

## UNCLE SAM.

*Children.* Now, Uncle Sam, we are come that you may tell us something more about fire, and light, and such things.

*Uncle.* One thing we have learned, my dear children ; and that is, the great value of fire. As man is, I do not see how he could rise above the condition of a savage without it. It seems to be one of those provisions for human nature which are absolutely necessary for the existence of man in civilized society. Indeed, I might say, to the continued existence of the human race. We may form ideas of individuals, in very peculiar circumstances, living without fire ; but the more we reflect on such cases, the more clearly we shall see that these are decidedly occasional exceptions to a general rule. But even those individuals would do very poorly.

*C.* They would indeed. Every one of them would try as hard as he could to get fire.

*U.* And what would they do for it ?

*C.* Why, they could manage easily if they had such things as we have ; but if they had not, what could they do ?

*U.* My children, we are now on the borders of a wide subject, and by and by I hope you will be able fully to enter upon the study of it. At present, I can only tell you a few facts for you to remember. After you have pursued your studies, you will be prepared to have them explained to you. Wise men have agreed to have one word to express our own feeling of heat, that is *heat* ; (the word is used scientifically to signify the *sense* of heat ; ) and *another* to signify the *matter* or *cause* of heat. Some believe that it is a sort of fluid substance ; but, whatever it is in itself, the word which signifies that which causes the sensation, or occasions the actions of heat, is *caloric*. Caloric is the matter of heat. That is one step. Another is, caloric can be communicated to substances, or taken from them. They can be made *hot* or *cold*. Here is a fire. You feel that the air all about it is heated. You put the cold poker into the fire. It becomes red hot. You take it out. The caloric it had received flies off, and it becomes cold.

*C.* O ! we know that.

*U.* Yes ; and I must mention another fact. Even though it felt cold before you put it in the fire, there was caloric in it. Caloric is spread all through nature. It is in cold water.

*C.* *Heat* in cold water, Uncle ?

*U.* Yes ; for when the heat is taken out of it, it becomes solid. You must know that one law of heat is its tendency to what we may call a balance. The hot poker put into a cold place, cools, till it is like the other things around it. The word that expresses the quantity of heat in substances is, temperature ; the temperature of the body,—the quantity of caloric that is shown to exist in it. This tendency to equality of temperature is a most important law of heat. You act