

class, perhaps, or for home work. Mollie illustrates her book either with drawings or with pictures pasted in.

Making the cocoa. A quart of cocoa serves six people very well, for the cups we drink from hold less than a half pint. How many quarts of cocoa shall you need for them?

Let us now, one by one, think of the points we must remember.

Cocoa.

*What to use.*¹ Cocoa, sugar, water, milk.

How much to take. Equal parts of water and milk. 8 teaspoonfuls of powdered cocoa to a quart of liquid. The same amount of sugar as of cocoa.

Utensils. This depends upon the amount of cocoa, does it not? You can plan this easily yourself. Remember that a large pail or kettle full needs a long spoon for stirring.

How to make. This is the one way that saves dishes: Heat the water and milk together. Mix together the cocoa and sugar, dry. When the liquid begins to bubble, throw in the dry materials, and begin to beat and stir as fast as you can. When the cocoa and sugar are all dissolved, your beverage is ready.

How to serve. Have a dipper and the cups all ready. Remember, if you do not spill, there is nothing to clean up.

There are other ways of making cocoa. Try more than one. Some girl in the club may know another way, or your teacher may have another recipe. How shall you know which is best? It is the way that makes

¹ Hereafter, for convenience, simply *What*, *How much*, *Utensils*, *How to make*, and *How to serve*, will be used.



Courtesy of Miss Jennie Shields.

FIG. 17. — Cocoa is easy to prepare for the school luncheon.

the smoothest cocoa, with the fewest dishes, and with the least work.

The Dutch people, who manufacture cocoa, also make it well. They always beat it to make it smooth. If you can have a large "Dover" egg beater, a few minutes' beating, while the cocoa is still on the stove, makes it free from grains and lumps.

EXERCISES AND PROBLEMS

1. How many liquid teaspoonfuls make a tablespoonful?
2. How many dry?
3. How can you divide a dry spoonful in halves?
4. How many tablespoonfuls are there to a quarter cup? To a whole cup?
5. Copy your cocoa recipe in your notebook.
6. Begin a table of measures, and leave space for more.

LESSON 4

THE VALUE OF MILK AS A FOOD

How can we use milk for the school lunches?

A glass of cool, clean milk is one of the best possible foods for luncheon at school. Sip milk very slowly; for, if you gulp it down, you may have indigestion. Carry

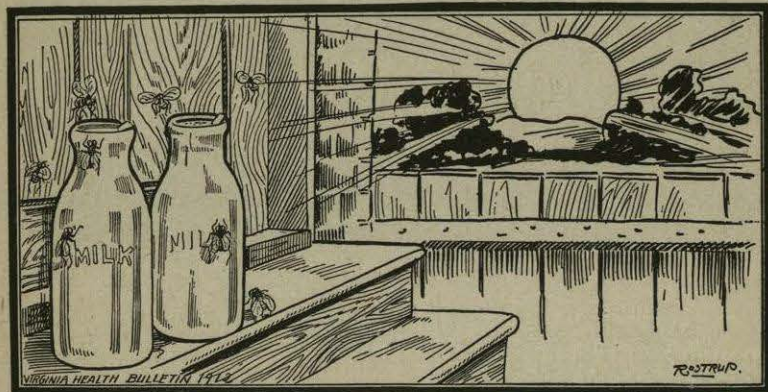


FIG. 18. — Do not let milk stand in this way.

it to school in a clean bottle, and keep it in a cool place. Would you like a little change from plain milk, either at school or at home?

Renneted milk, or junket.

What. Milk, sugar, a flavoring, rennet tablets (bought at the grocer's). The flavoring may be vanilla, or nutmeg, or cocoa dissolved in the milk.

How much. 1 quart of milk
 $\frac{1}{4}$ cup of sugar
 1 teaspoonful vanilla
 A few gratings nutmeg
 1 tablet, usually

Utensils. Something for warming the milk; something to hold the milk; measuring implements.

How to make. Junket is a dish that needs no cooking. Warm the milk slightly on the stove, or set it in the sun in an open dish. Stir the sugar and flavoring into the milk. Dissolve the tablet in a little water, and stir it into the milk. Let the dish of milk stand in a warm place; and then cool it, when the milk becomes firm.

How to serve. Serve just as it is, in saucers, or with berries or fruit juices, or with cream and a little sugar.

Why is junket digestible? Do you know what the rennet is? It contains the same substance that helps to digest the milk in our bodies, as we usually take it. The junket is partly digested then, and agrees with some people who cannot take milk plain.

Cheese from sour milk.

What. A pan, or dish, of soured milk that is firm. Salt is enough to add, but a little butter or cream improves it.

How much. This cheese can be made without measurements, and salted to taste.

Utensils. The pan that holds the milk, a bowl, and a piece of clean cheesecloth.

How to make. Heat the milk until the whey separates, but not until the curd toughens. Put the cheesecloth into the bowl. Pour in the milk. Lift the cloth, let the whey run out, squeeze it a little; and then, if the curd in the cloth is not dry enough, tie the cloth together and hang by the string where the rest of the whey will drip. Later salt the curd, and add a little soft butter or cream.

How to serve. Serve the whey to the chickens. They will appreciate it. Make the curd into balls and cool. It is delicious with gingerbread for supper. You can take it to school

in a cup or jar. Try putting it into a sandwich with a little currant jelly spread on, too. That does sound odd, but see if you do not like it.

Why is good milk, and clean milk so important?

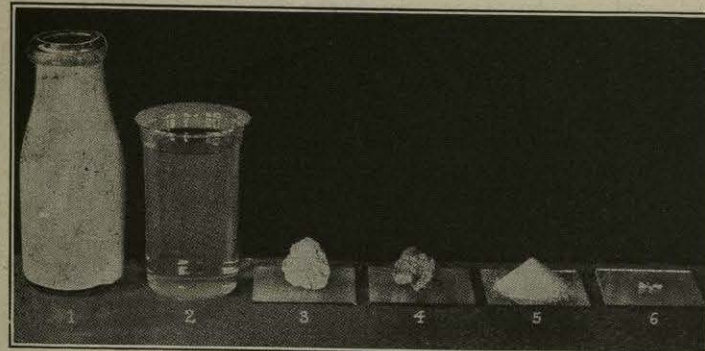
We are quite right in Europe and in America in thinking that milk is a useful part of our diet; and even in Japan and China, where milk has not been used in the past, the people are beginning to take it as food.

What is the value of milk? In the first chapter we have seen how the growth, strength, and warmth of young animals show milk to contain substances that build the body and give energy. Indeed, it is a perfect food for the young and an excellent food for grown people. The grown-ups and you must remember that milk is true food to be taken instead of some other food, and not in place of water plus the other food. This is a very important fact, for some people add milk to a meal when they have eaten enough of other things; and then they say that milk does not agree with them. It should always be partaken of slowly.

Hot milk is a good thing sometimes, especially when one feels a little "faint" for food. Some forenoon when Mother looks tired, give her a cup of milk heated almost to the boiling point; add a tiny pinch of salt; and, if she does not like the taste, stir in a teaspoonful of fruit juice. It will make her feel rested, and will give her nourishment.

What does milk contain? This picture (Fig. 19) shows what is found in milk, when the chemist separates

the parts. You have seen the dairy separator remove the cream. The curd and the whey separate when milk sours or when rennet is used. The chemist can do more. He can take out the sugar, which gives the sweet taste,



Courtesy of President Gulltner, Rockford College.

FIG. 19. — Composition of milk. 1, whole milk; 2, water; 3, fat; 4, protein; 5, carbohydrate; 6, mineral matter or ash.

and the mineral matter, which gives iron, lime, and other things needed for body building and health.

The word "Protein." The curd of the milk has something in it that is found in somewhat the same form in meat, fish, and eggs; and also in nuts, old beans, and peas; and in grain seeds. It is a substance without which we starve, and which you might be satisfied to call "meat food." But why not learn its name, *protein*? You cannot understand just what protein is until you study chemistry; and then you will learn among other things that it contains *nitrogen*, a gas that is all around us in the air. We breathe it in with every breath, and out again. Nitrogen stays in our

bodies only when we take it in our food in this substance called protein. Marjorie Allen found the word in one of the Farmers' Bulletins about feeding animals. Ask you father about it, too. If you are studying a little agriculture in school, you are learning something about nitrogen in fertilizers; for plants must have it, as well as animals. Neither can live without it. The protein is both a body builder and a fuel food.

Why is milk a substitute for more costly food? When milk is compared with the other animal foods that contain protein, we begin to realize how very valuable it is. Does it astonish you to be told that a quart of milk equals in food value a pound of steak or eight eggs?

Why must we have clean milk? Milk must be very clean, for in any dirt there may be the germs of sickness. Even clean milk will sour in time. Souring means the presence of one kind of "germ" or bacteria, — invisible tiny living things that form the acid. These do not injure us, but other bacteria may be harmful. Typhoid fever, tuberculosis, and other serious illnesses are carried in milk, cream, and butter. "Clean milk" is the best advertisement for those who produce it to sell. Also, when one has milk for home use one must be careful for the health of the family.

Begin with the cow. The cow must be in good health, well fed, kept in a clean barn or stable; the milker must have clean hands and clean clothes; and the pails, cans, and bottles should be as clean as boiling water, soapsuds, and sunshine can make them. The

milk must be cooled as quickly as possible. In the most up-to-date dairy farms, the cow is washed and curried! This means much trouble and labor. People who buy milk must learn to pay enough for it, so that the farmer can keep the milk clean. "Since a quart of milk equals



Courtesy of Walker-Gordon Laboratory Co.

FIG. 20. — Notice how clean everything looks in this picture of milking time.

a pound of steak or eight eggs in food value, milk even at 15 to 20 cents a quart is more economical than meat and eggs at ordinary prices. At the usual price (city) of 8 to 10 cents a quart, milk is very economical."¹

Some day we may all learn the lesson of cleanliness.

¹ See *Foods and Household Management*. Kinne-Cooley, Macmillan Co., page 150.

Then we shall not have the tragedy of many deaths in some city, even of little children, because of an impure milk supply.

Milk in the home. Milk must be kept cool and very clean in the house. This is where ice is a comfort and saves milk and work. You cannot have the pans for milk too clean. The vessel for holding milk, whatever it is, — pan, pail, pitcher, or bottle, — should be rinsed in cold water, washed in strong, clean soapsuds, rinsed in clean boiling water, and dried in a sunny place; or, in rainy weather, near the stove. The place where the milk stands must be clean and washed off daily.



United States Department
of Agriculture. Farmers'
Bulletin, No. 51.

FIG. 21.—A covered milk pail helps to keep dirt out of the milk.

If you have no ice on hot, muggy summer days, scald the milk when it is fresh, to keep it from souring. It is better to let the pans or other containers drain dry from the boiling water than to wipe them, even with the cleanest towel. Cool the milk as quickly as you can, and keep it as cool as possible. Mr. and Mrs. Allen believe milk to be so necessary to the health of the family that they have one cow whose milk is for family use. Every one in the country who can have even a small barn and pasture, should try to have a cow.

What is the value of skimmed milk? As only the fat has been removed, skimmed milk is useful for many purposes. We know that it is fed to farm animals.

Although we may not care to drink it, skim milk can be used in cooking, when some cheaper fat, like suet or "butterine," takes the place of the fat taken off in the cream.

Is there any use for sour milk? Clean milk, soured, forms a smooth curd, which some people like with sugar, for a dessert. It is very delicious in this way on a hot day, especially if a little fruit juice is taken with it. And what an easy dessert to prepare for dinner or supper! Another way to use sour milk, is to beat it thoroughly and drink it. Cheese is made from the sour milk. We shall learn later about using sour milk in cooking.

Why, then, is it important to use clean milk freely in our diet? Suppose you write down the answer, that you may be sure to have all the points.

EXERCISES AND PROBLEMS

1. Why does milk take the place of meat or eggs at a meal, rather than of potatoes? What are the three fuel foods in milk?
2. Since 1 quart of milk equals eight eggs in food value, is milk or eggs the more economical food at the time you are studying this? How can you find out?
3. Why does cream cost more than milk?
4. If there is a dairy on your farm, find out how many quarts of milk make a pound of butter.
5. What are the substances left in the skimmed milk?
6. See if you can decide what is left in buttermilk. Has it any food value?
7. In what ways can we be sure that milk is kept clean?

LESSON 5

BREAD A STAPLE FOOD

BREAD is a staple food for the school luncheon and for all meals. If you cannot make it at school, make it at home and have a bread contest at school. How can we plan for this bread contest?

One day in fall, when the Pleasant Valley Luncheon Club was eating sandwiches under the trees, one of the girls remarked: "Isn't it funny that our sandwiches look so different! I don't mean what is inside, but the bread itself. It is different colors, and the holes are different sizes, and some of the bread is crumbly and some is moist. Isn't it queer that bread isn't just the same always!"

"My mother didn't have luck with her bread this week," Marjorie Allen said. John Alden replied, "My father says, 'Don't talk about luck: that's a lazy man's excuse!'"

"Well," Marjorie began, her face flushing, — but Barbara Frietchie said quickly: "It's late for our county fair, but why can't we have a bread contest here? Everybody says it's an accomplishment to make good bread. Didn't you read about a contest last week in the 'Pleasant Valley News'?"

"Yes, indeed," they all said, "we'll ask Miss James!"

"A good idea," said the teacher, "and just the time, for we are beginning percentage, and this is where the boys can help."

But John Stark looked very determined. "If there

is going to be a bread contest, I am in it. My brother is a mining engineer, and last time he was at home, he learned how to make yeast bread, Mother's way. He said bread often is pretty poor, where he stays."



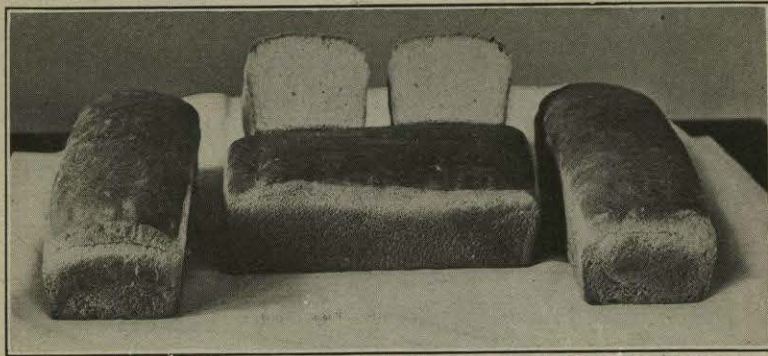
Courtesy of Mrs. Hetty S. Browne.

FIG. 22. — "Who says boys can't cook?"

This is the way the club planned their contests. Miss James thought it better to wait until the instructor in household economics came from the State College to talk to the Woman's Club and to visit the school.

When Miss James received a letter saying that Miss

Travers would be there on a certain date, each pupil who wished to engage in the contest made a loaf by the rule used at home, and brought it to school to be judged on the day of the visit. Miss Travers used a score put on the blackboard, and explained that, for an accurate contest, all the loaves should be made by one recipe. She gave a demonstration of her own rule,



Courtesy of the Department of Foods and Cookery, Teachers College, Columbia University.
FIG. 23. — A loaf of this shape and size bakes evenly.

making the bread from the materials that the club had supplied. She explained that hers was a good and exact recipe, though probably no better than many of those familiar to the mothers of Pleasant Valley. The mothers had been invited to the school; and many of them were present and enjoyed the demonstration and the lecture. They helped by asking practical questions.

A bread score. This is the Bread Score as Miss Travers explained it. Do you understand it?

BREAD SCORE CARD¹

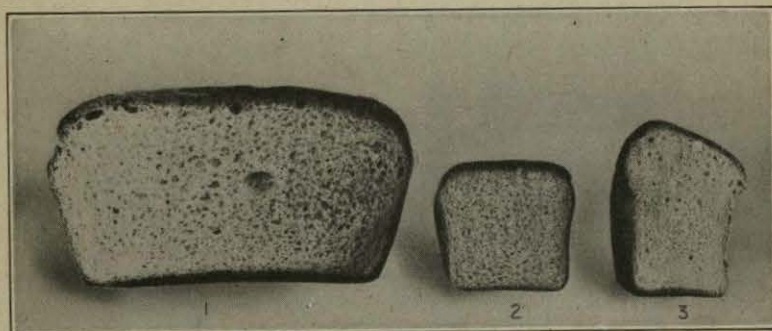
I. General Appearance	15 %
1. Shape	2.5 %
2. Size	2.5 %
3. Crust	10.0 %
(a) Color	
(b) Smoothness	
II. Internal Appearance	55 %
1. Depth of crust	10 %
2. Texture (lightness)	15 %
3. Crumb	30 %
(a) { Moisture } (25 %)	
Elasticity	
(b) Color	5 %
III. Flavor	30 %
	100 %

If you read it carefully you can see that all the points mentioned are important, and that the different per cents show the importance of the points when compared with each other.

What are the points in good bread? Notice the shape of the loaves in the picture (Fig. 23). A loaf of this shape and size bakes evenly. The crust should be a golden brown and tender rather than hard and tough. The color of the crumb — the inside of the loaf — should be creamy rather than snow white; the holes,

¹ Courtesy of Department of Foods and Cookery, Teachers College, Columbia University. See, also, Bulletin 25, University of Illinois.

small and evenly distributed; and when the crumb is pressed between the thumb and finger, it should be soft and springy, but not doughy. Some people like a rather open, dry bread, and others a closer and moister grain; but it must be baked through to the very center, in any case. And the flavor — who can describe exactly the sweet, almost nutty taste of good bread, free



Courtesy of the Extension Department, Ohio State University.

FIG. 24. — 1 has a poor shape and texture; 2, good shape and texture; 3 has a poor shape.

from a taint of yeast or sourness! We all enjoy it when it is perfect. It is indeed a science and an art to make it so.

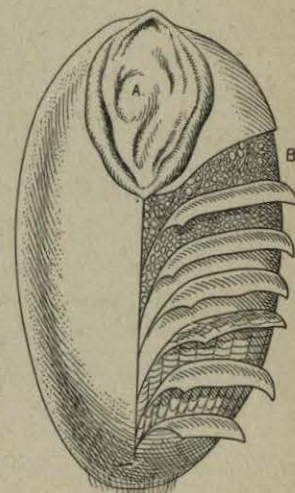
What is the value of white bread as food? Even before scientists explained to us the true value of bread, the human race had learned to prize bread made from ground wheat. Bread is called the "staff of life," as you know. Bread made from other grains is useful and palatable. In the pioneer days of America, "brown" bread was made largely from corn and rye

meal; and we enjoy this kind of bread even now. We may have whole wheat, or graham, or rye alone; but white flour bread is our main dependence.¹

Hear what the scientists say.

What does bread contain? Bread made from white flour contains all the stuffs necessary in food.

If you should make a list of what the bread contains and compare this with a list that shows the different foodstuffs² found in milk, you would find them to be almost the same, but not occurring in the same amounts. The bread contains less mineral matter than milk, and therefore is not quite a perfect food. It has but little water, and a large quantity of something that is not found in the milk; that is, starch. Curiously enough starch and sugar are very much alike; and Mother Nature, who is a wonderful chemist, can change one into the other. Indeed, you may have learned from lessons in physiology or hygiene that when we eat starch it is changed to sugar by the digestive juices before it is absorbed and carried about by the blood. The protein is found in the gluten, which you



Courtesy of Washburn Crosby Co.

FIG. 25. — A dissected grain of wheat.

¹ See *Foods and Household Management*. Kinne-Cooley, Chap. XII.

² See page 294.

can easily obtain by tying some flour in a cloth, and washing out the starch.

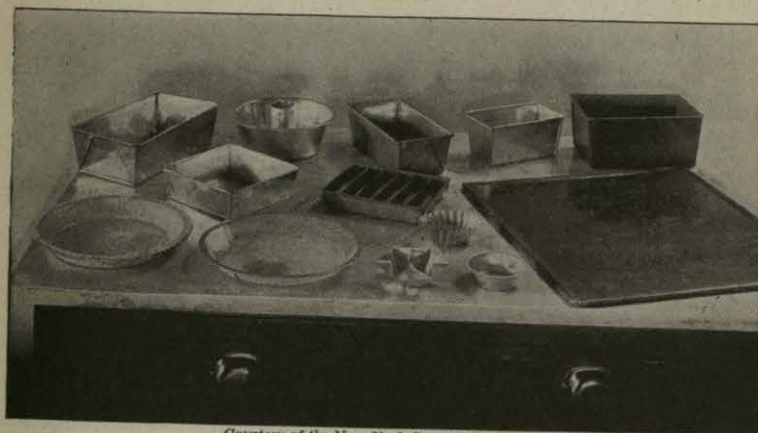
Why are so many foodstuffs found in wheat? Is it not interesting that in the grain of wheat the same kinds of materials are stored to feed the baby plant that nature supplies in milk for the young animal, the little plant drinking water from the soil? There is so much of this food in the grain, that it is worth while for man to use it himself as food.

Why is bread a cheap food? The scientists tell us, too, that for ten cents' worth of bread we can have more body-building material and energy than from ten cents' worth of any other kind of food, even of cheese, beef, eggs, milk, potatoes.¹ When Miss Travers asked the question at the beginning of this paragraph, Pleasant Valley pupils answered it, after a few minutes' discussion. See if you can answer at least in part. You can buy a heavier weight either of milk at 9 cents per quart or of potatoes at 60 cents a bushel; but the milk gives less energy, and the potatoes less building material, than the bread.

Should we ever buy baker's bread? One of the mothers present asked Miss Travers if it is economical to buy bread. Her answer was: "It depends upon what you are trying to save. In the summer it saves heat in the kitchen, and your time and strength. The bread costs a little more per loaf than when it is made at home."

¹ U. S. Department of Agriculture. Farmers' Bulletin 487.

Some one also asked if it were "just as good" as homemade, and Miss Travers replied: "That depends upon the baker, and the bakery laws of the state. It should be good, because the baker has an oven that is better than that in the home stove, but he does not



Courtesy of the New York State College of Agriculture at Cornell University.

FIG. 26. — Pans for baking bread, cake, and pastry, of tin, iron, and enameled ware.

always use good material, and work in a clean place. We must all work together to see that bakery laws are made and enforced, for it is said that about fifty per cent of the bread used in this country comes from the bakery. But there is nothing in the world better than the best home bread. And do you not think every girl should learn to make it?" Everybody said, "Yes," to this question; and the pupils went home, anxious to have a proper bread contest as soon as possible. One pleasant fact about such a contest is that it is possible for all to

win, since you compete with a standard for bread, and not with each other.

EXERCISES AND PROBLEMS

1. Make a list of the foodstuffs contained in bread; that is, starch, sugar, etc.
2. Explain why bread costs less than milk.
3. Separate the gluten from the rest of the flour, as explained in the text, knead and stretch it.
4. Can you tell what winter wheat is? spring wheat? the difference between them?

LESSON 6

MAKING BREAD

How shall we make bread for the contest?

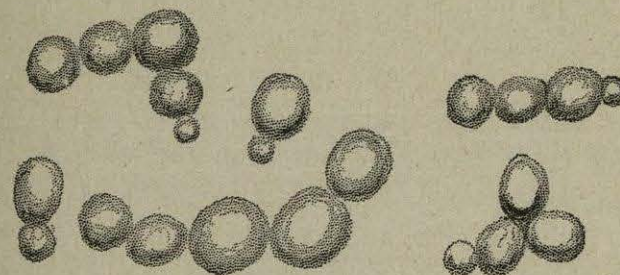
What kind of flour shall we buy? In order to make the bread contest exact and fair to all, the loaves should be made from the same kind of flour. Different brands of flour make different kinds of bread, the quality of the flour depending upon the variety of wheat and upon the method of manufacture. Modern flour mills produce an excellent flour.¹

A good bread flour is creamy in color, feels grainy to the touch, and contains a large amount of gluten. Spring wheat grown in the northwestern part of United States has more gluten and less starch than winter wheat living in the ground through the winter farther south, and makes a good flour for yeast bread. Some people

¹ *Foods and Household Management*. Kinne-Cooley, Chapter XII.

who are judges of flour, like a mixture of spring and winter wheat flour for bread.

Why is yeast put into bread? Something is needed to make the bread light and porous; yeast is used for this purpose. This is a fact already known to you. People have used yeast for many years in making bread, but it was not until the microscope gave us eyes to see small



Buchanan's Household Bacteriology.

FIG. 27.—One form of yeast seen through a powerful microscope.

things, that we could learn what yeast really is and how it works. If you should look at yeast through a powerful microscope, you would see something like this picture (Fig. 27). Even then you would need to be told that this tiny object has life, and that it is a tiny one-celled plant. As new cells develop in the bread, one budding out from another, a gas is formed. This gas, as it expands, makes the bread "rise," as we say. The gas is of the same kind that we breathe out from our lungs; its name is carbon dioxide. Alcohol is also formed. Both the gas and the alcohol pass off in the baking.

What does the yeast need to form new cells? If you stop a moment to recall what all plant life needs for growth, you can decide what these tiny cells want, too,—food, warmth, moisture. The yeast cells find food in the flour and moisture in the liquid mixed with the flour. We must give them warmth.

Now you understand why, in winter time, the bread dough is put in a warm place. The yeast cell is not killed by moderate cold, but, like the trees, it does not bud when it is cold. And the reason why soft, or compressed, yeast cake, and liquid yeast are kept cool, is that the yeast cells may not bud and increase, until we want them to do so. The tiny yeast is like what we usually call a plant in another way. During a drought when everything has turned brown and looks dead, you have seen grass grow green in a few hours after the welcome rain falls again. Thus, will the yeast cell remain dry for a length of time, to bud and increase when moisture is supplied. Does not this explain the dry yeast cake, in which thousands of the tiny cells are mixed with meal, dried and kept ready for use?

Where does yeast come from? The story of the yeast is a very pretty one, and might be used as the subject of a composition in school. If all the liquid yeast and beer, which always contains yeast, should be thrown away, and all the compressed and dried yeast cakes burned, would the yeast cells be lost to us, and could we have no more yeast bread? No, indeed! We

could begin all over again, and set a trap to catch the "wild" yeast cells that are present in the air, clinging to fruit and other things, and growing wherever they have a chance. What would the trap be like? Your mother may have caught the cells already; for when canned fruit or preserves "work," the busy little yeast cell is there, finding just what it needs to make it comfortable,—and it thrives on sugar in small quantities. Have you ever heard of "salt rising" bread, made without adding yeast? Here again the wild yeast was in the flour probably, ready to develop in the dough. It is more convenient, though, to cultivate the cells and to keep them ready to use whenever we wish.

Perhaps your mother keeps liquid yeast on hand. Dry yeast cakes and compressed yeast are useful and convenient, however, and save the trouble of making the liquid yeast.

What else do we put in bread? We use a liquid,—either water or milk, or some of both,—and salt. We sometimes add a little sugar, and some form of fat,—butter or "butterine" or lard,—which makes the bread and crust less tough. Some people dislike the taste of lard in bread. Those who like a moist bread, add a mealy mashed potato.

Dried currants, or raisins, and nut meats make a pleasant variety in bread, especially when it is made of graham flour. Part of the bread dough can have extra fat and sugar put into it, with a little spice and dried fruit, to be baked in biscuit or rolls.