

the children are told that things which *burn* are said to be *flammable*.

An interesting lesson may now be given in arranging the substances used in illustration into three classes: (1) those which burn readily; (2) those which burn with difficulty; and (3) those which do not burn at all (at least in any ordinary fire). The substances may be tested in the flame of the spirit-lamp.

The result will appear thus:—

(1)	(2)	(3)
Cotton-wool.	Wool.	Glass.
Cotton goods.	Woollen goods.	Stones.
Paper.	Sponge.	Clay.
Cork.	Leather.	Chalk.
Dry wood.	Whalebone.	Metals.
Camphor.		
India-rubber.		
Coal.		
Sulphur.		

The children must be called on to exercise their powers of observation during the experiment on each substance, and to note any striking likenesses and differences exhibited.

Thus, cotton-wool and wool resemble each other in colour, lightness, &c., but the one burns fiercely, the other with difficulty. Paper and thin leather (say a finger of an old kid glove), india-rubber and sponge, splinters of dry wood and whalebone, sulphur and chalk, coal and stone, may all be compared with advantage. The smell and smoke given off by the different burning substances should also be noted.

When the various substances have been experimented on and classified, attention may be called to the fact that all the substances in the first class (except sulphur) come from

plants, all the articles in the second class come from animals, while all those in the third class belong to inorganic nature.

The teacher should now encourage the children to name any uses to which burning bodies are put, and lastly, she should impress on the children the danger of playing with fire.

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### LESSON XIII.

#### PROPERTIES OF BODIES.—ELASTIC.

THE teacher should be provided with india-rubber, sponge, and a piece of whalebone or steel spring to illustrate the three kinds of elasticity.

See that the children know the names of the objects. Then, taking up the whalebone and bending it, proceed by questions to elicit the idea of the first kind of elasticity.

“See, I am bending this whalebone. What happens now I let it go?” *It goes back again. It flies back again. It springs back.*

“We will say *it springs back to its own shape again.*”

“What is this I am stretching?” *India-rubber.*

“What will happen if I let one end go?” *It will spring back again.*

“Yes, *it springs back to its own shape again.*”

“Here is a piece of sponge. What am I doing with it?” *Squeezing it.*

“What will happen if I let it go?” *It will go back to its own shape again.*

"I will now give you one word which means springing back,—it is *elastic*."

"What does the word *elastic* mean?" *Springing back.*

"Why do we say whalebone is elastic?" *Because it will spring back after being bent.*

"Why do we say india-rubber is elastic?" *Because it will spring back after being stretched.*

"Why do we say sponge is elastic?" *Because it will spring back after being squeezed.*

"When do we say a thing is elastic?" *When it will spring back after being bent, or stretched, or squeezed.*

"John shall take this cane and bend it. Is it elastic?" *Yes, because it springs back again.*

"Here is a strip of lead. Jane may bend it. Is it elastic?" *No, it does not spring back again.*

"Here is a cork. It looks too large to go into the neck of this bottle. How shall I get it in?" *Squeeze it in. Press it in.*

"I take it out again. What do you notice about it?" *It has gone back to its shape again.*

"Then what can you say about cork?" *Cork is elastic.*

"Here is a piece of cotton-wool. What shall I do to it to find out if it is elastic?" *Squeeze it.*

"Mary shall try it. Is it larger or smaller now that Mary is squeezing it?" *It is smaller.*

"When Mary opens her hand what will happen to the cotton-wool?" *It will get larger.*

"Is cotton-wool elastic?" *Yes.*

"Why do you say it is elastic?" *Because after being squeezed it goes back to its own shape again.*

The property of *flexibility* or *pliability* may be taught in conjunction with *elasticity*. Whalebone and india-rubber

are *elustic*, but they are also *flexible*, because they can be *easily bent without breaking*.

Leather, cord, paper, lead, copper are all flexible, but not elastic.

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#### LESSON XIV.

#### INDIA-RUBBER.\*

ARTICLES for illustration:—A piece of bottle india-rubber, bottle containing india-rubber dissolved in naphtha, and any waterproof articles.

This lesson should be partially a review of what the children have already learnt about this useful substance. The teacher may therefore introduce it by means of questions such as the following:—

"What can you tell me about india-rubber? Why do we say it is elastic? Is india-rubber heavy or light? How can you find that out? What else can you say about india-rubber? With what kind of flame does india-rubber burn? Can you tear it easily? What do you call it because it does not tear easily? What do you call it because it bends easily?"

"You have remembered about india-rubber, then, that it is *elastic, flexible, light, tough, and inflammable*."

The teacher may then proceed. "To-day I want you to find out for yourselves something more about india-rubber; but first I must tell you something about it which you could not find out for yourselves. India-rubber is the juice of a tree. Cuts are made in the bark of the india-rubber tree;

\* In this and the following three lessons the teacher should aim to show how the particular uses of india-rubber, sponge, &c., follow from their special properties.