

They Changed The Food Habits of Millions

Grain Bubbles Now the Queen Foods

Do you realize how Puffed Grains have changed children's food habits?

Think of the whole grains—millions of dishes—now served morning, noon and night. And all displace a lesser food.

The food cells are all exploded by Prof. Anderson's process. Every granule is fitted to digest. So countless children now get in plenty the 16 whole-grain elements.

Made Tempting

Whole grains are now exploded—puffed to eight times normal size.

They come as airy bubbles, flimsy, flaky, nut-like in their taste.

They seem food confections. Children revel in them. Yet they are whole grains cooked as never before—the ideal form of grain food.

The milk dish is more popular. Breakfasts are more delightful. Bedtime is more welcome. And millions of children are being better fed.

All because Prof. Anderson invented this way to puff grains.



With Cream and Sugar or in Bowls of Milk

Puffed Wheat Puffed Rice

Steam-Exploded

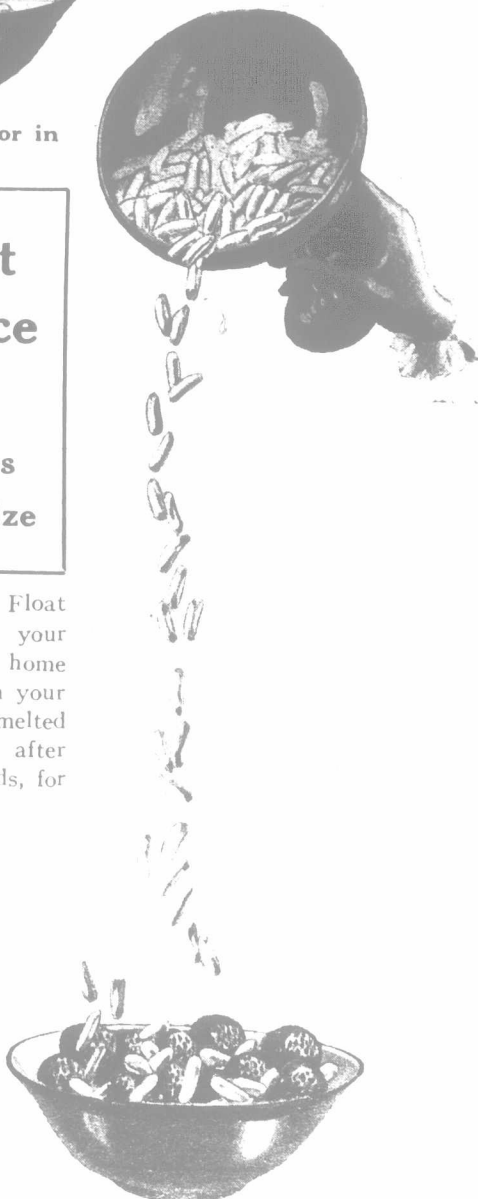
Puffed to Bubbles
8 Times Normal Size

Serve with cream and sugar. Float in bowls of milk. Mix with your fruits. Use like nut-meats in home candy making and as wafers in your soups. Crisp and douse with melted butter for hungry children after school. These are all-hour foods, for they easily digest.



Add Melted Butter

Then children at play time will eat them like peanuts or popcorn.



Puffed Rice in Every Dish of Fruit

The Quaker Oats Company

Peterborough, Canada

Sole Makers

Peterborough, Canada

Our School Department.

The Story of Apple Scab.

PROF. J. E. HOWITT.

Nearly every year black spots are seen on apples, especially on such varieties as Snows and Greenings. When we enquire what causes them we are told that they are due to a fungous disease known as Apple Scab. Naturally the next question that comes to our mind is "What is a fungous disease?" Most of us are inclined to think that a fungous disease is something mysterious, something which cannot be explained. However, a high-power microscope shows us that there is nothing more strange about a fungous disease than there is about a dog having fleas. A flea is a small and low form of animal life which lives upon and obtains its nourishment from the dog, which is a larger and more highly-developed form of animal life, while a fungous disease is caused by a fungus which is an exceedingly small and low form of plant life, which lives upon and obtains its nourishment from a larger and more highly-developed form of plant life such as an apple tree or a potato plant.

These little plants, which are called fungi, are just as much plants as are sunflowers, turnips and maple trees. They differ from such well-known plants as these chiefly in their very small size, in the fact that they have no roots, stems, leaves, flowers or green color, and also in the way they get their food.

Most fungi are very, very small, though there are some quite large ones. Some idea of how small many of them are can be had when we are told that we can only see them when there are several hundreds of them growing close together, and then usually only as mere specks.

Instead of being composed of roots, stems and leaves, fungi are made up of very fine and delicate threads, some of which bear little bodies called spores, which take the place of the seeds of our familiar plants. These seed bodies or spores are generally very numerous and always very small, so small indeed that they can only be seen without a magnifying glass when there are several hundreds of them massed together. Being so small they are very light, and, therefore, very easily blown about by the wind, washed around by rain, or carried on implements and clothing from place to place.

The familiar plants, such as trees, flowers, grains and vegetables, take certain substances from the soil and air, and out of these they manufacture their food. Fungi have not the power to manufacture their own food, so they steal it from other plants or get it from the bodies of dead and decaying plants or animals. Those fungi which steal their food from other plants injure them in various ways, and thus cause what are known as fungous diseases. So we see that after all there is nothing very wonderful about fungous diseases, except the small size of the little plants called fungi which cause them.

Now that we know something about the nature of fungous diseases we are better able to understand "The Story of Apple Scab." If we go into an orchard and look over an apple tree we shall see that there are black and brown spots on the leaves as well as on the fruits. If the spring and early summer have been very wet and the trees have not been sprayed, in all probability nearly all the fruits will be disfigured and many of the leaves destroyed by the apple scab. If we could examine under the microscope the black or brownish spots on the fruits and leaves we should find that they were made up chiefly of fungous threads and very small somewhat oval spores. These spores are produced just under the outer layer of the apple skin which is soon pushed off so that they are right on the surface of the spot, from which they are easily washed away by rain, blown about by the wind or carried off on the bodies of insects. By such means the spores produced on a scab spot are spread all through the orchard. Those that reach an apple or an apple leaf, if there is plenty of moisture, begin to grow. They send out very small threads called germ tubes which bore under the skin and grow into numerous fungus threads and spores which soon show on the surface of the fruit as spots. Plenty of moisture is necessary for the spores of the

scab fungus to grow and produce new spots. This explains why apple scab is always worse in a wet season than it is in a dry one.

The spores found on the surface of the spots are often called summer spores because they spread the scab during the summer months. They are not, however, the only spores produced by the scab fungus. If in the early spring we examine the fallen leaves under an apple tree on which the scab has been bad the previous year, we shall notice on both surfaces of the leaves little black, pimple-like bodies, some mere specks, some as large as a pin's head. If we could examine these under a microscope we should find that they were round black cases, each with a very small hole or mouth. In each case we should find a large number of little sacks, and in each sack eight little spores. In the spring, when the weather begins to get warmer, if there is plenty of rain these spores are set free into the air, and some of them are blown on to the lower leaves of the apple tree, where, if there is plenty of moisture, they grow and produce scab spots with numerous summer spores, which, if the weather is wet, soon spread the scab through the orchard.

As these spores which are found on the fallen leaves in the spring of the year serve to carry the fungus over the winter, they are often called winter spores. Just when they are liberated in the spring of the year depends upon the time we get our rains. Moisture is required to set free these winter spores as well as to cause them to grow. In most seasons we get enough rain to set free the spores and cause them to grow just about the time the leaves of the apple tree are unfolding. The scab fungus only grows and spreads rapidly when there is plenty of moisture, so that the times of the year that the scab usually does the most damage are during the spring and early summer months, which are very likely to be wet, and during the early fall rains which we often have about the middle of August or first of September.

If we enquire how to prevent apple scab we are told to spray with lime-sulphur or Bordeaux mixture. These substances are what are called fungicides, that is, they kill fungi; and the object of spraying is to cover the surfaces of the leaves and fruits with them so that when a spore reaches a leaf or fruit it is poisoned and cannot grow and cause scab. We see, therefore, that if spraying is to accomplish its object it must be very thoroughly done; every fruit and leaf must be all covered with the poison so there is not the least space on which a spore can grow.

Spraying must also be done at the proper time. The poison should be on the leaves and fruit before the spores reach them. We have already learned that the spores only spread and grow during wet weather. The times of the year, therefore, that we get our wet weather are the times when we have to spray if we are going to prevent scab. One spraying with either lime-sulphur or Bordeaux mixture is not sufficient as the rain in time washes the spray off and, as the leaves and fruit grow larger, there is more surface to cover. In order to be sure of preventing apple scab we must spray with lime-sulphur or Bordeaux mixture from three to five times during the summer, the number of sprayings depending upon whether the season is wet or dry. The first spraying should be done early in the spring just as the leaf buds burst, the second just when the blossom buds are showing pink, the third immediately after the blossoms have fallen. If the weather is wet after this time another spraying should be given in about two weeks. After this last spraying we seldom get very much rain until late summer when the weather very often becomes cold and wet and favorable for the spread of scab. In such seasons it is necessary to spray again in August.

Children are often given calves to rear for their own, and if any readers of this page should have the pleasant task of this spring of feeding and caring for a dairy calf, they should read the article, "Starting the Dairy Calf Right." This article appeared in our issue of April 1, page 613.