. It is better to be a minute late than to be run over; it is better to be safe than sorry.



THIS BOY TOOK A CHANCE

The result was a broken limb; it might have been loss of life.

YOUR CIVIC DUTY

People often injure their neighbors through carelessness and neglect. The following instructions in regard to the comfort and safety of others were distributed by the Health Department of one of our large cities.

1. Respect your neighbors as much as yourself. Don't beat your rugs or stir up ashes so that the dirt will be blown into their apartments to fall on their food or be breathed by them.

2. Don't throw your garbage or ashes at the cans provided, but into them, and don't fill them to overflowing. Don't leave them uncovered. If you do any of these things you are selfishly indifferent to the health and comfort of others.

3. Don't buy fish, meat or fruit from dirty dealers who fail to protect their wares from dust, dirt, and flies.

4. Don't spit on the sidewalk and public floors, to the disgust and danger of other persons.

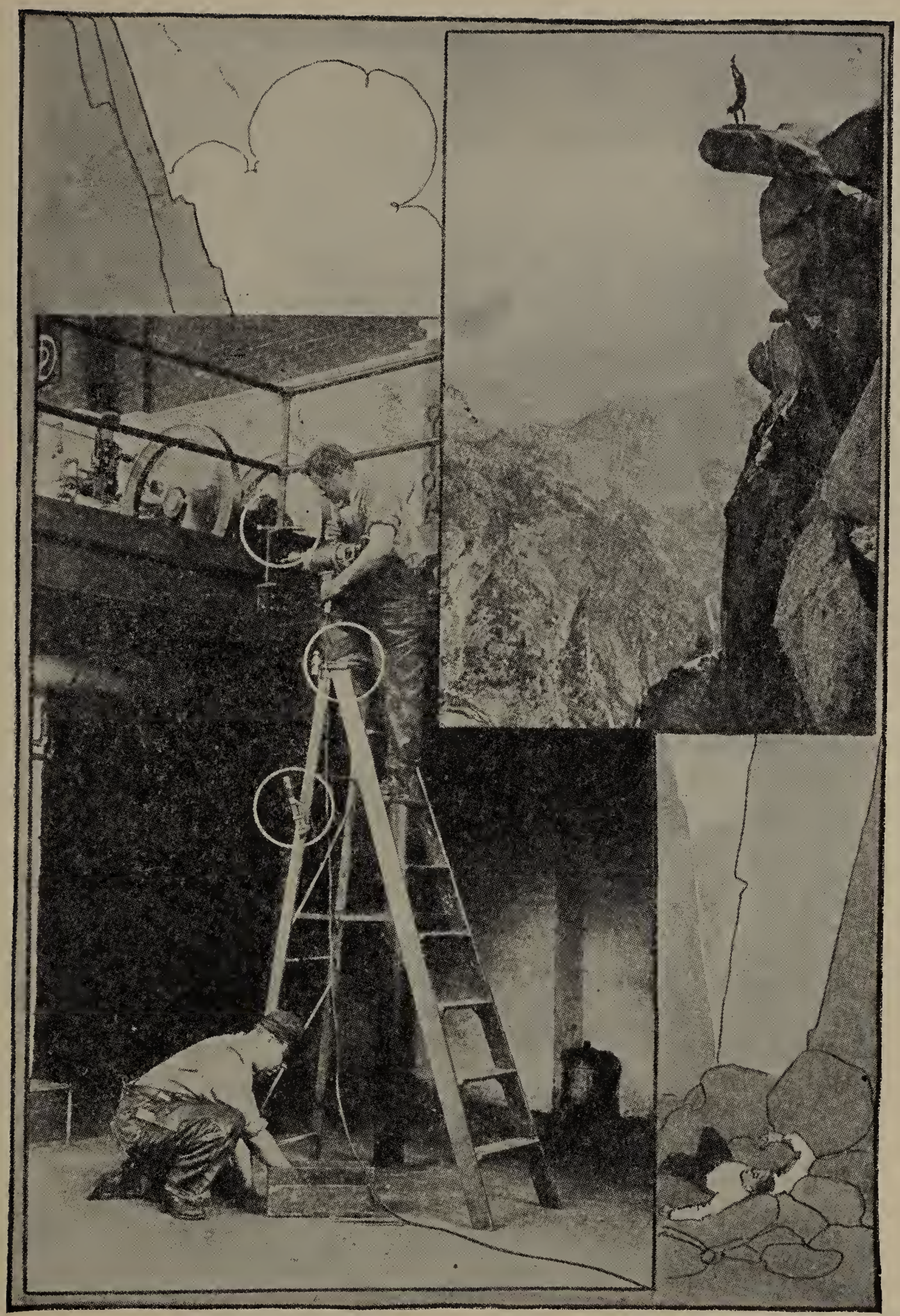
5. Don't keep tin cans where mosquitoes can breed.

6. Don't put flower boxes or other loose objects on your window ledges unless properly fastened. Many persons are seriously injured by such articles falling on them.

7. Don't place anything on the fire-escape which would obstruct it in case of fire. To do so is nothing short of criminal.

8. Report to the Health Department any unsanitary conditions. If you are well, keep well by helping others.

9. Keep your eyes open. Learn to observe. It costs nothing, and is a habit that will always help you.



THE CARELESS WORKMAN. THE CHANCE TAKER.

WATCH YOUR STEP! LOOK BEFORE YOU LEAP!

More than 1,100 persons were injured in Pennsylvania in 1917 from falls into pits or over obstructions.

Reports for a period of twenty years show that nearly 200,000 people were killed or injured while trespassing on the railways of the United States. Of this number, equaling the population of a large city, about one-half were killed and the other half were seriously injured or crippled for life.

Three out of four elevator accidents occur through carelessness in entering or leaving the car.

Narrow escapes should remind you of the importance of being careful; they should teach you to be watchful in the presence of danger and not to rely on others for safety.

Most accidents are due to carelessness and chance-taking. Do not take chances, for the chance-taker eventually gets caught to his own injury.

QUESTIONS

Name some of the ways in which lead pencils or penholders have injured people's eyes through carelessness.

Did you ever know a child whose teeth had been knocked out? Why will the child suffer from that accident all through life?

Why is it dangerous to "box" or pull a child's ears?

Did you know that the great electrician, Thomas A. Edison, was made deaf when a boy by the thoughtlessness of a railroad employee? When you go to the library, read about it.

Name some other accidents resulting from dangerous "horse-play."

A THREE-HUNDRED-MILLION-DOLLAR BONFIRE

The loss of property through fire in the United States is said to amount to more than three hundred million dollars a year. Besides the loss in property, about five thousand persons lose their lives, and about fifty thousand persons are injured by fire each year. It has been shown that three out of four fires that occur could be prevented by observing the rules of safety first.

Common Causes of Fire

1. Spontaneous combustion of oily rags, waste paper, rubbish, paint material, benzine, gasoline, etc.
2. Careless handling of matches.

Rule: Always break a match in half before throwing it away! How could this rule prevent forest fires?

Use safety matches if possible. Other kinds should be kept in a metal safe, away from rats and mice. Why?

3. Carelessness with gas.

Never hang draperies near gas jets.

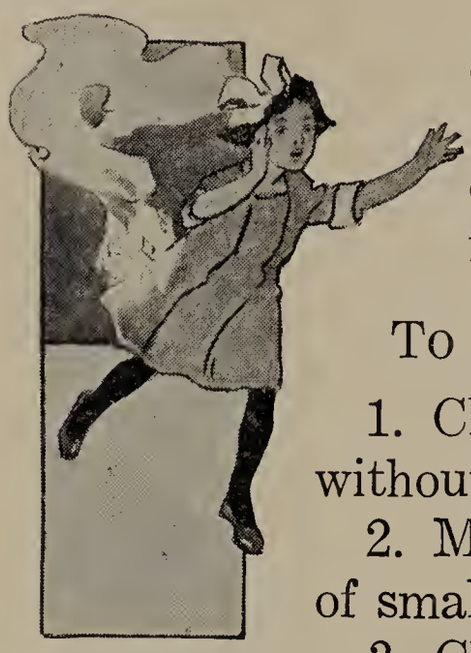
Every gas jet should be protected by a glass or wire globe.

If you notice an odor of gas never look for the leak with a lighted candle or match. Why?

4. Carelessness with kerosene oil.

Never use kerosene for kindling a fire. Why?

It is better not to place a lighted lamp on a table covered with a long cloth. Why?



Do not fill lamps at night. Why?

5. Carelessness with electricity.

Do not forget to turn off the current when you leave the electric iron.

To Avoid Accidents from Fire

1. Children should not make bonfires without the aid of older persons.

2. Matches should be kept out of reach of small children.

3. Children should be taught to be careful of open fireplaces.

4. Children should be taught to roll if their clothing catches fire. This would save scores of lives in a year.

Safety first! Look ahead! See the danger before the accident.

How to Put Out Flames

If your clothing catches fire, do not run. Roll, in a rug if possible, on the floor or ground.

In putting out fire on another person's clothing, use rugs or coats or blankets. In throwing a rug on another person, be careful not to allow your own clothing to catch fire. Let

the sufferer lie down and roll. Stand back of the rug, and throw it from the head downward.

If You Are Caught in a Burning Building

1. Do not rush with the crowd to the door. There is often more danger of being crushed in the jam than of being burned to death.

2. Stop to think. If there is much suffocating smoke, lie down and creep on hands and knees to the door or window. If possible wrap a wet towel around your head, covering nose and mouth. Why?

Always notice where the fire-escapes are when you enter a large building. The doors of all large halls, theaters, churches, and schools should be marked "Exit" and open outward. Why?

QUESTIONS

Name some other causes of fires than those mentioned.
How do great fires start—with big blazes?
Are you as careful as you should be?
Will you try to remember "Safety First"?
Why is Fire Prevention Day, if properly observed, really a Safety First Day?

When you light a match you start a fire; be sure to put it out. Common matches are more dangerous than safety matches. Safety matches are made safe by placing part of the lighting substance on the the tip, and part on the box. For this reason they will light only when rubbed on the striking surface of the box. Only safety matches should be carried in the pocket.

FIRST AID TO THE SICK OR INJURED

1. Little Accidents

Safety First teaches us how to avoid accidents. First Aid teaches us what to do when they occur.

One out of every four accidents is a little one, calling for only a simple remedy and not resulting in loss of time. Most of such little accidents arise from little dangers which care would have prevented.

A small scratch—something in the eye—a surface bruise from a slight fall—may mean little more than an inconvenience for a few days. If not properly attended to at once, little accidents may become serious. The loss of an arm, an eye, or a leg, takes the joy out of life. The sad part of it is that almost all such losses could be prevented by forethought.

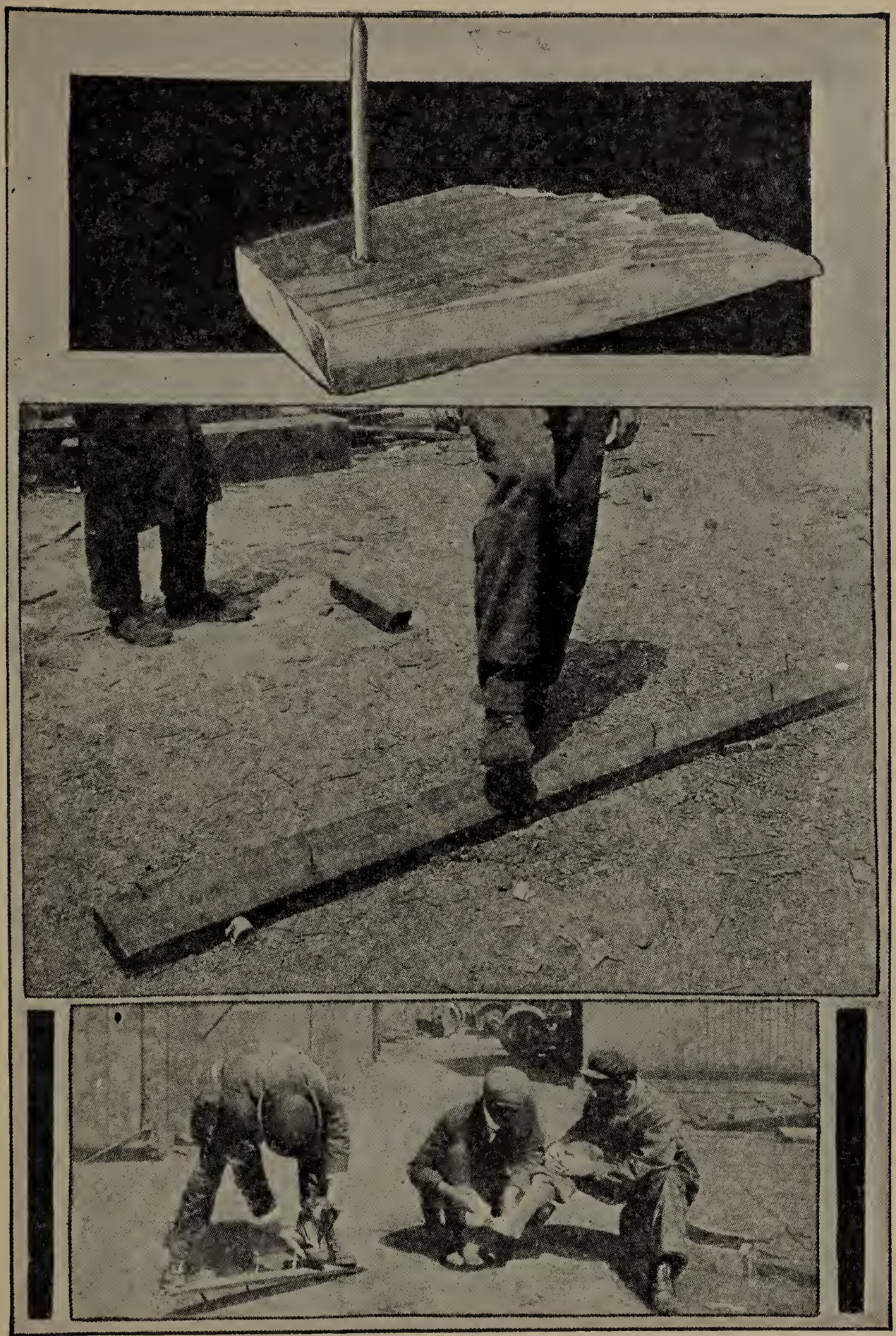
2. Neglected Wounds

Treatment of all injuries is most necessary. Serious cases of blood poisoning often occur from neglect; and not only mean loss of dollars and cents, but also great suffering, and perhaps the loss of a finger, a hand, a leg, or even of life.

For example: An employee in a steel mill, while changing rolls, caught his finger on the sharp edge of a bolt and did not have the injury treated. The wound became infected, making it necessary for the injured man to be absent from his work for three weeks.

3. Fourth of July Accidents

A Safe and Sane Fourth of July means Safety First.



How Can You Help Prevent an Injury of This Kind?

If toy pistols and firecrackers and other toys containing gunpowder were perfectly safe playthings, nothing would be said about discouraging their use, but gunpowder wounds are extremely dangerous.

Gunpowder is not clean. It is very dirty because it contains so many of the deadly germs of lockjaw. This germ has such a terrible effect upon the body that, if not destroyed in time, it causes the jaws to lock together so tightly that they cannot be forced open. The disease nearly always causes death.

Toy pistols, firecrackers and blank cartridges, being loaded with gunpowder, are very dangerous playthings. Any physician or nurse will tell you that the hospitals have many deaths from tetanus or lockjaw after the Fourth of July.

4. What are Germs?

Germs are little living particles too small to be seen without a miscroscope. They cause more diseases and deaths than any of the big animals you are afraid of, such as lions or bears or tigers. They make great deep sores out of little cuts, and prevent wounds from healing. So you can readily see how necessary it is to keep all materials which touch broken skin perfectly clean—and they cannot be clean if they are touched by the hands. Neither is any cloth clean which has come in contact with dust. Since you know this, you will try to keep germs out of any wound.

Do not think that every germ does evil, for some germs are good—just as some people are good and some are bad. Indeed, we depend for some kinds of food

upon the action of certain good germs. Among such foods are cheese and vinegar.

The disease germs which we dread most in cases of wounds are the germs of blood-poisoning and lockjaw. These are everywhere about us, in standing water, air, dust. They cannot do a bit of harm to the outside of the body if the skin is unbroken, any more than a fly can do harm to the armor of some old knight. But if they can enter where the skin is broken, they begin to do all kinds of harm, which sometimes results in months of suffering from "infected" wounds, and sometimes finally causes the patient to lose a leg or an arm, or perhaps to die.

5. First Aid Treatment of Little Accidents

Every home should have tincture of iodine, absorbent cotton, and sterile gauze where they may easily be found. These articles may be purchased at the drug store at small cost. Always send for a doctor if an accident is serious.

Powder Wounds

These are dangerous because powder carries the germs of "lockjaw."

Wash the skin. Paint with iodine.

Apply vaseline. This loosens any bits of powder in the wound. It may be washed off the next day.

Every wound of this character must be treated by a doctor.

Cuts and Small Wounds

Apply tincture of iodine.

Soldiers in the army carry this valuable remedy in their kits. They are taught to pour it on a wound immediately, because it will destroy germs.

To apply iodine to a cut—roll a little absorbent cotton on a tooth pick, dip into the iodine and paint the cut. Throw it away after using.

Burns and Scalds

For slight burns or scalds apply any one of the following:—

Bicarbonate of soda (baking soda) dusted on; olive oil; vaseline; white of egg; flour-and-water paste; or starch and water paste.

Bruises

Bruises are "black and blue" spots from a blow or fall or pinching, causing small blood vessels to rupture under the skin.

Apply at first:

Ice, or ice water; or alcohol and water, half-and-half; or witch-hazel or arnica; or vinegar diluted with water.

Afterward use hot applications. Gentle rubbing or massaging helps to remove the discoloration. If the surface is scraped, as from a fall in sand, paint with tincture of iodine.

Fainting

Fainting is caused by too small a quantity of blood going to the brain.

To prevent: Fresh air; drink of cold water; half

teaspoonful aromatic spirit of ammonia in water; bending head between knees.

If the person has fainted:

Keep the crowd back; place in a lying-down position.

Dash the face with cold water.

Let the patient inhale smelling salts or household ammonia.

Rub the limbs toward the body.

Remember: An unconscious person cannot swallow. Medicine may enter the windpipe and cause the patient to strangle. After the patient becomes conscious, stimulants may be given; such as one-half teaspoonful of aromatic spirit of ammonia, or hot coffee.

Something in the Eye

Wink. Do not rub. Lift upper lid down over lower lid, blowing opposite nostril. If this method fails, ask an older person to roll the lid back over a match stem, and remove object with the corner of a clean handkerchief. If the accident is at all serious, send for the doctor.

Stings or Bites of Insects

Extract the sting if it remains imbedded in the flesh. Apply household ammonia, diluted with a little water, or a solution of bicarbonate of soda (one teaspoonful soda to one cup water).

Mud, wet salt, slice of onion, arnica, witch-hazel or camphor are soothing. If there is much swelling, apply cracked ice. Apply spirit of camphor or alcohol to mosquito bites.

Electric Shock

The touching of electric wires (live wires) is extremely dangerous, often killing instantly. Avoid touching any wire, whether it seems dangerous or not.

Do not touch a person in contact with a live wire with your bare hands, for the current will pass through his body to your own. If possible, cover your hands with rubber (tops of rubber boots, rubber gloves),

then touch only his clothing. A dry stick or board may be used to knock a loose wire away from the person in contact with it. Send for a doctor.

QUESTIONS

I

What is the chief danger from fire-works?
Do they sometimes cause damage to property?
What are some good ideas for celebrating Independence Day?
What is meant by a "safe and sane Fourth"?
What did you do last Fourth of July?
Do you think of any way you would have enjoyed the day more?

What is the first aid treatment for powder wounds?
Why are such wounds so very dangerous?

II

Name some ways to avoid accidents from fire.
What would you do if your clothing caught fire?
How could you help a child whose dress was in flames?
What is the first aid treatment for burns and scalds?
Suppose your little brother falls and bruises his knee—what will you do to help him?
If your mother should faint, what would you do?
If a cinder is blown into your sister's eye—what can you do?
What should always be done in cases of serious accident?

BREATHING AND POSTURE

Wrong Posture	*Right Posture*
Hollow chest	Developed chest
Weak lungs	Strong lungs
Shallow breathing	Deep breathing
Poor circulation	Good circulation
Ill health	Vigorous health

Head
Neck
Chest
Abdomen
Balls of feet

should be balanced one over the other in a straight line.

Why is caring for your own health safety-first?
Why are correct breathing and posture safety-first?
What is meant by "an ounce of prevention is worth a pound of cure?"

Adapted from Junior Red Cross Manual.

THE BUBBLING FOUNTAIN

This is a magic cup
That needs no lifting up,
And gushes the cool drink
From an over-flowing brink,

From an ever-filling hollow.
As you swallow,
You can feel the water go
Against your lips with tumbling flow
And all its noises hear,
As if you were a deer
Or a wild goat,
Sucking the water into your throat
Where a little brook goes by
Under the trees and summer sky.
Oh, it is fun to drink this way!
Like a pleasant game to play,
Not like drinking in other places;
And it is fun to watch the faces
That come and bend them at this urn.
Something you can learn
Of each person's secret mind:
Know which is selfish, which is kind.
Many of the young are old and think
A drink is nothing but a drink;
Water is water, always the same;
They could not turn it into a game.

But the children know 'tis a gay, rare thing
To drink outdoors from a running spring;
And laugh and quaff,
As if their zest
Would challenge to a test
The bounty of this store
Which gives, and gives, and still has more.

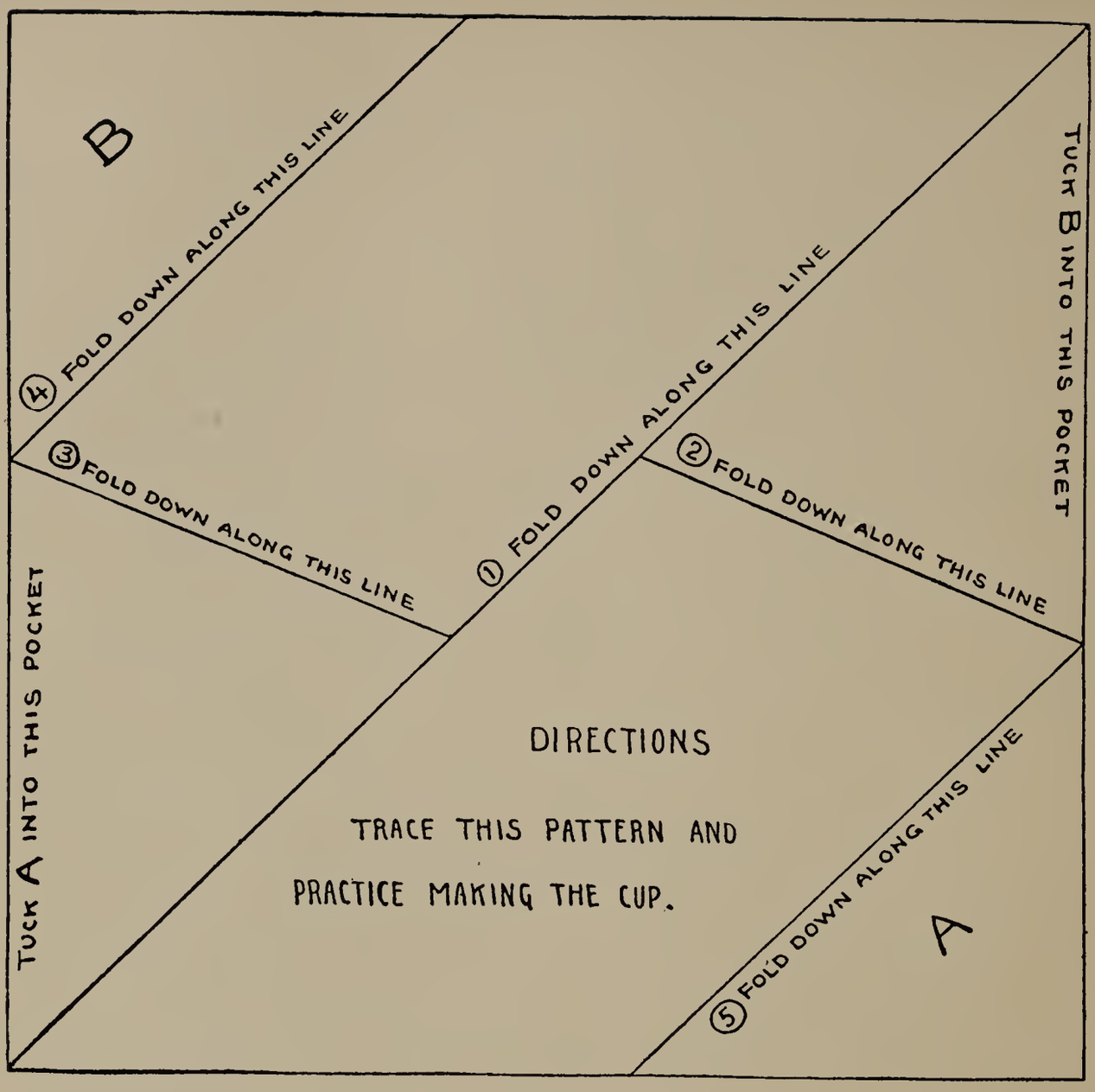
—*Helen Hoyt.*

DAILY RECORD OF HEALTH HABITS

1. I washed my hands before each meal today.
2. I washed not only my face but my ears and neck, and cleaned my finger nails today.
3. I tried to keep fingers, pencils, and everything that might be unclean out of my mouth and nose.
4. I drank a glass of water before each meal and before going to bed, and drank no tea, coffee nor other injurious drinks today.
5. I brushed my teeth thoroughly in the morning and in the evening today.
6. I took ten or more slow deep breaths of fresh air today.
7. I played outdoors or with windows open more than thirty minutes today.
8. I was in bed ten hours or more last night and kept my window open.
9. I tried today to sit up and stand up straight, to eat slowly, and to attend to toilet and each need of my body at its regular time.
10. I tried today to keep neat and cheerful constantly and to be helpful to others.

—*Junior Red Cross Manual.*

What is your report on each of the above points?



To Make a Sanitary Drinking Cup from any Piece of Clean Paper*

First cut a piece of paper the same size as the pattern; trace the folding lines and make the cup. Next unfold this and note the folds. Then cut a piece of paper twice the size, or about eight inches square, and fold a larger cup in the same way as the smaller. With a little practice this can be done without the aid of a tracing.

* From "The Mary Frances First Aid Book."

QUESTIONS

I

Make a list of some dangers which children meet every day in going to and returning from school.

How may they avoid such dangers?

Do they run into any dangers in their own playground?

What can you suggest to make your playground safer?

How is your fire drill an example of "safety first"?

Did you ever see a large fire?

Do you know how it started?

What do you think about the use of kerosene in starting fires?

II

What is first aid treatment?

Why should everyone learn something about first aid?

Have you ever just escaped being severely injured? Tell about it.

Whose fault was it? What did you learn from your experience?

What is meant by "Make your head save your heels"? How could you "make your head save your life"?

What is meant by "Look before you leap?"

What do you think about safety first—does it pay?

Why are foolish risks cowardly acts?

III

Name some ways in which you can protect yourself and others from danger.

Can you tell about a time when you have done this?

Is it safe for children to play in the streets?

Do you realize that sometimes the brakes of automobiles and trolley cars do not hold, and the cars get beyond the drivers' control?

Do you realize that this is especially so on a rainy day? Do you know what the word "skid" means?

PART III

THE AMERICAN RED CROSS

Junior Membership and School Activities.

Patriotism and Service.

A PROCLAMATION

To the School Children of the United States:

The President of the United States is also president of the American Red Cross. It is from these offices joined in one that I write you a word of greeting at this time when so many of you are beginning the school year.

The American Red Cross has just prepared a junior membership with school activities, in which every pupil in the United States can find a chance to serve our country. The school is the natural center of your life. Through it you can best work in the great cause of freedom to which we have all pledged ourselves.

Our Junior Red Cross will bring to you opportunities of service to your community and to other communities all over the world, and guide your service with high and religious ideals. It will teach you how to save in order that suffering children elsewhere may have the chance to live. It will teach you how to prepare some of the supplies which wounded soldiers and homeless families lack. It will send to you through the Red Cross bulletins the thrilling stories of relief and rescue. And best of all, more perfectly than through any of your school lessons, you will learn by doing those kind things under your teacher's direction, to be the future good citizens of this great country which we all love.

And I commend to all school teachers in the country the simple plan which the American Red Cross has worked out to provide for your co-operation, knowing as I do that school children will give their best service under the direct guidance and instruction of their teachers. Is not this perhaps the chance for which you have been looking to give your time and efforts in some measure to meet our national needs?

September 15, 1917 Woodrow Wilson.

A GREAT HONOR

On September 15, 1917, a great honor came to the school children of America. From the White House in Washington the President of their country sent them a letter, in the form of a proclamation. In this proclamation President Wilson asked the school children to do their part as good citizens of their country by joining the Junior Red Cross, and to help in the mercy work of the American Red Cross.

You see, until the time of President Wilson's proclamation, most people had thought of children as needing grown people's help. Their parents or their teachers or the government had always been planning something more to do for the children, some more advantages to give them, and they had not stopped to think of what the children could do.

But the World War so changed conditions that it set everyone thinking, and some of the wiser people said, "Why wait for children to grow up before they help us? Children love to help. Let us ask them to do their part as good citizens now."

The Red Cross, merciful and glorified, lives imperishable. It summons all Americans to the greater work of the future.

THE JUNIOR RED CROSS

Before the Junior Red Cross was planned, only grown people belonged to the Red Cross. When the grown people prepared the junior membership they invited twenty-two million new members into the ranks of their army, the army which fights our greatest enemies—suffering and disease.

The President knew that the school children of America wanted to be good citizens. He knew that they wanted to be helpful. He was glad when the Red Cross prepared a junior membership with school activities, for the Junior Red Cross is the gateway through which children may enter the Land of Helpfulness for their Country and their Flag.

The soldier may die for love of his country, but boys and girls can live to serve their country. If they join the Red Cross when they are young, they have many more years in which to serve than if they wait until they are grown.

The Junior Red Cross made a glorious record of service during the World War, a record of which it may well be proud. Now its members are enlisted in peace activities which will work great good to their country and to the world. They are carrying their ideals and habits of service into the community and national life. By working for health, and by aiding in the fight against disease and suffering, they are preparing for the years to come; they are preparing the Junior Red Cross of today to be the American Red Cross of tomorrow.

THE GOOD CITIZEN

What is meant by a good citizen?

The good citizen can be counted on for help in time of need. The good citizen is a good neighbor.

To be a good neighbor is to be the best of citizens.

You know how much one good neighbor can do.

Imagine how much good a thousand good neighbors working together could do. Five thousand. Fifty thousand. The Red Cross is made up of millions of good neighbors working together, doing for others what one good neighbor tries to do alone.

So the Red Cross is made up of the best citizens.

The plan of the Red Cross is to teach the Junior Members the duty of good citizenship. The highest duty of the good citizen is to serve his country.

Scarcely a month passes without a call to the Red Cross for aid from some people in distress.

By giving funds they helped the people in—

1906.	San Francisco Fire, giving.....	$3,087,469
1906.	Japanese Famine, giving.....	245,855
1908.	Messina, Italy, Earthquake, giving....	985,300
1912.	Titantic Shipwreck, giving.....	125,933
1913.	Ohio Flood, giving.....	2,472,287
1916.	U. S. National Guard, Mexico, giving..	100,000

If you add these sums, you will get a little idea of the good work done by the American Red Cross before the United States entered the World War. During the war tens of millions of dollars were spent in helping the war-stricken countries of Europe. You can see that the Red Cross is truly a good neighbor.

How the Juniors Served in Time of War

They learned to make bandages and hospital outfits for wounded soldiers.

They made clothing for needy children.

They collected books and magazines for the soldiers and sailors.

They helped to gather crops and other food.

They made games and sweetmeats for the soldiers.

They knitted sweaters, helmets, mufflers and wristlets.

They made various other articles according to the rules and regulations sent out by the Red Cross.

They helped the families of the men who were serving in the army or navy.

They were always ready to do any service which the Red Cross planned for junior members.

Can you name other ways in which they served?

How the Juniors Serve in Time of Peace.

They are showing what good grown-up citizens they are going to be by doing their part well as junior citizens. The small children will imitate them and thus they will help make other good citizens. When money is needed they can aid their school to raise its funds for Red Cross work.

If they are good Junior Red Cross members they will be good citizens. Not only will they be a real help in their own home country, but will do what they can to help all the world.

In order to give such good services to their country, children should do all in their power—

To keep their health;

To perform their daily duties well;

To improve their neighborhood or the community in which they live;

To care for harmless birds and animals;

To learn what they can of first aid to the injured;

To learn something about home nursing;

To practice habits of thrift and saving at all times;

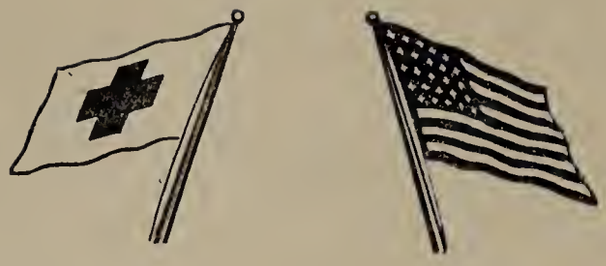
To learn to spend money and to use materials so wisely that nothing will be wasted;

To share their good things with others about them who do not have such blessings; in other words, to be unselfish and helpful;

To do what they can to relieve the sufferings of children in every land, and to share with them some of the privileges and happiness which they enjoy.

The Red Cross asks children to pay attention to these things because they will help them to be good citizens, anxious to serve their country as faithfully in time of peace as in time of war

Can you name other ways in which they may serve?



THE FLAG OF SERVICE

It is no wonder that girls and boys are proud of being members of the Junior Red Cross, for by enlisting under the Red Cross flag they enlist in the service of their country.

Those who love the Stars and Stripes best of all flags will love the Red Cross Flag of Service next best, for it stands for all that is noble in the hearts and minds of the civilized nations of the world.

Some day this world will forget about such a thing as war. Instead, people will be busy building things which will make the world a better place for boys and girls and men and women to live in.

Some day people will live according to the laws of health so that sickness and disease will become very rare, and people will die only of old age or accident.

Some day kings and ruling classes will be done away with, and the people of all countries will make their own laws. When that bright day comes there will be much less sorrow and suffering. People will be happy; and we know that the right kind of happiness is the right of every human being.

Every young citizen can help bring such a wonder-

ful day. Every child now living loves the children who will live in the coming years. The way to make this world a happy place for those coming children is for the children now living to do their parts as good Junior American Citizens.

The Red Cross on the white flag means
"If I die for my country, I give my life,
If I live for my country, I give my life."

YOUR COUNTRY

Your country is all that surrounds you, all that has reared and nourished you, everything that you have loved. That land you see, those houses, those trees, those smiling girls that pass, that is your country. The laws that protect you, the bread which rewards your toil, the words you exchange, the joy and the sadness which come to you from men and the things among which you live, that is your country. The little chamber where you once saw your mother, the memories she has left you, the earth where she reposes, that is your country. You see it, you breathe it everywhere. Picture to yourself, my son, your rights and your duties, your affections and your needs, your recollections and your gratitude, all united under one name—and that name will be—Your Country.

—*Emile Souvestre.*

THE STORY OF THE RED CROSS FLAG

1. Henri Dunánt

There is a little country lying in the heart of the Alps mountains. The name of this country is Switzerland. Here, at Geneva, in the year 1829, a little boy was born. This boy's name was Henri Du-nánt.

He was a splendid little fellow, and as he grew up loved to play all kinds of games. But if anyone were hurt in playing, Henri was the first to try to help the sufferer. He was that way after he came to be a man. It made him sad to see people suffer.

When he was thirty-one years old he was traveling near the battlefield of Solferino and saw that terrible battle fought. When the battle was over and the smoke cleared away, thousands of wounded French and Sardinian and Austrian soldiers lay without help for days upon the open ground.

Henri did all he could to help the wounded and dying at that time. When he returned to his home he wrote a book which he called "Souvenir de Solferino," in which he told the horrible story of their suffering; and he asked in the book whether it would not be possible to form a society in all countries which in times of war would help the wounded no matter what their nationality, no matter whether they were enemies or not.

Read also the story of Florence Nightingale in Young American Reader, "Our Home and Personal Duty."

His book was much talked about, and many people became interested in his plans.

2. The Meeting at Geneva

Sometime afterward several nations sent men to Geneva, and these men formed the society which Henri Dunant had wished for. They all signed a treaty saying that their nations agreed not to fire upon the people of the society who were helping the wounded soldiers. This was the Treaty of Geneva.

"But how will we know who the helpers are?" someone asked.

"Every helper must wear the same kind of badge," was the answer.

"What shall it be?" everyone wondered.

Now, the national flag of Switzerland is a white cross on a red field. The committee of men thought it would be a compliment to the Swiss people, in whose country they had met, to reverse the colors of their flag and use it as a symbol of their new society.

So they used a red cross on a white field, and from that came the name of the Red Cross. After the Stars and Stripes, the Red Cross Flag is the most beautiful flag in the world, is it not?

Since the original meeting at Geneva many similar meetings of the Red Cross societies of the world have been held. At these meetings plans have been made not only to relieve the sufferings of war, but to lessen the suffering and disease that afflict the world in time of peace.

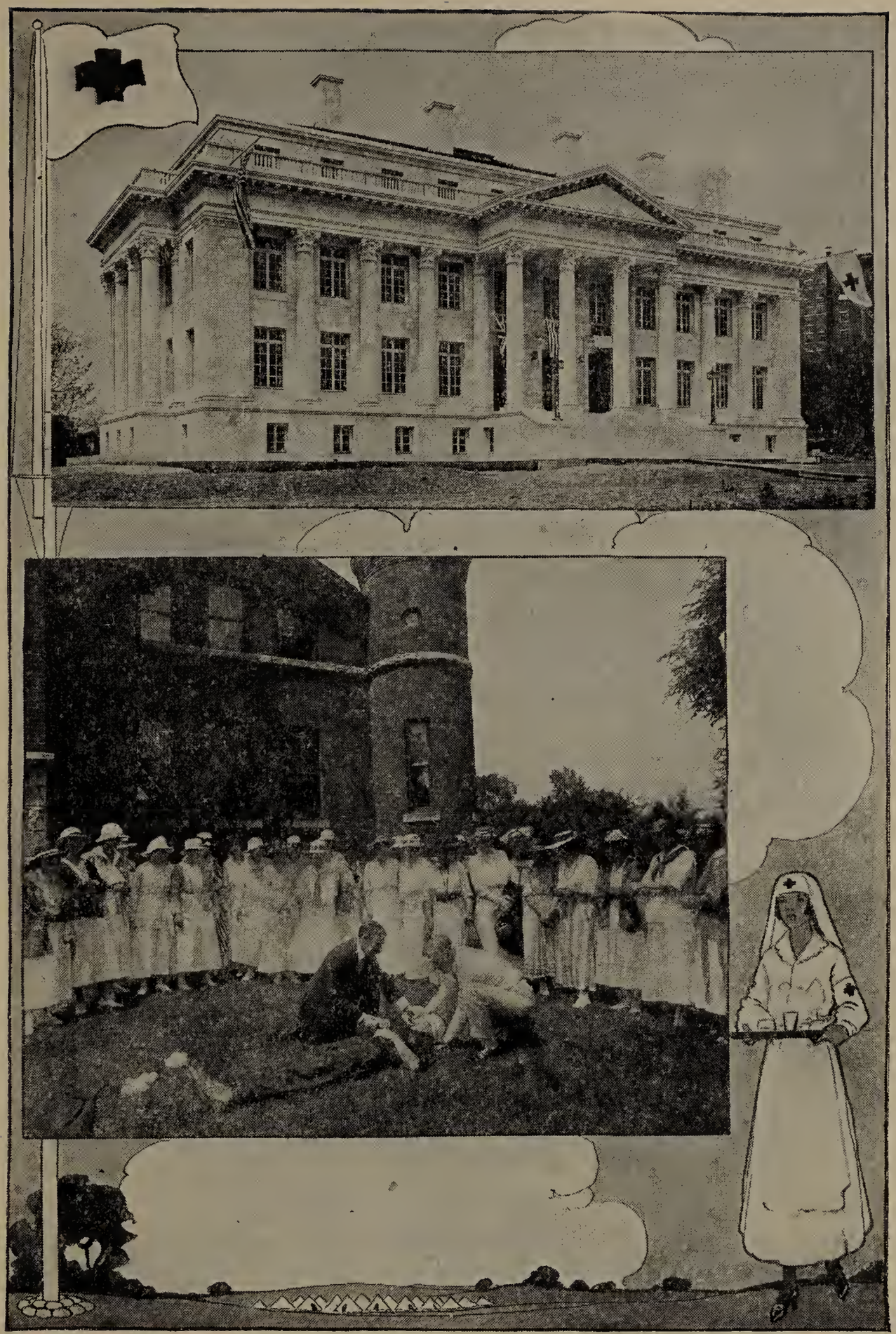
THE AMERICAN RED CROSS

The American Red Cross came to be in this way. At the time when the first Red Cross meeting was held in Geneva, the Civil War was going on in the United States, and our people were too busy with their own affairs to learn much of the new organization.

You have read the story of Clara Barton and of her work for wounded soldiers. You remember that, after the Civil War was over, Miss Barton went to Europe and, while in Switzerland, learned more about the Red Cross. She was told that the United States had been asked to become a member, but had not done so; and she promised to do everything possible, on her return, to bring this about.

After several years of hard work on the part of those interested, the Treaty of Geneva was finally signed by President Arthur in 1882, and the American Red Cross was formed with Miss Barton as its first president.

For many years the American people paid little attention to its Red Cross, but when the World War came they found it ready. In France, Belgium, Italy, Russia, in every war-stricken country of Europe where the cry of distress was heard, on every battle-field, at every point of danger, there the brave Red Cross workers carried relief and comfort to the hungry, the sick, the wounded, the dying. Now in time of peace, and in the same spirit of service, it seeks to prevent disease and to relieve hunger and suffering everywhere, both at home and abroad.



RED CROSS HEADQUARTERS, WASHINGTON, D. C. A CLASS IN FIRST AID

THE INTERNATIONAL RED CROSS

Up to the present time more than forty nations have signed the Red Cross treaty and have become members of the International Red Cross.

International means between nations. Do you not think that such an understanding between nations, and such kindness toward sufferers, will bring about a day of peace when all the nations of the earth will dwell in safety from the terrible destruction of war?

How can you help bring that day?

QUESTIONS

What kinds of work does the Red Cross do?

Do you know of any other work which shows as much mercy, kindness, and helpfulness?

How does the Red Cross help in cases of fire, flood, or famine?

Can you mention some catastrophes in which the Red Cross came to the help of our people?

Tell what you know about the work of the Red Cross at the time of the Johnstown flood; the San Francisco earthquake; the Cherry mine disaster.

Do you know what is meant by the "three R's" of the Red Cross—rescue, relief, reconstruction?

Do you belong to the national army which fights sickness, sorrow, and disease?

What can children do to help in such a great army?

What is your idea of a good citizen?

Would you not be happy to be able to say that every child in the United States was a junior member of the American Red Cross?

How would that affect the future of our country?

How would it make it a better place for the children who will live after you?

THE MEANING OF OUR RED CROSS

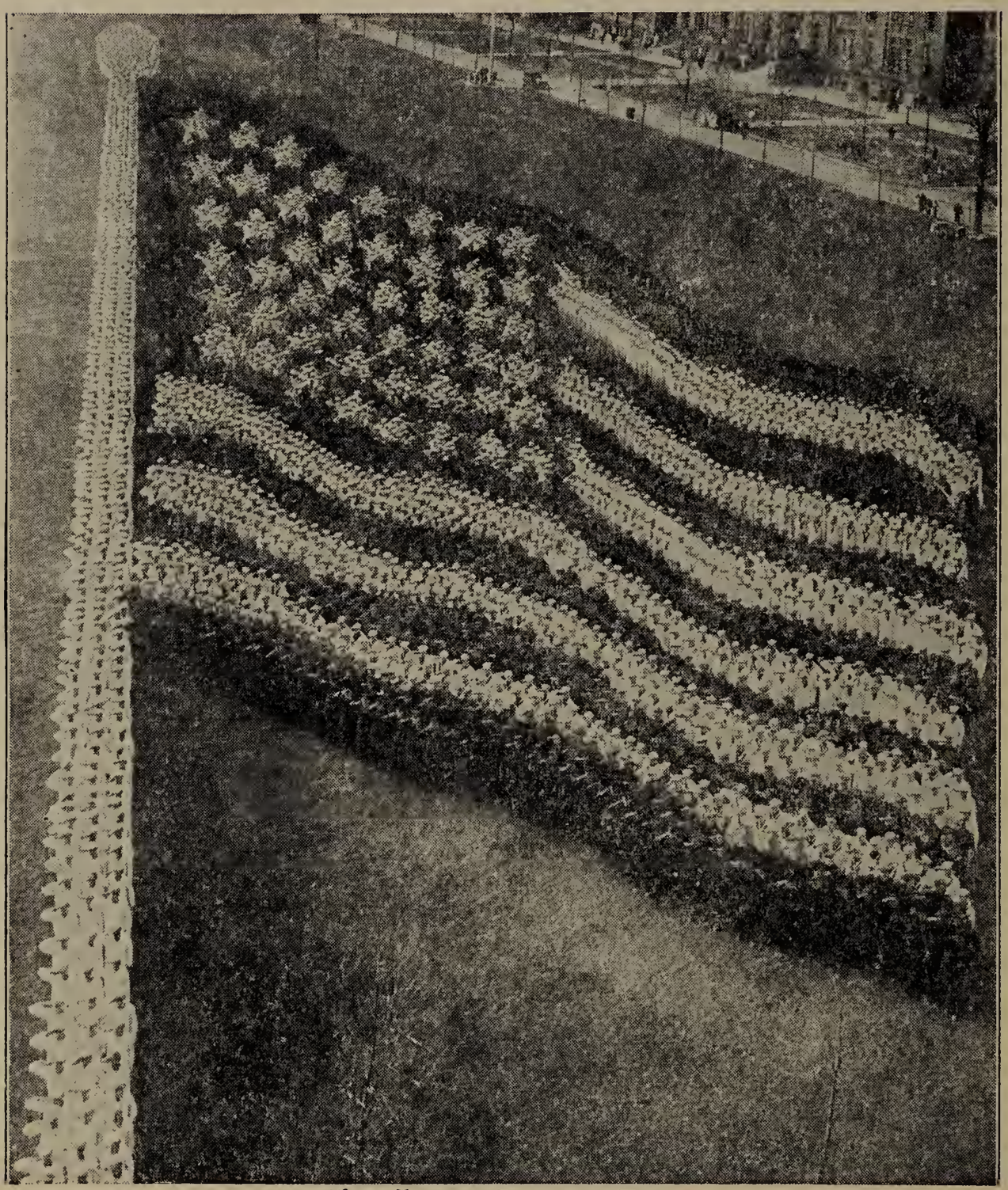
The red in our cross stands for sacrifice, for giving life, as the warm, crimson blood gives life to the body. The cross has the same length on all four sides of its arms, to signify that it gives life equally to all, high or low, east or west. It stands alone always, no words or markings on it, to show that the Red Cross workers have only one thought —to serve. They ask no questions, they care not whether the wounded be ours or of another people—their duty is to give, and to give quickly.

The Red Cross stands on a white ground, because real sacrifice can come only from pure hearts. Service must come, not from hate, but from love; from the noblest thoughts and wishes of the heart, or it will fail. That is why children love this flag. It is drawing them by millions in the schools of our land, in a wonderful army of rescue under the President, to make, to save, to give for others. And some day the children of all lands, under the Red Cross, will teach the grown people the ways of understanding and of friendship; the beautiful meaning of the Red Cross which is echoed in their lives.

H. N. MacCracken

THE LIVING LIBERTY FLAG OF THE GREAT WAR

This living flag was spread out over seven acres on the shore of Lake Michigan on the vast parade ground



The Living Liberty Flag.

of the naval training station at Great Lakes, Illinois. Nearly 10,000 men composed it and its staff. The star in the extreme left-hand corner was composed of 126 men. The pole, not including the ball, contained 700 men; the ball alone, 250 men. Sixteen hundred men composed the white stripes, 1900 the red stripes, 1800 the stars, and 3400 the blue field.

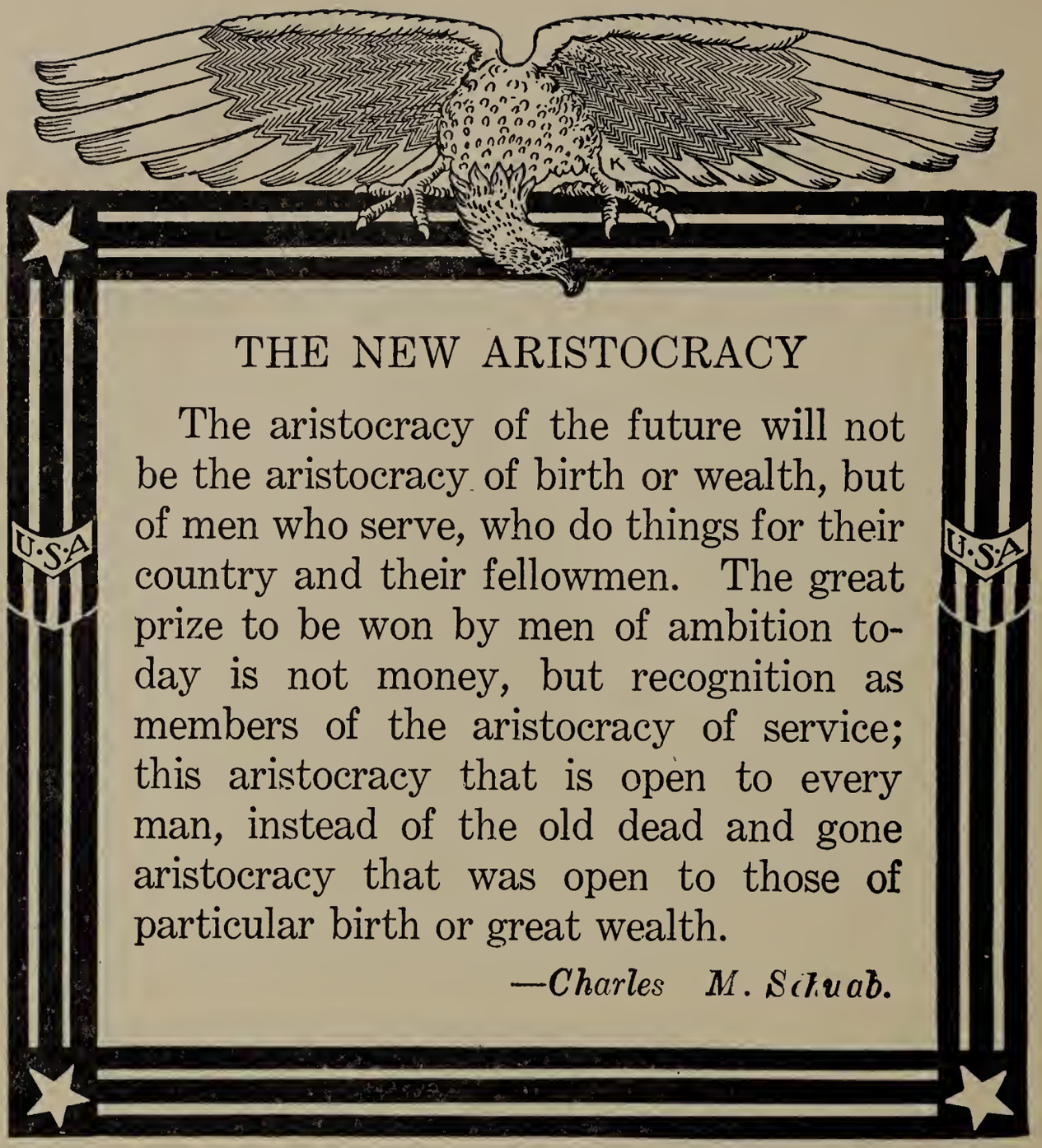
CO-OPERATION

Can you tell something about the great good accomplished during the World War by the co-operation, or the working together, of helpful organizations like the Young Men's Christian Association, Young Women's Christian Association, Knights of Columbus, Jewish Welfare Board, War Camp Community Service, American Library Association, Salvation Army, and Young Men's Hebrew Association?

If citizens pull together—making good laws and electing men who will work for the good of all—why will everyone in the world be happier in the years to come?

Could any one person, working alone, have brought liberty to our country? Could the different organizations, each working alone, have accomplished as much as they did by working together?

What I do, added to what you do, added to what others do each day, forms the history, or story, of the world. What kind of story will the children of the future read about **what** we did during our lives?



THE NEW ARISTOCRACY

The aristocracy of the future will not be the aristocracy of birth or wealth, but of men who serve, who do things for their country and their fellowmen. The great prize to be won by men of ambition today is not money, but recognition as members of the aristocracy of service; this aristocracy that is open to every man, instead of the old dead and gone aristocracy that was open to those of particular birth or great wealth.

—*Charles M. Schwab.*

QUESTIONS

What is the meaning of the word *aristocracy?* Do you often hear it used?

Can there be an aristocracy in a country where all the people are free and equal?

DEMOCRACY MEANS THE RULE OF THE PEOPLE.

What is meant by "making the world safe for democracy?"

Would the world be safe for democracy if some ruling class, like kings, tried to get more and more countries to rule over?

LINCOLN AT INDEPENDENCE HALL

I have never had a feeling political that did not spring from the sentiments embodied in the Declaration of Independence.

I have often pondered over the dangers which were incurred by the men who assembled here and framed and adopted that Declaration.

I have pondered over the toils that were endured by the officers and soldiers of the army that achieved that Independence.

I have often inquired of myself what great principle or idea it was that kept this confederation so long together.

It was not the mere matter of the separation of the colonies from the motherland, but that sentiment in the Declaration of Independence which gave liberty not only to the people of this country, but, as they hoped, to all the world for all future time.

It was that which gave promise that in due time the weights would be lifted from the shoulders of all men and that all should have an equal chance. This is the sentiment embodied in the Declaration of Independence.

All my political warfare has been in favor of the teachings that came forth from the sacred walls of Independence Hall. May my right hand forget its cunning and my tongue cleave to the roof of my mouth if I ever prove false to those teachings.

Abraham Lincoln.

Our Flag has gathered and stored chiefly this supreme idea: Divine right of liberty in man. Every color means liberty; every form of star and beam or stripe of light means liberty; not lawlessness; not license; but organized, constitutional liberty, liberty through law and laws for liberty.

—*Henry Ward Beecher.*

IN FLANDERS FIELDS

Of all the poems written by soldiers few have been more widely quoted than Lieutenant-Colonel John D. McCrae's "In Flanders Fields." The author himself made the supreme sacrifice.

In Flanders fields the poppies blow
Between the crosses, row on row,
  That mark our place; and in the sky
  The larks still bravely singing fly,
Scarce heard amidst the guns below.

We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
  Loved and were loved, and now we lie
    In Flanders fields.

Take up our quarrel with the foe!
To you, from failing hands, we throw
  The torch. Be yours to hold it high!
  If ye break faith with us who die
We shall not sleep, though poppies grow
    In Flanders fields.

QUESTIONS

Where is Flanders? How near is it to France?
What form of government has France?
What form of government do we have?
Do many countries have this form of government?
How are some other countries ruled or governed?
Why did Americans enter the World War?
How did this war help to "make the world safe for democracy?
Will the children in years to come be thankful to the people who served in the World War in somewhat the way we are thank-

l to George Washington, and the others who fought for liberty so many years ago?

What is meant by "our quarrel with the foe"?

What is meant by "the supreme sacrifice"?

What is meant by, "To you, with failing hands, we throw the torch"?

How can you hold the torch of liberty high?

If you are willing to give your life for liberty, or democracy, as the men in Flanders Fields were; or,

If you are willing to live your life for liberty, or democracy, by living every day in the best way you know how,

You are holding high the torch!

You are showing your love for your flag.

FREEDOM IS KING

God said, I am tired of kings,
  I suffer them no more;
Up to my ear the morning brings
  The outrage of the poor.

Think ye I made this ball
  A field of havoc and war,
Where tyrants great and tyrants small
  Might harry the weak and poor?

My angel—his name is Freedom—
  Choose him to be your king;
He shall cut pathways east and west,
  And fend you with his wing.

—*Ralph Waldo Emerson.*

OUR FLAG

Why do I love our flag? Ask why
Flowers love the sunshine. Or ask why
The needle turns with eager eye
Toward the great star in Northern sky.

I love Old Glory, for it waved
Where loyal hearts the Union saved;
I love it, since it shelters me
And all most dear, from sea to sea;
I love it, for it bravely flies
In freedom's cause, 'neath foreign skies;
I love it for its blessed cheer,
Its starry hopes and scorn of fear;
For good achieved and good to be
To us and to humanity.

It is the people's banner bright,
Forever guiding toward the light;
Foe of the tyrant, friend of right,
God give it leadership and might!

—*Edward A. Horton.*

O Beautiful! My Country!
What were our lives without thee?
What all our lives to save thee?
We reck not what we gave thee;
We will not dare to doubt thee,
But ask whatever else, and we will dare!

—*Lowell.*

YOUR FLAG AND MY FLAG

A SONG FOR THE PATRIOT*

Your flag and my flag,
And how it flies today
In your land and my land
And half a world away!
Rose-red and blood-red
The stripes forever gleam;
Snow-white and soul-white—
The good forefathers' dream;
Sky-blue and true-blue, with stars to gleam aright—
The gloried guidon of the day; a shelter through the night.

Your flag and my flag!
And, oh, how much it holds—
Your land and my land—
Secure within its folds!
Your heart and my heart
Beat quicker at the sight;
Sun-kissed and wind-tossed—
Red and blue and white.
The one flag—the great flag—the flag for me and you—
Glorified all else beside—the red and white and blue!

Your flag and my flag!
To every star and stripe
The drums beat as hearts beat,
And fifers shrilly pipe!

Your flag and my flag—
A blessing in the sky;
Your hope and my hope—
It never hid a lie!
Home land and far land and half the world around,
Old Glory hears our glad salute and ripples to the sound.—*Wilbur D. Nesbit.*

DO YOU KNOW YOUR STATE'S STAR?

"Every big and little state has a twinkler of its own." The date under each star in this flag is that of the year when that state helped to form or was admitted into the Union.

QUESTIONS

Read the poem on the page opposite.

What is meant by "Ship of State"?

What is meant by "Humanity is hanging breathless" on the fate of our country?

Where does the poet imagine our "Ship of State" to be sailing?

What can you do to help our country onward toward a Better Future?

How will this help the whole world?

SHIP OF STATE

Thou, too, sail on, O Ship of State!
Sail on, O Union, strong and great!
Humanity with all its fears,
With all the hopes of future years,
Is hanging breathless on thy fate!

. . . . . .

Sail on, nor fear to breast the sea!
Our hearts, our hopes, are all with thee;
Our hearts, our hopes, our prayers, our tears,
Our faith triumphant o'er our fears,
Are all with thee,—are all with thee!

—Henry W. Longfellow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