

The Leavening of Bread.

Graduating Thesis.

Class of '97.

Harriet Agnes Vandiver.

Table of Contents.

I. Introduction — pp. 1-2.

Origin of word bread. p. 2.

II. Discussion. pp. 2-15.

- pp. 2-3-4. 1. The bread of different countries.
- pp. 4-5. 2. Flour, its qualities.
- p. 4. 3. Process of making flour.
- p. 5. 4. Different grades of flour.
- pp. 5-6. 5. Requisites for good bread.
- 6. Different kinds of fermentation, and what they do.
- pp. 7-8. 7. Yeast its properties and use.
- pp. 8-9-10. 8. Baking-powders and Soda.
- pp. 10-11. 9. Bread baking.
- pp. 12-13-14. 10. Care of bread after it is baked.
- p. 14.

III. Conclusion. p. 13.

The duty of the bread maker in the home. She must be a lady — a loaf-giver.

It is a well established fact, that people, as a rule value that least which is to them a daily occurrence. The doing constantly of an act forms eventually a habit, and finally grows upon one until it becomes a life long companion. The rose in all its beauty and fragrance, the green of the trees and grass, the bright sunshine, all evidences of Nature's regard for us, may cease to please us, because we become used to them. So, too, the existence of things about us, in their origin and development often ceases to cause admiration or wonder, and then we fail to appreciate the real worth of objects in our sphere of life. Not only in the world of Nature and in our lives is this true, but in the home with its activities, repeated again and again is it the case.

Take the simple act of eating the food which is daily prepared and placed before us. Of the many interesting things which are centered around this act, none is more so

than the tracing of the origin of that food. Among the numerous foods we might investigate, we have bread, best known, perhaps for its universal use. This food furnishes us with the topic for our consideration.

Bread is one of the very oldest, as to origin, of the foods, much mention being made of it in the Bible.

When the Angels were guests of Abraham, on the plains of Mamre, Sarah was commanded to bake cakes on the hearth. Doing this she gave to the visitors, bread.

In many places in the New Testament we find reference to bread, but this bread consisted simply of crushed grain, and some molting, made into cakes and baked. This was the "Passover" bread of the Israelites, and here it is that the leavened bread first came into existence. The leaven used being the ferment of some dough left from a previous baking.

Later we find that the Egyptians made cakes and loaves, of many kinds which

they flavored with aromatic seeds. The Greeks, it is said, had no less than sixty-two different kinds of bread. We are told that the professional baker was introduced into Rome in 160 B. C. The government had at this time full control of the bakeries. The grain was to be delivered at certain places and magistrates were appointed to superintend the public baking of bread.

Then as now, bread was considered the "Staff of Life". The word bread is derived from the verb, to bray or pound, which expresses the old method of preparing the grain. Bread is, therefore, made of something brayed, as brayed wheat or brayed corn.

To-day we find bread in all parts of the world, differing in the several nations in material, in kind and in use.

In Sweden, rolls are used almost entirely. In Northern Europe, the rye cake is used. These cakes form the bread of the peasants and are made but four or five times

few years, they are, in consequence very hard. The oat cake of Scotland forms the national bread of this sturdy race. In Central Europe we find the black loaf, made of rye or barley. It is hard and dry in texture yet this loaf builds up the bones and muscle as the white loaf will not do. In America the wheat flour is used for the greater part of our bread, although corn and rye are sometimes used. The colored people of the South live upon the bread made from corn-meal, entirely. Their "corn pone" being a characteristic dish. Bread making in its widest sense consists in mixing and baking in different forms, for human food, the products of various grains, after they have been crushed by milling, or grinding. In every sense, bread making is an art, one in which each cook should be skilled.

Bread is made principally from wheat flour, because wheat is the only grain which contains the right amount of

gluten necessary to make light, spongy bread. Rye flour makes sticky bread, while corn meal used alone makes a dry, crumbly loaf. The gluten of the wheat is a tough elastic substance consisting chiefly of vegetable fibrin, capable of stretching four or five times its original bulk. Wheat also contains a large amount of starch and more mineral matter than any of the grains. Bread is a very nutritious food, containing an average of 5% of albumen, 47.4% of starch, 3.6% of sugar, 1.6% of fat, it is then essentially a carbonaceous food, giving 55% of carbons, and 8% of nitrogen. The different kinds of wheat, however, vary in these proportions. In Egypt, India and South America, the wheat yields 15% of gluten, while that of the wheat belt of the Northern part of the United States, yields but 10% of gluten. The different grades of flour depends somewhat upon the process of grinding the wheat. In the earliest times the grains of wheat were crushed

between stones, from this crushing process was developed the Hungarian or whole wheat process, by which the finest flour is now made. The degrees between these two processes are varied, but step by step, the inventor has improved the machinery for making our best flour of to-day. The best flour, now on the market, has nearly all the gluten in it, for it contains the germ of the wheat, while the so called "best flour" of a few years ago, contained but little gluten, it was largely starch. Having the flour of the best quality, next in importance comes the yeast, if that be good, to have perfect bread, the one who moulds and bakes the loaf must be skilled in her art, for bread-making is an art, one much neglected in cookery. To make bread light - a perfect loaf, a ferment is used. This causes a chemical change in the flour. Thus we make a distinction between leavened and

unleavened bread or raised and unraised bread. The ferment used to accomplish the raising of the bread is some albuminous substance, in a state of change or decomposition, which when introduced into any other albuminous substance causes the fermentation of the whole mass. These germs of the ferment are always present in the air, and when a substance containing large quantities of starch, sugar or gluten are exposed to these germs of the air, with warmth or moisture, the germs grow and the substance upon which they feed, ferments, new compounds being formed. Of these fermentations there are three kinds. Lactic fermentation, which occurs when milk sours. Alcoholic fermentation, the change taking place when the fruit juices ferment or when wine is made from the juice of grapes, or beer from the fermentation of grain. Acetic fer-

mentation, which is caused by allowing the alcoholic fermentation to go on too long, or in too great a degree of heat. In the alcoholic fermentation carbon di-oxide (CO_2) is produced, and on account of this fact, this alcoholic fermentation is most suitable for bread-making.

One of the objects in bread making being to puff up the dough quickly, and then it must be baked while in this state. In wheat flour there is beside starch and gluten a ferment called diastase, and when this is moistened and heated a change will take place. This change or decomposition may be hastened by adding a substance already partly decomposed, so we use yeast.

Yeast is a tiny sporadic plant, of the fungus tribe, and is one of the smallest forms of vegetable life. Each tiny cell is made up of an albuminous membrane and a liquid. Growing rapidly these

small cells permeate a substance and decompose it. The process is more complete, if sufficient warmth be given to it. One of the cares of the keeping of the "life" in yeast is the regulating and preserving of the right temperature. We have dry, liquid and compressed yeast, each made by a different method of treating the yeast during the process of fermentation. In making bread we put the yeast into the flour, moisten the whole, and keep it warm. The flour furnishes a food upon which the yeast may grow. These yeast cells feeding upon the dough multiply and so change the flour. The diastase ferments and changes the starch into a kind of sugar, then the sugar is further changed into carbon di-oxide and alcohol. The dough being elastic is stretched by the carbon di-oxide, in seeking to escape and thus the loaf is made light. If the ferment by accident changes to the acetic stage the bread becomes sour, and

is then unfit for use. The keeping of the yeast in the best condition is another requisite for good bread. While the dough is filled with carbon di-oxide gas, and while the fermentation is still alcoholic, the fermentation is checked, so that the acetic stage may not enter. The dough is now ready to be baked in a hot oven. During the process of baking, the alcohol escapes into the oven, the starch grains are broken, and some of them are changed into a gum which forms the delicate brown crust of the loaf.

Another method of raising bread is by the use of soda or baking-powder. The object here being to get an acid and an alkali, so mixed as to form the required gas. With these we use sour or sweet milk, the only caution necessary is that all of the acid or alkali shall neutralize the other. The baking-powder is a comparatively recent invention, and about the first on the market was Horsford's.

Phosphate powders. Acid phosphate was supposed to be the principal element. These baking powders raised the bread and supplied some of the elements of the flour, which had been removed during the grinding of the grain.

Many different baking powders and sodas are on the market and their qualities vary greatly, for they are easily adulterated. The most common adulterant is alum, which cheapens the powder, at the same time making it dangerous to use. An absolutely pure baking powder will entirely neutralize itself and no residue will be left.

Another essential in the making of good bread is that it be baked properly, and this one thing must be studied by the beginner in cookery, if she would excel in bread making.

There are no certain rules to follow, each cook must know her own oven and learn to regulate it, that its heat may be just right. Testing the oven with a thermometer is not always sure, testing by the length of time

one can hold her hand in the oven, will vary with each hand. Experience, therefore, is the best teacher, as to the exact heat, remembering which kind of fuel give a quick heat, and which a steady, slow heat. The bread maker must fix her own standard and abide by it. Bread requires a hot oven, of about five hundred degrees of heat. The loaf must brown evenly and be of a delicate color, and musty flavor, also symmetrical in form.

The kneading of bread is another consideration of bread making. The length of time for kneading or working the dough depends upon the quality of the flour. If the flour so absorbs the moisture as to spoil the gluten, no good bread can be made out of it, though it be kneaded indefinitely. Not only must the bread be kneaded and worked, but it must be pulled and stretched also, and when the ingredients of the dough are good, a great amount of kneading is not necessary. When

ready to put to raise for the oven, it should be a smooth, firm mass, very elastic and not sticking to the hands or moulding board, now, it may be made into any desired shape.

To be able to tell just when the dough is light enough to bake is another requirement for a good cook.

When the loaf is ready to be baked it should have raised to nearly double its size, it will feel aerated all through, and when weighed in the hand it is found to be light, or when dented with the finger, it immediately springs back into place.

Just before the loaf reaches the perfection in lightness it should be put into the oven and baked.

The care to have perfect bread should not cease with the putting of the loaves into the oven, for it must receive a certain finishing after it is baked. The pan in which it is to be put should be well greased, to insure a smooth, moist crust. The bread in the

loaf should bake from fifty to sixty minutes, while rolls and buns need but twenty or thirty minutes.

After the bread is well baked and done, remove the loaves immediately from the pans and place where the air will circulate around them, and thus let them cool. To give a soft tender consistancy to the crust, wrap the loaf, while still hot, in cloths. Or if any special flavor is preferred sugar and water, or milk may be used to moisten the crust of the warm loaf. When thoroughly cooled, the loaf should be put away in a stone jar and there well covered with a cloth or stone lid. Here again must the watchful eye of the house-keeper be vigilant, for mold, the bane of the bread jar, may attack the fresh loaf and deposit there its green germ.

So, cleanse the bread jar, often, and keep out of it altogether the stale pieces of the previous bakings. Then you may be able to keep the

loaf sweet and wholesome.

From the time the flour, yeast and wetting are mixed into a dough, until the fresh, white slices of bread are placed upon the table to eat, a certain pleasure is felt by the cook in the accomplishment of so dainty a task. for a perfect loaf of bread represents to her, what deft hands and a clear brain may do, and proclaims her the possessor of a talent worth acquiring. She is now a lady a loaf-giver.

The cook of a household is wise if she is mistress of this art of bread-making, for the perfectness of this "Staff of Life" means much towards the welfare of the persons who may eat of the food. Let her remember that she is, through her cookery, responsible for the habits and desires of the persons for whom she prepares the meals, and that to bear this responsibility rightly she must be an adept in all branches of cookery as well as in that one of bread-making.

Bibliography.

"Boston School Kitchen Test Book."

(Mrs D. A. Lincoln.)

"Bread and Bread Making".

(Mrs Emma P. Ewing.)

White House Cook Book.

Kansas Home Cook Book.

"Lectures in House-hold Economy"

(Mrs Nellie S. Kedzie.)