HINTS FOR THE SCHOOL ROOM.

I. Physiology—Digestion.

INTRODUCTORY.

T. If we took no food for a number of days, what would be the result?

S. We would waste away and at last die of starvation.

T. How could it be shown that we would waste away?

S. Why, everyone could see it; and if we weighed ourselves from day to day, the scales would show that we would be growing lighter. There would be a loss of several pounds each day, very likely.

T. You are correct; and that fact illustrates the important truth that we are constantly wearing away, and that food is necessary to supply the constant waste. Now let us try to see how food becomes a part of our bodies. If you were to cut your hand very deeply would you find in it any potatoes, or bread, or beef, or fish?

S. No; it would be all flesh and blood and bone, and——

T. Then all the food we take must change into something else different from what it may be when we eat it. What would you call that change?

S. It must be dissolved, when taken into the substance of the body and changed to blood and flesh.

T. Yes, the dissolving we may call *digestion*, and the change *assimilation*. But why should digestion be necessary?

S. Because potatoes, or beef, or fish, or bread could not go into the currents of blood which are rushing all the time through every part of the body building up anew every little particle which is wasting away.

T. Very good; I am glad you did not forget our lesson on the circulation. All the food which is taken into the substance of our bodies must first be dissolved and changed into some liquid form. And the region of the body in which these changes are accomplished is called the *alimentary* canal. What is the meaning of *aliment?*

S. Food.

T. Then the alimentary canal may be called——

S. The food canal.

T. When the food is in any portion of this canal is it in the substance of our bodies?

S. No. If a person has his mouth full of biscuit, the biscuit is in his mouth—not in the substance of his body, of course.

T. Then the alimentary canal, that is the cavity of the mouth of the stomach and of the intestines are all outside of the substance of the body?

S. It looks like it.

T. You are right. The alimentary canal is really a tube of varying size and character, and its cavity is really as much outside of the body as is the surface of our skin.

S. And is it covered with skin like the outside of the body?

T. It is. But there are a few important differences in the nature of this skin. Instead of skin, it is called the *mucus membrane*. Its outer or scarf skin is so thin that the blood filling the millions of minute capillaries are quite visible through it. Proof: open your mouth and note its color.

S. Red.

T. The outer skin of the body has a great number of sweat glands in it. The skin of the inside of the alimentary canal, that is the mucus membrane, has a still greater number of minute glands in it; but instead of secreting and pouring out perspiration, a great many of these pour out mucus which is a clear slimy fluid and forms a portion of the spittle in the mouth. It serves to keep the mucus membrane moist.

S. It is because the skin of the alimentary canal is filled with so many glands pouring out mucus that it is called the mucus membrane, is it?

T. You are quite right; it is just so. But in different parts of the canal there are other glands which pour other liquids of great importance in dissolving our food. We shall consider these in our next lesson.

II. Ptyalin.

T. We come to the conclusion already, that the food all through the alimentary canal is really as much outside of the substance of our body as if it were applied like a plaster to the outside of our body. but the mucus membrane is a kind of skin which pours out from itself substances which help in liquifying the food; and the thinness of its scarf skin permits of the absorption of this liquefied food into the substance of the body very easily.

S. Is not the food digested in the stomach?

T. It is digested in every part of the alimentary canal.

S. Is it very long?

T. About twenty-eight feet in a full grown man.

S. Why! that would reach from one side of our school house to the other.

T. Yes, and all the food we take will pass through that twenty-eight foot tube unless it is dissolved and absorbed through the mucus membrane. Some food dissolves in the mouth, more in the stomach, and