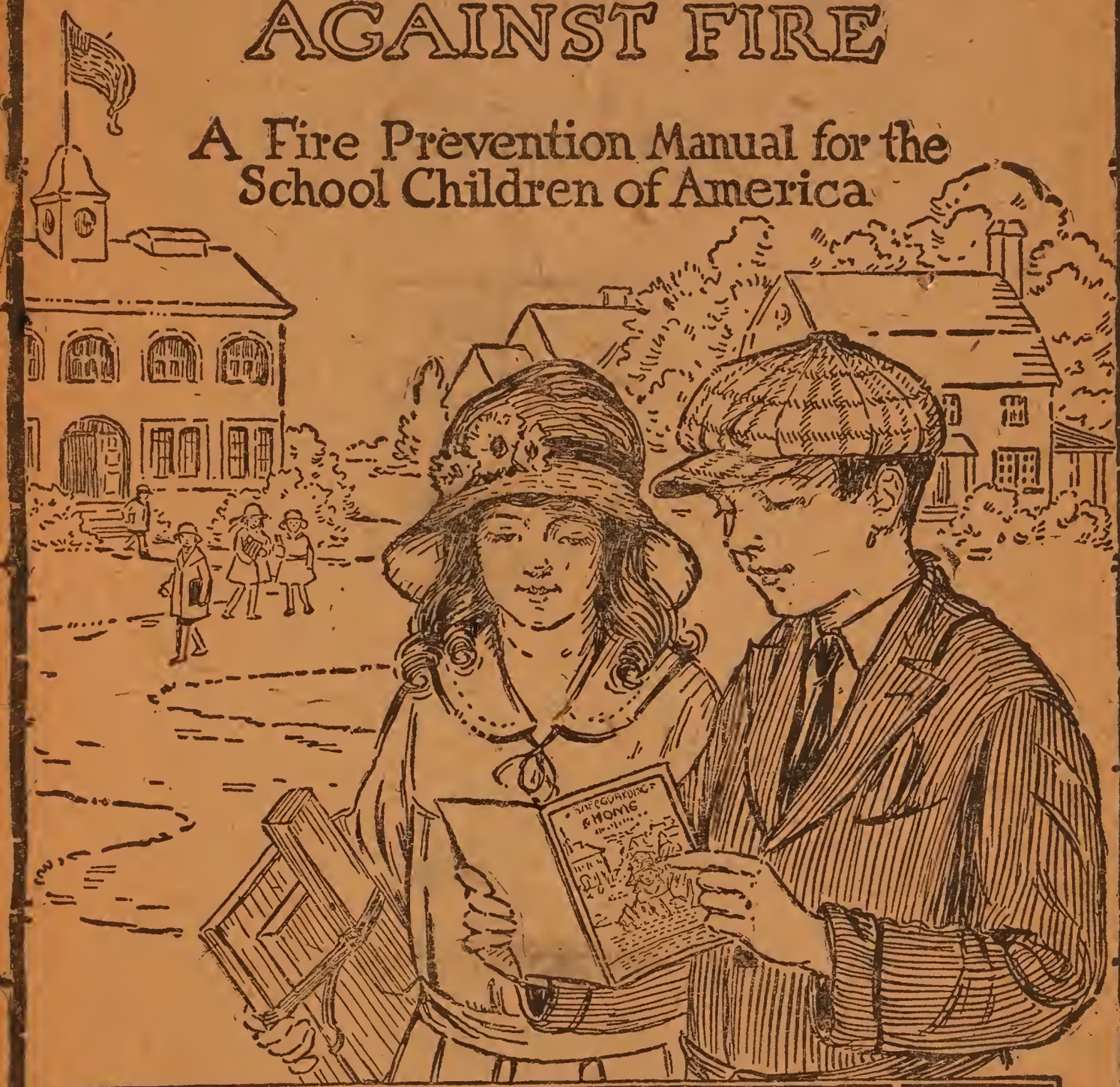
STATE OF NEW JERSEY
DEPARTMENT OF PUBLIC INSTRUCTION
TRENTON

The Teaching of Fire Prevention

September, 1920

SAFEGUARDING The HOME AGAINST FIRE

A Fire Prevention Manual for the School Children of America



"Every boy and girl who would be a good citizen should learn to protect his community and his country against loss by fire"

P. P. Claxton
United States Commissioner of Education

Prepared for
The UNITED STATES BUREAU of EDUCATION
BY
The NATIONAL BOARD of FIRE UNDERWRITERS

FOREWORD

HERE is a copy of the legislation enacted in the 1920 session of the Legislature concerning the teaching of fire prevention in the schools.

1. The Commissioner of Banking and Insurance and the Commissioner of Education are hereby empowered and directed jointly to provide a course of study in fire prevention for use in the public, private and parochial schools of this State dealing with the protection of lives and property against loss or damage as a result of preventable fire.

2. It shall be the duty of the board of education, school directors, trustees or other committees or persons having control of the public, private or parochial schools in each township, village, borough or city or school district thereof to arrange for said course of study in fire prevention and to compel its use in each school under its or their control or direction.

3. On and after September first, one thousand nine hundred and twenty, it shall be the duty of each teacher in any public, private or parochial school of the State of New Jersey to devote not less than one hour in each month, during which such school is in session, to the instruction of the pupils thereof in said course of study in fire prevention comprising the ways and means of preventing loss and damage to lives and property through preventable fires.

This is a subject of vital interest to everyone. The fire loss in this country is enormous—much larger than it should be. Many fires are caused by carelessness, and this carelessness may be reduced.

The fact that the Legislature has required the schools to teach this subject is an indication—but not the only one—of the widespread belief that the schools may help to check this evil.

In this, as in so many other subjects, conduct is of more value than mere knowledge, but knowledge will influence conduct.

We hope that the teachers of New Jersey will use the hour a month which is stipulated in the law to the very best advantage.

If this subject is taught by teachers with enthusiasm and with a spirit of earnestness, we are sure that much good will be accomplished.

Respectfully,

C. N. KENDALL,
Commissioner of Education.

FRANK H. SMITH,
Commissioner of Banking and Insurance.

July 1920.

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OUR COUNTRY'S FIRE LOSS

The Fires You Remember

WERE you ever in a burning house? Can you possibly forget it? Even though the fire may have been put out before it did much damage, you remember the excitement and fear. If you were old enough to realize the danger, you will never again care to pass through such a terrible experience.

You never have been in a burning house, do you say? That is fortunate, but at least you have seen fires and can plainly recall the clouds of smoke and the fierce crackle of the flames, as they spread and destroyed everything within reach. You may have noticed the people who escaped; do you remember their grief as they saw their home and comforts, their clothing, furniture, pictures, books, and the treasures that they had been gathering for so many years, suddenly swept away?

They Are Homeless Now

It is to be hoped that you have never seen a fire in which people have lost their lives, or have been badly injured—but these, too, often occur. They happen without warning, at points where they are least expected. People who have been going about their daily tasks without a thought of danger may suddenly find their escape cut off by flames that have been caused by somebody's carelessness.

In order that such a terrible thing may never happen through our carelessness, let us try to learn some things about fire, and especially about the ways in which it may be kept from becoming dangerous.

Watching the Clock Hand

Fires and the Clock

Here is a good way to begin: Stand in front of a clock and watch the long hand creep steadily from minute to minute. Every time it passes a minute mark, say to yourself: "Another fire has broken out; perhaps somebody's dearly-loved home is being destroyed or some child is being terribly burned——" then add, *"It could have been prevented."*

Watch that clock hand for ten minutes or more—"another fire"—"another"—"somebody's home"—"some boy or girl"—"some hotel, with the people struggling to escape"—"some factory, with dozens of hands thrown out of work"—"another"—"another." That is the way it goes, minute by minute, night and day, throughout the year. When you wake up in the morning, you may be sure that there will be hundreds of fires throughout the country before night; when you go to sleep at night, it is pretty certain that there will be hundreds of fires somewhere in the United States before morning. If some minutes go by without a fire, others may have two or three, for there are 1,440 minutes in the twenty-four hours, and each day has an average of more than 1,500 fires.

There will be 1,500 more fires tomorrow, another 1,500 day after tomorrow, and so on, sometimes a few more and sometimes a few less, but *averaging* pretty close to 1,500 for each day. Think of it—these fires

haven't yet occurred, *and they wouldn't occur* if people only would be careful.

Gold + Silver + Copper + Petroleum = "Fire Tax"

And it is not merely the *number* of these fires that is shocking—remember the terrific amount of damage that they do! A few years ago, one of the departments of the United States Government * spent a large amount of time getting together figures and comparisons about this damage. Some of the things shown were really startling. For example, the report stated that the United States "fire-tax" (meaning the direct cost of the fire damage, and the other costs that are indirectly due to fire) is greater than the combined value of the production of all our gold mines, silver mines, copper mines, and oil wells. This was bad enough, but the report went on to say that this same "fire-tax is greater than the value of all of the land and improvements in any one of these states: Maine, West Virginia, North Carolina, North Dakota, South Dakota, Alabama, Louisiana, or Montana." When you come to think of it, it is almost as though one of these great states were fed into the fire every year.

Burning the Value of Great States

Then, to make us understand it in still another way, the report added that the amount which might be saved if people would really take proper precautions would be "nearly enough to build a Panama Canal each year."

But perhaps the strongest statement of all was made in an address by Mr. Charles Whit-

*Report of the U. S. Geological Survey (1909).

ing Baker. This gives us a picture that we can almost see:

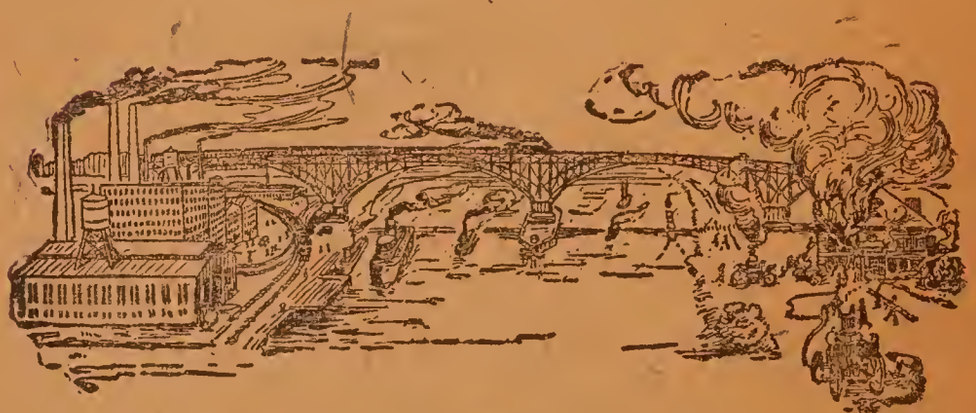
A Street of Desolation

A Street of Desolation

"The buildings consumed, if placed on lots of 65 feet frontage, would line both sides of a street extending from New York to Chicago. A person journeying along this street of desolation would pass in every thousand feet a ruin from which an injured person was taken. At every three-quarters of a mile in this journey he would encounter the charred remains of a human being who had been burned to death."

All of this means a good deal to boys and girls, for two reasons. In the first place, it is important for them to think of themselves as citizens, because in a few years they, themselves, will be owning the property, and paying the taxes of the nation; and, in the second place, while yet children, they can perform a wonderful service in saving their homes and neighborhoods from much of this loss.

This little book will tell how this may be done.



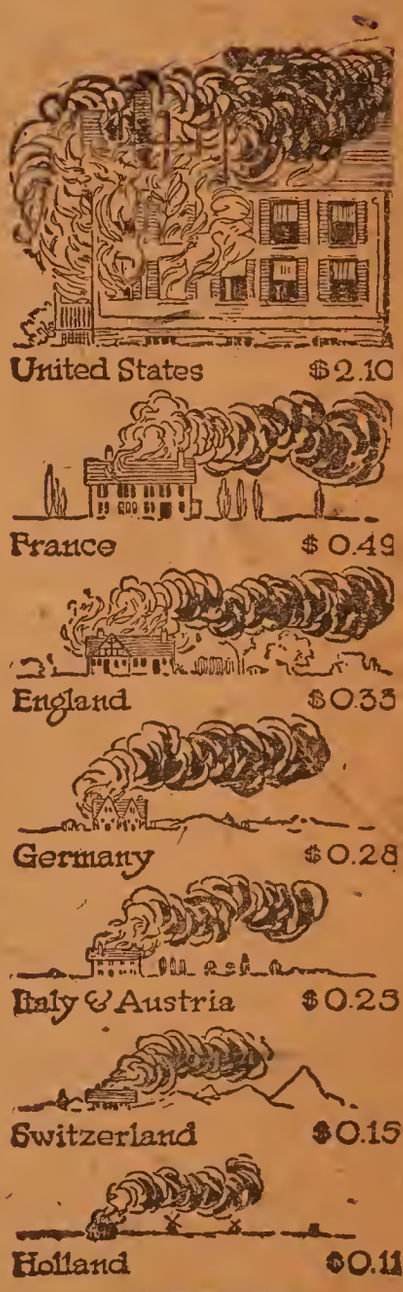
Fire Is a Good Servant, but a Hard Master

Ask Yourself the Question

LET us find out something about you—something that you may not even know yourself. Are you careless? That makes you stop and think a bit, doesn't it? You had never considered it in quite that way, but if you are honest with yourself, the answer probably will be "Yes," for almost everybody in this country is careless; that is the principal reason why we have so many fires.

Here are some figures that should open our eyes. In 1913, the year before the outbreak of the war, the average fire-loss for each man, woman and child in France was 49 cents; in England it was 33 cents; in Germany, 28 cents; in Austria, 25 cents; in Italy, 25 cents; in Switzerland, 15 cents; and in Holland, only 11 cents. In the United States for the same year the direct loss was $2.10—and the indirect loss was far higher. Our record was, therefore, more than four times as bad as that of France, and nearly twenty times as bad as that of Holland.

Vienna and Chicago are cities of about the same size. Vienna had fire losses for the year 1913 of $303,200; Chicago's were $5,513,237, or more than eighteen times as great. New York City's fire losses were about four and one-half times as large as those of



How the Fire Losses Compare

London. A similar comparison might be made with many other cities. Can we be proud of such figures?

Carelessness the Greatest Cause

Of course, there are more wooden buildings in America than in Europe. This is a condition which will take many years to change. But the most serious cause of fires could be removed at once, if all the people would assist; this cause is found in one word—carelessness.

The National Board of Fire Underwriters makes a study of hundreds of thousands of fires, and has prepared tables which show that in 1916, 28.9 per cent of all American fires came from strictly preventable causes, while 47.8 per cent were partly preventable, and 23.3 per cent came from unknown causes, which probably were largely preventable.

It must then be admitted that the United States, with all its advantages, is a nation of careless people. Carelessness is not a thing to be proud of; it is a great national sin. It shows itself in many habits of recklessness, wastefulness and untidiness. It burns our towns, it leads people to risk their lives at railroad crossings and other places of danger; it takes chances with health; it is shown in all dirty streets, littered backyards and untidy homes. It has been well described in the following quotation:

WHO AM I?*

I am more powerful than the combined armies of the world.

I am more deadly than bullets, and I have wrecked more homes than the mightiest of siege guns.

*Roy K. Moulton, in the Grand Rapids, Michigan, "News."

I steal in the United States alone over $300,000,000 each year.

I spare no one, and find my victims among the rich and poor alike, the young and old, the strong and the weak; widows and orphans know me.

I massacre thousands upon thousands of wage-earners in a year.

I lurk in unseen places, and do most of my work silently. You are warned against me, but you heed not.

I am relentless. I am everywhere; in the home, on the street, in the factory, at railroad crossings, and on the sea.

I bring sickness, degradation and death, and yet few seek to avoid me.

I destroy, crush and maim; I give nothing, but take all.

I am your worst enemy.

I AM CARELESSNESS.

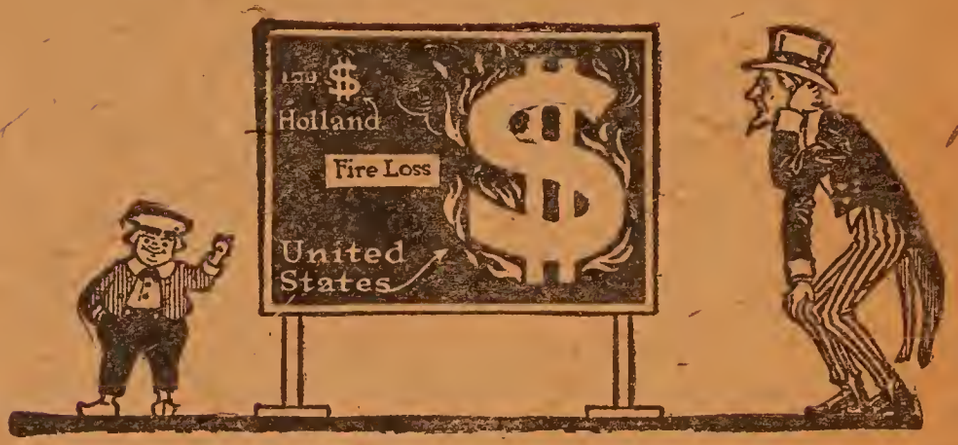
Carelessness—Our Great Enemy

If a foreign army should land upon our shores, it could not wreak more destruction than this. If such an army should come and any American were found to be giving it aid, he would be called a traitor to his country. Every patriot would rise against such a foe.

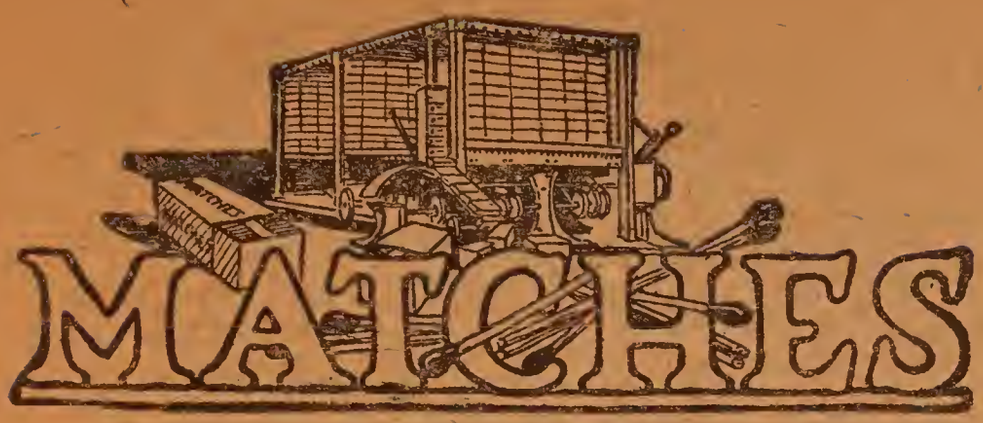
The spirit of carelessness in the United States is really a greater enemy than any foreign invader, and it is found in millions of little unconscious acts of carelessness. Whenever you, yourself, commit such an act, therefore, you really range yourself as an enemy of your country—but if you begin earnestly to watch your actions and to form new habits of carefulness, you will be helping our great nation to become safer, healthier, happier, more efficient, and more useful to humanity. This is the spirit of true patriotism.

If, then, you are determined to try with all your might to form these new habits of carefulness, the first great step toward preventing fire will have been taken. From this

point, it will be merely a question of getting knowledge—of learning what fire is, why it spreads, and the ways in which it may be prevented.



America's Wasteful Habit



Valuable but Dangerous

THE match is perhaps the most valuable and the most dangerous article made by man. It has been in use for less than one hundred years, but think of trying to get along without it!

Suppose, for example, that you were camping far from any houses, and discovered, when it came time to cook dinner, that you had lost your matches. What would you do? Would you rub sticks together like the Indian or make a "bow-drill" like the Eskimo? These were the methods used by mankind for thousands and thousands of years, but they mean desperately hard work, as you would soon realize. You would be fortunate if you could find a bit of flint from which to strike sparks with steel, as your great-grandfather probably did. But even in that case you certainly would appreciate matches as never before.

A Hard Method of Making Fire

It was not until the year 1827, that an English druggist named John Walker made the first practical friction-matches, and they were known as "Congreves." A folded piece of glass-paper went with every box, and in order to ignite the match one had to draw it, in one hand, quickly through the folds of the paper tightly pressed together with the other. Another kind of match, the "Pro-

methean," appeared a little later. It had at one end a thin glass globule, which it was necessary to press in producing fire.

Thus people went on experimenting, for everyone was interested and there was great demand. Gradually methods of making that were better and cheaper were discovered, until, to-day, matches are found in every home and are carried in millions of pockets.

The Eskimo's Bow-Drill

1400 Years for One Day

It is said that more matches are sold in the United States than in all the rest of the world. *More than seven hundred million matches are used in the United States each day.* You can hardly imagine such a figure. If a factory made just one match for every minute, night and day, it would take nearly fourteen hundred years for it to produce as many matches as this country uses in a single day. Or—to put it in another way—*nearly five hundred thousand flames are struck every minute* on an average. There is not one of these flames that would not develop into a destructive fire if it had a chance. Consequently, every match must be regarded, and must be treated, as a possible source of great damage. It has within it the power to rob you of your home, your loved ones, even of your life.

With the exception of fires from lightning, spontaneous combustion, and a few other causes, all fires can be traced in some way back to matches. If sparks from a chimney set fire to a roof, for example, the fire in the stove from which the sparks came was undoubtedly lighted with a match. But when we speak of the danger of matches, we do not mean indirect danger such as this. Many

lives and millions of dollars in property are lost every year because of carelessness in the direct use of matches. In 1916, the insurance companies reported a total loss of $7,136,181 from this cause, and this did not include the great damage caused by careless smokers.

Two Kinds of Matches

Strike-on-the-box and Strike-anywhere Matches

Matches, to-day, are of two general classes: Those which may be struck upon any rough surface, and the so-called "safety matches," made to be struck only upon the box, but there are good matches and bad matches in both classes. In other words, while the safety match, *as a rule,* is safer than the kind first mentioned, a poorly made strike-on-the-box match may be more dangerous than a well-made strike-anywhere match. Therefore, we ought to know something about what a match *is,* as well as how to use it.

Here is a match. What could appear more harmless? A tiny stick of wood, shorter than your finger, coated at one end with some substance that forms a little bulb, or head—who would believe that it can be either a blessing or a deadly peril, according to the way in which it is used.

The secret of fire-production lies in the head of the match. This contains certain chemicals which take fire easily when heated, and it also contains particles of ground flint in order to create heat by friction when the match is struck. If two objects are rubbed quickly together, the resulting friction brings heat, and all the more easily and quickly if one of the objects be rough. If you sandpaper a board, rubbing it hard, you will soon find both paper and board becoming warm.

Thus the friction from striking a match produces sufficient heat to cause the head to burst into flame.

The best of the strike-anywhere matches have heads containing a chemical called sesquisulphid of phosphorus, while the strike-on-the-box match-heads contain chlorate of potash, which substance must be rubbed on phosphorus to bring fire, and for that reason the box has phosphorus paint upon its sides.

How to Buy Matches

Now, it must be remembered that even careful persons may meet with accidents through the use of bad matches. Sometimes when struck, the blazing head will fly off, or the stick will break and fall; sometimes, too, the match will continue to glow after the flame has been blown out. These are signs that the match is poorly made; probably it is of some very cheap brand, for such things never happen with good matches. Carefulness, therefore, must begin at the time of buying. One should always notice the brand and always order by brand. Whenever a brand is found to have any of these faults, it should be avoided in future, no matter how low the price may be. If manufacturers find that no one will buy the dangerous brands, they will stop making them.

The best of the strike-anywhere matches have a *black bulb* surrounding the white head. This black substance is placed there to prevent the head from flying off when struck, and also to guard it from being set on fire accidentally. But, as a class, the strike-on-the-box or safety matches are less dangerous.

Matches of all kinds are carefully tested in

the great Underwriters' Laboratories, which The National Board of Fire Underwriters maintains in Chicago, and those that are able to pass the test are labeled by the Laboratories. It is always a protection to find one of these labels on a box:

The Laboratories have no interest in the sale of matches, and any manufacturer who will make goods of the right grade can secure the label.

Being Careful

Always Strike Away from You

Let us suppose that your house is provided with good matches, those having solid heads and tough sticks. There will be no danger if you are always careful when using them. But are you? Here are some questions for you to answer:

Do you ever throw away a match which is burning or even *glowing?* Never do this again. It has caused hundreds of deaths and has burned thousands of homes. The wife of Henry W. Longfellow, the poet, was burned to death because she allowed a lighted match to fall on the floor.

How do you strike a match—away from you, or toward you? Probably you have never thought about this, but think of it hereafter, and form the habit of always striking *away* from you. Thus, if the match breaks or its head flies off, it will not be likely to set fire to your clothing. In lighting matches upon a box, first *close the box;* otherwise the flame may set fire to the whole

box. If the box is set in a box-holder, such as those used by smokers, wherein the upper part of the box is pushed open, always place the box so that the heads are not exposed. In striking a match upon such a holder, always strike downward away from the open end.

What May Happen to Spilled Matches

Use Covered Boxes of Metal or Earthenware

If matches are spilled, do you stop at once and pick up *every one?* If you leave them strewn about for even a little while you may forget them until after mischief has been done. A match on the floor is always a dangerous thing. It may be stepped on and ignited, or it may be found by a little child, or it may be carried into the wall or under the floor by a rat or a mouse. It is not probable that mice often start fires by gnawing matchheads, as many people think, but they do like to use them in building nests in warm, comfortable places, close to chimneys or furnace-pipes. Dangerous fires may come from this cause, or from matches accidentally rubbed against beams while being carried to the nest.

Out of Reach of Little Children

Where do you keep your matches? Are they out of the reach of little children, as they always should be? No one can tell how many little ones—and older people, too—have been burned to death through neglecting this rule. Are they kept away from the stove, or the stovepipe, or any other place where they may become overheated? Are they loose in a drawer or on a shelf, or are they in a covered box or dish of metal or earthenware? Sometimes uncovered matches are ignited by the sun's rays, shining through a lens-forming bubble in a window-pane.

Carrying Matches

Do you carry matches on your person? A child should never be allowed to do this. He may be careful, but some more careless child may ask him for a match. Always be on the safe side. A grown person should never permit himself to carry loose matches in his pocket. The State Fire Marshal of Iowa says:

Some men, especially smokers, are in the habit of carrying matches around with them. It is the easiest thing in the world for matches carried around loose in a man's pocket to drop out. Suppose the man has work to do about a barn. A match drops out on the barn floor and a horse steps on it. It is a parlor-match and ignites, setting fire to hay and other inflammable material found in barns. Then the barn burns and the cause of fire is reported something like this:

"Unknown. Nobody had been in the barn for some time. Everything safe when the barn was closed up."

Six hundred and ninety-four barn fires took place in Iowa in 1914. Hundreds of these were reported as of unknown origin, but it is safe to say that in a great number of cases, if the cause could have been traced, it would have been found to be a match that had dropped out of a smoker's pocket.

Always Put Out Matches

Until we find some better device for producing fire, matches will continue to be used in immense numbers, and they will always be a source of danger in the hands of careless people, and even careful people may be imperiled by the actions of careless people about them. There are no safety-rules more important than those applying to the use of matches, and habits of carefulness should be formed by every person. Some one has said:

Matches do not think with their heads. When you use them, your head has to do all the thinking. Do the thinking! Put them out!

Safety Rules for Matches

In Buying

1. Purchase by brand, and always avoid brands which break, lose their heads, or glow after being blown out.

2. Look for the label of the Underwriters' Laboratories.

3. Give the preference to strike-on-the-box, or safety-matches, but, in case of buying the strike-anywhere match, get one in which the white head is surrounded by a black bulb.

Don't Let the Baby Play with Matches

In Using

4. Never throw away a match until every spark is out.

5. If matches are spilled, pick up every one.

6. Do not carry matches loose; do not carry them at all, if a child.

7. Keep matches out of the reach of little children.

8. Keep them in covered boxes or dishes, away from the heat of stoves and stovepipes and out of the reach of rats and mice.

9. Strike matches away from you. If striking on a box, first close the box. Strike downward on the box.

Diamond's Mischief

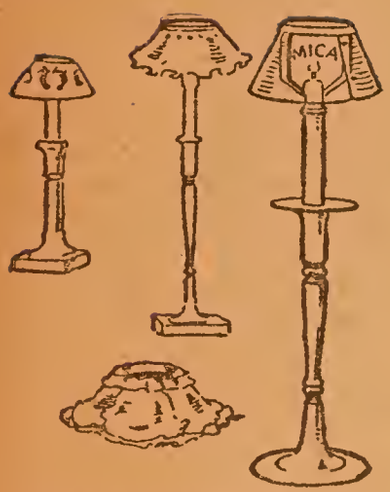
"AH, Diamond, you little know what mischief you have done!" exclaimed Sir Isaac Newton, the great scientist and philosopher, looking with dismay at the ashes of a very valuable set of papers. For a long time, he had been making researches in optics, and the carefully written reports of his studies were lying upon his table when his little dog, Diamond, upset a lighted candle, and the invaluable records of his research and labor were destroyed.

This incident calls attention to one of our commonest forms of fire-danger—that from lights. When evening comes, lights begin to shine from thousands of windows, for there is hardly a house in America which is not supplied with some form of artificial light. It is one of the great human necessities; without it many hours of activity would be lost. Therefore, since all must make use of artificial light almost every day, it is important that we learn how to render it harmless. All forms are dangerous in some degree.

How is your house lighted? Do you have candles, kerosene lamps, gas-flame burners, gas-mantle burners, acetylene gas, or elec-

tricity? Whatever system you employ, you should learn how to make it safe.

You strike a match and get a flame; that flame instantly creates three things—danger, heat and light. The danger begins the moment the tiny, flickering flame begins to cast its light, for we already know how flame seeks to spread.



Heavy Candlesticks and Mica Shades

When You Light a Candle

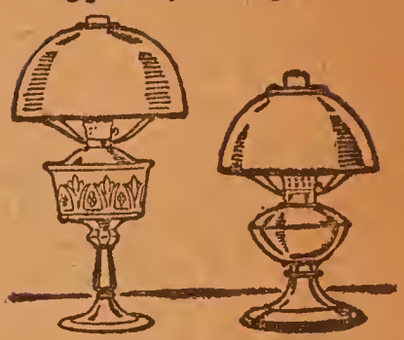
Perhaps you touch the match to the wick of a candle. A lighted candle gives a small, fairly steady, open flame. What are the necessary precautions to be taken with it? First of all, did you examine the base of the candlestick? Is it broad and heavy, so that it will not overturn? Sir Isaac Newton really may have been more to blame than his little dog. Possibly the great man's mind was so filled with his gigantic problems that he forgot to make sure that his candlestick was properly made; but you have no such reason to be so thoughtless. Always make sure that the candle fits snugly in its holder, since a loose candle may tip or fall out. Candles should never be stuck into the mouths of bottles, fastened to boards, or used in any other way than in well-designed candlesticks, sconces, or candelabra. Cloth or paper shades must not be used unless protected by a guard of mica.

Furthermore, you must keep an eye upon your candle to see that it does not gutter or bend and, of course, it must be placed where there is no danger that its flame will touch anything that might take fire. Does this seem like a great deal of precaution for one small candle? One small candle may cause a great disaster.

Do You Really Understand Lamps?

Let us go back to the match. Perhaps you may use it for lighting a kerosene-lamp instead of a candle. In this case, the wick flames up brightly, giving you a strong, soft, steady light as the kerosene oil is ignited after being drawn upward by the marvelous phenomenon known as capillary attraction—you will learn about *that* when you study physics. There is no doubt that a well-made kerosene lamp is less dangerous than a candle, but it still is far from being safe in the hands of careless people. Some authorities insist that glass lamps should never be used. They are easily broken, and it is asserted that accidents more easily occur while they are lighted. If your family is buying a new lamp, take the first step toward safety by getting one that is made of metal and has a heavy base; then begin your precautions by never filling it except by daylight. After filling, make sure that the caps and burners are tightly screwed into place, and that the outside of the reservoir is wiped clean of oil.

Types of Lamps



Wrong *Right*

Next comes the question of where the lamp should be placed. This is important. See that it does not stand too near the edge of a table or in any position where it is likely to be struck; see, also, that it is not allowed to come too close to curtains, paper, or anything which takes fire easily. A little care on this point will add a great deal to safety.

But it is in the use of the lamp that the principal precautions are necessary. How about the burners? Are they clean? They should occasionally be boiled in water containing soda, lye, or a strong soap solution, so that the flame will not smell and sputter.

Keep the Lamp Away from the Edge

Put Out the Lamp When Leaving

The wick, of course, should be kept smoothly trimmed upon the top, for a flame that shoots up at one point gives a poor, smoky light and may crack the chimney. The lower end of the wick should be well covered with oil, and the wick should fit snugly in the burner. If you notice a little open space on either side of the burner, do not light the lamp until you have got a new wick that fits snugly. Take no chances.

It is not wise to leave a burning lamp unwatched for any length of time, and one should never leave the house without extinguishing it. This is very important where there are little children or pet animals in the house. While rats and mice cannot exactly be considered pet animals, they, too, may upset carelessly placed lamps.

Do not blow out a lamp without first turning down the flame. Use no lamp that does not have a heavy base, for such a one will be difficult to overturn.

Use no oil but the best that can be bought. Occasionally, gasoline is sold by mistake for kerosene, but any dealer who does this may be prosecuted for any damage that results. A National Fire Protection Association bulletin tells the following story:

A Narrow Escape

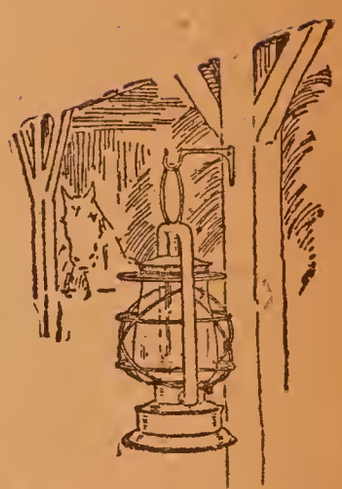
"I never really examined the construction of a kerosene-lamp until last night," said a man in a Boston lamp store the other evening, "and I've read by them from the time I was warned as a child not to touch them until to-day. I filled my lamp last night and sat down to read. In a few minutes I heard a blowing sound like that of a gasoline torch. I glanced about the room but saw nothing. It occurred again. I listened, and the next time it occurred I located it. It was the lamp. I took off the green shade and watched the flame. Every minute or so it would extend itself upward an inch or so, blowing like a gas flame. I never had seen a lamp

do that, and I didn't like it. I turned down the wick and extinguished it just as my neighbor rapped at the window. I let him in and told him about the lamp. 'Let's see it,' he said. He unscrewed the filling-cap and sniffed at it. 'The deuce!' he exclaimed. 'You're burning gasoline!'"

The lamp-man, who had listened to the narrative without interruption, nodded his head.

"Yes," he said; "I've known of such cases. Lucky for you the lamp was clean. The heat of the bowl was vaporizing the gasoline, and the vapor was escaping in puffs up the wick-tube and burning like gas. Kerosene vaporizes also, but much slower than gasoline. The lamps are constructed in the knowledge of this fact."

The man who had so narrowly escaped accident ended the interview by the purchase of new burners for all his house-lamps.



Take No Risks with Lanterns

Lanterns are similar to lamps in many respects, but are made to carry from place to place. In buying lanterns, make sure of three things: First, that the lantern cannot easily be upset; second, that the glass chimney is protected by a wire guard; and third, that the lantern can be swung or held in any position without danger of exploding. Lanterns are so often carried into barns where hay is stored, or other dangerous places, that they always should be well made and carefully used. In the course of time, the safer and more convenient electric hand-lights probably will take their place.

How to Make a Gas-Light Safe

So much for kerosene—now for gas. It is not many years since all gas-burners were of the kind that made flat, spreading flames. The gas flame gives a poorer light, costs more, and is more dangerous than the gas-mantle, but there are still hundreds of thousands of them in use.

You might think that people would hardly need to be reminded that *all gas flames, everywhere, at all times, should be protected*

by globes. Surely, common sense ought to tell that to anyone after a moment's thought, but fire-records prove that thousands of people go on using gas flames without globes, and allowing them to get in the way of a blowing curtain, or to be pushed too near to woodwork; and then, presently, they are astonished at having a fire. The difference between a safe gas flame and one that is dangerous is almost always a mere matter of a globe. Anyone should be able to see that.

Gas Flames Must Be Protected by Globes

Fortunately, "incandescent" gas-lights are to-day more common than gas flames. These are the burners that have mantles which glow brightly when lighted. All gas-mantles have chimneys or globes of some kind, but it is important to see that the burner is so made that fragments of the heated mantle cannot fall out. There have been many fires from this cause. It is also important to see that nothing which might take fire is allowed to hang above the burner; for this form of light requires great heat, and the column of heated air is in itself a source of danger.

Never Use Paper Lighters

There is an old and bad habit of using paper lighters. Millions of people think nothing of folding a piece of paper into a long lighter and using it to carry flame from one place to another. This is always a dangerous thing to do. Almost everyone has seen burning fragments of paper fall from such lighters. Never use them, especially as the safer kinds of matches are easily procured.

This finishes with the subject of precautions with lights, for electricity and acetylene will be considered in separate chapters.

Safety Rules for Lights

For Candles

1. Be sure that the candlestick will not overturn.

2. Be sure that the candle fits snugly.

3. Never stick candles into bottles or upon boards.

4. Use mica guards for cloth or paper shades.

5. Keep candles out of drafts and away from anything that will catch fire.

For Lamps

6. Use metal lamps, not glass ones.

7. Use only the best quality of oil.

8. Have lamps with solid, heavy bases.

9. Be sure that the wick fits snugly.

10. Keep the burner clean; boil it occasionally with soda, lye, or a strong soap solution.

11. Keep the wick trimmed evenly.

12. Fill the lamp by daylight only.

13. Be sure that cap and burner are tightly screwed into place.

14. Wipe the reservoir clean.

15. Do not set the lamp near the edge of a table or in any place where it may be struck.

16. Do not set it too close to curtains or anything that will take fire easily.

17. Do not leave a burning lamp too long unwatched.

18. Do not leave the house without extinguishing it.

Never Use Paper Lighters

For Gas

19. Have no gas flames without globes.

20. If you have a gas-mantle burner, be sure that pieces of the mantle cannot fall out.

21. Never use paper lighters.

STOVES and FURNACES

Keeping Warm in Zero Weather

IT was hard to leave the warm bed this morning. The thermometer stood at close to zero, and there were thick frost pictures on the window panes. Fortunately, there was plenty of coal in the cellar, and it didn't take long to get the furnace going. By breakfast time, the house was comfortable.

What would we do without stoves and furnaces when Jack Frost is outdoors? We could not live through the winter if we had not found a way to have summer weather in the house, no matter how cold it may be outside. This takes fire, however, and we have already learned that fire is always ready to escape from control and do damage. Every furnace and every stove is a box for fire, and millions of fires are built daily in our homes —even in summer time, for it is necessary to have fires for cooking.

You can easily see why it is important to learn how to make these fire-boxes safe. As it is, the fires which escape from them cause more destruction than those coming from open lights and the careless use of matches, combined. Nearly all of these fires are pre-

ventable. If people would learn how to take precautions, and then would not be careless, they would run little danger. Naturally, some stoves and furnaces are better than others, but even the best of them should not be treated carelessly.

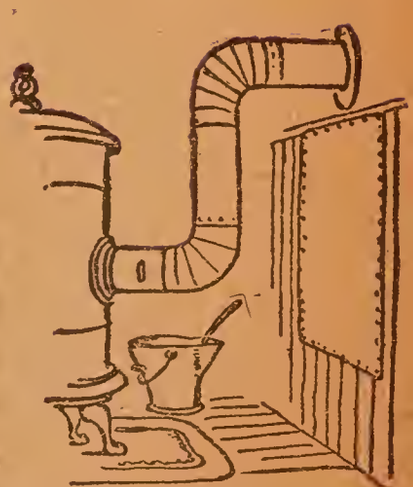
The first point to consider is that of *placing;* the second is that of *using.*

The Paint Warning

Have you ever noticed the paint beginning to blister, or the wood beginning to turn brown on some door or woodwork near a stove, a stovepipe or a heating pipe? Look around the house to see if you can find such a place. It means danger. It must not be neglected—no matter if it has been that way for a long time, without anything having happened. Often the charring goes on slowly until, at last, on some cold night when there is an extra hot fire, the moment comes for the wood to burst into flames. Such fires are very dangerous, because they often break out at night and cause loss of life.

All that is necessary to prevent this is a little common sense.

All stoves, furnaces, heating pipes and stovepipes should be placed far enough from walls and woodwork to prevent overheating. Furthermore, the nearest wooden surfaces should be covered with sheet asbestos, which is better for this purpose than sheet iron or tin. If iron or tin is used, it should be separated from the walls or woodwork by an air-space.

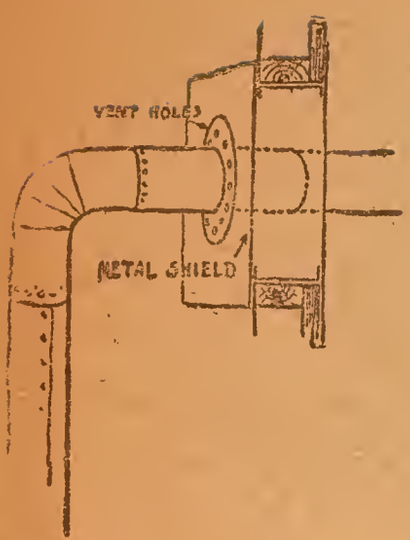


Protect the Floor and the Woodwork

Look Out for Rust Holes

Examine the stove-pipes—are all the joints and connections sound and tight? Are the pipes free from rust? If there is rust, there

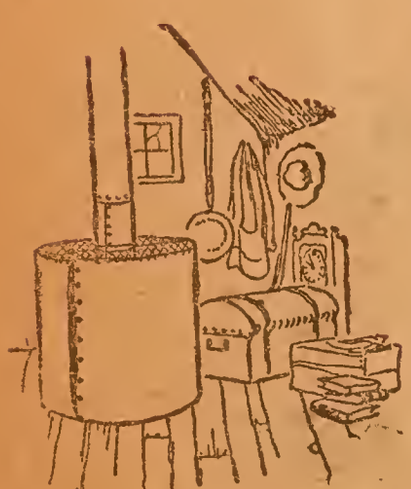
may be rust holes, and it does not take a large hole to let a tiny spark escape. One tiny spark may cause a fire.



A Ventilated Thimble

Pay special attention to the points where pipes pass through walls. At such points, the pipes should be separated from the wall by means of a special kind of metal box called a "thimble"—all stove dealers and tinsmiths know what that is. This thimble must be made of galvanized iron, double-walled and ventilated; also, its diameter must be at least twelve inches larger than that of the pipe. The diagram in the margin will show this. How is it in your house?

Stove pipes in the attic are worth looking after. Sometimes in the summer, wood, paper or cloth may be stored near to them and then forgotten when the cold weather comes and hot fires are built. Many fires have been caused in this way—you would better make a special trip to the attic and see that all is safe. Why not fix a guard around the attic pipe, so that nothing can be pushed against it?



A Guard Around the Attic Pipe

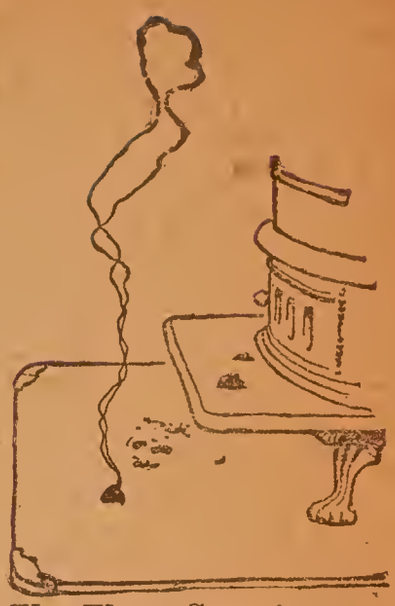
Protect the Floor

As to the stove itself, it is important to see that the floor beneath is protected by metal. This metal must extend at least twelve inches in front under the door to the ash pit, for sometimes live coals may fall, even when you are trying to be careful. Of course, a furnace must never set directly upon a wooden floor —almost anybody would know that. Its base should be surrounded with brick, stone or concrete.

Now you know something about the question of *placing*, but the question of *using* is

still more important. Here again carefulness and common sense will make you safe.

For example: no one should ever think of pouring kerosene upon a fire, for the blaze will run up the oil stream to the can, and cause an explosion. It all happens in a moment, and many foolish people have been terribly burned in this way. Never pour kerosene upon even an unlighted fire, for it forms a bad habit. Any combination of kerosene with coal or wood is dangerous to life and property. It is wisest to remove temptation by keeping the kerosene can in an outbuilding.



The Floor Covering Must Extend Beneath the Ashpit

$3,000 a Day for Hot Ashes

Again, in removing ashes, remember that coals may be dangerously hot, even when they do not glow. They must never be placed in wooden boxes or barrels. Hot ashes cause an average fire loss of over $3,000 a day in the United States, principally through carelessness in this matter. Everyone should have a strong metal ash can. It is hardly necessary to say that one should be careful to keep ashes from falling upon the floor. The floor, as already stated, should be specially protected at the point where ashes are removed.

The Fire Marshal of Illinois gives the following example of the dangers that lurk in hot ashes when handled by careless people:

Never Put Ashes in Wooden Barrels or Boxes

About a year ago I was in the city of Chicago when one of these unnecessary fires blotted out of existence an entire block of property. At about nine o'clock on a bitterly cold night an alarm of fire was sounded from the south side, and upon the arrival of the fire department, a large, magnificent apartment house on Oakwood Boulevard was found to be in flames. Within the next hour, $400,000 worth of property was destroyed and fifty families were turned out into the street. The day before had been

warm and pleasant, and a sudden drop to zero weather that day caused intense suffering among these people, thrown out of doors in the middle of the night. Upon investigation, I found that a careless janitor had thrown hot ashes and cinders near a pile of rubbish and thus destroyed this beautiful building and imperiled the lives of two or three hundred people.

It is necessary that one should make a study of the drafts and dampers in order to learn how the best results may be obtained with the smallest use of fuel, and also to make sure that no metal work shall become red-hot. A red-hot stove or pipe is always dangerous.

Get the Soot Out of Stove Pipes

Soot is Expensive

Do you know that soot is dangerous and expensive? When stoves and furnaces have been burned for some time, there will generally be deposits of soot at various points. It is important to keep the stoves, flues and chimneys clean. This will save fuel and increase the heat; it also will remove danger. When a stove smokes, it is unsafe, for the gas from the smoke may cause an explosion. Remember also that a clean chimney cannot take fire. Fires from burning chimneys, or live sparks from excessive fires in stoves and furnaces, often set fire to wooden roofs.

Be sure that your family has someone carefully inspect the chimneys and flues occasionally to see that they are sound. It costs the people of the United States over twelve million dollars a year in fire losses to neglect this precaution.

One should not dry wood in an oven. It is a well-known form of fire hazard.

Be careful not to hang wet clothing too near a stove for drying. One may be called from the room, and fail to notice when the clothing has begun to scorch. It is always

wisest to proceed slowly and safely. Of course, curtains should not hang near a stove or pipe.

The precautions for gas, gasoline, kerosene and electric stoves will be taken up in later lessons.

If the rules of this one lesson were always followed, it would save the people of the United States almost *$70,000 a day*. Think of what $70,000 would buy! Will you not help in this saving, and begin by making your own home safe?

Safety Rules for Stoves and Furnaces

In Placing

1. Place stoves, furnaces and pipes far enough from walls and woodwork to avoid overheating.
2. Cover the nearest wooden surfaces with sheet asbestos, sheet iron or tin; if iron or tin is used, leave an air space behind it.
3. Where stovepipes or heating pipes pass through walls, enclose the pipes in galvanized iron, double-walled, ventilated thimbles at least twelve inches wider than the diameter of the pipes.
4. Protect the floor beneath the stove with sheet metal, and have it extend forward at least twelve inches directly beneath the door to the ashpit.
5. Surround the base of the furnace with brick, stone or concrete.
6. Make sure that all pipes are free from rust, and that all joints and connections are sound and tight.
7. Fix a guard about the pipe in the attic so that nothing may be stored againstsit.

Do Not Dry Clothing too Close to the Stove

In Using

8. Never pour kerosene into a coal or wood

stove, even when the fire is out.

9. Never put ashes into wooden boxes or barrels; have a strong metal can.
10. Study the drafts and dampers.
11. Do not let the stove or pipes become red-hot.
12. Keep stoves, furnaces, flues and chimneys clean.
13. Inspect the chimneys and flues to be sure that they are sound.
14. Do not dry wood in an oven.
15. Do not hang wet clothing too near to a stove.
16. Keep curtains and other cloth away from stoves and pipes.

OPEN FIRES

Two Kinds of Pictures

SEATED comfortably before an open fire, older people sometimes speak of the pictures that they see in the heart of the flame. Of course they do not mean real pictures, but memories of past scenes that come back to them as they watch the flames.

The firemen and the insurance men also see pictures in the fire, but theirs are of a different kind. Their memories show them pictures of burning scraps of paper flying up chimneys to lodge on the shingle roof and set it on fire. They see pictures of sparks snapping out into the room upon curtains or perhaps upon the light dress of some one sitting quietly in the chimney-corner. These things they see, and more besides. They see red-hot embers falling out upon the carpet after the family has retired and they see dreadful pictures of little children coming too close to the hearth and being terribly burned.

They know that all of these distressing things are really quite unnecessary, but come from the foolish American habit of carelessness. It is perfectly easy to burn papers in the stove where they can do no harm; it is not difficult to be sure that the fire is out before

Have a Screen Before an Open Fire

Put Out the Grate Fire Before Going to Bed

going to bed and it does not cost much to buy a wire screen to place before the fire. It may cost a little more to replace the shingle roof with one that will not burn, but it is worth the extra expense.

There is one other precaution which ought always to be taken—that is the choosing of safe fuel. Hard, or anthracite, coal burns quietly and does not snap; soft, or bituminous, coal burns with more of a flame, while chestnut and some other woods constantly snap and shoot out sparks. If such wood must be used, great care should be taken to have a high, tight fire-screen.

Sometimes, on a frosty morning, you will go to the faucet to turn on the water and the water will not run. The pipes are frozen and must be thawed out.

It may seem strange to speak of this in a lesson on open fires, but it is a fact that frozen water-pipes cause many, many fires every winter. And they are such foolish, unnecessary fires! If people would thaw out the pipes properly by pouring hot water upon them, there would be no danger. But when they use flame for the purpose, as many do, they are almost inviting their houses to burn down. Think of losing your home upon an icy day because someone was too careless to pour hot water upon the frozen pipes.

The Wrong Way to Thaw Frozen Pipes

"Bone-Fires" and Bonfires

But fires out-of-doors must not be overlooked—bonfires, for example. Boys and girls enjoy bonfires, and probably very few of them ever heard that the word was once spelled "bone-fire," and meant a fire of bones.

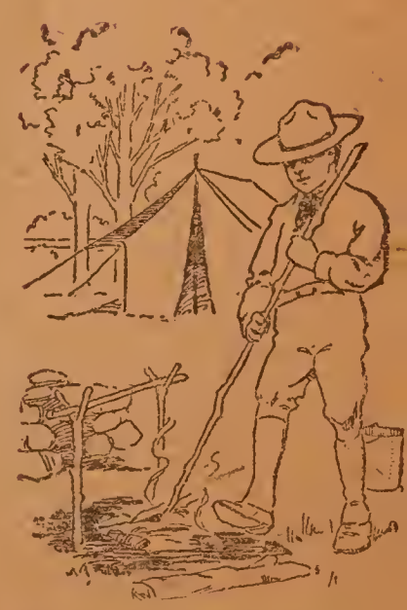
The danger from outdoor fires comes from that same old fault of carelessness. Children

seem to go wild with excitement when watching a fire and take all sorts of foolish chances. There is an old saying that "the burned child dreads the fire," but if the child would dread the fire *first*, he would not be burned. Every one of the shooting sparks, every flame, every glowing ember has the power to set fire to clothes and to cause suffering. Fire may be fascinating to watch, but it is always, always dangerous—it must always be treated with care.

The Right Way to Thaw Frozen Pipes

This carefulness must begin when the fire is first started. Do not light a fire if there is a wind blowing, for sparks will travel farther than you think. Do not build a fire where there is any chance of its spreading to leaves, dry grass, moss, or wood. Never build it against a tree, because it may kill the tree. Do not build too big a fire, and do not poke it or stand too close. And the most important rule is this: *Never leave the fire until you are SURE that the last spark is out.* If you must leave it before it burns out, throw water or earth upon the embers, but *always make sure.*

It really is not wise to burn dead leaves, as many people do every fall, for if leaves are buried they will decay and make a rich loam for the garden.



Put Out Every Spark When Leaving Open Fires

Picnickers and Campers

All that has been said of bonfires applies to camp-fires. People who go on holidays often feel such freedom that they take reckless chances. They gather together a few sticks, boil their coffee or fry their fish over the blaze, and then forget about the fire. It will go out, they think, when perhaps it may smolder for hours until a gust of wind fans it

again into flame and it begins to spread over the country.

Forest-fires are caused in this way. Anyone who has ever witnessed a real forest-fire, who has been half choked by the smoke, has seen the anxious faces of the people living near, and has watched the fire-fighters in their scorched clothing as they used their spades, shovels, and their wet blankets, ought to need no further education in the necessity for fire-prevention.

Thousands of lives have been lost and millions of acres of good timber-land have been burned in this country just because campers were careless.

Take Precautions with Bonfires

Safety Rules for Open Fires

1. Don't build bonfires for fun.

2. If you must build outdoor fires, be sure that they are cold before you leave them.

3. Don't set dead trees afire. Sometimes they will burn for days.

4. Before lighting an open fire, be sure that it is completely enclosed in a stout wire screen.

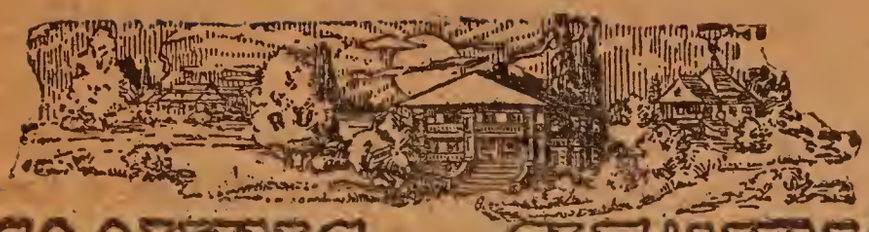
5. Keep children from playing too near the fire, screen or no screen.

6. Don't throw large pieces of loose paper upon an open fire.

7. Make absolutely certain that the fire is put before going to bed at night.

8. Don't say, "I guess it's all right."

9. Thaw frozen pipes with hot water, not with flame.



COOKING and CLEANING

Sunrise and Smoke

HAVE you ever taken a long drive in the country very early in the morning? Then you must have noticed that from the chimney of each house there rose a little plume of smoke. That meant that some early riser was beginning the new day with the little sacrament of lighting the household fire.

Cooking the Breakfast

As soon as we arise for the day, we think of breakfast, for we have a *fast* to *break*, but we are too civilized to eat our breakfast raw; a fire must be kindled to cook it. Therefore, all over the world, the rising sun is greeted by smoke from the chimneys of millions of homes.

In times past, this fire was kindled on the floor or outside the door on the bare ground, but we, being wiser, put our fire in that iron box which we call a stove. There it would be safe enough, no doubt, if we did not use it with that reckless carelessness of which you have read in all these lessons.

Early in the morning the cook, or some one else, comes into the kitchen with the sleep scarcely out of her eyes. She puts newspapers and kindlings into the stove and lights them, then adds a little coal. Soon there is heat enough for the breakfast to be cooked.

Smothering Flames with a Metal Cover

Up to this point, everything has been safe enough, but it never seems to occur to some cooks that great care is required in frying and broiling, because fat is brought close to flame, and fat will most readily take fire. If this should happen, there may be no danger unless the cook becomes excited and allows the burning fat to fall upon the floor. It is well to *remember not to use water upon burning fat because it may spread the flames.* The best way to smother these flames is with a metal cover. When fat takes fire, it does so with a sudden leap of flame; therefore, neither paper nor cloth should ever be kept near to the stove.

Red-hot Stoves? Never!

In the course of the day, the stove is filled with coal again and again. There is food to be baked and roasted, water to be boiled, preserves to be put up, and no end of other things to be done. It is a common fault with many cooks to let the stove get red hot, which is about the worst possible thing that can be done to a stove. *There is no excuse for a red-hot stove; none whatever!* Fuel is wasted; the stove becomes warped, and danger lurks for all who are in the house.

Never Polish a Hot Stove

Some people place papers below the burners of gas- or kerosene-ranges in order to catch the drippings. Of course, these persons would realize that they know better if they would only stop to think.

Precautions in the disposal of ashes have already been explained, but the cleaning of the stove is also a fire-peril. Many kinds of stove-polish contain gasoline or benzine, both of which are highly inflammable substances. They are used for cleaning purposes because

they are what are called "good solvents," which means that they dissolve dirt as hot water dissolves sugar. We all know that if a little sugar is caked on a plate, it can be dissolved by hot water and then easily wiped away, leaving the plate perfectly clean. For the same reason, the dirt on the stove can be wiped away after it has been dissolved, but benzine is too dangerous for use about a stove. There are safe polishes, and these should be asked for, since hundreds of serious accidents have come from using benzine stove polishes. Even then it is a good rule never to bring polish near to a hot stove; it is a good safety-habit.

Buy Stove Polishes That Are Safe

Look Out for Cleaning Compounds!

Many other cleaning compounds are quite as dangerous as these stove-polishes, because they contain the same inflammable ingredients. It is always wise to be suspicious of *every* cleaning or polishing preparation until you are absolutely sure about its character. There are, for example, "sweeping-compounds" to be sprinkled on the floor before the room is swept. These are fire-perils if they contain animal or vegetable oils, because the oil-soaked sweepings may ignite by spontaneous combustion. This is discussed in the next lesson. We shall have a separate lesson upon gasoline, which causes thousands of fires every year.

Be Sure that the Cleaning Compound Will Not Burn

It is a common practice to use oil or wax upon wooden floors and upon furniture, and this, if proper care be used, need not be a source of danger. Such care would consist in using only small quantities of oil or wax at a time, leaving no free oil upon the rubbed

surface, and also in being careful not to approach too close to a fire while working with oil or wax. The danger of storing oily rags will be especially referred to in the next lesson.

Safety Rules for Cooking and Cleaning

1. Don't leave the stove while broiling is being done.
2. Don't pour water on burning fat; use earth, sand, flour, salt, or a metal cover.
3. Never let a stove get red hot.
4. Be careful not to use stove-polish on a hot stove; wait until it is cold.
5. Don't use any kind of stove-polish or other cleaning mixture unless you know what is in it; buy the safe kinds.
6. Don't leave sweepings in a piece of paper; put them in the stove.
7. In handling oil or wax, use only small quantities at a time; wipe thoroughly the surfaces you have rubbed with rags, and then burn the rags.

RUBBISH

A Test of Citizenship

"TELL me what you do with your rubbish," said the fireman, "and I'll tell you what sort of citizen you are. If you dispose carefully of every bit of your broken furniture, all your old newspapers, your oily rags, your worn-out clothing, and all rubbish of that kind, you are a good citizen, but if you allow them to accumulate you not only are a bad citizen but a menace to your neighbors.

"What makes such things catch fire? It may be the heat from the furnace, a spark from a cigarette, a candle dropped by some one, the torch of a plumber—sometimes they are very careless fellows, these plumbers—or, perhaps, they just catch fire from what is called 'spontaneous combustion.'

"You don't know what spontaneous combustion is? It is a fire that starts itself! It has been discovered that cotton waste, oily rags, moist hay, and certain other things, if left to themselves, will grow hotter and hotter and finally burst into flame. There was once a nice new church that was destroyed in that very way. It had just been finished, and on the afternoon before the day set for the first service, some of the ladies of the congregation wiped the woodwork with oily cloths. When they had finished and were

Keep Oily Rags in Metal Cans

going home, one of them suggested that it was a pity to throw away the new dusters, and accordingly they were put into a closet for safe keeping. In the night the church was entirely destroyed by fire. The cloths in the closet had caught fire by spontaneous combustion. A painter I once heard of was up on a ladder painting a house; he used cloths to wipe the turpentine from his hands. After he had done this a number of times, each time putting the rags back into his pocket, the pocket suddenly caught fire, and he was badly burned before he could get down to the ground.

Carry Rubbish Out of the Attic

"So remember that if you don't burn your rubbish it may suddenly start to burn all by itself and perhaps in the middle of the night.

"Do you see that beautiful house across the way? Its lawns are rolled and clipped, its flower-beds are carefully tended, its gravel paths are smooth, it has a rose bush over the door and bright-colored awnings at every window, and yet that house is more dangerous to its neighbors than a German aeroplane dropping bombs. I had occasion to make an inspection there one day, and this is what I found:

What Was Found in the Cellar

"In the cellar and also under that piazza, are the barrels and packing-boxes that were used when the family moved in, also the excelsior that came around the new parlor clock, a few old chairs and tables, a disabled rocking-horse and several boxes of magazines. In the garret there are any number of old straw hats, two or three broken mattresses, a lot of old clothes hanging on hoo

two trunks full of old letters, and I forget what else. On the second floor I found that the good lady of the house was keeping all her light summer dresses in a closet which had a steam-pipe passing through it. Now, if you will look at the house again, you will see that whoever raked the lawn has piled up a big mound of leaves near the steps of the side door and has gone away. Even dead leaves sometimes take fire from spontaneous combustion. Do you wonder that every time the gong rings in the engine-house, I think of this building? I know that when it burns, the whole block may burn with it, if there is a strong wind, and then people will blame the fire department for not being more efficient.

Rake Up the Dry Leaves

"Oh, you live next door, do you? Then I would suggest that you make a little call upon these people and tell them a few things about their duty to their neighbors. They might be interested to know that fires from spontaneous combustion alone cost more than ten million dollars a year in the United States.

"By the way, before you call upon your neighbors, how about your own house—is there rubbish in your cellar? What is that—the lumber from the old hen-house which was torn down is stored there? Hm—your case is different because that wood is to be used for kindlings; is that it? There's a grocer's boy going into your house now, and it looks to me as if he were carrying kindling-wood from the store. Oh, the man who was going to cut up the wood didn't come on the day he promised and then the matter was forgotten. I've heard of such cases before. On the whole, I think you would better not

It is Important to Have Clean Basements

try to advise your neighborhood until your own house is in order.

Tie Up Old Papers and Sell Them

Having a "Clean-up Day"

"What you people need is a neighborhood 'Clean-up Day' in which you could get out all this rubbish and burn it. Of course, it would have to be a day without wind, and you would need several pails of water nearby in case of emergency. I don't ask you to burn up wood that could be split up into fire-wood; get somebody to put in a few days work on it, but I do ask you to burn all that worthless trash that is, without doubt, in almost every garret and cellar in town. Sometimes, you will be surprised to find that there are really valuable things hidden away in the rubbish piles—old furniture or crockery that can be sold to some dealer in "antiques." Leaves should not be burned, because they fly about when on fire—even on windless days. They should be buried where they can enrich the soil.

"Always remember that a clean house seldom burns unless a dirty house sets fire to it, and by a 'dirty' house I mean a house where all kinds of silly junk is preserved as if it were of the greatest value.

"Also, don't forget that accumulations of dirt and rubbish are frequently a source of disease. From every point of view they are wasteful, unsightly, and dangerous, and they tend to lower the moral standards of people who tolerate them."

Never Let Rubbish Accumulate

Safety Rules for Rubbish

1. Keep things tidy; don't allow rubbish to accumulate anywhere in the house or near it.

2. If you keep oily cloths, put them into a metal box or can with a cover.

3. If you learn that anyone is keeping oily rags outside of metal containers, it is your duty to report it.

4. Don't pile dead leaves against anything that will burn. They sometimes ignite of themselves.

5. Bury leaves; don't burn them.

6. Don't have old pieces of lumber cluttering up your basement. Have them cut up into kindlings and then piled in a proper place.

Bury Leaves—Don't Burn Them

A Strange Fountain

A FEW years ago, some men were boring into the ground in eastern Mexico not far from the shore of the Gulf. They had a big wooden derrick rigged over the hole, and the drill was tap-tapping away, down in the earth when, suddenly, there was a rush and a roar—the ground trembled, and a great fountain of thick, greenish-black strong-smelling liquid gushed up into the air. Higher and higher it went—hundreds of feet high—and, as it fell back upon the earth, rivers of crude oil began to run off in various directions. For five days it continued to pour at the rate of a million barrels a day. It is hard even to imagine such an amount.

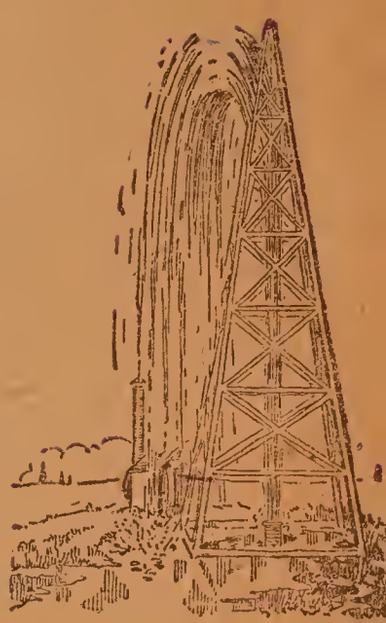
While this was the biggest oil-well ever discovered, there are thousands of others, big and little ones, in various parts of the world. Many of these are in the United States, and the boys and girls in the oil regions know that this crude oil, or petroleum, which comes from the ground in such immense quantities is one of the most valuable things in the world. They know that it gives us kerosene for our lamps and gasoline for our automobiles, also paraffin for our candles, and lubricating oils for our machinery, as well as other things.

Seneca Oil

This strange precious fluid is so important that it is hard to see how we could run the world without it; yet the world knew little about it until less than a hundred years ago. Early in the nineteenth century, under the name of "Seneca Oil," it was used as a liniment near Seneca Lake in New York state. Then in 1829, it was discovered in Kentucky and sold for a time as "American Medicinal Oil." Still later, it was discovered that there were large quantities in Pennsylvania, and then people began to wonder whether perhaps it couldn't be used for light in place of whale-oil and candles.

They tried it, but it made a smoky flame and burned with a strong smell. It didn't seem to be good for much.

But other people said, "Perhaps this oil would be all right to burn if we could take out its impurities"—and they began to experiment. Finally, they discovered a way to separate petroleum into various different oils and gases. One of these oils burned with a strong, clear light, and soon everybody saw that it was exactly what the world was looking for. It was named "kerosene." To-day it is used in millions of homes for lighting, cooking and heating.



A Gushing Oil Well

Good and Bad

Kerosene is a good servant and kerosene is a bad servant. It is a good, safe, and helpful servant to careful people, but with careless people it sometimes burns up homes. Let us study to make it safe.

If you have paid attention to the directions under "Lights," you know how kerosene may

be used in lamps without any danger. The rules in regard to oil-heaters, oil-cookers, etc., are much the same. The stoves must be well made, free from leaks, and hard to overturn. The burners must be kept clean, and the flames must not be turned too high. It is a good idea to have a sheet of metal or asbestos beneath an oil-stove.

It is difficult to believe that anybody could be so foolish as to try to start a coal or wood fire with kerosene, but many people still are terribly injured in this way. Turn back to the warning on page 31. It must never be forgotten.

Common Sense with Oil-Cans

You must also use common sense about your oil-can. Keep it in an outbuilding if possible. Be sure that the floor beneath it does not become soaked with oil in filling lamps. Make certain that the filler-cap is secure and that the faucet does not drip. Never keep a can for a single day after it has begun to leak. If you cannot mend the leak at once, throw the can away and get a new one.

Fill Lamps by Daylight Only

Lastly, always fill your lamps and oil-stoves by daylight and fill them only when they are cold. Keep lights and flames away from uncovered kerosene. The home where these rules are practised is the careful home, where kerosene will be a good and helpful servant.

Safety Rules for Kerosene

1. Study the lamp rules under "Lights."
2. Be sure that oil-heaters and -cookers do not leak and that they will not overturn.

3. Keep their burners clean and do not turn the flames too high.

4. Keep the oil-can outside of the house, if possible.

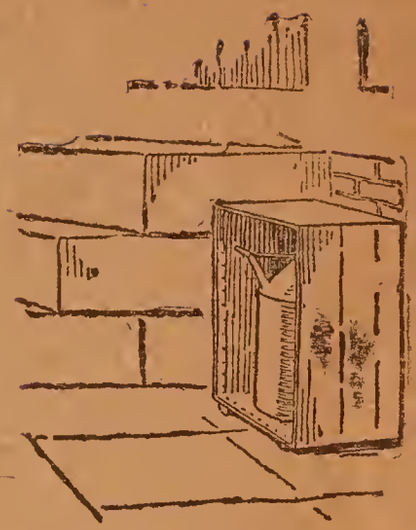
5. Do not let the floor beneath the can become oil-soaked.

6. Make sure that the can does not leak nor drip.

7. Never leave oil uncovered.

8. Fill by daylight only any receptacle in which oil is to be burned.

9. Never start a coal or wood fire with oil.



Keep the Oil-Can Outside of the House

A Dangerous Giant

NO one who has ever read that delightful old book, "The Arabian Nights," will easily forget the story of the genie in the bottle. You remember that as long as his bottle was kept tightly fastened, he was harmless and invisible, but that, the instant he was allowed to escape, he became a terrible giant, able to do a vast amount of harm.

The subject of this lesson—gasoline—is very much like that genie. So long as it is deprived of liberty and kept under proper control, gasoline will drive motor-trucks, automobiles, and boats, and will work on farms or in factories. But let it once have an opportunity to escape, and it will take human life, burn down houses, cause terrible explosions, and behave generally like a very wicked giant indeed.

Gasoline, like kerosene, is derived from crude petroleum but is far more volatile. What does "volatile" mean? Well, you know that water in an open dish will dry up after a while, because it slowly changes into an invisible gas and disappears. Gasoline does the same thing, but it vaporizes much

faster than water, and that is what we mean when we say that it is very volatile. Gasoline vapor is extremely dangerous; it is not disseminated in the atmosphere but sinks slowly to the ground. Sometimes it will settle to the floor of a room and flow along like the water of a stream, filling every hole and cranny that it can find and remaining there perhaps for days. In changing into vapor, gasoline expands so enormously that one gallon will produce eight thousand cubic feet of gas, which means that a tank twenty feet square would be required to hold it. When this gas is mixed with air, it becomes an explosive much more powerful than dynamite and much more easy to set on fire. Perhaps you have seen men engaged in blasting and have noticed how the small yellow sticks will tear solid rock to pieces. Who would be foolish enough to leave dynamite lying around? Yet it would take eighty-three pounds to do as much damage as the vapor from one gallon of gasoline, and people often handle gasoline as carelessly as though it could do no harm. That is why there are so many terrible accidents from its use.

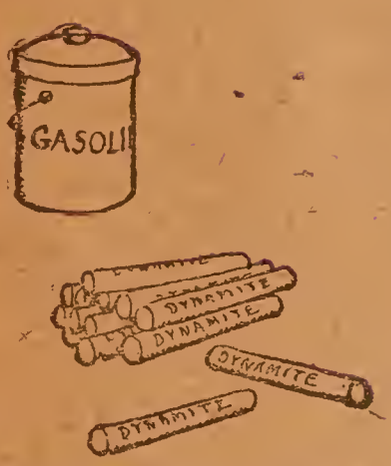
A Dangerous Giant

The Spreading Fumes

Take, for example, the matter of cleaning. It may seem a great convenience that we can so easily clean our gloves and clothes with gasoline, but it is an extremely dangerous practise and one which has caused great loss of life and property. The fumes of the gasoline spread out in all directions, and if they come in contact with a lighted cigar, a burning gas-jet, a glowing coal in the fireplace, or even the merest spark, an explosion instantly takes place with a resulting flash of

flame which sets fire to whatever inflammable matter it touches. When we realize that a nail in one's shoe striking against a metallic object may produce a spark, and that sparks may even be caused by the friction of rubbing gloves together while cleaning them, the countless opportunities for gasoline vapor to ignite and explode become apparent. Then when we remember that five cents worth of gasoline is sufficient to blow up an ordinary house, we can understand the necessity of keeping the gasoline genie tightly corked in his bottle.

The inflammability of gasoline fumes is amazing. In one case, these fumes were carried outside a building to a lighted lamp thirty feet away, where they took fire and flashed back to the building, which was entirely destroyed. In another, the mere opening of a door between the room where gasoline was being used to clean gloves and a room in which there was a lighted lamp caused a destructive explosion. A chauffeur was cleaning his automobile one evening using an electric flash-light for illumination in order to be perfectly safe. A part of the lamp which was not insulated struck the metal rim and foot-board, producing a spark. In the fire that resulted, his little daughter was burned to death and the garage was destroyed.



More Explosive than Dynamite

Never Pour Gasoline Into the Sink

Gasoline must never be allowed to remain in an open vessel or in any can or bottle that is not tightly corked. It should never be poured down a sink, because the fumes may pass through the sewer and come up in some other house. Do not use gasoline at all in a

room which has a light; in fact, all cleaning by gasoline—dangerous in any circumstance—should be done by daylight and out of doors. It is still better to use some cleaning fluid which will not take fire. Such safe preparations can be bought at any drug store.

Never keep gasoline or benzine in a glass bottle; for, if the bottle be dropped it is liable to break and let the liquid escape. In many states, the law provides that any receptacle containing gasoline for the retail trade must be bright red in color, with the word "Gasoline" in a different color.

Gasoline Cans Must Be Tightly Covered

There is one precaution against gasoline fires which always should be taken. When an automobile stops at a garage and takes on several gallons of "gas," as it is often called, there is always a slight smell of gasoline in the air; this means that, despite every care, there has been a slight leakage somewhere. It is very necessary, therefore, that no one should smoke in an automobile which is receiving gasoline. The larger gasoline cans must always be kept away from the house. The safest place for gasoline in quantity is in underground tanks.

There Must Be No Smoking Where Automobiles Are Filled

Should one be so unfortunate as to have a gasoline or a kerosene fire occur in a garage r house, it is foolish to pour water upon it; ter will spread the flames. Earth or sand be thrown upon the fire to smother it, ough the use of a chemical extinguisher en better. Sometimes a woolen rug or a thrown over the fire will put it out in- y, but there should be a chemical ex- sher in every garage.

r all, the best and safest thing we can

do is to keep our gasoline genie where he can do us no harm.

Safety Rules for Gasoline

1. Always remember that you must take no chances with gasoline; it is one of the most dangerous materials in common use.

2. It must always be kept in tightly fastened cans; never in glass bottles.

3. It should never be uncovered within the house, nor at any point where its fumes can travel to an open flame, a live coal, or a spark.

4. Do not use it for cleaning, if you can get a safe cleaning preparation.

5. Gasoline in quantity should be kept in underground tanks.

6. No one should be allowed to smoke in a garage.

7. No one should be allowed to smoke in an automobile while its gasoline tank is being filled.

8. Do not use water upon a gasoline or kerosene fire; use a chemical extinguisher, or else throw earth or sand upon it—try to smother it.

Smothering Burning Gasoline

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From a Red Tank to Your House

IF you live in a city, you probably have illuminating gas in your house. You need only to turn a key, and out there will flow an invisible, strong-smelling gas, which will take fire instantly from an applied flame.

This gas comes from a small pipe, and if you could follow this pipe you would find it joining a longer and larger pipe buried in the street, a pipe that runs underground from one of those huge red tanks to be seen on the edge of almost every large town. Perhaps you have wondered why these tanks were down so low in the morning and why they rose slowly all day, until by evening they stood high up in the air. Again, somebody may have explained that the invisible gas, which pours into them all day long, has such power that it can lift the heavy iron tanks as they are filled with the gas in the daytime.

Our fathers had artificial gas, and so did many of our grandfathers, but the chances are that our great-grandfathers never saw it used until they grew up. It is another of those now familiar things which the world had to get along without for thousands of years. It is usually made by distilling coal, or by mixing water-gas and oil under certain conditions.

The Gas That Comes from the Ground

First, Open Doors and Windows

Strangely enough, people learned how to make and use this artificial gas a good many years before they discovered that there were immense stores of natural gas deep in the ground at a number of points. Natural gas is now being piped and used in many states.

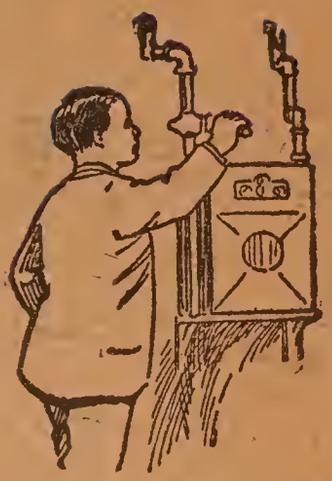
The records of The National Board of Fire Underwriters show that the use of gas (both natural and artificial) causes fire damage of about five thousand dollars a day in the United States. It is a very familiar fire cause. You will remember that the dangers arising from the use of gaslights were discussed under "Lights." It will be wise, as a part of this lesson, to reread the warnings against gas flames without globes, against gas-fixtures near woodwork or curtains, against swinging brackets, and against the wrong kind of gas-mantle burners, as given on page 26.

At first, gas was used only for lighting purposes, but now it is much used for both cooking and heating also. There are any number of different kinds of gas-stoves. Some are small enough to set on gas-fixtures, and some are large ranges. It is always important to be sure that they are tight and well made, for a hole or a crack too small to be noticed will let gas escape, and the gas is generally under such pressure that it will come pouring out and mix with the air of the room. Then beware! Gas in the room may cause death after it has been breathed for a short time, or it may make with the air a mixture so explosive that a spark or a flame will cause a terrible disaster.

Then Find Leak, But Do Not Use a Match

A leaky gas-fixture or pipe, or a gas-jet

left turned on without being lighted, is a deadly thing. There are fires from these causes almost every day. No one knows how many people are killed or burned and blinded because of them.



If You Cannot Fix the Leak, Turn Off the Gas at the Meter

Never Look for a Leak With a Match

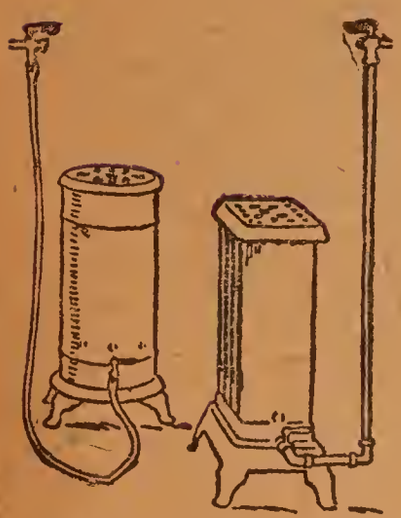
If, at any time, you notice the odor of escaping gas, first open the doors and windows; *then find the leak at once.* Do not strike a match while searching. Do not take with you a lighted candle or lamp, or any other flame. Use an electric flashlight, if you have one, or else trace the leak by its smell alone.

When you find the leak stop it by turning off the key which may have been left partly open, or by screwing up the joint which may have worked loose. But if you cannot find the leak, or if it comes from something that you cannot fix, turn off the gas at the meter and send at once for a gasfitter. The gas must not be lighted in the house until everything is sound and tight once more.

Sometimes, when people buy flexible tubing, the dealer may show them several kinds, some of metal and some of rubber. Perhaps, if they feel economical, they will buy the cheapest kind offered, without stopping to realize that by doing so they may be risking their lives. Cheap rubber gas-tubing is about as dangerous as anything which can be used in the home. It soon begins to crack, as low-grade rubber will do, and then, of course, the gas escapes. Well-made flexible *metal* tubing is far safer. The Ohio fire marshal says:

And Send at Once for the Gas-Fitter

The rubber tube as a transmitter of gas in houses has slain its thousands among the twelve millions now using natural gas—murdered them silently by suffocation, or noisily by explosion.



Never Buy Low Grade Tubing for Gas Stoves

It is important to see that the tubing is very solidly attached at both ends, and even the best flexible tubing should not be used when it is possible to make connections by light iron pipe put in place by a competent gasfitter.

In some states, natural gas is so widely used for household purposes that these precautions are all the more important. It is also important that each house should be provided with some kind of automatic cut-off, so that if the pressure from the gas-main should fail, and then be restored, there will be no danger of the house becoming filled with gas through burners being left open.

Safety Rules for Gas

1. Study the rules for gas lights, page 27.

2. Make sure that lamps, stoves, heaters, pipes that burn gas, and their connections, are well made, tight, and free from leaks.

3. When you smell escaping gas, *first* open doors and windows, then find the leak at once.

4. Never look for a leak with a lighted match, lamp, candle, or flame of any kind; use an electric flashlight, if you have one. otherwise find the leak by the sense of smell.

5. Correct the leak at once, or else shut off the gas at the meter and send for a gasfitter. Do not light up in the house until this has been done.

6. Never buy cheap rubber gas-tubing. If you cannot connect with solid-iron pipes get a good quality of flexible metal tubing and make sure that it is tightly joined at both ends.

Lightning, and Some Strange Ideas

DID you watch that big thunder-storm roll up last evening? It was a wonderful sight. Long before the rain fell, flashes of lightning could be seen darting and twisting through the great masses of clouds while the thunder first rumbled, then roared, and finally came in a succession of crashes that made the windows rattle.

Fortunately, no one was hurt, but two barns were set on fire, a flagpole was shattered into splinters, and a tremendous limb was torn from the white-oak tree at the top of the hill. It was the lightning which did those things, for there was no wind to speak of. What an amazing force!

It is a strange thing, this electricity, for of course we all know that lightning is electricity. Did you ever wonder about its terrific power, appearing and disappearing so quickly? Many other people have wondered in exactly the same way during thousands of years. The ancient Greeks believed that thunderbolts were hurled in anger by their great god Zeus, and the Romans had much the same idea, but called their god, Jupiter. The people of northern Europe imagined the lightning flash to be the hammer of the fierce god, Thor, flying so swiftly that it made a streak across the sky. All of them felt that they were looking upon a great, mysterious

Franklin and His Kite Experiment

force, something to be afraid of. No one suspected that it was also a willing and mighty servant, merely waiting for men to become wise enough to command its services.

How a Servant Was Discovered

It was only a few generations ago that scientists began to learn some of the secret laws of this force. Every one knows the story of how Benjamin Franklin drew electricity from a thunder-storm by means of a kite, and of how Galvani turned a current into the severed leg of a frog and caused it to kick. Still, electricity was considered as a mere scientific wonder. Very feeble currents were produced in the laboratories; nobody seemed to think that anything would come of it.

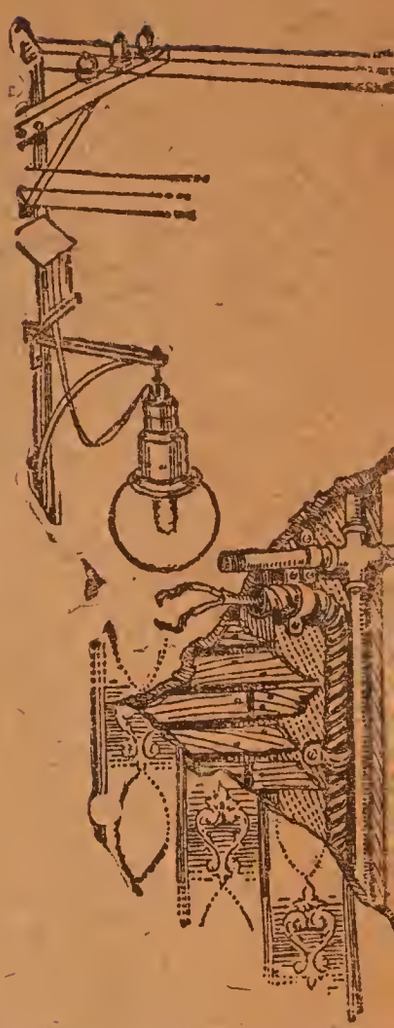
At last there appeared a great invention, the dynamo. There is no need to describe the dynamo here, but it made possible the production of a strong current, one powerful enough to be of some value. The dynamo in its simplest form was invented by Faraday in the year 1831; that really was the year in which the force became a servant and went to work for man. It took some time to work out details, but in course of time it was seen that the new servant was to be a wonderful helper that could do much of the work of mankind. It could be sent anywhere by means of wires, and could accomplish the most amazing things.

To-day it lights our streets and houses, it runs our cars and even our trains, it carries our messages and our voices, it furnishes the power in thousands of factories, and is used in so many other ways that the mere list would be a long one. There is hardly a town in this country where the electric

current is not utilized; there is hardly a person who does not employ it in some form. We often truly say that this is the "Age of Electricity." For this reason, every one should understand something of its laws, and appreciate that it has dangers as well as uses. Every one should be able to recognize these dangers, and learn how they may be avoided.

The Danger in Being a Good Conductor

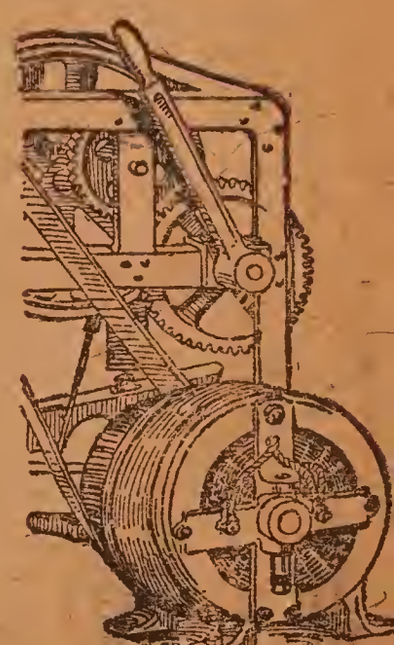
The electric current will travel readily through some substances, and these are called "good conductors." Other substances are "non-conductors," since they offer an obstacle to its passage. Most metals are good conductors, while rubber and glass are examples of non-conductors. *The human body is a moderately good conductor.* For this reason it is dangerous for a person to touch trolley wires, electric-light wires, "third rails," or anything else which carries a heavy current. If such a current passes through the body, it will almost certainly cause death.



It Must Be Carefully Installed

One should never pick up a wire that has fallen to the ground before making sure that no electric current is flowing through it. It is a dangerous thing even to lean against a pole supporting electric wires or to touch the guy-wires of such poles; sometimes these become charged with enough electricity to produce a violent shock.

However, we are studying about electricity as a fire hazard. Figures prove that the fire loss from electricity is greater than that from any other single cause. A great many fires occur from defective wiring, bad insulation, poor switches, etc. These, of course, are usually the fault of the electrician who does the



Electricity is a Useful Servant

wiring, and for this reason no one should be employed who is not known to be expert and careful. Saving money by hiring a cheap workman may be a very expensive kind of economy.

Fires due to the electric current often break out behind walls or under floors, where it is difficult to get at them. It also is important to see that any wires leading to connections outside the house are run in such a manner that there is no possibility of their becoming crossed with a trolley or street-lighting wire. Sometimes such crossings occur during the progress of a storm, and in such cases the house wires may receive a current much too strong for them, and one that will cause a fire.

The Wire Must Be Detached at the Socket

Carelessness at the Ironing-Board

But carelessness in the use of the electric current is the greatest hazard of all. For example, a woman is ironing with an electric flatiron. The telephone bell rings, and she runs to answer, *without remembering to turn off the current from her iron.* She intends to hurry back to her work, but a caller arrives just as she finishes at the telephone, and soon she has forgotten all about the iron.

The current does not forget; it keeps steadily at work, and the iron grows hotter and hotter. Some time later the woman smells smoke, and traces it to the kitchen. To her alarm, the ironing-board is ablaze, and some of the other furniture has begun to burn. If she had been called away from the house it might have been totally destroyed.

Do you say that this is not likely to happen in your home? The National Board of Fire Underwriters receives reports of about

one hundred fires per day from electric flat-irons, curling irons, plate warmers, and similar devices. Some of these are big fires, and some cause loss of life. Do you suppose that in any of these cases the people expected to have fires? Not at all; they were merely careless, and the fires occurred. The only safe rule is: *Never* leave any kind of an apparatus with the current turned on. Do not rely upon so-called "safety" devices. Sometimes these work, sometimes they do not. If one must leave even for a minute, *the wire must be detached at the socket.* In that way there can be no chance of a mishap. The widespread formation of such a habit would save many lives and millions of dollars.

Misusing Light Bulbs

There are also some precautions to be observed in using ordinary electric-light bulbs. Such lights are not generally dangerous unless misused, but it is unsafe to use them for warming beds or for drying clothing, as is sometimes done. A recent incident will show why this is so. A guest in a Pennsylvania hotel hung a damp garment over a light bulb in order to dry it out. Some time later he was carried unconscious from the smoke-filled room. Investigation showed that the heat from the light, because of being confined by the garment, became so intense that the glass first softened, and then collapsed. If help had not been close at hand the results might have been more serious than they were.

Use Electric Bulbs Lighting Only

This incident calls attention to the heat generated by incandescent lamps and to the danger of confining this heat. It is decidedly unsafe to use paper or other inflammable shades on these lamps, as is sometimes done,

unless they are protected by asbestos or metal.

Taken all in all, electricity is one of our most valuable servants, but its value and convenience should not lead one to forget that carefulness in its use is always a factor of safety. A home fitted with electric lights and appliances may be a safe home, but only if it be the home of careful people.

Safety Rules for Electricity

1. Remember that the human body is a conductor; do not touch wires, rails, or anything else which may be charged with electricity.

2. Do not have wiring done or connections made by any one but an expert and careful electrician.

3. *Never leave an electric device even for a moment without making sure that the current is turned off.*

4. Never use electric-light bulbs for warming beds or for drying clothes.

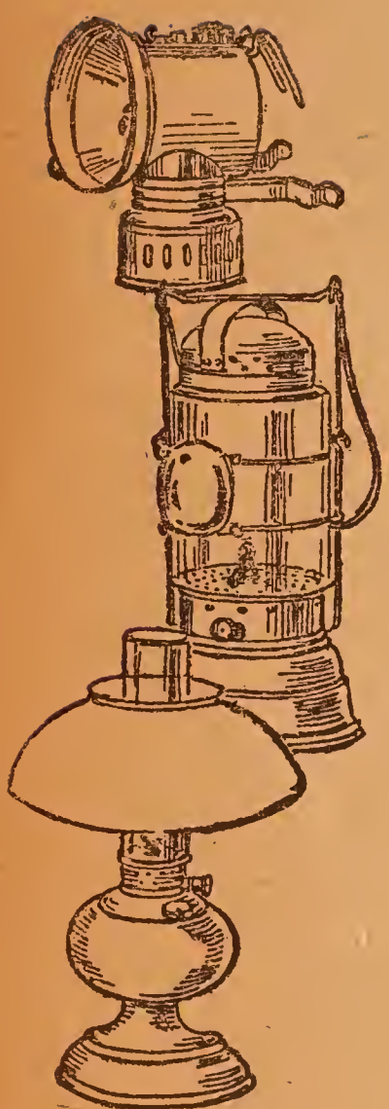
IN the spring of 1892 an electrical engineer, named Thomas L. Wilson, was making some experiments with an electric furnace in a North Carolina town. We are not so much interested in what he was trying to do as in what he really did do. When his electric furnace had cooled he found within it a dark, brittle substance which looked like stone. Its color was gray.

That wasn't at all what he was looking for. In disgust, he threw the stuff into a neighboring stream. Instantly the water bubbled and began to give off great quantities of a queer-smelling gas. Somebody applied a flame to the gas, and it burned brightly.

That was twenty-six years ago, and today that same queer-smelling gas is lighting our bicycles, many of our automobiles, even our railroads and our harbors.

The grayish, stonelike substance was calcium carbide, which is a chemical composed of calcium and carbon, or, as a chemist would write it, CaC_2; that is, each *molecule* of acetylene, which is the smallest quantity of it we can think of, is composed of one *atom* of calcium and two *atoms* of carbon, atoms being the smallest conceivable quantities of simple substances like calcium and carbon; and the gas which is produced by contact of a carbide with water is known as acetylene.

In one way the acetylene gas is superior even to electricity; that is in its ability to shine through fog and mist. For this reason it is used for railroad signal lamps and for harbor buoys. For the same reason, automobiles sometimes use acetylene lamps.



Various Acetylene Lights

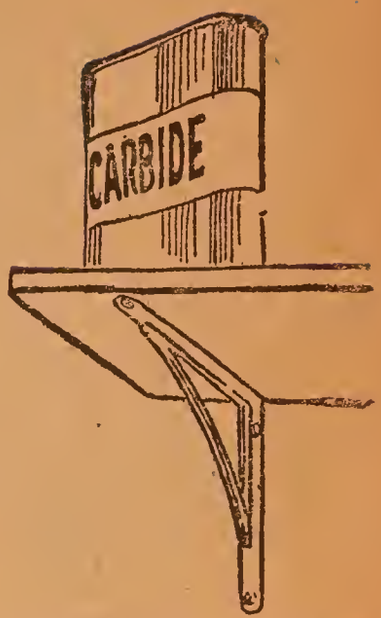
As soon as this gas came into general use the world began to hear of fires that were caused by it. This seems to be the rule with many new discoveries. Calcium carbide is cheap, and widely sold, and water is found everywhere; consequently there is always danger of the two being accidentally brought together. Acetylene, like many other gases, needs only to be mixed with air to become highly explosive. This means that one must take no chances with any of this carbide in his possession, but must always keep it in a tightly covered metal box in a dry place.

Acetylene's principal use in the household is for lighting. There are many different types of lamps on the market, and all of them act on the principle of regulating the amount of water that comes in contact with the carbide, so that the gas will be generated slowly, at a uniform rate sufficient to meet the demand for the gas. It is always a wise thing to pay enough for such lamps to make sure that they are of the safest kind; that is, that they are well and strongly made as a guarantee against leakage, and that their operation makes it impossible for water and carbide to come together except gradually and in relatively small quantities.

The National Board maintains its Underwriters' Laboratories in the city of Chicago for the purpose of testing all kinds of apparatus and only those which are proved to be

safe are allowed to carry its label. If there is an acetylene generator for your house you should make sure that it is labeled by the Underwriters' Laboratories.

The dangers from the use of acetylene are very much the same as those from illuminating gas. See what is said about these points under "Lights" and "Gas." Fortunately, acetylene, like illuminating gas, has a strong odor, and it is easy to tell when it is escaping.



Keep Calcium Carbide in Tightly Covered Metal Boxes

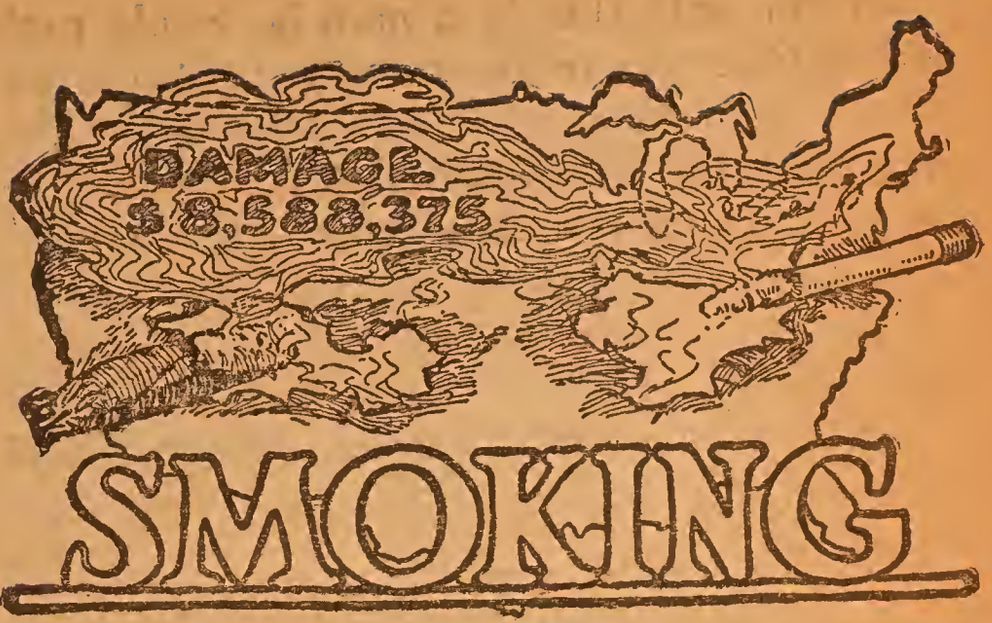
Safety Rules for Acetylene

1. Keep calcium carbide only in a tightly covered metal box; never leave the cover off.

2. In buying an acetylene lamp or lighting plant, always make sure that it bears the label of the Underwriters' Laboratories.

3. Fill the generators or lamps by daylight only.

4. Always remember that acetylene gas is very dangerous, and do not try experiments with the carbide. Study the gas warnings under "Lights" and "Gas."



SMOKING

The Careless Smoker

HAVE you ever seen a man light a cigar and then throw away the match while it was still burning? Have you ever watched a smoker knock the ashes from his pipe without heeding the bright sparks carried away by the wind? Have you ever noticed how people throw away glowing cigarette and cigar stumps without taking the trouble to notice where they fall?

Make Sure that the Sparks Are Out

Of course you have—many times a day. On the street, in houses and barns, on trains and steamers, in shops and stores, in fact, everywhere, these little firebrands are constantly being dropped by people who really know better but are merely careless.

The next time you see a man throw a lighted match over his shoulder, just say to yourself, or to him, if you know him well enough:

"Do you know that you are an enemy to your country? Do you know that you, and others like you, are costing the United States $165,000 a week, which is sixteen dollars a minute, by causing fires? Do you know that you are killing people, causing explosions, destroying homes and wrecking factories?"

If you said this to a man he would probably look at you in amazement; he might even resent your frankness, but you would be "doing your bit" for your country, since every word you spoke would be true.

The United States raises every year more than one million pounds of tobacco, and large quantities also are imported from other countries. To light that amount of tobacco it has been estimated that five thousand matches are struck every second. Five thousand matches lighted by smokers every second! No wonder the careless smoker is considered a dangerous person.

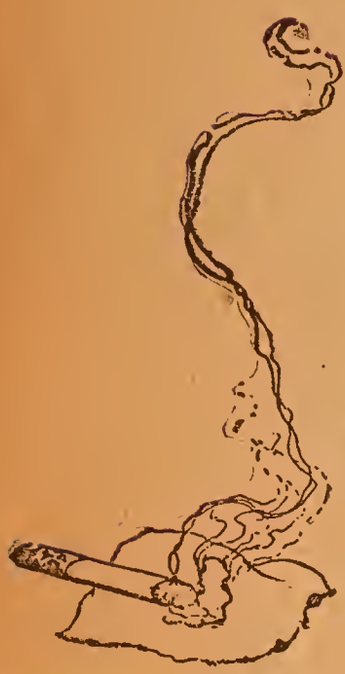
Watch Careless Smokers

Now you can understand why New York City has made it a penal offense to throw away a lighted cigar or cigarette in any structure, building, car, or other vehicle for the common carriage of passengers. Under this law there were in one year 1377 convictions and punishments.

Have you ever stopped to think why there are so many "No Smoking" signs? Perhaps you may have thought that the people in the places where these signs are placed disliked the odor of tobacco. Nothing of the kind. It is because the careless smoker is such a menace to life and property that it is safer to prohibit all smoking. In fact, in many places the "No Smoking" sign is required by law. The New York Fire Prevention Bureau law on that subject is a marvel of brevity; it says simply: "There shall be no smoking in factories." This is because so many operatives work side by side in large rooms, perhaps on inflammable materials, and the danger to life is very great.

What Happened Near Washington Square

One bright spring afternoon in 1911 a fire broke out on the tenth floor of a factory building near Washington Square, New York City, and spread almost instantly over the whole floor. In a short time 147 girls who had been making shirtwaists, without a thought of danger, were killed by the flames or by leaping in terror from the windows. It is a shocking thing to realize that this frightful accident is believed to have been caused by a careless smoker. Think of what he has to answer for. If, therefore, you should chance to see any violation of this rule against smoking in factories—if you should, for example, see a stranger enter the factory with a cigar in his mouth, or find a boy smoking a cigarette in the basement, or notice a workman putting a hot pipe in his pocket as he entered the door—think of the poor girls who were killed in the Triangle Shirtwaist fire, and report the facts at once.



Cigarettes Cause Many Fires

What else can you do to lessen the number of fires from smoking?

For one thing, you can make it your business to watch all smokers, and promptly stamp out any burning matches, cigar or cigarette stumps they throw away, and you can urge others to do the same. Furthermore, if there is a smoker in your own family, you can make it your business to warn him against throwing his cigar stumps about heedlessly, and you can tell him that one of the very common ways of setting houses on fire at night is to smoke in bed.

Children Should Never Smoke

Children, of course, should never smoke under any circumstances. It checks their

growth, it weakens their nerves, their digestion, and the action of their hearts. Teachers and police-court judges well know that boy cigarette smokers are apt to be backward mentally, morally, and physically. Most boy criminals are found to be cigarette smokers. Besides, smoking is one of the principal reasons why boys get in the habit of carrying matches, a habit which, as we have seen, is responsible for many fires.

The only interest, therefore, that children should have in tobacco is to see that their elders use it safely. Any boy or girl who keeps a sharp eye on all smokers, and who stamps out all burning matches and cigar stumps, is rendering a public service which this country greatly needs.

A Harmful Practice for Boys

Safety Rules in Smoking

1. Watch the careless smoker; notice where he throws matches, cigars, and cigarettes when he has finished with them; stamp out any sparks you may see.

2. Report all violations of "No Smoking" rules and warn people of the danger.

3. Give people special and emphatic warning against the danger of smoking in bed.

4. Tell your friends that smoking is harmful to children as well as dangerous to those about them.

PYROXYLIN PLASTIC

A Strange Combination

COTTON comes from the cotton fields of our own southern states; camphor comes from the vast tropical forests in the far-off Island of Formosa—who would think of putting those two things, as well as certain acids, together? Certainly, it would hardly occur to one of us, yet about fifty years ago it was discovered that they could be combined to produce a new material adapted to so many uses, that today it is in almost every home. Its proper name is *pyroxylin plastic compound.*

This lesson is to tell you that pyroxylin plastic compound causes many fires in the hands of careless people, but is reasonably safe when people know its dangers and take precautions.

"Well," you may say, "I never heard that name before; there is certainly nothing like that in *my* home." On the contrary, it is almost certainly in your home at this minute; lots of it; you have handled it today. Think a bit! It does not look like cotton; it does not look like camphor; it does not look like acid. It is generally white, although often colored; it is hard and smooth and shiny, and it is made into so many articles that, like as not, it will be found in almost every room—articles like brush and mirror backs, combs,

hairpins, collars, toys, eyeshades, cuff guards, knife and fork handles, boxes, trays, clocks and picture frames; the eyelets in your shoes are probably made of it, the keys on your piano, perhaps, and so on with many other things. There are few substances which enter so constantly into our common life, and there are few substances which so need to be understood.

Now, have you guessed? Of course, you doubtless have known it by one of its many trade names, such as "Celluloid," "Pyralin," "Fiberloid," "Xylonite," "Viscoloid," "Parisian Ivory," "French Ivory," "Ivortone," "Ivortus," etc. This is a valuable and convenient material, nevertheless, it is charged with causing a large number of fires and is mentioned almost daily in fire reports received by The National Board of Fire Underwriters.

Since all of these fires are due to carelessness, it can be seen that we are dealing with a substance which needs to be understood and properly safeguarded. The Bureau of Standards of the United States Government has this to say upon the subject:

"If heated somewhat above the boiling point of water, decomposition takes place so rapidly that the material heats itself to a point where ignition or explosion occurs. . . . A hot curling iron, or even a steam radiator, may be sufficient to cause ignition of these materials. Many persons have been seriously burned by the use of combs, collars, and other celluloid articles."

A Dangerous Candlestick

Several years ago, some fire-insurance men, to their amazement, discovered that pyroxylin plastic was being used to make candlesticks. Some of the manufacturers argued

that a metal cup at the top of the candlestick would catch the hot candle grease and prevent all danger, but it was soon found out that such was not the case, for when the candle was lighted and allowed to burn down, the candlestick took fire and burned with violence. When the matter was called to the attention of the makers of pyroxylin plastic, they refused longer to furnish it to the candlestick manufacturers. It is possible, however, that some of these candlesticks are still in existence, and if you ever hear of any person owning one, tell him to break it into small pieces and throw it away. It is too dangerous a thing to leave around the house.

A particular warning is necessary against the use of knives and forks having handles of this material. It is always dangerous to put hot curling-irons into a dresser with pyroxylin plastic combs or hairpins, while pyroxylin plastic ashtrays and burnt-match receivers should be abolished altogether.

We are now considering a different kind of fire peril from those of preceding lessons. Matches, lights, stoves, fire, cooking, kerosene, gasoline, gas, acetylene, and smoking—all of these materials or operations require the use of fire, but celluloid and such substances can not stand fire, for it destroys them. The danger they present comes from the fact that they are so common and take fire so easily.

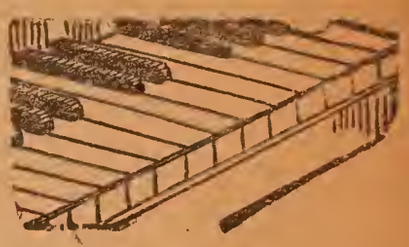
However, the precaution to keep them harmless is very simple: *Keep them away from fires and from great heat.*

Safety Rules for Pyroxylin Plastic Compounds

1. Never tolerate pyroxylin plastic candlesticks.

2. Don't keep matches in a pyroxylin plastic box.

3. Keep everything that smells of camphor away from fire or great heat.



4. Be careful to keep away from fires if you are wearing a pyroxylin plastic collar or imitation shell combs.

5. Warn people not to smoke when wearing a transparent eyeshade.

6. Tell them not to use cigarette holders, ashtrays, or burnt-match receivers, made of this material.

No Vacation for Common Sense

IT seems almost a pity to preach precautions for holidays. We all like to draw a long breath on holidays, with the feeling that now we are free to do "just as we please." Rules are well enough for ordinary days, but when the long-expected time has really come may we not at last find ourselves at liberty? Perhaps you have asked this question—a little rebelliously.

And the answer is that you may feel free about many things, *but not about fire.* Natural laws never take a vacation, and fire burns as fiercely upon holidays as at any other time. Many a joyous day has ended in pain and sadness for the very reason that people have felt so free from restraint that they forgot to be careful.

There are some holidays that also have special hazards of their own. For example, we are only just beginning to realize that we can celebrate Independence Day without burning up a great deal of gunpowder. Fourth of July has always meant a day of cracking and banging, with perhaps the sound of fire bells heard from time to time, and the expectation of accidents as a matter of course.

It seemed a great hardship to the small boy when people began to talk about a "safe

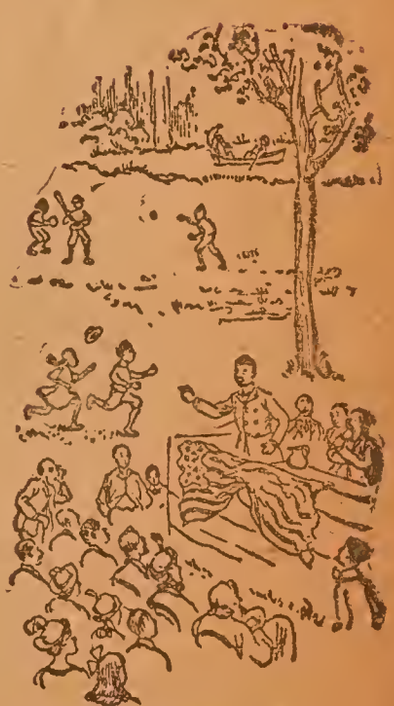
and sane" Fourth, but it eased the strain upon his parents, while it relieved the firemen of the hardest day's work of their entire year.

The "Glorious Fourth" in Dorchester

Upon July 4, 1913, a Dorchester, Massachusetts, youngster was having a delightfully noisy time with a bunch of firecrackers, and one of the crackling little paper tubes set fire to one building in a wooden "row." Before the fire department could extinguish the flames twenty-seven houses had been damaged and five of them were completely destroyed. This is merely one example of the fires, little and big, which were started in thousands of towns upon every Fourth, leaving multitudes of people homeless by nightfall.

But the worst feature of all was the series of accidents with which the next day's papers were always filled. Children were blinded, or had fingers blown off, or were disfigured by burns, and the death list was never small. The nation paid a terribly high price for its "patriotism."

Now, however, it is coming to be appreciated that it is not truly patriotic to cause danger to one's neighbors, and that it is just as pleasant, and much safer, to celebrate Independence Day by means of exercises, games, parades, and outdoor sports. Within the past few years, therefore, the list of deaths, accidents and fires on this day has grown much smaller, although it is still far too high. The safer rule to follow is that fireworks should never be handled except by grown people who realize their danger and take proper precautions.



Various Forms of Celebration

A bulletin published by the National Fire Protection Association gives these particulars:

Human Sacrifices to Independence Day

The table shows by years the steady progress of the safe and sane idea. As heretofore, all accidents not due directly to the discharge or handling of fireworks, or other means of noise production and display, on or about the Fourth of July, have been omitted. Of the 749 deaths from Fourth of July injuries, other than from tetanus, in the fourteen years, 227, the largest number, were burned to death; 208, the next largest number, were killed by firearms; 119 by explosives; 59 and 52, respectively, by giant crackers and toy cannons, and 84 persons by various forms of fireworks. Of the ten victims of fatal burning in the celebration of 1916, nearly all were little girls or small children, and the fireworks responsible were in most cases described as "harmless."

Fourth of July Victims

(*Compiled by Journal of the American Medical Association*)

Year	Dead	Injured	Total
1903	466	3,983	4,449
1904	183	3,986	4,169
1905	182	4,994	5,176
1906	158	5,308	5,466
1907	164	4,249	4,413
1908	163	5,460	5,623
1909	215	5,092	5,307
1910	131	2,792	2,923
1911	57	1,546	1,603
1912	41	947	988
1913	32	1,131	1,163
1914	40	1,466	1,506
1915	30	1,135	1,165
1916	30	820	850
Total for Fourteen Years	1,892	42,909	44,801

To this may now be added the figures for 1917, when, according to the Chicago *Tribune*, the deaths were reduced to fourteen and the number of injuries to three hundred and fifty-three.

Of all the days of the year, Christmas is probably the greatest favorite, and yet it, too, has a terrible record of unnecessary fires. Strange as it may seem to Northerners, many of these fires are caused by gunpowder, be-

cause firecrackers and fireworks are much used in celebrating Christmas in the Southern States. Here is an extract from an editorial in the Nashville *Tennessean* (December 27, 1916):

Christmas and Gunpowder

On Christmas day in Nashville a quiet in keeping with the sacredness of the day was observed. Scarcely an explosion of fireworks was heard. Not a single accident was reported. Only one fire alarm was turned in, and the damage from that fire amounted to a dollar and a half.

On the same day in Atlanta fireworks were exploded after the old fashion. Thirty accidents were reported. Some of them will result in death, and many were serious. No report is yet obtainable as to the number of fires in Atlanta, but, doubtless, there were a number of them, with considerable property loss.

Every Christmas before this one Nashville's case was similar to that of Atlanta. The change is due to a new law regulating the sale and discharge of fireworks, promulgated by Charles W. Schuyler, commissioner of the Department of Fire Prevention.

The celebration of Christmas Day in the North, however, is nearly as bad because of the dangerous decorations in millions of homes. Santa Claus is associated with snow, and so people surround Christmas trees with cotton-wool to imitate snow, and hang them with cut paper and celluloid ornaments, all of which will blaze up at a spark. Worst of all, they add lighted candles to complete the dangerous combination. They also put dried branches of evergreen, holly and mistletoe upon gas fixtures, hang them with tissue-paper ropes, and do other things that invite a conflagration.

An Unsafe Form of Decoration

A fire, once started in a room thus decorated for Christmas, is likely to spread with terrible swiftness. Every year the papers tell of many homes destroyed and many people burned to death.

Do Not Use Cotton Wool

Of course, such fires are unnecessary. A Christmas tree should not be lighted unless this can be done with electric lights, and even then special care must be taken to see that the wiring, lights, etc., are in good condition. Cotton-wool and cut-paper decorations are extremely dangerous, and should never be used. It is also dangerous to leave the Christmas greens in the house for more than two or three days following Christmas, because when thoroughly dry they are extremely inflammable. From the fire-prevention standpoint, cleaning up after Christmas is one of the most important precautions of the entire year.

After all, it is possible to have just as good a time without forgetting the simple rules dictated by common sense. There is an old saying that "it is better to be safe than to be sorry," and this should be applied with particular force on holidays.

Safety Rules for Holidays

1. Do not take foolish risks.
2. Try to have a good time without burning gunpowder, but if there must be fireworks let them be handled only by grown people.
3. Do not use lighted candles on Christmas trees. If you desire lights, use only electric lamps, carefully wired.
4. Do not use cotton-wool, tissue paper, and other inflammable decorations.
5. Remove all Christmas greens within two or three days.

Never Have Candles on Christmas Trees

Why the House Was Burned

IT is often said that the first five minutes at a fire is worth more than the next five hours. If you have ever seen a real fire *start* you will know what this means.

Not long ago, a guest in a handsome country house was awakened by the cry of fire. He ran into the hall, and saw that a partition had begun to blaze as the result of an overheated furnace pipe. It was a very small blaze. A hand extinguisher would have put it out in a moment; so would a pail or two of water, but the foolish people had no extinguisher and no pails of water. Some one rushed to the bathroom, but found that there had been an accident to the water pipes; not a drop would run. So the *first five minutes* went by, and the little blaze quickly grew into a great mass of flame that soon began to eat through the walls and ceiling. In the end, the house was burned to the ground.

In this lesson we come to a different division of our subject. We have been studying the *prevention* of fires, but it also is important to know how to deal with fires that do occur. In fact, this, too, is a kind of fire prevention; it prevents little fires from becoming big ones.

Let us remember, then, that we are never far from the possibility of fire. We have seen how fire enters into our daily lives in all sorts of useful ways, and how it is always seeking to escape from bounds and become the master. We have seen how many of the familiar objects in our homes may be a cause of fire peril, and we have studied plans for increasing our safety. But even this is not enough. In spite of our precautions some fires will occur, perhaps because some one else has been careless. What shall we do when we are face to face with the actual danger, and see before us the sudden burst of flame?

Fires Must Be Put Out While They Are Small

How to Keep Cool

First of all, let us keep our heads. We must act quickly, of course, but excitement may make us do exactly the wrong thing. It is not easy to keep from getting excited, do you say? Yes, there is one way; it is by studying it all out in advance, *when there is no fire*, and deciding just what should be done in such a case. Then we shall not need to stop and think if we find ourselves confronted by sudden danger. After all, it is simple enough; there are only a few rules to remember.

Let us see. We have already noticed that most fires are small in the beginning, therefore the time to put them out is at once, before they have had a chance to spread. How? *By means of an extinguisher*, if there be one within reach, as there should be in every home. There are various types of hand fire extinguishers on the market; all houses should be equipped with some good type, placed at convenient points, within plain

sight and easy reach, and every member of the family, including visitors and servants, should be taught how to use them. Fire may break out suddenly; it generally takes one entirely by surprise. In the hurry of the moment one must not have to wait to read directions. One must know in advance exactly what to do.

And then remember that whether water or an extinguisher is used, the fire should always be attacked *at its base*, the place where the flames start. It is the burning material, instead of the flames themselves, which should be drenched or smothered. If water is used, and the blaze is still a small one, it is generally more effective to throw on the water a little at a time instead of all at once. Some small blazes can be beaten out with a broom or a coat.

Putting Out a Fire on the Floor

If the Clothing Catches Fire

Fire in clothing is particularly dangerous, and calls for quick action, but without excitement. Tear off the burning clothing, if possible, or smother it by wrapping about the body any *woolen* cloth within reach. Never try to smother a fire with a cotton cloth, because cotton will burn. Running is the worst thing that could possibly be done, since it fans the flames. One effective way of smothering is to throw to the floor the person whose clothing is on fire and cover him with a rug or other woolen material, throwing it downward toward the feet in order to keep the flames from the face. Always remember that the *flames must be kept from the face.*

Smothering Burning Clothing with a Rug

If the fire is outside of the house, in the roof or exterior walls, or in some outbuilding,

Keeping the Roof Wet

use a garden hose, if possible. If your own house is not on fire, but there happens to be a fire near by, so that there is danger from sparks and brands, keep your roof wet by using the hose or by passing buckets of water. The hand force-pumps used for spraying trees are also valuable in fire fighting.

Study these simple rules until they are thoroughly learned, then, if you are in danger, they will flash into your mind, and you will be able to do the right thing without excitement.

Rules for Fighting Small Fires

1. Keep cool, and act quickly, before the fire can spread.
2. Make your plans in advance as to what you would do in case of fire.
3. Have one or more hand fire extinguishers within easy reach.
4. Be sure that every one in the house knows where they are and how to use them.
5. Do not aim at the flames but at the place where the flames start.
6. If you use water, it is generally best to throw it on in small quantities.
7. Small fires can sometimes be beaten out with a broom or coat.

SERIOUS FIRES

LAST of all, we come to the fires which have not been extinguished at the start and which, therefore, cannot be put out easily. No, of course we don't like to think that such things can happen to *us;* we read about them in the papers, and sometimes we follow the engines to a place where some other family's house is on fire. Nevertheless, the people in that other family didn't expect to see their home in flames, either. Probably they didn't know what to do when the fire broke out, because they had never given the subject much thought. *You* are going to think about it now; then you will be prepared.

Suppose that you were to go to sleep some night, feeling perfectly safe, and wake suddenly to find the house full of smoke and every one rushing excitedly about. It is hard to think straight at such times unless you have made your plans in advance.

Therefore, never go to bed without knowing the quickest, safest way to leave the house. If it is by a window, be sure that the window isn't locked, and that it is not too high for a jump; if it is by a hall or stairway, be sure that you know every turn in the dark, whether to right or left, and that there is nothing to stumble over.

Know the Way Out Before You Go to Sleep

It is dangerous to leave things standing

about in halls, doorways, or on steps. Sometimes you will see city fire-escapes filled with boxes or flower pots or other things. People who can be so criminally careless as that hardly deserve to be saved; that kind of carelessness costs many lives.

Look around in daylight, therefore, plan your escape, and make sure that the way is kept clear at all times.

But that is not all; it is only the beginning. You may be the only cool-headed person in the house, and you must know how to give the alarm. If you find that you cannot put the fire out yourself, shout "Fire!" unless you happen to be in a crowded room. Of course, one should never call "Fire!" in such a place, for fear of causing a panic. Such a proceeding has sometimes resulted in terrible loss of life. If you discover fire where many people are gathered, speak of it calmly, and tell them that there is no danger if they will but go out quietly.

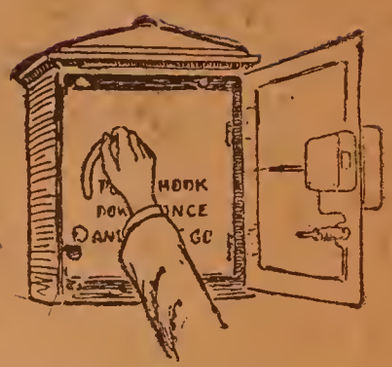
Know Where to Find the Nearest Alarm Box

The fire department is, of course, the best help to summon. Do you know where to find the nearest fire alarm? Do you know how to use it? If not, don't waste a single day before learning. Make yourself thoroughly familiar with its operation *at once!* There may be no time to stop and read directions when the fire comes.

Not long ago, in a New York City apartment house, the elevator boy discovered a blaze, and rushed at once to the nearest alarm box. He turned the handle and then hurried back to help people to escape. This boy was brave, and he kept his head, *but he had never studied the directions on the alarm box.* Turning the handle merely opened the door;

it did not send in the alarm, for there was a hook to pull after the door was opened. Consequently, the fire engines did not come until the alarm had been sent in by some one who understood how to turn one in, and so much time had then been lost that the fire did a large amount of damage.

Unless the alarm box is in the burning building, it is best to wait at the box in order to direct the firemen where to go. But perhaps you may wish to send the alarm by telephone. Call the operator and merely say: "I wish to report a fire." Then she will connect you with the fire department. Always give the address when sending in a telephone alarm; some people get excited and merely give the name, thus causing delay.



Understand How to Send an Alarm

So much for alarms. Now let us go back to consideration of the fire. Here is some good advice from Chief Kenlon of the New York City Fire Department:

As soon as you discover that there is a fire in the house, go to the door of your room and, if it is closed, put your foot behind it and then open it cautiously, just enough so that you can see out. Don't throw the door open wide, because if the fire has been burning for some time there will be such a draft that you may not be able to get the door shut again, and in that case the fire will rush in and set everything in the room afire, including yourself. If you find that there is a strong pressure against the door and that the fire is close, shut it and coolly consider what to do. It will be several minutes before that door will burn through, and in that time you can make a sheet into a rope and slide to the ground with it or you can throw the mattresses and pillows out of the window so that if you have to jump you will have something soft to fall on. Don't jump until it is absolutely necessary.

Making a Rope of Bedclothing

Remember to *close the door* behind you when leaving a burning room, as that will check the spread of the fire.

The Smoke is Thinnest Near the Floor

Sometimes a hallway is so thickly filled with smoke that it looks as though it would be impossible to pass through, and yet it may be the only way to safety. Here is the best method for getting through: Tie a wet towel over your mouth and nose; then crawl along on your hands and knees, for the smoke is thinnest near to the floor. Say to yourself, "I will keep cool; I will not get excited."

Always remember that when a fire has such a start that you cannot put it out, the most important thing is to save life. If no lives are in danger, you should save as many of the valuable things in the house as possible. Don't waste any time carrying out things of little value until you have made sure of the jewelry, silver, pictures, and such things, and never be foolish enough to throw breakable things out of the windows, as excited people sometimes do.

Coolness, quickness, quietness, and knowledge of what to do, these are the valuable things to possess in a fire emergency, and there is not a boy or girl who reads these words but that may sometime be called upon to make use of them. Do not merely read these lessons, study them; make them a part of your knowledge. Then, if the test comes suddenly, you will *BE-PREPARED*.

Safety Rules in Serious Fires

1. Make all your plans in advance.

2. Never go to bed without knowing the quickest, safest way to leave the house.

3. Keep the halls, stairs, doors, and fire-escapes free from obstruction.

4. Give the alarm promptly by calling "Fire!"—unless in a crowded room.

5. In a crowded room give the alarm quietly and keep the people calm.

6. Know where to find the nearest fire-alarm box, and study the directions in advance.

7. Wait by the box, if it is outside of the burning building, so as to direct the firemen when they appear.

8. If you send a telephone alarm, call the operator, and say "I wish to report a fire," and be sure to give the address.

9. If your door is closed, put your foot behind it, and open it cautiously. Slam it shut if the fire threatens to rush in.

10. If there is smoke, but no flame, in the hallway, tie a wet cloth around your mouth and nose, and crawl on your hands and knees if the smoke is dense.

11. Close all doors that you pass, in order to keep the fire from spreading.

12. Do not jump from a window unless it is absolutely necessary. It is better to tear a sheet into strips, tie the strips together into a rope, fasten one end of the rope securely, and slide to the ground.

13. If you have to jump, throw out mattress and bedding to break your fall.

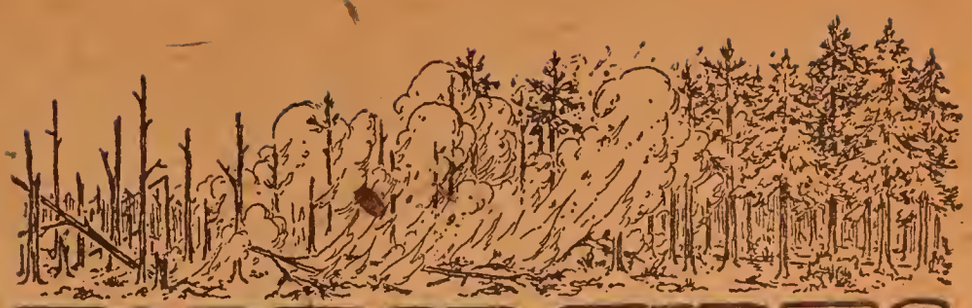
14. Always save life before property. In saving property, take out the most valuable things first.

15. Don't throw breakable things from the windows.

16. Always keep your head.

Open the Door Cautiously

Throw Out the Mattress Before Jumping



FOREST FIRES

By the HON. C. P. WILBER
State Firewarden of New Jersey

FIRE not only destroys our homes and buildings, but burns up, in our forests, timber, which would make thousands of homes, wasting it before it has been made into lumber, or into paper and the multitude of other things for which we use wood in our daily lives. It has been said truthfully that every year there is more lumber burned up in forest fires than all of America's sawmills manufacture in a year.

Besides this awful waste, these fires cost many human lives, cause untold suffering and do millions of dollars damage by destroying crops, and homes and even whole towns. They likewise kill multitudes of birds and wild animals and drive away those which escape by ruining their homes and feeding grounds. Also the blackened wrecks of woods drive away and keep away all sorts of people; the woods worker, the homeseeker, and the pleasure seeker. They leave the countryside a deserted waste, idle and unproductive, and worst of all, it must stay so for years. The ruins of the biggest fires in our cities are replaced by new buildings in a few months or at longest in a year

or two, but it takes from 30 to 150 years to rebuild a ruined forest.

Too many people believe that the little fires crawling among the leaves or burning quietly in the underbrush are harmless. And yet they injure even the larger trees and kill the young growth and seedlings from which the next forest must come, they also rob the forest of nature's sponge for holding moisture and her fertilizer for feeding the trees, by burning up the humus. No fire is so small that it is insignificant or harmless. A few moments spent by some "good citizen" who finds one will certainly prevent some damage. It will often avert a big conflagration, for any such fire, if left untended, is more than likely to be caught by some sudden gust of wind or to reach more inflammable cover and become a roaring furnace.

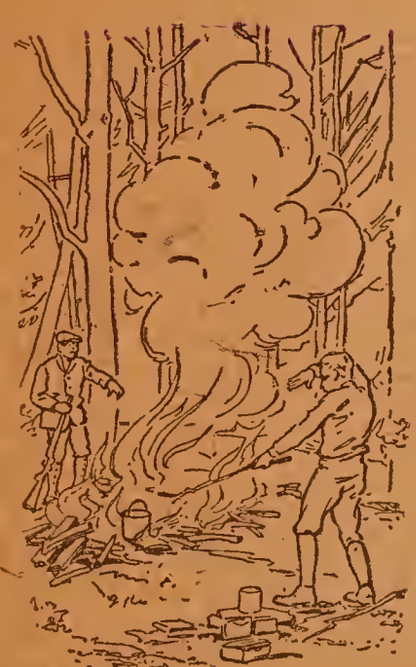
Two Cases of Carelessness

Like other fires, nearly all forest fires come from someone's carelessness or ignorance. Here are two examples from actual occurrences which show two of the main causes of fires and how easily they may make trouble.

A fire recently burned up more than 2000 acres of fine woodland. When the man who was responsible for it was found this was his story: "It was an absolutely quiet morning and I had just a few weeds and briars to get rid of after cleaning up the garden, so I lighted them and watched the fire carefully. When it was almost burned out, there came a sudden whirl of wind and the fire seemed to scatter and

Brush Should be Burned in Small Piles Under Careful Supervision

start up everywhere at once, so that I could not put it out before it got to the woods and got too big for me." This man had never heard that it is always unsafe to start a fire for any purpose near the woods or fields when things are dry, and especially so in the Spring and Fall. He didn't know that it is always more dangerous to build a fire in the morning than in the evening. He'd never learned that even on the quietest day, a little fire may start the air to moving or that the wind will often suddenly change direction or grow stronger. He had neglected to have water or a shovel or even something to beat out fire handy in case the unexpected did happen. He didn't realize that, for even the smallest fires, grass and leaves should be raked back so that there is a big ring of soil around the fire. He had never been told that there were cheap and safe "rubbish burners" to be had for just such purposes. Because he was so ignorant he had done what hundreds of others do every year with bonfires, campfires or when "cleaning up," he had made a graveyard full of blackened tombstones where a forest had stood. Remember the mistakes he made and the advice in the chapter on "Open Fires," when you have anything to do with such fires.



Large Camp Fires are Too Hot for Comfort or for Cooking and are Dangerous

A Hunter's Experience

A good sportsman, used to the woods all his life and very careful in every way, said: "I was out after rabbits last fall with a new dog and while waiting a moment for him to jump something, lit my pipe. Just then he let out a yelp and I went on to see

what he had started. He'd found a deer trail and gone off on it and I couldn't call him back, so I turned homeward, and right where I'd lighted my pipe, found a little fire getting under way. It was quiet so that I got it out in a short time, but that taught me a lesson, for I've always thought I was as careful as a man could be." If this man's dog had jumped a rabbit instead of finding the fresh deer track, there would have been all the destruction of forest and game which forest fire does, and no one, least of all the man who started it, could have told how it happened. This man's accidental fire is similar to thousands set each year by smokers who throw away lighted matches, cigarettes, cigars or pipe tobacco from car windows or automobiles or as they tramp the woods and roads. Don't guess, but always know that a match is out before you drop it anywhere. Don't ever be in such a hurry that you fail to tramp discarded "smokes" into the mineral soil before you leave, if there is any heat in them. Remember, that dry grass or leaves are even more inflammable than papers in a waste-basket.

Fight Forest Fires From the Front, Beating Toward the Source

Who Is Your Firewarden?

Most states now have firewardens or some similar organization for putting out forest fires. People living near the woods or traveling through them should know who these men are and how to reach them just as in a city, they should know where the nearest fire alarm box is and how to use it. Do you know who your local forest firewarden is?

Many states also require every one, setting fire for any purpose near the woods, to secure a permit from a firewarden before doing so. Those who plan to build fires should know whether such permits are needed and get one if they are, to avoid needless unpleasantness because of unlawful fires.

Safety Rules for Forest Fires

To Prevent Them.

1. Never drop lighted matches or smoking materials in the woods or fields or along the roads without putting out the match absolutely or stamping the "smoke" into the mineral soil.

2. Never build an open fire for any purpose near the woods or fields when the woods are dry.

3. Never leave any fire until it is entirely out. Drench it with water or cover it completely with mineral soil.

To Control Them

1. Never pass even the smallest fire unnoticed. Put it out yourself or see that a firewarden, the owner or some responsible resident starts for it before you leave.

2. Fire travels with the wind always. Stop its front first and put out the sides and rear later. Sand or soil will smother it, beating will kill it, but water is always best. Flirt water or soil along the line, do not dump it in one place. Beat toward the fire to avoid spreading it.

3. Always work slowly and deliberately in fighting fire so that every motion counts and your energy is not wasted.