THE OMAHA SUNDAY BEE MAGAZINE PAGE

NEW DISCOVERIES ALL OVER THE EARTH

Why We Should EAT MORE POTATOES

When Cooked WITH THEIR PEELS ON They Are One of the MOST ECONOMICAL and NOURISHING FOODS

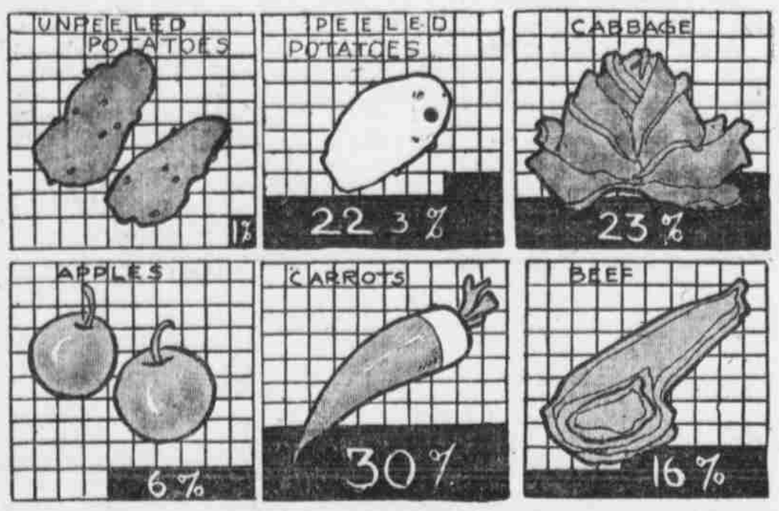

Diagram Showing the Percentage of Waste in Peeled and Unpeeled Potatoes as Compared with Other Foods.

THE purpose of food is to supply the body with material for its growth and repair and with the energy required to keep it in good running order. We have long realized our dependence on starches, sugars and fats for energy with which to do our work and keep warm; on proteins, as furnished by milk, eggs, meat and legumes, for building material both in the development and in the repair of the body; and on water for its important part in the transportation of the food within the body, for keeping the food in dilute form, and for washing out waste from tissues and intestines. However, the majority of housewives have not realized the importance of another group of foodstuffs, the mineral, or ash, constituents which are found in such abundance in potatoes.

Although their percentage in foods is small, the part the ash constituents play in constructing tissue and in keeping the body in good working order is by no means a minor one. Calcium is important in building bones and teeth; phosphorus is essential not only to build tissues, but also to stimulate growth; iron is necessary for making red blood cells and other tissues.

All the fluids of the body must be kept slightly alkaline. This is best accomplished by including sufficient base-yielding substances in our foods. Certain of the ash constituents in the food materials are so changed in their course through the body that the final product is an acid; others yield as a final product a base, or alkali. In most of our food materials both these kinds of ash constituents are included. The quantity of the acid-forming elements as compared with the quantity of the base-forming elements therefore determines whether a particular food material is acid-forming or base-forming in the system.

The acid-forming foods, which are meats, eggs and cereals, should be balanced in every meal by those that are base-forming; namely, fruits, vegetables, legumes and milk, in order that an acid condition in the system may not recult. An excess of bases in the daily dietary is probably more favorable to health conditions than an excess of acids. This explains why a meal of meat and cereal, while being fairly well balanced as to starch and protein, needs the addition of a fruit or a vegetable. In vegetables lies our chief dependence for salts of potassium and magnesium, two of the important base-forming elements.

Turning now to the potato, it is found that a very high proportion, from 75 to 79 per cent, is water; from 18 to 20 per cent is carbohydrate, chiefly starch; from 2 to 2.5 per cent is protein; about 1 per cent, a relatively large amount, is ash, and a small proportion is fat.

The potato value is not dependent on its high starch content alone. It also supplies bulk, another requirement in the diet. Further, in the mineral content are found moderate amounts of the necessary compounds of calcium and phosphorus, a relatively high percentage of iron, and a very high percentage of the base-yielding potassium.

From the standpoint of acid-forming and base-forming qualities it is fairly exact to say that one medium-sized potato furnishes enough bases to neutralize the acids of two average slices of roast beef. Now, if we should substitute rice for potato in such a meal, we should find that, while rice supplied the necessary starch, it did not serve to counteract the acids produced by the meat, but rather increased them.

Another property possessed by the potato is of considerable importance, although it is not yet fully understood. For want of a better name it is often called vitamine, because it is essential to life. The vitamine in potatoes makes them especially beneficial in a diet in which white bread is used, because in the refining process the wheat loses this vitamine property, or constituent.

A comparison of the value to be obtained from 10 cents' worth of potatoes, of patent flour and of white bread, respectively, shows the following: When potatoes are selling at 60 cents a bushel, the cost of the edible portion is really 1.2 cents a pound; when they are selling for $1 a bushel, the cost of the edible portion is 1.9 cents a pound. Patent flour at $1.10 for 25 pounds costs 4.4 cents a pound. White bread, averaging 12 ounces to a five-cent loaf, costs 6.6 cents a pound.

In 10 cents' worth of each of these three articles, potatoes give from 62 to 99 grams of protein, flour 115 grams, and bread 64 grams. Comparing the energy value, one of the main purposes for which these foods are usually included in our meals, potatoes furnish from 2,362 to 3,780 calories; flour, 3,639 calories, and bread, 1,773 calories. Thus from potatoes at either price we are getting considerably more energy than from bread.

Of the minerals, 10 cents spent for potatoes may buy from three to four times as much calcium and from three to five times as much phosphorus as in the flour of the bread purchased; from two to four times as much iron as in the flour, and about ten times as much as in the bread. From the standpoint of acid-forming and base-forming materials, the excess of base-forming elements in 10 cents' worth of potatoes may be 161 to 258 units, while in flour there may be an excess of 99 units and in bread of 48 units of acid-forming elements.

Cooking a potato increases its palatability and makes it more easily digested. Heat transforms the water into steam and the resulting expansion breaks down the cell walls and lets out the starch grains; the protein becomes coagulated, just as the white of an egg does when cooked; the mineral salts are only slightly affected. However, by the methods of preparation that are perhaps most commonly used, a very large proportion of the nutritious substances may be lost. From all points of view, baking and steaming are apparently the best methods of cooking potatoes.

A potato baked in a slow oven is much inferior to a potato properly boiled, however, because the heat has not been intense enough to cause the cell walls to be broken down, and the result is a soggy mass on which the digestive juices cannot act freely. Too rapid boiling is likely to pulverize the outside of the potato before the inside becomes tender, thus causing waste.

The chief ways in which losses of nutritive matter occur in cooking potatoes are in paring, both by cutting away valuable material and by exposing the soluble substances to the action of the water; in exposing a large amount of surface to the water, as when the potato is cut in dice; in soaking before cooking, and in the use of cold water at the beginning of the cooking.

It has been estimated that in paring a potato the loss may be 20 per cent. When it is remembered that the larger proportion of the valuable protein and mineral matter is in the outer layers, it is seen how serious this loss it. The skin is not palatable to all persons, although some like it. But if it is to be removed, it should be borne in mind that the waste of total substance is about twice as great when the paring is done before the boiling as when it is done afterward.

If the potato is cut into dice before cooking it is noticed that on standing it becomes dark. In order to overcome this difficulty the potatoes are covered with water and allowed to stand until it is time to cook them. Old potatoes are often soaked in cold water. Experiments have shown that a pared potato soaked for from three to five hours loses about three times as much of its mineral matter and seven times as much of its protein as one that is pared and put on to cook immediately. When potatoes are both pared and soaked the loss in one bushel has been shown by experiments at the New York State College of Agriculture to be equivalent to one pound of sirloin steak.

Another factor influencing loss of nutriment is the temperature of the water in which the potatoes are put on to cook. Here again experiments prove that there has been waste of the minerals for which money has been spent. In this case the use of cold water instead of boiling water at the beginning gives an inconsiderable loss of ash, but over twice as great a loss of protein. If the potatoes are washed thoroughly and then, without being pared or soaked, are put on to cook in boiling water, there is practically no loss.

In other words, when potatoes are cooked by the most wasteful method (skins removed, potatoes soaked, cooking started in cold water), the loss of protein is 51 per cent and that of ash is 38 per cent; when cooked by the least wasteful method (skins not removed, potatoes not soaked, cooking started in boiling water), the loss of protein is 1.6 per cent and that of ash is 4.9 per cent.

All these facts make it plain that potatoes should be cooked in such a way as to retain the valuable nutritive matter, and that the material extracted from them should be used in soups, sauces, gravies and the like. When prepared as they should be they are one of the most healthful foods we can eat as well as one of the most economical.

Why Our EARS Have LUMPS, Our LIPS FURROWS

RUN your forefinger around the rim of your ear. You are almost sure to find in one of them, and quite possibly in both, a small, hard lump.

The lump is only a relic of the days when, innumerable hundreds of centuries ago, man was only one of the animals of the wild and had a pointed ear, like a wolf's or dog's.

What good is the little furrow that runs down from the nose to the middle of the upper lip? None, but it, too, has a history. It is a legacy from the time when the human upper lip was in two parts—a hare lip, like that of the rat tribe. The split has healed up long ago, but the new skin is so recent in the history of the race that hair refuses to grow on that furrow.

When a fly settles on you anywhere, can you serenely twitch that patch of skin and shake him off? Probably not; but once these old skin muscles, now almost dead after centuries of clothes wearing, were as active as those of a horse.

A few people can twitch their ears like a dog, and do so instinctively when startled, and cases do occasionally occur in which the scalp can be moved at will. These accomplishments, now so rare, used to be quite common.

In one very interesting case mentioned in medical books, a man could hurl books a couple of yards away simply by twitching the muscles on the top of his head. But, generally speaking, our skin muscles are even more dead nowadays than our ear muscles. We've neglected them. The only set still in use are those we employ when we want to raise our eyebrows.

The appendix is another thing we could do quite well without. It is a relic from old vegetarian days. It has been worthless ever since mankind started meat-eating and is apt to get in the way.

The large intestine, too, is a thing we really don't need nowadays. The many coils of the long tube are, according to the doctors, quite unnecessary; now mankind has become a flesh-eating animal, and merely provide a resting place for germs. Surgeons have often cut out a few odd coils and stitched the ends together. We don't really need to carry a great intestine about with us.

Another thing we don't need much nowadays is the instinct to walk on hands and feet together. You think walking upright the only natural way for men? It isn't. If ever you have to make your way along some narrow plank or some narrow, dizzy mountain ledge you will find the old instinct strong in you.

Our Eyes NEVER SEE A RAINDROP

WHEN it is raining just what does one see? We know that the rain consists of drops, nearly spherical, falling either vertically or at an angle (if the wind be blowing). But what do we see? We see streaks through the air and not drops at all. The reason is that the eye cannot follow the raindrop in its flight, and so cannot see just the drop continually. The eye gets only one glimpse of the drop in one position, while an impression is made on the retina for some distance by the drop moving.

If the drop were still we could look at it as long as we chose, and the image of the drop would be in just one place on the retina, but if we let the drop escape from our direct view it makes an image, or rather a succession of images, on the retina—and that is what we see.

But why does the retina show this succession of images? It certainly sees at any one time the drop in just one position, so it would seem that the last position seen would be the one. This is not the case, and the cause is due to what is known as persistence of vision. We cannot quit seeing a thing immediately after getting a view of it. It takes about an eighth of a second for the retina to lose an image—and so this succession of images will be on the retina at one time and will cause a streak.

For the same reason the spokes of a rapidly rotating wheel cannot be seen except as a blur. For the same reason moving pictures are possible.

SCIENCE NOW KNOWS—

Airships You Can't See or Hear.

THE newest idea in aeroplane construction is to use, instead of canvas as a covering for the wings a non-inflammable celluloid. This makes the craft quite invisible and enables the aviator to make observations in all directions. A new muffling box has also been devised which makes the motor almost noiseless.

Banana-Fed Hogs Best.

IT has been found that the worn-out banana lands of Central and South America make ideal pastures for hogs. Animals fattened on the grass found in these lands, and on the small unmarketable bunches of bananas which grow there, produce a superior, almost odorless lard and finely flavored meat.

Plants Capable of Love.

BLUE rockets show fear and the deadly nightshade is full of hatred. Both of these are plants, but that does not prevent them from declaring merciless war on animal life. The blue rocket is a dainty flowering shrub which gives forth a perfume at night, but it carries one of the deadliest of poisons. One-sixteenth of a grain shot from its poison pistol has proved fatal to a man. This is according to Professor Henry G. Walters, of Philadelphia, who maintains that plants have memories and are capable of love.

WOUNDED SOLDIERS SUFFER LESS Than We Think

AN eminent military surgeon recently stated that much of our pity for the victims of severe wounds on the battlefields is in reality wasted and the result of over-wrought imaginations.

His experience in the present war has brought strongly before him that wonderful provision of nature known to the profession as euthanasia, or painless death. It has proven to him that, in general, we know as little of our going as of our coming into the world.

Our fear of wounds and death the surgeon attributes to our natural conclusion that a wound twenty times as big as the cuts and scratches to which we all are accustomed, must hurt twenty times as much as we have been hurt. Thus to the onlooker, physical agony and pain are dreadful in the light of his own imagination.

The fallacy of this reasoning is daily being proven on the battlefield of Europe. Victims of the most serious wounds are daily passing through severe surgical operations without the help of brain-enclouding drugs. These cases witness that at a certain stage pain becomes too intense to bear, the nerves become paralyzed in transmitting their messages to the brain. The convulsions of the body and the shrieks of agony are indeed not evidences of conscious pain.

This surgeon says that in many cases he has observed young doctors, when about to operate on badly mangled soldiers, are more seriously affected and mentally tortured than the victim of the wound himself; that frequently the evidences of the approaching death struggle are more apparent in observers than in the mutilated bodies which they are forced to see.

With the most violent wounds, the only conscious sensations are usually a sort of cold numbness, preparatory to a fever, and the quieting descent of euthanasia. It is the smaller wounds, not serious enough to bring about this twilight state upon the nerves, which inflict most conscious pain.

In a very small percentage of cases, euthanasia takes on another phase which, though temporarily of benefit to the patient, is a warning of danger to the surgeon. In those rare cases, the patient seems to become unduly exhilarated. His eyeballs expand and he laughs and talks and sings as if inebriated. In such cases the danger of surgical shock following the operation is very grave and often fatal.

In the light of modern surgery, there is much to reassure our faith in the far-reaching provisions of nature to protect all life from undergoing torture as great as we may at times imagine possible We may now believe that death comes only with the same quieting hand that is laid upon us as we sleep; that the summons, "to join the innumerable caravan" is never a clarion call of tremendous conscious agony, but is rather a quiet drifting, a gentle touch without sound or hurt, like a door that is softly closed.

How GOOD GERMS BECOME NAUGHTY

PROF. METSCHNIKOFF was the first to show that not all bacteria are harmful. We now know that the bacteria contained in Yoghurt, the Bulgarian sour milk, or in tatti, the Scandinavian sour milk, or even in ordinary sourkrout, have a positively beneficial effect. By acting as a sort of living antiseptic in the intestines, they prevent self-poisoning, that curious illness from which so many persons of sedentary habits suffer, and to which, directly or indirectly, is ascribable a legion of diseases, among them typhoid, diphtheria, rheumatism, dysentery.

Whether helpful, or at least uninjurious, bacteria could under given conditions transform themselves into the naughty variety, has been a problem which has greatly interested the medical world. It seems that they can.

Most of the bacteria found in the skin are of the variety staphylococci, so-called from their spherical form and because they are arranged in clusters, the word staphylos, meaning "grape" in Greek. Most of these are absolutely harmless. Sometimes a few poisonous ones flourish in a community of the harmless brethren and create pus and inflammation. The difference can be detected only in their effect upon the person in whom they exist, for neither with the microscope, nor by cultures, can one type be distinguishel from the other.

To prove that the harmless bacteria of this species could be changed into poisonous ones, cultures of harmless bacteria produced in broth were placed in the intestines of guinea pigs, well protected by collodium sacks. After eight days the harmless bacteria had transformed themselves into the poisonous variety.

The purpose of the collodium sacks was to prevent the leucocytes from getting to work on any process which might compass the transformation. The leucocytes, as is well known, are the busy little policemen of the body, whose business it is to protect all organs and secretions of the body against inroads of poisonous substances. These collodium sacks kept out the leucocytes, but permitted an exchange of secretions of the body and of the bacteria, and the experiment seems to demonstrate that the poisonous matter in the bacteria was produced under the influence of the secretions of the living organism.

YOUR HAIR Shows WHAT YOU ARE

THAT the color of your hair may be full of hidden meaning is the newest scientific discovery about the reading of character. If you are the possessor of dull black hair, for instance, your disposition is probably a jealous one, and there is in your composition a tendency to treachery. Light hair, on the other hand, denotes a sensitiveness of character, a readiness to respond quickly to real or fancied wrongs, and a prevailing touchiness of manner in regard to matters of trifling nature.

Possessors of brown hair of a good deep color and firm texture may congratulate themselves on their natural endowment of good judgment, good reasoning power and plenty of common sense. If, however, in the prevailing brown tinge there happens to be a tendency to red, the person must be regarded at times with some suspicion, as the combination may mean a peevish, fretful temper, with a tendency toward moroseness and melancholy.

Chestnut, or even red hair, of the brightest hue, is not in itself a bad sign. Women with red hair, though sometimes too impulsive and outspoken, are, as a rule, truthful and honest, with fair common sense. They are usually the brightest, sunniest and gentlest of mortals.

A woman with "straight and unyielding" hair, particularly if dark in color, is usually of a firm and high-spirited nature. She is determined, perhaps even a little bit obstinate, but in the main extremely dependable. Experts unite in pronouncing her the safest and best of wives.

RUSSIA'S FIGHTERS Get MOST HEAT

IF Russia's soldiers are not victorious the blame cannot be laid to lack of heat. If the Russian soldier is able to get the rations allotted to him by the army's dietetic experts he receives every twenty-four hours food which supplies him with nearly 1,000 more heat units than any other soldier on earth.

The Russian soldier's daily rations are selected so as to supply him with 4,929 calories. The energy allowance of the American soldier comes next, with 4,199 calories. Then come the French, British, German and Austrian soldiers in the order named, the latter getting only 2,620 calories a day.

The average daily field ration of the United States army is made up as follows: Bacon, 12 ounces, or fresh meat, 20 ounces; bread, 18 ounces; beans, 2.4 ounces; potatoes, 20 ounces; prunes or preserves, 1.28 ounces; coffee, 1.12 ounces; sugar, 3.2 ounces; evaporated milk, 5 ounces; vinegar, .16 gill; salt, .64 ounce; pepper (black)), .04 ounce; lard, 6.4 ounces; butter, .5 ounce.

Of this ration, just a portion is carried individually by the soldier, the rest, such as butter, lard, pepper and syrup, are given in bulk to the companies and then distributed to the men at meal time. This ration is greater than necessary, and the men trade in the surplus for delicacies.

How the Russian's Daily Heat Units Compare with Those of Other Soldiers.

A—Russian, 4,929; B—American, 4,199; C—French, 3,340; D—British, 3,292; E—German, 3,147; F—Austrian, 2,820.