

## Foods Necessary to the Body Nutrition.

Health and Happiness. Number 40.

**Medicine and Mystery.**—Medicine has cast off the veil of mystery which once covered her face and walks among men uncovered and unshamed. The days of "divine healers," Indian medicine fakers, and of Mrs. Winslow and Lydia Pinkham, are passing away. Some may say that these statements are contradicted by the wide prevalence of Christian Science, osteopathy and other cults. These are only the vagaries which have taken form in the delirium-racked brain of a fast dying superstition.—V. C. Vaughan, M. D., Science, Dec. 8, 1916.

Food is fuel but there is one constituent, protein, which while it can be used as fuel is especially fitted to build tissue, that is, to serve for the growth and repair of the body. Protein contains nitrogen as the essential element in tissue-building. The proteins are so named because, on account of the elements in their composition, they stand first or foremost among the foods necessary to the growth and maintenance of the body tissues.

The two other chief constituents in food are fat and carbohydrate, the last term embracing what are familiarly known as starch and sugar. Fats and carbohydrates are only for fuel and contain carbon as the essential element.

Nitrogen forms about 16 per cent of the protein molecule. After this material is metabolized in the body, the nitrogen is eliminated in various forms, chiefly in the urine, but to a smaller extent in the feces and sweat.

### NITROGEN EQUILIBRIUM.

If the body is receiving in the food as much nitrogen (or protein) as it is metabolizing and eliminating in the excreta it is said to be in nitrogen equilibrium. If there is a plus balance in favor of the food it is evident that the body is laying on or storing protein tissue, while if the balance is minus, the body must be losing protein. During the period of growth, convalescence, etc., the body does store protein, and under these conditions the balance is in favor of the food nitrogen. But throughout adult life under normal conditions our diet is so regulated by the appetite that a nitrogen equilibrium is maintained through long periods.

### CARBON EQUILIBRIUM.

The term carbon equilibrium is sometimes used to describe the condition in which the total carbon of the excreta (in the carbon dioxide, urea, etc.), is balanced by the carbon of the food. It is possible that an individual may be in nitrogen equilibrium and yet be losing or gaining in weight, since, although the consumption of proteins may just be covered by the proteins of the food, the consumption of non-protein material, particularly the fats of the body, may be greater than the supply furnished by or manufactured from the food.

An adult under normal conditions lives so as to maintain a general body equilibrium; his ingesta of all kinds are balanced by the corresponding excretions, and the individual maintains a practically constant body weight.

Raw meat, fish, milk, cheese, eggs, legumes (peas, beans, lentils), nuts, and to some extent cereals, are illustrations of protein-containing material. In fact, most ordinary foods contain more or less protein. The carbohydrates include the starches and sugars.

### THE PROTEIN RATION.

"Foods should be so selected as to give to the ration the right amount of protein, or repair-foods, on the one hand, and of fats and carbohydrates, or fuel-foods, on the other. A certain amount of protein is absolutely essential. While, for a few days, protein may be reduced to little or nothing without harm, if the body be long deprived of the needed protein it will waste away and ultimately death will result.

The right proportion of protein has been the subject of much controversy. On the average, 100-120 grams of protein are used daily by the adult man. Voit gives 118 grams of protein as the average daily consumption. Experiments show, however, that a man may exist in good health upon a much smaller amount, per day, as little as 20 to 40 grams; provided the non-protein portion of the diet is increased.

According to what are now regarded as the best investigations, the right proportion of protein is generally about 10 per cent. of the total number of heat-units consumed. This does not mean 10 per cent. of the total weight nor 10 per cent. of the total bulk, but 10 per cent. of the total nutriment, that is, 10 calories of protein out of every 100 calories of food.

Most persons in America eat much more protein than this. Instead of 10 calories out of every 100, many people use 20 to 30. This excessive proportion of protein is usually due to the extensive use of meat and eggs although it may occur also from excessive use of other high-protein foods such as fish, shell-fish, fowl, cheese, peas and beans. To quote one of the world's foremost students of hygiene: "It is a fact that the diet of the well-to-do is not in itself physiologically justified; it is not even healthful. For, on account of false notions of the strengthening effect of meat, too much meat is used by young and old, and by children, and this is harmful. But this meat is publicly sanctioned; it is found in all hotels; it has become international and has supplanted, almost everywhere, the characteristic local culinary art."

When protein is taken in great excess of the body's needs, as is usually the case in the diet of Americans, added work is given the liver and kidneys, and their "factor of safety" may be exceeded.

Flesh-food—fish, shell-fish, meat, fowl—when used in great abundance, are subject to additional objections. They tend to produce an excess of acids, are very prone to putrefaction, and contain "purins" which lead to the production of uric acid. Some of the vegetable foods, rich in protein, such as peas and beans, are likewise not free from objection. Their protein is not always easily digested and is, therefore, liable to putrefaction. Unlike most vegetable foods, they

contain some purins. These foods are, however, rich in iron, which renders them a more valuable source of protein for children and anemic people than meat. Also, an excess of protein is not so likely to be derived from such bulky foods as from meat, which is a concentrated form of protein.

### THE AMOUNT OF FATS AND CARBOHYDRATES REQUIRED.

It has been already stated that 10 calories of protein out of every 100 calories of food are considered sufficient. The remainder of the diet, say 90 per cent. of the calories, may be divided according to personal preference between fats and carbohydrates in almost any proportion, provided some of each is used; as each serves much the same purpose in the body, any small excess can be easily stored. A good proportion is 30 per cent. fat and 60 per cent. carbohydrate. Comparing by weights, the number of calories, or food units, yielded by fats is a little more than twice that yielded by carbohydrates."

While proteins, carbohydrates and fats are called the chief constituents of foods, it must be understood that a ration balanced even properly in these food constituents would yet not alone properly support life. Another quotation from "How To Live" (Fisher and Fisk, page 40) will explain other factors that must be considered:

### HARD, BULKY, AND UNCOOKED FOODS.

"The wise choice of foods does not consist entirely in balancing the ration as to protein, fat and carbohydrate.

### HARD FOODS.

Hard foods, that is, foods that resist the pressure of the teeth, like crusts, toast, hard biscuits or crackers, hard fruits, fibrous vegetables and nuts, are an extremely important feature of a hygienic diet. Hard foods require chewing. This exercises the jaws and improves the condition of tooth sockets and teeth and insures the flow of saliva and gastric juice. If the food is not only hard, but also dry, it still further invites the flow of saliva. Stale and crusty bread is preferable to soft fresh bread and rolls on which so many people insist. The Igorots of the Philippines have perfect teeth so long as they live on hard, coarse foods. But civilization ruins their teeth when they change to our soft foods.

### BULKY FOODS.

Most of the ordinary foods lack bulk; they are too concentrated. For this purpose it is found that we need daily, at the very least, an ounce of cellulose, or "woody fiber." This is contained in largest measure in fibrous fruits and vegetables—lettuce, celery, spinach, asparagus, cabbage, cauliflower, corn, beets, onions, parsnips, squash, pumpkins, tomatoes, cucumbers, berries, etc. Until recently would-be food reformers have made the mistake of seeking to secure concentrated dietaries, especially for army rations. It was this tendency that caused Kipling to say, "compressed vegetables and meat biscuits may be nourishing, but what Tommy Atkins needs is bulk in his inside."

### RAW FOODS AND VITAMINS.

Cooking is an important art but some foods when cooked lose certain small components called vitamins, which are also found in the skin or coating of grains, especially rice, also in yolk of egg, raw milk, fresh fruit, and fresh vegetables, especially peas and beans. These vitamins are very important to the well-being of the body. Their absence is probably responsible for certain diseases, such as beriberi, scurvy and possibly pellagra, as well as much ill health of a less definite sort. Some raw or uncooked foods, therefore, such as lettuce or tomatoes, celery, fruit, nuts, and milk, should be used in order to supply these vitamins and as yet not well-understood substances, which are destroyed by the prolonged cooking at the temperature which is employed in order to sterilize canned foods. They are also diminished and often destroyed by ordinary cooking, except in acid fruits and acid vegetables.

It is true that only very clean milk is entirely safe in an absolutely raw state, and that heat is usually needed to kill the germs. But this heat, even at the comparatively low temperature of pasteurization, has been found to sometimes destroy the vitamins that prevent scurvy. Orange juice should always be given to infants over one month old who are fed pasteurized milk. Raw foods have dangers of their own in carrying germs and parasites, and it is extremely advisable that all raw foods should be very thoroughly washed before eating.

### ACIDS AND INORGANIC SALTS.

In addition to protein, fat, carbohydrate, and vitamins, there are other elements which the body requires to maintain chemical equilibrium and for the proper maintenance of organic functions. These are the fruit and vegetable acids and inorganic salts, especially lime, phosphorus, and iron. These substances are usually supplied, in ample amounts, in a mixed diet, containing a variety of fruits and vegetables and an adequate amount of milk and cream. Potatoes feared by some in acid condition (such as gout), are actually valuable because of their alkalinity.

April 26—"The Daily Ration"—The Amount of Food Required Each Twenty-Four Hours."

### The Truth of the Matter.

Bood—Most things that are bought go to the buyer.  
Simp—Yeah, all except coal, and that goes to the cellar.—Awwgan.

—They are all good enough, but the "Watchman" is always the best.

## OUT FISHIN'

By Edgar A. Guest.

A feller isn't thinkin'—out fishin';  
His thoughts are mostly good and clean—out fishin';  
He doesn't knock his fellow man,  
Or harbor any grudges then;  
A feller's at his finest when—out fishin'.

The rich are comrades of the poor—out fishin';  
All brothers of a common lure—out fishin';  
The urchin with the pin an' string  
Can chum with millionaire an' king;  
Vain pride is a forgotten thing—out fishin'.

A feller gets a chance to dream—out fishin';  
He learns the beauties of a stream—out fishin';  
An' he can wash his soul in air  
That ain't foul with selfish care,  
An' relish plain an' simple fare—out fishin'.

A feller has no time for hate—out fishin';  
He ain't eager to be great—out fishin';  
He ain't thinkin' thoughts of pelf,  
Or goods stacked high upon a shelf,  
But he's always just himself—out fishin'.

A feller's glad to be a friend—out fishin';  
A helping hand he'll always lend—out fishin';  
The brotherhood of rod and line  
An' sky an' stream is always fine;  
Men come real close to God's design—out fishin'.

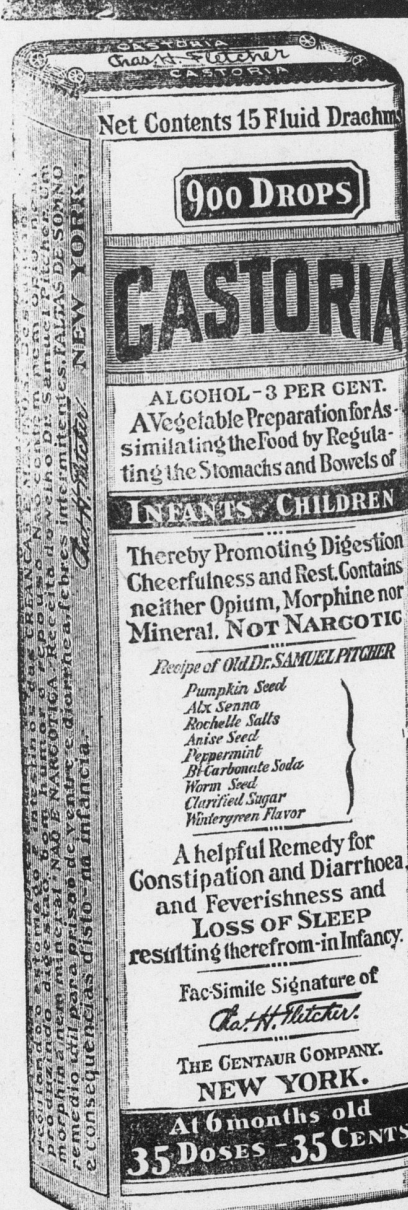
A feller isn't plottin' schemes—out fishin';  
He's mostly busy with his dreams—out fishin';  
His livery's a coat of tan,  
His creed? To do the best he can.  
A feller's always mostly man—out fishin'.

—The Germans are predicting that the French towns adopted by American cities for restoration are to be laid low by conquest in the great German drive. Some of them like Noyon, the adopted child of Washington, D. C., Tilloloy, the protegee of the Daughters of the American Revolution, and Soissons, specially cared for by Detroit, lie directly in the line of the German offensive. But German guns cannot destroy the kindness and brotherly feeling that made the repair and rehabilitation possible. Moreover, the American cities will, without doubt, stand by their adopted civic children so long as the need remains.—Christian Science Monitor.

—Subscribe for the "Watchman."

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