

DIGESTION AND NOURISHMENT.

By "THE NEW DOCTOR."



Do you know what is the use of the blood? It is to nourish the body by supplying every individual organ with oxygen and food. The blood obtains oxygen from the air by means of the lungs, but all other food-stuffs are taken from the digestive organs. Oxygen exists free in the air, of which it forms about one-fifth part. The lungs take in this oxygen and pass it on to the blood unaltered; but what you put into the digestive track does not enter the blood until it has been completely altered by the process of digestion.

The blood is the food of the body. All the organs draw what nourishment they require from the blood, and if that fluid were not constantly replenished with nourishment, it would soon become useless and the body would die of starvation. The blood collects food from the stomach and digestive organs. Everything that you eat which nourishes you must get into the blood. Anything that you eat that does not become blood is useless.

But do not innutritious materials get into the blood from the stomach? Most certainly they do. If a person takes a dose of poison it will get into the blood, and the poisoned blood circulating through the body will produce death. From this we draw the very valuable hint that we more or less possess the power of altering the composition of our own blood by what we put into our stomachs.

If you eat a piece of meat or a potato, the nourishing part of it will get into your blood—not as meat or potato, but as another substance derived from the meat or potato.

Most of the food we eat is solid. A piece of meat is a solid. More than this, it is an almost insoluble solid. It will not dissolve in any ordinary fluid. But the blood is a fluid during life, and if that piece of meat is to get into the blood it must be made soluble, and it is made soluble by the digestible juices.

The organs of digestion in man are very numerous and complex. The food taken passes through the following passages and cavities. First it enters the mouth, here it is masticated by the teeth and mixed with the spittle or saliva. It then passes to the back of the mouth and is swallowed into the pharynx and gullet and then enters the stomach. Here it is acted upon by the gastric juice and churned into a mass resembling porridge. It then passes into the first part of the small intestine, where it is acted upon by the secretions of the liver and pancreas. It then passes into the lower part of the small intestine, where it is acted upon by still another digestive juice. From the small intestine, that part of the food which is indigestible passes into the large intestine. The blood circulates through the whole of this digestive canal and gradually absorbs the nourishment from the food as it passes, first in the stomach, but chiefly in the small intestines.

You see, therefore, that we have a great many digestive organs, and every one of them is of extreme value. Let us further consider their actions and uses.

The mouth is the first part of the digestive canal. It contains the tongue, the cheeks, the palate, the teeth and the fauces, and into its cavity open the ducts of the salivary glands. The chief use of the tongue, in digestion, is to move the food about while it is in the mouth and to help in the process of swallowing.

Moreover it contains the nerves of taste. When we say the tongue is the organ of taste, a reservation is necessary, for the tongue only tastes coarse flavours such as bitter, acid, salt or alkaline. The delicate flavours are tasted not by the tongue but by the back of the nose. The palate does not possess the power of tasting, so the adjectives "palatable" and "unpalatable" are misnomers.

Mastication is the only digestive action which is completely under the power of the will. It is, doubtless, for this reason that it is usually so slovenly performed. There is an old adage that as you have thirty-two teeth, you should give each mouthful of food thirty-two bites. How many of us do so? How many there are who are content with two or three bites! Yet it is most important to thoroughly masticate your food, for the digestive juices cannot properly act upon lumps of food.

Insufficient mastication is one of the commonest causes of indigestion, and it may give rise to the very worst forms of dyspepsia. Two or three weeks ago I saw a middle-aged man who came to me complaining of very severe indigestion. So severe, indeed, were his symptoms, that I came to the conclusion that he had cancer of the stomach. Before however giving a definite opinion I examined his mouth, but of teeth he had not a vestige. This was quite enough to cause his symptoms. I asked him if he had never had false teeth. "Oh, yes!" he replied. "I had a complete set of false teeth, but I dropped them overboard six weeks ago, and could not get another set." "How long have you had indigestion?" I asked. "Five weeks," he replied. Just one week after losing his teeth. He got another set of teeth and is now quite well again.

Always masticate properly. If you have not got teeth of your own procure false ones. Many persons have a ridiculous objection to false teeth. I believe this partly arises from the belief that false teeth are made from teeth that have been extracted from other humans, or else made out of hippopotamus's tusks. One does not take out teeth that are good, nor put in false teeth that are decayed, so you may rest contented that the first opinion is a fable. All false teeth are now made of composition.

One must lay great stress upon this point about mastication, as it is totally useless to try to cure dyspepsia when the teeth are out of order, or are not used sufficiently.

The salivary glands secrete the saliva or spittle. This fluid serves a double purpose; it makes the food into a sticky mass preparatory to swallowing, and it is itself a digestive juice. Very few people know that spittle possesses digestive power. It digests starchy food. Therefore food containing a lot of starch should be retained in the mouth as long as possible, so as to get digested by the saliva, which converts the starch into grape sugar.

One of the worst forms of indigestion is that called "amylaceous dyspepsia," a condition in which starchy foods are only digested with extreme pain and difficulty. The chief cause of this trouble is insufficient mastication. It seems absurd to tell you to give thirty-two bites to a piece of mashed potato, but you should do so if you have the slightest inclination towards indigestion. It is not the mastication that is necessary here, but the intimate mixture of the starch of the potato with the saliva.

Having arrived at the back of the mouth the food is swallowed into the pharynx. This

process of swallowing is one of the most elaborate operations of the body. The food passes from the pharynx into the gullet and downwards till it comes to the stomach.

The stomach is practically a hollow muscular bag. It has strong muscles, and possesses numerous "pores" which secrete the gastric juice. The stomach is situated just under the heart, and both organs are supplied by the same nerves. This explains many curious phenomena in connection with these two organs. Have you ever noticed that you feel sick after being excited by good news, or after being depressed by sudden misfortune? If you have indigestion do you feel the pain over the heart and palpitation? It is the nervous connection between the stomach and the heart that causes these symptoms.

A large number of my readers suffer from fluttering of the heart, and have long ago come to the conclusion that they suffer from heart disease. But if I were to examine their hearts, I should be very much surprised to find that more than one per cent. had heart disease. Palpitation is a rare symptom of heart disease, but is almost constantly present in dyspepsia.

The stomach performs two functions. It churns the food into an almost liquid form by its muscular coats, and it furnishes a digestive juice, the "pepsin."

Pepsin does not digest all foods, but only those which contain nitrogen. It only digests proteid (or albumen), which is the nutritious part of meat. Proteid is not only found in meat, but exists in certain amounts in nearly every food. It is the most important food-stuff of man. The gastric juice converts this proteid into what is called "peptone," and this is absorbed into the blood. But peptone does not remain peptone for long; it is changed back again to albumen as soon as it enters the blood.

I cannot here enter into the question of disorders of the stomach. I will only state that the gastric juice will not act if it is diluted too much. Therefore you should never drink large quantities of fluid with your meals.

Leaving the stomach the food passes on into the first part of the small intestines. It is here that the greater part of digestion is carried on. Immediately the food enters the small gut, it meets with the secretion of the liver and the pancreas.

The secretion of the liver is called the bile, and it has the power of digesting fat. This is the reason why a very greasy meal makes you "bilious." The bile does not enter the stomach naturally; when it does it makes you sick.

Surely the liver does more than secrete a little bile to digest fat? This the largest organ in the body? Oh, yes! It has a very much more important office to perform. The secretion of bile is but a tenth part of its office. But the other actions of the liver I will leave for another time.

The pancreas or sweet-bread secretes the pancreatic juice. This is the only digestive fluid which digests all three forms of food, starch, albumen and fat.

Digestion is now finished, and the food is in a state in which it can pass into the blood. But all of it cannot pass into the blood. A certain quantity consists of indigestible food, dust, and various other impurities which would produce disaster, if they were to get into the blood.

You have twenty feet of small intestine. The food travels slowly through these twenty feet and as it passes the useful parts are slowly taken up by the blood. This gut also supplies

a digestive juice, of not much importance; its sole object being to convert cane sugar into grape sugar.

I had a dinner yesterday. Part of that dinner is now writing this article. It does so in the following manner:

My dinner consisted of roast beef and fat, potatoes, bread, salt, water and coffee.

These foods have the following composition:—

Roast beef	=	proteid
Fat	=	fat
Potatoes	=	starch
Bread	=	{proteid starch
Salt	=	salt
Water	=	water
Coffee	=	{caffeine water

So that my dinner consisted of proteid, fat, starch, salt, water and caffeine. If you have

carefully followed this article you will be able to follow this:

The proteid was converted into peptone by the stomach and pancreas.

The starch was converted into sugar by the spittle and pancreas.

The fat was converted into soluble fat (soap) by the liver.

The water, salt and caffeine need no digestion, they can enter the blood direct.

So this dinner was absorbed by the intestines and got into my blood. The blood circulated through my brain and hand, and gave them nourishment which enabled them to write this account of their nutrition.

Is there anything in the digestive organs of man that tells us what we should eat? Most certainly there is. As we have organs which digest a mixed diet it must follow that we require a mixed diet. And so we do. Again the length of our gut (twenty feet) also suggests a mixed diet, for it is intermediate

in length between that of a carnivorous and an herbivorous animal.

Those who read this paper and are unfortunate in regard to their digestions can gather many valuable hints from this brief account of the physiology of digestion. I will enumerate the chief points here suggested.

1. Thorough mastication of food is indispensable.
2. Starchy foods must be thoroughly mixed with the saliva.
3. What you take by your mouth finds its way into the blood.
4. A mixed diet is the physiological diet of man.
5. Drinking in large quantities at meals is to be avoided.
6. Greasy food should not be taken when there is a tendency to biliousness.
7. If you have palpitation, you have probably *not* got heart disease.

COLD MEAT COOKERY AND VEGETABLES.

MINCE.

Ingredients.—Half a pound of cold meat, one small onion, one ounce of dripping, half an ounce of flour, one gill of stock, pepper and salt.

Method.—Mince the meat finely and remove all skin and fat; slice the onion and fry it brown in the dripping, take out the onion and stir in the flour, let it brown and then add the stock by degrees and the minced meat. Let the mince get quite hot and serve with a border of mashed potato or well cooked macaroni round.

RISSOLES.

Method.—Make in the same way as mince, using only half the quantity of stock, and then spread the mixture on a plate to cool. When cold divide into equal portions, flour the hands, roll into balls, egg and crumb and fry in deep fat a golden brown.

HASH.

Ingredients.—Slices of cold meat, a slice each of carrot, turnip and onion, half a pint of stock or water, half an ounce of dripping, one ounce of flour, sippets of fried bread sauce, browning, bay leaf.

Method.—Chop up the bone from the cold joint and put it to simmer for an hour in the water or stock. Fry the vegetables in the dripping, add the flour and fry that brown, pour on the stock from the bones, stir till it boils, add the bay leaf, pepper and salt, put on the lid and let all simmer half an hour. Put in the slices of cold meat and let them heat gently in the sauce, take away the bay leaf, add a little Harvey or ketchup and a little browning. Serve on a hot dish with sippets of fried bread round.

CURRY OF COLD MEAT.

Ingredients.—Half a pint of curry sauce—(See Chapter on "Sauces.")—cold meat, rice.

Method.—Cut the cold meat into dice and let it heat in the curry sauce. Serve with a border of boiled rice—(See "Odds and Ends.")

COLD MEAT MOULD.

Ingredients.—Three-quarters of a pound of cold meat (minced), a quarter of a pound of cooked ham (minced), one egg, two tomatoes, one small onion (chopped), parsley (chopped), half a gill of stock, one dessertspoonful of flour, pepper and salt.

Method.—Butter a pie-dish, slice the tomatoes and ornament the dish with them. Mix the meat with the onion, parsley, pepper and salt; mix the flour smoothly with the stock and stir it until it boils in a small saucepan;

beat the egg and add it to the sauce when it cools; mix well with the chopped meat, etc., and press all into the ornamented piedish, cover with a greased paper and bake half-an-hour in a moderate oven. Turn out when cold.

COLD MEAT PATTIES.

Ingredients.—Any scraps of cold meat, pastry, pepper and salt, a little stock or water, beaten egg.

Method.—Cut the meat into little pieces and take away any skin. Line some patty pans with short pastry: season the meat with pepper and salt; put some meat on each patty pan and a very little stock or water for gravy; cover with pastry, brush with egg, make a little hole in the middle of each and bake twenty minutes.

VEGETABLES.

GENERAL RULES FOR COOKING VEGETABLES.

1. Green vegetables must be cooked with the lid off the saucepan to keep them a good colour.
2. Root vegetables can be cooked with the lid on as they will not discolour if the steam is shut in.
3. Pulse (i.e., peas, beans, and lentils) must not be cooked with salt in the water as the salt hardens them.
4. Potatoes, artichokes and turnips must be put into water as they are peeled to prevent their turning a bad colour.
5. All vegetables except pulse must be cooked with salt; green vegetables need a pinch of carbonate of soda.
6. Salt for boiling vegetables is used in the proportion of two ounces to the gallon.

BOILED POTATOES.

Wash the potatoes and dry them, pare them thinly, putting them as you do so into clean, cold water; boil gently with salt in the water, from twenty to thirty minutes according to their age and size. When tender pour off the water and put the saucepan back on the stove with the lid off for the potatoes to dry. Sprinkle with salt and shake slightly.

BAKED POTATOES.

Wash the potatoes and dry them. Lay them on a tin and bake them an hour or more until they feel tender. When half baked turn them over.

NEW POTATOES.

Wash the potatoes and scrape them. Boil gently with a sprig of mint from ten to fifteen minutes. Drain and dry on the stove; melt a

little dripping in the saucepan, put in a little chopped parsley, and toss the potatoes in this.

CARROTS.

Wash and scrape, if large split in halves. Score across the thick end with a knife and boil one hour.

TURNIPS.

Wash and pare thickly, boil half an hour, drain, mash with pepper and salt and a little milk.

ONIONS.

Cut off the top and bottom and take away two skins; blanch them by putting them in a saucepan of cold water, bringing to the boil and throwing the water away. Boil three-quarters of an hour.

PARSNIPS.

Wash and scrape, cook like carrots.

CABBAGE.

Put to soak in cold water with salt, head downwards, to draw out the insects. Take away the outer leaves, cut off the stump and score through the thick end to help it to cook. Boil from twenty to thirty minutes. Drain and press well; cut up small. Young greens need hardly any leaves removed.

CAULIFLOWER.

Cook in the same way as cabbage but serve whole.

LEEKs.

Cut off the roots and the top part of the green leaves; wash thoroughly, boil gently about twenty minutes until tender and then drain.

GREEN PEAS.

Shell and rinse; boil gently with a lump of sugar and a sprig of mint about twenty minutes. Drain when tender and toss in a little butter or dripping.

BEANS.

Rinse the beans and cut them in pieces. Boil until tender and drain well.

ARTICHOKES.

Wash and peel, boil gently about twenty minutes until tender. Serve at once as they soon lose colour.

SPINACH.

Pick the stalks off and wash very thoroughly, letting the tap run on it and turning it over and over. Rinse out a saucepan and put in the spinach. No water is needed. When tender press and drain well and toss in a little butter or dripping; add pepper and salt and serve.