BREAD.

by

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BREAD.

It is said that the civilization of a people may be judged by the bread they make. The more one reads of bread in history the more he is inclined to believe this statement. From the earliest recorded times, all but the most savage people have used bred in some form. We find, in the oldest records of Egypt, that each woman then ground her own grain between two stones, mixed the flour with water and then baked it on hot stones or in the ashes. But by the time the Isrealites came to Egypt, leavened bread was in common use. The yeast plant, that we know now, was grown by the ancient Greeks. Microscopic examination of bread found in buried Pompeii shows the form of yeast that we use to-day.

The pure strong yeast to be found in all markets and the carefully milled flour of the present time make possible a bread unobtainable among barbarians or any less civilized people. In spite of all this, poor bread is lamentably common. Good light bread is a palatable, digestible and nutritious food, and from an economical as well as dietetical standpoint holds an important, one may almost say first, place among our foods.

Wheat bread yields 1210 calories of energy per pound at a cost ranging from one and one-half to three cents, exclusive of labor, while a pound of the best beefsteak yields 1270 calories at a cost ranging from fifteen cents upward according to the place.

The composition of bread is about 35.3 per cent water, 9.2 per cent proteid, 1.3 per cent fat, 53.1 per cent carbohydrates and 1.1

per cent ash. It nutritive ratio is 1:6.1 but it is seen to be lacking in fats and proteids. The fat is usually supplied at the table as butter. Other writers state that the proteid is increased by using flour which contains more of the outer coats of the grain. The ground for this claim was the fact that these so-called entire wheat flours showed, upon chemical analysis a higher per cent of proteid than the white flour.

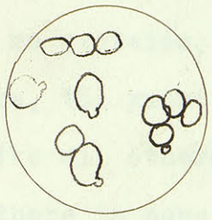
Extensive digestive experiments have shown that the per cent of digestive proteid is really decreased by using the entire grain, but this will be taken up farther under flours.

The proteid can be increased however by using in mixing that unappreciated article - skimmed milk. Bulletin No. 85 of the United States Department of Agriculture, states that the proteid is over one per cent and the ash over one-half per cent greater in bread made with skimmed milk than in that made with water. Much the same effect is produced by using whey instead of water in mixing the dough.

The digestion experiment just referred to shows that the digestibility of bread depends greatly upon its mechanical condition. Bread that is well raised and light can be more easily and completely acted upon by the digestive juices than a heavy sodden mass. If lightness is an absolute necessity, sweetness is no less so. A light sweet loaf that is well baked is a desirable object, and not difficult to obtain if a good grade of ingredients be used with care.

The first necessity is a pure strong yeast, or other agent to make the dough light. Yeast itself is worthy of much study. It is a misroscopic unicellular plant. There are several species but they all belong to the Fungi family. Reproduction is principally by bud-

ding, and the entire operation, lasting about two hours, may be watched under the microscope if the yeast is in a healthy active state.



The action of the plant causes fermentation but there are other fermentations besides this, such as the lactic, in the souring of milk, the acetic, in the formation of vinegar and the putrefactive. The necessary food materials are sugar, mineral matter, water and nitrogenous substances. The necessary conditions are warmth, darkness, moisture and exposure to the air.

The yeast plant acts upon sugar, converting it into alcohol and carbon dioxide principally, hence it is called alcoholic fermentation. Bread makers use the plant for the gas carbon dioxide, which is to raise the dough, but the brewers use the same plant to produce alcohol. In bread making the alcohol is a by- or waste-product and is practically entirely evaporated in the oven. Sugar then is necessary for the growth of the yeast plant. It may be glucose which is decomposed according to the equation, $C_6H_{12}O_6 = 2C_2H_5OH + 2CO_2$ or maltose which is hydrolyzed, $C_{12}H_{22}O_{11} + H_2O = 4C_2H_5OH + 4CO_2$ or other sugars. Sugar itself may not be present in the flour but starch is, and the action of a diastatic enzyme converts the starch to sugar. The yeast plant begins growth sooner if sugar is already present. For this reason sugar is always used when bread is to be made in a few hours.

Yeast also requires in its growth, certain inorganic substances. Potassium, magnesium and calcium phosphates are found in the ash of yeast. The potassium salt has been found to be absolutely necessary

and the others of value.

When healthy growing yeast is put in water containing sugar and inorganic substances but no proteids, even under the most favorable contitions of temperature, the yeast will soon become weak and finally dies.outThis plant like all others contains nitrogen as an essential element, and when there is none in its food it preys upon the living cells of its own kind. In a short time the colony necessarily is exhausted.

Sugar, nitrogenous matter and inorganic substances are all essentials for the growth of this plant. To this list must be added plenty of moisture, air or oxygen and a certain degree of warmth. The plant is inactive at temperatures below 2° C and it is killed at 70° C. The activity of yeast is measured by a mechanical contrivance that measures the gas produced. The production of gas is found to increase with the rise of temperature from 10° C up to 40° C, but the increase is more rapid between 25° and 30° than between 30° and 35°. From 24° C to 35° C is the best temperature at which to raise dough. Whether it should rise at the lower or higher limit depends upon the flour largely and will be discussed later.

Yeast cells are in the air about us. If malt extract, in which there is no yeast, be exposed to air under suitable conditions of temperature, alcoholic fermentation will begin, and this can have been produced only by the yeast from the air. These are called "wild yeasts", and all of our cultivated ones came from them originally. Not many years ago many of the housewives grew the wild yeasts in decoctions of hops or potatoes. This is not necessary now when good yeast is obtainable in every market.

Compressed yeast when it can be obtained fresh is the ideal article. It is manufactured in distilleries on an immense scale under perfectly sanitary conditions. One of the largest establishments of this kind in France turns out one hundred and seventy tons of compressed yeast weekly. This is undoubtably the yeast of the future for it is the strongest and purest and gives the sweetest bread. All this applies only when it is perfectly fresh. Then it has a pleasant odor like that of apples. A cheesy odor shows it to be stale.

The manufacture of this kind of yeast is carried on almost entirely by distillers along with the production of spirits from raw grain or malt. Barley, rye and maize are the grains most frequently used. The first step is the malting of the barley. This operation develops the enzyme diastase, destroys the outer cell walls of the grain, thus allowing the inner part to be more readily acted upon by the diastase, and renders the nitrogenous compounds more soluble. The grain is then reduced to a fine meal. A small part of the malt is mashed with rye at a temperature such that the greatest possible part of the starch shall be changed to maltose. This mash is then allowed to stand at a temperature of 35° C which is the most favorable for the production of lactic acid. Even.15 per cent of lactic acid added to a mash prevents lactic fermentation beginning, although if once started this fermentation may proceed until about 1.5 per cent of the acid has been produced. The object of producing this acid here is to prevent its production at a later stage.

The mash is then cooled and the yeast added. The fermentation produced continues from ten to fourteen hours.

Other materials are being prepared meanwhile. Raw grain, usually corn, is thoroughly cooked so as to effect complete gelatini-

zation. This cooled grain is mashed, first with rye and later with malt. The result of this is the production of a large amount of maltose from the carbohydrate. The product, which is now called wort, is cooled rapidly and then placed in other vats to which ferments are added. The wort is thoroughly aereated by means of compressed air. The grains rise to the top and in a few hours the evolution of carbon dioxide begins. After fermentation has continued ten or twelve hours the yeast is ready to be skimmed off. This takes about twelve hours. The wort remaining is taken to the distillery department and the skimmed yeast is washed with water to remove the wort and put through a number of sieves to remove the grains. The purified yeast is pumped through filter cloth which separates the yeast from the water. The yeast is pressed to remove as much water as possible and is then packed in tubs until it can be put into packages for the market.

There are many kinds of dry yeast on the market which keep better than the compressed because they lack moisture. Yeast Foam is as good as any. There are a number of excellent recipes for making yeast from these dry cakes. The advantage of these is that they act more rapidly than the cakes.

Potatoes are particularly adapted to nourishing the yeast plant. This is due partly to their kind of starch and may be due partly to the abundance of potassium salts which are a necessity to the plants. The water in which potatoes have been boiled acts nearly as well as the potatoes themselves. There is a general objection to the use of new potatoes for this purpose. Beaause of the immaturity of the starch, potatoes should not be used for yeast too young, but they may be used as soon as they have their "ripe" taste.

The following recipe for what is sometimes called "yeast beer" has always given satisfaction if used within ten days or two weeks after making.

One quart of madly boiling water.

Four medium sized potatoes.

One tablespoon of salt.

One-half cup of sugar.

One cake of yeast (soaked in a little water).

Grate the potatoes into the boiling water and stir while cooking until the mixture is clear, about five minutes. Stir in the sugar and salt, when cool, stir yeast in thoroughly. Set in a cool dark place. In twenty-four hours it is ready to use or to bottle.

It must not be thought that yeast is the only method of raising dough. There are three objections made to its use. Yeasts are uncertain in their action, it is claimed; the time needed for the growth of the plant is inconvenient; and lastly the yeast plant uses up some of the nutritive ingredients of the bread. This last is the greatest objection. Lieb, a German, calculated that the daily loss in his country alone, occasioned by this plant would equal the bread needed by 400,000 people for a day. But for all this no satisfactory substitute has been found. There are two points in favor of yeast beyond the simple fact that it raises the bread. It leaves no residue as baking powders do and the yeast plant acts upon the starch producing more digestible compounds as well as a pleasing flavor. The gas liberated by the action of an acid upon a carbonate or other salt is used in the case of soda and baking powders. The self rising flour used in the United States Army acts upon this principle. There is a great liability to adulteration here, the good baking powders are quite

expensive and the cheaper ones leave a considerable residue of salts that are harmful.

The most wholesome bread is that which is raised by carbon dioxide produced outside the dough by chemical means, such as the action of hydrochloric acid (HCL) upon a carbonate. The gas is made to enter the dough and thoroughly penetrates it. The tastelessness of this bread has kept it from being liked generally, though one soon learns to like it.

Until some new substitute is found yeast will continue to be the popular means of raising dough, and if the best possible be obtained and used while it is fresh, the bread, while not perfectly wholesome can still be excellent.

Of all the grains used for flour, wheat is conceded to yield the flour from which the lightest and best bread is made. The lightness is due to the gluten which will be spoken of later. The proteid of wheat is largely gluten and the amount of proteid and starch determines its hardness or softness. According to the United States Department of Agriculture, soft white, or winter wheat contains on the average, 1.4 per cent more proteid, .1 per cent more fat and .6 per cent less starch than hard, red or spring wheat. The soft flours are used for pastry and the hard for bread. If a handful of flour, when pressed, retains the impression of the fingers, it contains considerable starch and is a pastry flour.

Good bread flour, after being pressed in the hand, will fall loosely apart; when rubbed between the fingers or in the mouth it will have a slightly gritty feeling. It should be white or a faint yellow in color and have a sweet nutty taste, without a suspicion of acidity.

Macaroni wheat is harder than the hardest bread wheats and its milling product, semolina, until recently was considered only of use in the manufacture of such articles only as macaroni, noodles, and spaghetti. The ease with which a large yield of this wheat can be obtained, lead to experiments with macaroni flour in bread making. The results show that by methods, differing only slightly from the ordinary ones, an excellent though slightly darker colored bread is obtained. Digestion experiments have not yet been made upon this bread. It will be interesting to watch this flour in the future.

The main part of the grain of wheat is the endosperm, which is to supply the germ with food during the early stages of its growth. The germ itself is small but contains a large per cent of fat. When left in the flour the germ gives it a yellow color and the fat is apt to become rancid.

The germ has six protective layers surrounding it. The three outer ones are principally cellulose. The inner one of the six is the cereal or aleurome layer, and is the richest part of the grain in nitrogen. Strange to say, the only flour which contains the entire grain is genuine graham flour. Entire wheat flour is only a trade name and is applied to that made from the grain after the three outer layers or "bran" coats have been removed.

Graham flour takes its name from Dr. Graham, an American physician who invented it. He made great claims for its nutritive value and considerable prejudice was aroused in regard to the "value-less white loaf".

But scientific experiments carried on by the United States government show that the digestibility of a flour depends greatly upon its mechanical condition.

The proteid in the protective layers is in the cellulose which resists the action of the digestive juices. Then too, graham and entire wheat flour as made in this country is not as fine a powder as the patent and high grade flours. This makes it still more difficult for the digestive juices to act and besides stimulates peristaltic action so that the food really has a shorter time in which to be digested.

Graham and all the coarser flours are undoubtably valuable in case of constipation and for the sake of variety in the diet. Although they contain on an average, 1 per cent more proteid than the fine white flours, yet the latter yield more nourishment per pound and for the same money.

Experiments with soft and hard flours showed no difference in this respect, nor were the standard patent flours more digestible than other grades of fine white flour.

The history of the milling of flour is very interesting. The first flour was made by crushing the grain between two stones. It was uneven, and unsifted of course, and mixed with particles of stone that were split off during this primitive milling.

In Medieval Europe each fuedal lord possessed a mill and even an immense oven for baking bread. The tenants were obliged to use these and to pay toll for doing so.

To-day we have mills covering acres of ground and the numerous processes are so complex that it would take volumes to describe them. Before any grain is ground it is washed and thoroughly cleansed. Graham flour is made by simply grinding the graim between rollers placed so as to insure it being completely crushed. The grain for

entire wheat flour is treated much the same way after the three outer coats have been removed. The following is a brief description of one of the most common systems of milling.

"In high-roller milling the grain is washed and skimmed as in entire wheat, and then is run through five or even more pairs of rollers, each successive pair being set a little nearer together than the last. After each grinding, or "break" as the miller terms it, the meal is sifted, and the leavings of each sifting, called "tailings" are themselves ground and sifted several times. In a mill where the grain goes through a series of six straight breaks, there are as many as eighty direct milling products, varying in quality from the finest white flour to pure ground bran. Careful millers always try to grind near the cerealine or aleurome layer as possible, and to leave as much of the germ in the flour as is consistent with good color. To make sure that each product is up to the standard set for it in the mill, samples are tested every hour, and the milling is regulated accordingly." *

Flour should be kept in a fairly cool, dry place. Moulds and fungi are apt to develop in damp places. The flavor of flour may be entirely ruined by a very little of the fat becoming rancid, due to slow oxidation. This takes place most readily at high temperatures, especially from 70° C to 80° C. Therefore it is well to purchase flour in summer time in smaller quantities , if there is not a cool place to store it in.

Cheap grades of flour are sometimes teeming with bacteria some of which are killed in the baking. If bread that is perfectly sweet when it comes from the oven and is then well taken care of, becomes

*Farmer's Bulletin No.112, U. S. Department of Agriculture.

mouldy or acquires a cheesy smell in a few hours or a day, the fault is in the flour. Sometimes the bread becomes really"ropy". Such flour should be discarded. Sourness ofthe bread which will be spoken of later is often due to the flour but this can usually be overcome.

Adulterations of flour are numerous and while most of them are not injurious to the body, a few are decidedly so. Rye or maize flour, rice, pea or bean meal, and potato starch are all harmless, but are fraudulent because they lower the value. There is much discussion as to whether alum does any harm when eaten in bread, some interested ones even go so far as to say that it does good. However its use should be prohibited, as it is in many places, if only for the reason that it makes it possible to produce good looking bread from very poor flour. Its presence may be detected by a simple test. Tincture of log wood is added to a solution of ammonium carbonate. When bread containing alum is put into this mixture a bluish color appears. Copper sulphate is undoubtably a dangerous adulterant, and like alum it makes bread appear to be better than it is. Lime also has this effect but in such quantities as it is used in bread is not at all injurious to the body.

The composition of wheat flour averages water 12 per cent, fat 1 to 2 per cent, starch 70 to 74 per cent, ash.5 to 1 per cent and proteid 9 to 14 per cent. There are five proteids of which gliadin or gluten are the most important. These two together constitute gluten which forms about 80 per cent of the proteid of wheat.

Gliadin makes the dough sticky and is the binding material which holds the dough together and causes it to retain the carbon dioxide which is the real cause of the bread expanding. Gluten is

a substance to which gliadin adheres. Two flours may have the same pereentage of protein and starch and yet one may rise four times as much as the other, because of the different composition of the gluten. In hard wheat, gliadin comprises 65 per cent and glutenin 35 per cent of the gluten, while in soft wheat the proportion is 70 to 30. Hence dough from soft flours will rise higher but require more yeast than that from hard flour. In an experiment described in bulletin No. 67, U. S. Department of Agriculture, gliadin was extracted by means of alcohol from high grade patent flour. The dough from this flour was not at all sticky but rather putty like. The loaf expanded a little, then broke open allowing the enclosed gas to escape, and decreased in size. The loaf when baked was half the normal size. When a small part of gliadin was removed much the same effect was noted, as when all had been. A number of experiments proved that a decided difference in the bread resulted whenever the glutenin and gliadin ratio was changed. When the ratio was correct another proteid, though of a very different composition could be introduced successfully. Wheat flour with 10 per cent of corn meal or twenty per cent of wheat starch added, produced bread that expanded nearly as much as the normal loaf. The reason that bread from corn and rye flours, etc., is not as light as that from wheat is the difference in their gliadin and glutenin ratio.

Flour, liquid, yeast or its substitute and common salt are the essentials in bread. Other ingredients add to the flavor or increase the nourishment but a perfect loaf can be produced with the four articles named above. Salt has become essential in our cookery, through the cultivation, or degeneration as some say, of our taste. But it

serves another purpose in bread. It retards lactic and other detrimental fermentations. Salt amounting to 1.5 per cent to 3 per cent of the liquid used will retard alcoholic fermentation but a very small amount acts upon the foreign fermentation.

Jago, author of the most comprehensive work upon bread, has found that the hardness or softness of water has some effect upon the bread. Hard water, he claims, will make a whiter but a dryer and harsher bread, while every soft water acts best upon soft flours. As the difference is small and a greater difference in the same direction is produced by slight changes in the time of fermentation the subject of the kind of water used, provided it be uncontaminated, cannot be so important as many other questions on this subject. The good of using milk or whey in mixing dough has been spoken of as increasing the nutritive ratio. Whey is of use also because it contains antitoxins that have been produced in the souring of milk. These retard some of the objectionable fermentations.

There are so many good methods of making bread that it seems strange a poor article should be common. However, neglect of a few general principles will give poor results no matter what methods are used. A good grade of ingredients, cleanliness, and attention to details are necessary. It is the best plan to sterilize all the liquids used. The yeast may be put into a sponge or the dough may be mixed at once. The latter method gives the gas a better opportunity to penetrate the dough thoroughly. If this way is used the batter may be well beaten with a spoon before all the flour is added. This will make the amount of kneading required much less. Enough flour should then be added to make a soft dough. Too stiff dough is harder to handle, cannot be as thoroughly kneaded, is apt to break when rising in the

oven and gives a dryer loaf. The dough should be kneaded with a quick light motion until it is velvety to the touch. By this time no more flour will be needed on the board. Experience alone will teach when bread has been worked enough but usually fifteen minutes will suffice. The object of kneading is two-fold - to thoroughly mix the ingredients and to expose all parts of the mass to the air which is essential to the growth of the yeast plants. Heavy handling is unnecessary for either purpose. The time of rising varies with the kind of flour, but more particularly with the temperature and amount of yeast used. Dough will double in size, which is the required expansion, in an hour at a maximum temperature, about 95° F if plenty of yeast has been used. A little more heat does injury so that it is the safest plan to let it rise at the normal room temperature, about 70° F. Sometimes bread must be hurried and then a cup of liquid yeast or one yeast cake to a cup of liquid is used. Sugar is added for the reason given under yeast. When quick rising is not desired, from one-eight to one-third of a cup of yeast is used for one cup of liquid. If the flour is strong, that is, has an abundance of tenacious glutin great pressure can be resisted, but if the same amount of yeast is used with a weak flour the glutin gives way, large holes are formed between "soggy"masses or the bread falls.

Experience will teach the amount of yeast to be used with any flour but the bread maker to improve by her failures must be observant and know something of the reason for the failures.

When bread has doubled in size it should be kneaded again. This time there should be no flour used on the board. If used it is apt not to be thoroughly mixed in and to produce large holes or dark streaks in the bread. If the first kneading has been thorough, it

will not take long for this one. The bread is then shaped into loaves and placed in buttered tins to bake. Practice is again needed in the moulding of the loaves. They should be quite smooth.

A little melted butter rubbed over the dough and a damp cloth placed over it will prevent the formation of a hard dry crust.

The evolution of the oven is as interesting as that of the milling of flour. There are many steps between the ashes of the camp fire where bread was first baked, and the modern bakers oven, with devices for admitting drafts of air and anatomized water so that the temperature can be accurately governed.

The temperature of the oven when bread is put in should be between 400° F and 500° F. The thermometers upon most ovens cannot be depended upon. This is especially true when the fire is first built for metal conducts heat much more rapidly than the air and the thermometer registers too high. One soon learns to tell by the hand if the heat of the oven is right. If the bread is very light, the oven should be quite hot to prevent further rising. A cooler oven is needed for bread which should rise more.

When bread is put into the oven it rises rapidly from two causes. The heat up to a certain point increases the action of the yeast plant, but most of the rising is due to the expansion of the enclosed gases.

The yeast plant is killed at about 158° F. The interior of the loaf never gets above 212° F. The starch in the crust is converted into dextrin and the sugars. The carmelization of these gives a brown color. The most valuable part of the loaf is lost when the crust is discarded, as is done frequently.

Bread should rise during the first fifteen minutes in the oven and then begin browning. Too heavy a crust or a burnt one is easily avoided by shielding the loaf with a tin pan or a lid or an asbestos mat.

Biscuits, rolls amd all smaller articles should rise about five minutes and then begin browning. For this reason they should be almost as light when placed in the oven as they are to be when done. Rolls, etc. will bake in twelve or fifteen minutes but the average sized loaf requires an hour at least. Bread is known to be well done by a certain sound it gives when tapped. If well baked the crust on the sides and bottom will immediately spring back after being pressed.

A tender crust is obtained by brushing the loaf with butter as soon as it is done. When bread is removed from the oven it should be placed on a rack and cooled rapidly. Wrapping warm bread in a towel keeps it soft but it feels"clammy" and is more apt to mould. A loaf when very stale, may be freshened by dipping it quickly in water and placing in the oven for a few minutes.

Bread should be kept in a stone or tin receptacle in a cool dry place. These receptacles should be scalded and aired weekly, or oftener in the hot weather.

Most of the faults commonly found in bread are not hard to overcome. A well shaped, evenly browned loaf is obtained if it is turned occasionly in the oven and shielded from too intense heat. Protruding crusts occur when the oven is so full that the heat cannot reach the sides of the loaf as well as the top. Bread need not be too light or the reverse if put into the oven when it is ready to go in. Bread had better be over done that under done. Many of the

poor in citiesprefer under done bread, thinking that because the loaves are heavier they obtain more for their money. The greater weight however, is due to moisture which makes the bread less digestible and more apt to mould.

Large holes in the bread may be due to several causes. Lack of kneading, too much rising, the use of flour in the last working, all have this effect but are easily changed. Weak flour produces bread with large holes unless a smaller quantity of yeast is used or the dough is not allowed to rise as long as usual.

The worst fault of all is <u>sourness</u>. One authority says the sourness is caused by false ferments; another that when dough stands too long some of the alcohol is oxidized into acetic acid.

$C_2H_5OH + O_2 = HC_1H_3O_2 + H_2O$ Lactic acid is also found in over-proved dough. However, the acidity of bread as measured chemically does not exactly correspond with sourness as detected by the nose and palate.

Sourness results from bacterial action. Lactic acid causes about 95 per cent of the acidity, but in bad cases butyric fermentation is found and also signs of the putrefactive. The bacteria get into the dough usually from the yeast, uncleaned vessels or from the flour. As long as the yeast is acting the bacteria are quiescent, but when for any reason the growth of the yeast plant is checked, the bacteria increases rapidly and sourness results. Weak yeast for this reason frequently produces sour bread. As the bacteria flourish best at the temperature that is too hot for yeast, keeping the dough too warm results badly. If sourness presists when entire cleanliness is preserved and the yeast is vigorous, the flour must be the cause of the trouble. Many of the cheaper flours are teeming with bacteria.

In such cases plenty of good yeast should be used and the operation hastened as much as possible by keeping the dough at the optimum temperature for the yeast plant. Sweet bread can often be made by the short process when it is impossible by the long one.

An endless variety of breads is made possible by the addition of shortening, sweetening, eggs, raisins, spices, etc. If a person can made a good plain bread there will be no difficulty with these modifications. These are more expensive than the plain loaf but even then they are cheaper than most other foods, besides being more nutritions.

Plain bread is an economical source of both proteid and carbohydrates, as is shown by the following figures from J. T. Willard's Relative Economy of Foods. One dollar if expended for porterhouse steak will purchase 2.37 pounds of nutrients, 1.23 pounds of which are proteid and the remainder fat, while the same amount spent for bread will purchase 12.72 pounds of nutrients, 1.84 pounds of which are proteid, 10.62 pounds carbohydrates and the remainder fat.

With good ingredients, care and cleanliness, any intelligent person with a knowledge of a few simple principles, can learn, in time, to make bread that shall be sightly as well as light, sweet and palatable.

When good bread becomes as common as poor or fair bread is now, people will eat one of the cheapest and best foods because they really like it and will cease to discard it entirely as many do now, or eat it simply from habit or sense of duty.

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