CHAPTER V

CEREALS, FOODS RICH IN STARCH

If the children are fortunate enough to live in the country they will feel especially at home when they come to the third booth, for here are the cereals, wheat, rye, corn, rice, oats, barley, and buckwheat, most of them ground into flour or meal. Of course, these are not so interesting in their boxes and bags as when they were growing in the fields, but they must be looked upon with profound respect, for throughout the greater part of the world people eat more cereals than any other one kind of food. They are the cheapest of the fuel foods, they are easy to raise, and they are convenient to store away because they are almost dry and they do not spoil easily. A wise man once said that he hated to see anything take up more room than it was worth, but he would never have said that of cereals.

From cereals we get most of our starchy food, and
the chief business of this is to supply us with energy. It has been kindly planned for us that, even if we cannot get food from the group best adapted to supply some special need of our bodies, food of another group may answer the purpose to some degree. The foods in the second group are the best providers of protein, but the cereal foods also will give us much of the protein that we need.

The green things growing are a wise folk. They act as if they understood just what was best for themselves and also for the little plants that are to follow them. If you look at a kernel of corn, you will see, close to the end which clings to the cob, a small, yellowish part which often slips out when one is eating green corn. This part is called the embryo, or germ, and it contains the life of the kernel. It is always in a hurry to begin to grow, and if it is only given some water and left quietly in a dark, warm place, it will set to work promptly. Nothing can grow without food, however, plants no more than babies, and the mother plant has looked out for this very moment. The embryo itself contains protein and fat; but she has carefully packed this embryo into the kernel, and most of the kernel is made up of starch and other materials, which are just the proper food to give the embryo energy to push out of the kernel, produce its little roots and leaves, and set up for itself in the world. This is the early life not only of corn, but of all the grains.
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In the olden times, beautiful stories arose from the facts of nature, and gradually became part of the religion of the people. They taught their children that Mother Earth, or Ceres, brought forth grain from the ground for them. They worshipped her and made offerings to induce her to give them generous harvests. They made statues of her as a kind and gracious woman, bearing a horn of plenty filled to overflowing with golden sheaves of grain. They delighted in the story that Pluto, king of the underworld, once stole away her little daughter to make her his queen. He gave her jewels and all the precious treasures that are found in the earth, but still she was sad and longed for her mother and the sunshine of the upper world; and at length the king of the Gods declared that the little daughter might spend half of every year with Ceres above ground; that is, putting it into the language of to-day, the kernel of grain spends part of the year underground and part in the air and sunshine. It is perhaps because of this myth of Ceres that we picture autumn, the harvest time, as a woman bearing sheaves of grain or ears of corn. Whittier wrote:

"Heap high the farmer's wintry hoard!
Heap high the golden corn!
No richer gift has Autumn poured
From out her lavish horn!"

The grains take their name of cereals from Ceres. To us corn means Indian corn or maize, but it is really
another name for grain, and in other countries is often given to the kind of grain that is most familiar there. To many Englishmen an "ear of corn" would mean a head of wheat; to the Scotchman, oats; to the Scandinavian, rye. In the Old Testament story of Joseph's brothers coming to Egypt to buy "corn" because there was a famine in their own country, "corn" means wheat or millet, and not the maize of America. Originally "corn" meant kernel, and this is its meaning in the words of Jesus, "Except a corn of wheat fall into the ground and die, it abideth alone."

Cereals are all good manufacturers of starch, but they need sunshine, and our American corn especially needs the sun. That is why hot, sunny days are called "good corn weather." The starch in cereals is closely packed into tiny cells with thin walls of cellulose, the substance that gives plants their form and stiffens their stems. The stems are older than the twigs, and therefore, contain more cellulose; that is why they are stiffer, just as young radishes are tender, but as they grow older, they form more of this substance and become tough. We do not digest cellulose readily, but some things are useful even if they are not digested. Cellulose is one of them, for it helps food to move on through the entire digestive tract.

Cereals are easy to cook, but they do need to be cooked a long time. This is because the little cells must be swelled with heat and moisture till they spread apart and their walls break down and set free the tiny
A Variety of Cereals and Cereal Products

- Wheat Bread
- Corn Pone
- Flaked Corn
- Cooked Oatmeal
- Indian Corn
grains of starch. To save time in cooking, many people buy the prepared cereals that are half cooked or entirely cooked before they are put on the market. What are called “rolled oats” are oats steamed and then crushed between heavy rollers, in order to break down the walls of the cells and set the starch free.

There is very little difference in the amount of starch or other materials contained in the different cereals. We have fallen into the habit of using wheat in its various forms more than the other grains, chiefly because it makes lighter raised bread, but it is not at all necessary, and the others will fill its place in the work of feeding the body.

Some fruits and many vegetables contain starch, though not in nearly so large quantities as the grains. The legumes, for instance, peas, beans, lentils, and peanuts, besides attending to their chief business as makers of protein, also manufacture considerable starch. Another name for the legumes is the butterfly plants, because their blossoms look like little butterflies with their wings spread. These pretty little plants work hard to make food for us. They are no “ slackers.”

Some of the fruits and vegetables which manufacture starch as well as sugar contain both substances at the same time, and sometimes one changes into the other. Bananas and apples contain much starch when they are young and green, and much sugar when they are older. That is why they can be eaten cooked before
they are ripe enough to eat raw. There is a pretty experiment that can be tried with apples and a few drops of weak iodine, showing the change of starch into sugar. Cut a half-ripe apple in two at right angles with the stem, and put a little iodine on the surface. Whenever starch meets iodine, it turns blue; and the surface of this apple will turn to a deep, rich blue. Do the same thing later in the season, and although the apple will be blue, it will not be of nearly so deep a shade. By and by, when the apple is ripe, you will find that the iodine will bring out hardly a trace of color. That is, the apple has changed its starch into sugar.

In the shortage of grain, the potato is an excellent substitute. The potato is a tuber, that is, a part of the stem which grows underground, thickens, and forms a storehouse which is filled with starch. Every “eye” is capable of becoming a plant, and in the first place, the potato probably contained only what starch the eyes would need for their own growth. We have cultivated the potato, however, and so increased the amount of starch that it is now of much value for food.

A potato is really very interesting, not nearly so commonplace as it looks. The courtly Sir Walter Raleigh thought potatoes a gift fit to bestow upon a queen, and more than three hundred years ago he is said to have taken some from America to give to Queen Elizabeth. If you cut a thin slice crosswise from the middle of a raw potato and hold it up to the light, you
will see that it is not the same all the way through. Next to the skin there is a layer half an inch thick or less that is more nearly transparent than the rest. From the middle of the potato, irregular rays stretch out toward the skin in a sort of star. The sweet potato contains much sugar, but the greater part of both white and sweet potatoes is made up of little irregular rooms or cells, the walls of which are made of cellulose, and each cell is a tiny storeroom full of starch.

Chewing even a raw potato will break open the cells and set free much of this starch, but of course the potato becomes far more palatable if it is cooked. There is much water in a potato, and heat will expand it and break the cells apart, and the little grains of starch will swell; and now the tuber is more fit for food and will give a generous supply of energy. If you happen to be a Boy Scout, and know how to cook without a stove, you can roast potatoes out of doors, but you will not carry them on a mountain trip, because they contain so much water that they are very heavy in proportion to the amount of nourishment in them. That is why potatoes are not so good to send across the ocean as the grains, which contain little water and are almost solid food.

*It is worth remembering:*

That most of our starchy food comes from cereals.
That cereals are the cheapest source of energy;
but must be thoroughly cooked.
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That there is little difference in the food value of the various cereals.
That some fruits and vegetables manufacture starch as well as sugar.
That the potato is a good substitute for grain.
That if you eat more peas and beans you will not need so much bread.
Counting the Full Sap Buckets in Maple Sugar Time