

**Student's Manual  
in Household Arts**

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# **FOOD AND COOKERY**

**MARTHA L. METCALF**



Class TX663

Book M4

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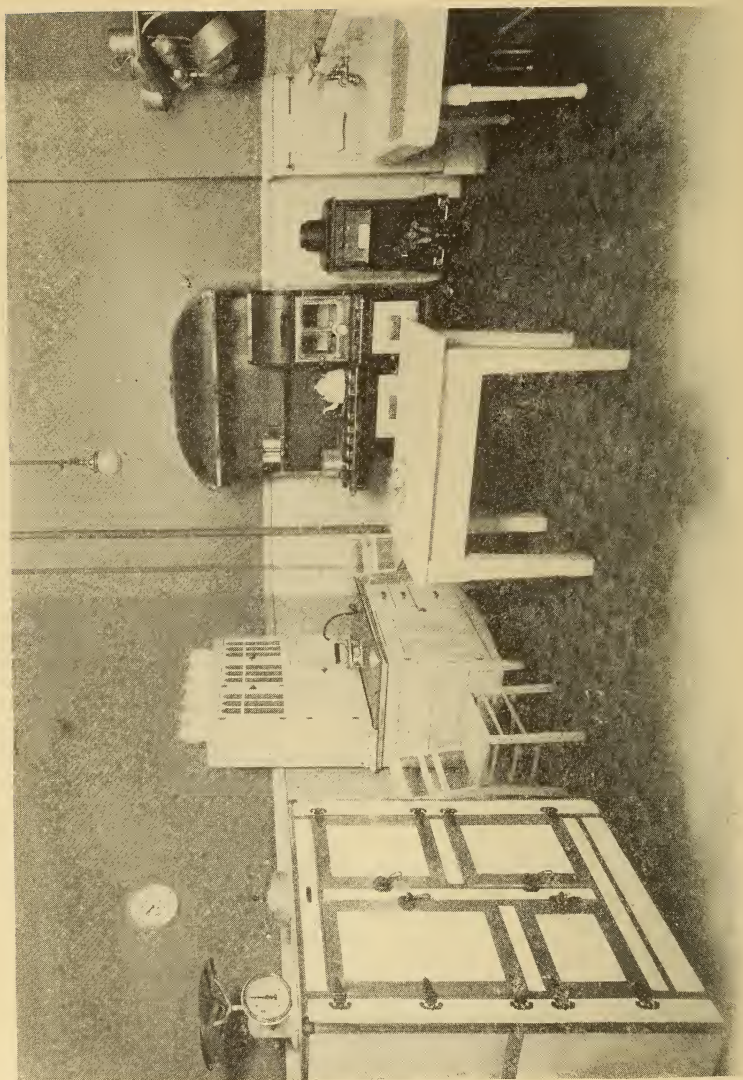








STUDENT'S MANUAL  
IN  
HOUSEHOLD ARTS  
FOOD AND COOKERY



A MODERN KITCHEN.

STUDENT'S MANUAL

IN

HOUSEHOLD ARTS

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FOOD AND COOKERY

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BY

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## PREFACE

---

IT has been our purpose to make the work in Household Arts pleasant and profitable for the girl while in school as well as when she leaves school. If this plan is carried out, she will be able to take with her into the home the results of her experience. It is possible to make the work so vital and so closely connected with the work of the home that the girl will not count the time spent in school as lost. Instead she will consider her school work to be a part of a well organized whole.

During the first year's work in food and cookery, the plan is to give a training in manipulation and a good working knowledge of the composition of food and the principles of cookery. The sequence of lessons has been based on food principles. At first sight this may seem merely the conventional course of lessons in cookery. However, it has been planned to make the topics taken up in the course at school fit into the home interests in a natural, helpful, logical way.

This book contains about one hundred twenty tested recipes besides many suggestions for varying these. The directions for

working have been so simplified that even the very young beginner will have no difficulty in following them.

Interesting and valuable facts concerning the history, manufacture, and commercial value of each of the principal food products have been briefly told. Each exercise contains some suggestions and instructions in housewifery or household management.

MARTHA L. METCALF.

*January, 1915.*

## SUGGESTIONS TO TEACHERS

The exercises in this book may be followed in the order in which they are given or they may be rearranged to suit the need of each particular class. If the lesson on Eggs should come at a time when eggs are particularly high in your locality, it would be better to postpone those lessons until prices were lower. The lessons on the Care of the Dining Room and on Table Setting and Serving may be given at any time. The Cranberry exercise is intended for a Thanksgiving lesson and the work on Candy should precede the Christmas holidays.

An opportunity is given at the close of each exercise in this course for the girl to state in brief form the results of her work. This feature should be carefully done because it will serve as an index to the amount of thinking the student is doing while she works.

At the close of each exercise a number of questions and suggestions are given. These are intended to stimulate the student to put intelligence back of the doing. Several recitations in which these questions form the basis for discussions may follow each exercise.

Definite credit should be given for all work in Household Arts done at home.

## BIBLIOGRAPHY.

The following references will be found useful to both teachers and students:—

- “Foods and Household Management,” Kinne and Cooley.
- “Principles of Cookery,” Anna M. Barrows.
- “A Home Science Cook Book,” Lincoln and Barrows.
- “The Boston Cooking School Cook Book,” Fannie Farmer.
- “Elements of the Theory and Practice of Cookery,” Williams and Fisher.
- “The Up-to-Date Waitress,” J. McK. Hill.
- “How the World Is Fed,” Carpenter.
- “Food Products,” Sherman.
- “The World’s Commercial Products,” Freeman and Chandler.
- “Bacteria, Yeasts and Molds in the Home,” Conn.
- “Household Bacteriology,” Buchanan.
- “Food and Dietetics,” Norton.
- “Food and Dietetics,” Hutchison.
- “Household Physics,” Lynde.
- “Good Cheer,” Hackwood.
- “Spirit of Cookery,” Thudichum.
- “Household Physic,” Butler.
- “Foods and Sanitation,” Forster and Weigley.





## GENERAL INSTRUCTIONS.

For the first lesson in a beginning course, it would be well to study with the children.

1. The name, use and arrangement of all the utensils in the individual desks. (Below is a diagram suggesting a convenient arrangement.) Have a definite place for each article and insist on its being kept there.

2. The care of the stove and the lighting of the fire.
3. The use and care of the refrigerator.
4. The care of the sink and garbage can.
5. The sweeping and dusting of the kitchen.
6. Rules for working.

There should be no cooking during the first lesson.



- |                                    |                     |
|------------------------------------|---------------------|
| A. custard cup                     | K. case knife       |
| B. white plate                     | L. spatula          |
| C. utensil plate                   | M. teaspoon         |
| D. small white bowl                | N. tablespoon       |
| E. large white bowl                | O. wooden spoon     |
| F. sauce pan                       | P. salt jar         |
| G. measuring cup ( $\frac{1}{3}$ ) | Q. biscuit cutter   |
| H. measuring cup ( $\frac{1}{4}$ ) | R. Dover egg beater |
| I. fork                            | S. strainer         |
| J. vegetable knife                 |                     |

At the beginning of introductory lesson number two, each child or each two children might prepare an apple for baking. While the apples are baking the time could be used

1. In learning the abbreviations.
2. In measuring different food materials,
3. In learning how to wash dishes.

(Spend very little time discussing the apple as that will come in later lessons on fruit.)

The general work of the kitchen, such as putting away supplies, cleaning the sink and stove, emptying and washing the garbage pail, can be arranged as the teacher thinks best. It is usually done by appointing one or more girls as housekeepers each lesson. The following "Duties of Housekeepers" are merely suggestions, they may be varied to suit the needs of the individual kitchen.

#### DUTIES OF HOUSEKEEPERS.

##### **Housekeeper No. 1.**

1. While the rest of the girls are washing their hands, dust the desk, ice box and cupboards, then wash out the dust cloth and hang on rack to dry.
2. When through cooking, put away supplies.
3. Divide supply dishes evenly among the rest of the class to wash. Do not give any supply dishes to the two who are washing housekeeper's dishes.
4. Clean stove.
  - a. Wipe out oven.
  - b. Wipe top of stove.
  - c. Empty teakettle and wash the outside.
  - d. Clean tray under burners.

5. Wash the supply table.
6. Brush floor around stove and table.
7. Have work inspected before leaving the room.

### Housekeeper No. 2.

1. When all have washed their hands, wipe wash basins and hang them up. Wipe drain boards and hang up sink cloths.
2. When through cooking, empty pan under ice box.
3. Wash the utensils in sink and the cover to garbage can.
4. Ask the girl sitting next to you to help you empty the garbage can.
5. Wash garbage can with small mop, then rinse with hot water. Wash out mop and hang it up.
6. Wash back of sink, polish faucets with dry cloth, wash the drain board, then the sink.
7. Brush floor around the sink and garbage can, using mop if necessary.
8. After all the dishwater has been emptied, wipe sink and strainer and hang up cloth.
9. Have work inspected before leaving the room.

### Abbreviations.

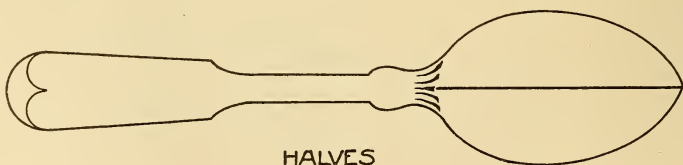
T.	stands for	tablespoon.
t.	“ “	teaspoon.
C.	“ “	cupful.
R.	“ “	rounding.
spk.	“ “	speck.
hr.	“ “	hour.
lb.	“ “	pound.
pt.	“ “	pint.
qt.	“ “	quart.
oz.	“ “	ounce.

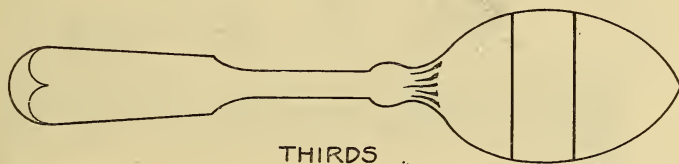
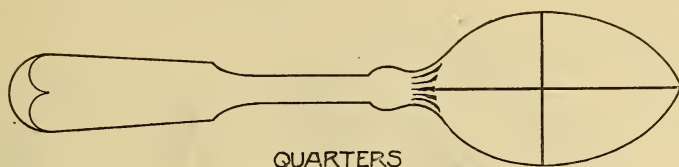
**Measures.**

3 t.=1 T.	2 C. sugar=1 lb.
16 T.=1 C.	2 C. butter=1 lb.
2 gills=1 C.	1 beaten egg=3 T. (?).
2 C.=1 pt.	8 large eggs=1 lb.
2 pt.=1 qt.	2 C. chopped meat=1 lb.
4 qt.=1 gal.	4 C. ground coffee=1 lb.
2 gal.=1 pk.	2 C. rice=1 lb.
4 C. flour=1 lb.	



All materials are measured level. The cup or spoon is filled heaping full, then leveled with a case knife. Flour is measured after sifting. In measuring butter or lard, scrape the surplus from the knife onto the back of the spoon, then pick it up with the tip of the knife and drop it into the supply dish. *Do not scrape the knife on the edge of the dish.*



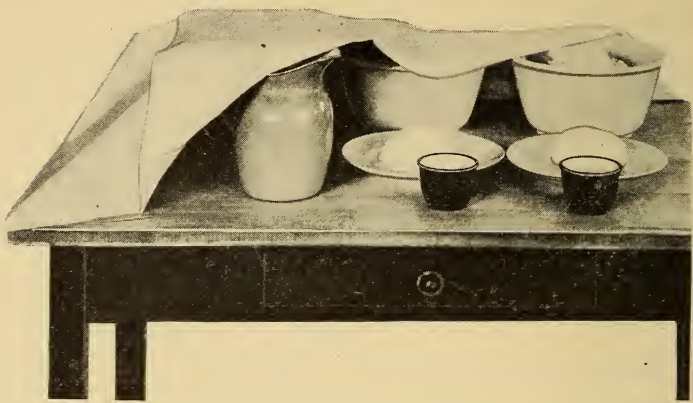


a. A spoonful of any solid material is divided into halves lengthwise of the spoon.

b. It is divided into quarters by a second division at right angles to the first, with this cross division somewhat nearer to the handle than to the point of the spoon.

c. A spoonful is divided into thirds crosswise.

## FOOD AND COOKERY LESSON PERIOD.



Before the class arrives, the supplies for that lesson should be neatly arranged in supply dishes on a table in the front of the room and covered with a clean cloth. If the class is large it would be better to pass the supply dishes from one pupil to the next, allowing each to measure the amount she would need for the lesson. In a small class the pupils might be allowed to come to the table and help themselves. Occasionally let the housekeepers order the supplies and put them out for the class.

After the cooking lesson is over the girls should arrange the food properly for serving and sit down quietly and eat it. The dishes should then be piled up ready to be washed. Two girls should work together; the uneven numbers should wash the dishes one week and the even numbers dry them. The next week they should reverse the work. The one who washes the dishes should scrub the tables and wash out the dishcloth, the one who dries them should put the dishes away and wash out the dish-towels.

Inspect all towels and dishpans before they are hung up and examine the desks before the class leaves the room to see that the work is properly done.

**Ways of Presenting a Lesson.**

1. The lesson may be assigned for study the day before it is to be taught. The subject matter can then be discussed when the girls come to class before beginning the practical work. Or

2. The recipe may be read at the beginning of the lesson. After discussing the reasons for each step, the girls may begin work, keeping recipes before them. Or

3. The list of ingredients may be put on the board and the method of preparation brought out by the teacher by means of questions and suggestions. After all the points in the method have been made clear and have been summarized by the class, the children should be able to prepare the dish without any further directions.

The last method is preferable during the first year. Either of the other two methods may be profitably used in the second year.

It will awaken interest in the lesson to have the prepared dish attractively arranged, ready to show the pupils at the beginning of the lesson. It will also be very helpful occasionally to demonstrate the preparation of the dish during the discussion of the method.

**Rules For Working.**

1. Before beginning to cook, wash the hands with soap and water; scrub the finger nails and clean them with a wooden toothpick. Wash the hands whenever anything has been handled that is not clean.

2. Have the hair so fastened that no hairs will fall into the food. Do not touch the hair nor face while cooking.

3. Do not wear rings nor bracelets, as dirt collects in the crevices and gets into the food.

4. Dress as simply and neatly as possible in the kitchen. Wear a wash dress when possible and *always wear an apron*.

5. Never dry dishes with anything but a dish towel.

6. Always use a holder or oven cloth in handling hot utensils.

7. Never use the mixing spoon to taste the food that you are cooking; take up a little food with the mixing spoon and put it in a teaspoon.

8. See that the fire is ready just when needed.

9. Before beginning work collect all necessary utensils, provide a plate on which to lay soiled knives and spoons and collect and measure all materials needed.

10. Save work by saving dishes; measure dry ingredients first, then liquids, then fats, and you will need to use only one spoon or cup.

11. Clean up as you work; soak dishes as soon as emptied.

12. Tin dishes and iron spoons will turn the food dark. Use *earthen* or *granite dishes* and *wooden* mixing spoons.

13. Do not let any acid stand in a tin vessel.

14. Rinse all milk dishes first with cold water, then wash with hot, soapy water.

15. All milk dishes should be thoroughly scalded every day.

16. Wash egg beaters in cold water, dry and put away at once. *Do not wet the black part of a Dover egg beater*, as it is impossible to dry it except in a warming oven.

17. Do not stand the teakettle in the sink.

18. Place saucepans with handles turned to the right, not over the fire.

19. In scouring faucets be careful to *keep the scouring brick out of the joints*. The smallest bit will soon wear out the faucet and cause it to leak.

20. Read your recipe and think before you work; work quickly, quietly and carefully. Never ask a question that you can answer yourself.

### **How to Wash Dishes.**

1. Collect each kind and put it by itself; scrape bits of food from dishes before washing and wipe greasy dishes with soft paper.

2. Have pan of very hot, soapy water; wash cleanest dishes first, as glass, silver, china, tin, etc.

3. Rinse in clean, hot water and dry on clean, dry towels.

A more sanitary way of rinsing and drying dishes is to place them, after washing, on edge in a drying rack, then pour clean, hot water over them and let them stand. The hot water rinses away all the soapy dishwater and the heat causes the dishes to dry without the use of a towel. With care, this method will save time and the dishes will be cleaner than even a clean towel can make them. Each dish should be inspected before it is put away.

4. When dishes are all washed, get clean water and scrub board and table, using scrubbing brush and scouring brick or powder. *Scrub with the grain of the wood.*

5. Wash off the suds; rinse and wring cloth and wipe the board as dry as possible. Be sure to wash and dry the edges of the table.

6. Wash dish towels and dish cloth in hot, soapy water; rinse in hot water and hang straight and even in the sun to dry.

7. Empty teakettle, clean stove, and brush floor around stove and table.

Note.—*All steel knives and forks should be scoured every time they are used.*

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Get pictures of different kinds of dish racks to paste in your book.
2. Could any of these be adapted to use in your own home?
3. Why is a spoonful of solid material divided lengthwise into halves? Explain the difference in length of the divisions into thirds, into quarters.

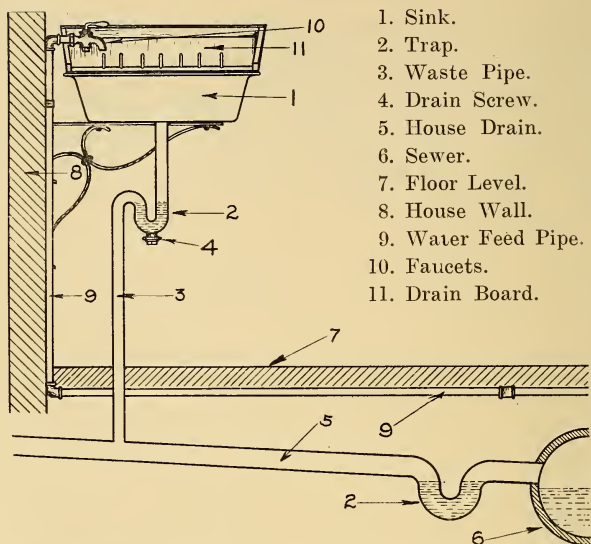
READING NOTES.

## HOME WORK.

Study the dish-washing question at home. See if you can make your work easier by a little planning.

Keep a record of the length of time it takes you to wash the dinner dishes each day for a week. Be sure your work is done equally well each time.

## THE SINK.

**Suggestions for Choosing a Sink.**

1. A white enameled, iron sink is the best. The copper sink is very durable and will not chip the dishes handled in it as easily as will the iron or the enameled iron sink. However the copper sink is very expensive and hard to keep clean.

2. Be sure the sink is equipped with a good trap, with nickel-plated faucets and drain.

3. The space below the sink should never be enclosed. It only makes a harboring place for water bugs and bacteria.

4. Have the sink so high that one can work at it comfortably.

5. If the sink is long enough, it will be more sanitary to have a removable drain-board placed inside the sink. If not, a drain-board may be fastened at one end or at each end of the sink.

PICTURES OF GOOD SINKS.

**Daily Care.**

1. Keep the sink always free from scraps. Neglect causes bad odors, attracts water bugs and roaches, and sometimes produces disease.

2. After pouring very greasy water down the waste pipe, pour down boiling water that the grease may not cool and settle on the sides of the waste pipe and the trap and clog them. Remember that sink, waste and drain pipes are intended for the passage of *water only*; not for bits of paper, burnt match, sand, food, etc. Slight carelessness in this respect may lead to a large plumber's bill. Pour all water through the sink strainer, then empty the strainer into the garbage can.

3. After washing the dishes, wash strainer, soap-dish and other sink utensils; wash the backboard, drainboards and basin of the sink with scrubbing brush and some scouring brick or powder. Polish faucets with dry, soft cloth. Once a week pour hot sal soda solution down the drain pipe. Clean carefully between the end of the drainboard and the sink each time you wash dishes so that dirt and bacteria will not collect there.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

How would it be possible to have a sink and drain with water supply in your house if you lived in the country or in a small town not equipped with sewers and city water systems?

Send for catalogs of windmills, forcepumps, etc.

## GARBAGE PAIL.

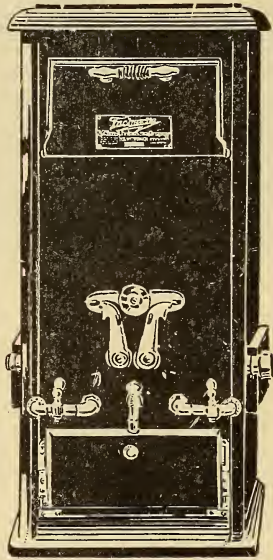
**Daily Care.**

Wash inside and outside of pail every day, using a dish mop. Stand the pail in the sun for a while if possible.

A plan followed in some localities is to fit the garbage can with a strong paper bag into which the garbage is emptied. This keeps the can from becoming soiled and aids the collector in emptying the garbage. All water should be drained from the garbage before it is put into the can.

A better way is to have no garbage pail, but burn the garbage every day. Have a bright fire in the stove and keep all the drafts open until the garbage is consumed.

## GARBAGE CONSUMER.



A gas garbage burner is sometimes used. There is no odor from it if it is connected with the flue. It occupies little space and does not use much gas.

## THE REFRIGERATOR.

**Daily Care.**

1. Have perfect order at all times.
2. See that no food remains in refrigerator long enough to spoil.
3. Empty drain pan once a day.
4. Do not put food away in fine china dishes nor wrapped in paper.

5. Keep all dishes containing milk or butter carefully covered. These foods absorb odors and flavors readily.

6. See that the ice is rinsed before it is put into the ice compartment.

### **Weekly Cleaning.**

1. Clean refrigerator at least once a week thoroughly.

2. Wash shelves and ice rack with hot soap suds and rinse in clean, hot water. Dry in the sun if possible.

3. Wash inside of refrigerator in the same way. Clean grooves and corners with a cloth on a wooden skewer.

4. Remove drain pipe and wash it or run a wire with a cloth on it down the pipe. Pour hot sal soda solution through the drain pipe and trap.

5. Wipe the refrigerator dry and let it remain open for an hour before putting food in it.

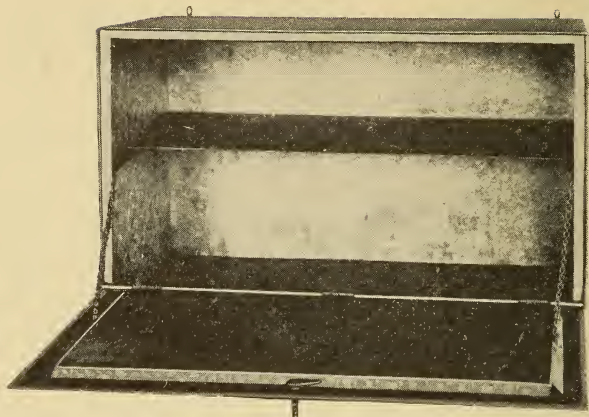
### **Suggestions for Selecting a Refrigerator.**

1. Have the refrigerator large enough, for a small piece of ice melts much more rapidly than a large one.

2. Have the refrigerator high enough from the floor to sweep under it.

3. A white enameled or porcelain-lined refrigerator is more easily kept clean than one lined with zinc.

PICTURES OF GOOD REFRIGERATORS.



### **Substitutes for Refrigerators.**

A window-box made of aluminum or a water-tight wood box is a convenience when there is no ice supply. It should be fastened by strong brackets outside the window with a door opening toward the window. There should be an opening in each end, covered with screen wire to give free circulation of air.

A cupboard, operated like a dumb-waiter that can be raised and lowered from the kitchen to cellar, will save many steps when the only cool place for perishable foods is the cellar.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Is it possible for a farmer to have a supply of ice for the summer?
2. Make a list of foods that you would keep in a refrigerator.
3. Make a list of perishable foods that you would not keep in a refrigerator.
4. What would you do with the foods in your second list?

READING NOTES.

Reference: Household Physics—Lynde.

## GAS RANGE.

**Daily Care.**

1. Keep air holes free from dirt.
2. Remove and wash tray under burners every day.
3. Wipe top of stove with damp cloth or with a few drops of kerosene on a cloth.
4. If burners become clogged, remove them and wash in clean, warm water.
5. Brush out oven and wipe with damp cloth. Aluminum paint applied to the inside of the oven two or three times a year will prevent its rusting and will make the inside of the oven lighter.

A hood is sometimes hung over the gas range. A pipe connects this with the flue. This is to carry away the odors from the gas or from the cooking. It is a worth-while addition but not absolutely necessary.

Whenever possible get a stove with the oven above or at

the side of the top-burners. This does away with stooping when looking into the oven.

### **Directions for Lighting.**

1. Top burners: Open cock wide, light match and apply it. If gas burns with a yellow flame and makes a roaring noise, it is burning in the mixer. Turn it off at once, then turn it on, let the gas flow for a second and relight it. The yellow flame smokes and wastes gas and is not as hot as a blue flame.

2. Oven burners: *Open oven doors.* Open the pilot cock and apply match. Turn on first one oven burner, then the other; when both are burning with blue flame, turn off the pilot.

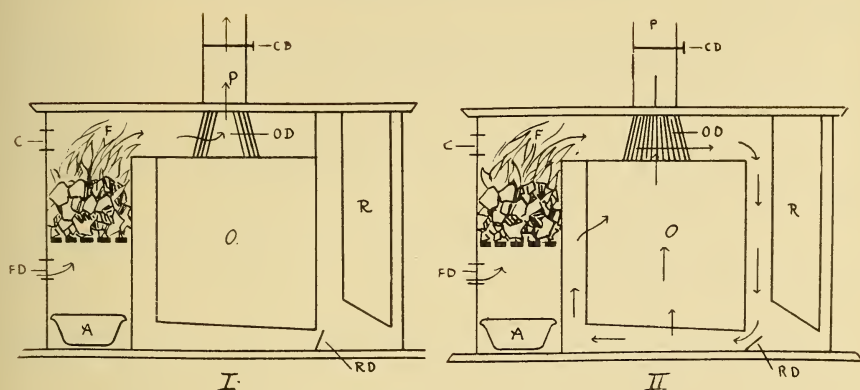
If the oven does not light with a pilot, turn on oven cock and apply match to the opening in the front of the oven.

*Never stand with face in front of the oven door when lighting the oven.*

Leave oven door open for fifteen minutes after the fire is turned out.

FOOD AND COOKERY  
PICTURES OF GAS RANGES.

## COAL RANGE.



DIAGRAMS OF RANGE.

I, with oven damper open. II, with oven damper closed. A, ash pan. F, firebox. O, oven. R, reservoir. P, stove-pipe. C, check draft. FD, front draft. OD, oven damper. CD, chimney damper. RD, reservoir damper. Arrows show direction of the currents of hot air.

**Daily Care.**

1. See that ash pan is emptied once a day.
2. Every morning as soon as fire is lighted, rub stove with blacking and polish with brush or soft cloth.
3. See that space around oven is kept free from soot and ashes.
4. See that *reservoir is kept filled with water.*

**Building Coal Fire.**

1. Clear firebox of ashes and empty ash pan.
2. Put layer of loosely twisted paper in bottom of firebox
3. On this lay small pieces of soft wood crosswise.

4. Put a layer of small coal on top of wood, then a layer of larger coal.

5. Have fuel loosely arranged so as to admit free passage of air through it.

6. Cover top of range, close check draft and open front, oven and chimney dampers.

7. Apply lighted match through the grate to the paper in the bottom of the firebox.

8. When the wood is all ablaze, more coal may be added. Do not keep firebox more than three-fourths full of coal.

9. When the fire is burning nicely, the front damper may be closed and chimney damper partly closed.

10. To heat the oven—close check draft and oven damper; partially close chimney damper and partially open front damper.

11. To check fire—open check draft, close all dampers, and if fire is still too hot, raise lids on top of stove.

12. To heat reservoir—close reservoir damper.

13. Ranges differ as to arrangement of oven and chimney dampers. Study carefully the one you are to use before building fire.

PICTURES OF COAL RANGES.

## KEROSENE STOVE.



Kerosene is a safe, economical fuel if carefully used in a good stove. The blue flame stove with a wick-burner is perhaps the best type for general use.

The stove must be kept absolutely clean or there will be a disagreeable odor from the burning kerosene. The wicks should be turned low when not in use, otherwise the oil will draw up through the wick and spread in a thin film over the stove. The top of the stove should be washed every day and the burners removed frequently and boiled in sal soda solution.

When the wicks become clogged and dirty they should be renewed.

At twenty cents a gallon for kerosene, one blue-flame burner will cost one and one-third cents per hour.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. How long does it take to get the oven of the coal range hot enough to bake bread? Keep account of the time from the moment you start to build the fire until the oven has reached the right temperature.

2. What would the kindling and coal cost to heat the oven and keep it at that temperature one hour or long enough to bake bread?

3. Try both experiments with the gas range or the kerosene stove. If turned on full, the gas oven will use about forty feet of gas per hour.

4. Make a list of prices of coal in your locality.

5. Is hard or soft coal used more generally? Why?

READING NOTES.

Read Chapter III of Foods and Household Management,  
Kinne & Cooley.

## HOME WORK.

Keep a record of your care of the range at home. Does your speed and skill increase with practice?

## SWEEPING AND DUSTING.

1. *Before beginning to sweep, see that no food is left uncovered in the room.*

2. Open the windows and close the doors.

3. Dust and remove chairs, etc. Cover such articles as cannot be taken from the room.

4. Wet the broom in a solution of borax and water. Do not use tea leaves or corn meal. Tea leaves may leave a stain and corn meal is apt to attract water bugs. Small pieces of newspaper well dampened and sprinkled on the floor may be used.

5. Sweep from the edges of the room towards the center.

6. Sweep with short strokes, keeping the broom close to the floor. This keeps the dust from flying. If the broom is properly held it will be impossible to lift it at the end of each stroke and set the dust flying. (See illustrations.)

7. When the dust has been gathered at one spot, take it up with a short broom and dustpan.

8. Always sweep a floor before washing or scrubbing it.

9. After sweeping a room, dust the woodwork and furniture, bring in the articles that were taken out, set the room in order and partly close the windows.

10. Always use a damp duster, which will collect and hold the dust, instead of merely moving it from place to place as a dry duster or feather duster will do. When the work is completed, wash the duster and so get rid of the dust.

11. New brooms may be soaked in strong, hot salt water before using, to toughen the bristles and make the brooms last longer.



CORRECT WAY.



INCORRECT WAY.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. What is the value derived from doing things in an orderly way?
2. Why should the state have the right to demand that things be kept clean and sanitary in and about the home?
3. What part does good, wholesome food and good cooking play in the work which one does?
4. Why should we be careful in working with fire? Does your state have any laws concerning the prevention of fires?
5. Take a broom and make a few strokes on the floor. What sense organ is affected? What is the danger in such sweeping?

READING NOTES.

**Suggested Topics.**

Broom industry.

Bacteria, yeasts and molds in the home.

Vacuum cleaners and carpet sweepers.



**EXERCISE I.**

## VEGETABLES.

**Classification.**

From the Standpoint of Nutrition.

Green vegetables—lettuce, spinach, cabbage, onions, etc.—  
non-nutritive.

Starchy vegetables—potatoes, beans, peas, lentils, etc.—  
nutritive.

From the Standpoint of Cookery.

Strong juiced—onions, cabbage, Brussels sprouts, turnips.

Sweet juiced—peas, beans, carrots, spinach, squash, etc.

**Composition.**

Vegetables are composed chiefly of cellulose or woody fiber, water, starch, mineral matter and small amounts of protein and sugar.

The green vegetables contain but little starch, sugar or protein, their chief value in the diet being their mineral salts, which tend to keep the blood in an alkaline condition.

The beans, peas, and lentils contain a large amount of protein as well as starch.

### General Rules for Cooking.

1. Wash thoroughly. Pare, peel or scrape according to the vegetable, e. g., potatoes are pared, tomatoes are peeled, and parsnips scraped.

2. Put on to cook in boiling water. Boil gently until tender. Salt when half done.

3. Sweet juiced vegetables should be cooked in just water enough to cover, with the exception of greens, which, being composed largely of water, require a much smaller amount.

4. Strong juiced vegetables should be cooked in a large amount of water and when half done should be put into fresh boiling water. By this method we lose some of the valuable mineral salts, but this loss is warranted by the improved flavor.

5. If strong juiced vegetables are cooked uncovered so that the steam will escape gradually, the odor will be less offensive.

### Points to Be Considered in Choosing the Method of Cooking Vegetables.

- |                |   |                 |   |                        |
|----------------|---|-----------------|---|------------------------|
| 1. Composition | { | Water           | } | determine method.      |
|                |   | Amount of fiber |   |                        |
|                | { | Starch          | } | determine temperature. |
|                |   | Protein         |   |                        |

2. Length of time to cook.
3. Flavor.
4. Appetizing appearance.

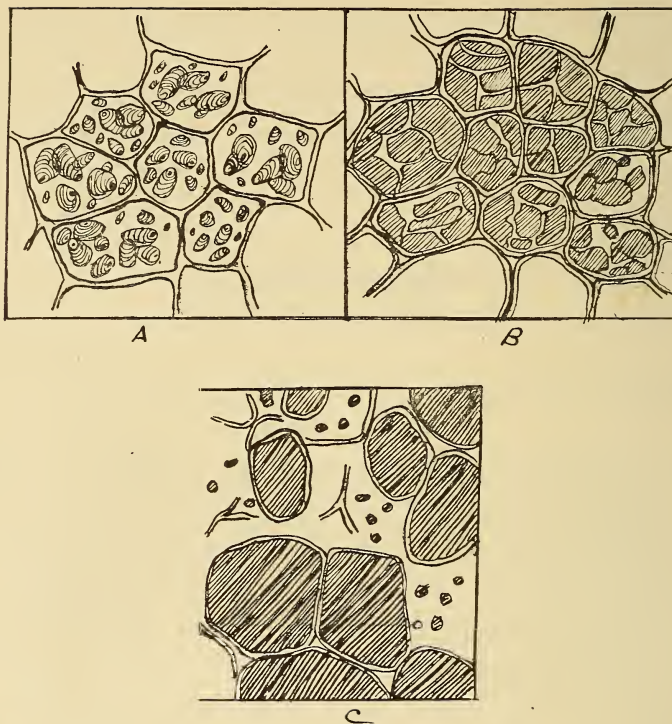
## WHITE POTATO.

### History.

The white potato is believed to be a native of Chili. It was introduced into England from America in the latter part of the sixteenth century. It belongs to the deadly nightshade family and for many years was believed to be poisonous. Now it ranks next to breadstuffs in importance as a food crop in the western countries. The small amount of poison it contains is driven off in cooking. In 1909 the potato crop in the United States alone was valued at \$206,545,000, there being a production of 376,534,000 bushels.

### Structure.

The frame work of the potato is woody fiber, which divides the potato into little rooms or cells of various shapes and sizes. These cells are filled with water in which are dissolved the soluble proteins, mineral matter, and soluble carbohydrates. The insoluble starch grains are also stored away in these cells. The greater part of the mineral matter and protein lies close to the skin of the potato.



A—Cells of a potato showing starch grains.

B—Cells of a potato showing partly cooked starch.

C—Cells of a potato showing thoroughly cooked starch.

**Composition.** (Edible portion.)

Water 78.3%.

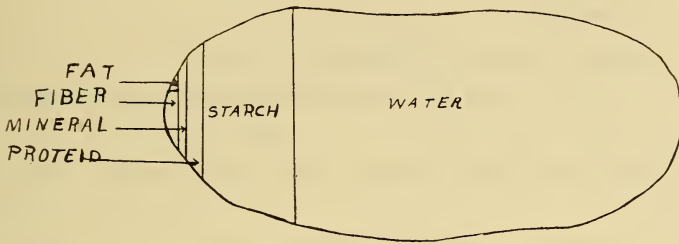
Starch 18.0%, the chief food in the potato.

Fat .1%.

Protein 2.2%.

Minerals 1.0%, aid digestion, help to keep blood alkaline.

Fiber .4%, too hard and tough to be digested.



A pared potato loses one-fourth its mineral, most of its protein and some of its starch in boiling.

Boiled without paring it loses much less.

Baked it loses none.

Potatoes put on to cook in cold water lose two times as much protein and are not as mealy as when they are put directly into boiling water.

Pared potatoes turn brown on being exposed to the air, due to the action of substances called enzymes naturally present in the potato. The covering with water to exclude the air will prevent this discoloration. Potatoes should not be allowed to stand in water for any length of time, however, as they will become water soaked and lose much mineral matter and starch. Old potatoes that have lost much water by evaporation are improved by standing in cold water for an hour.

### Buying and Storing.

In buying potatoes select those regular in shape, of medium size and with smooth skin. Store them in a cool, dry, dark place.

When the potato sprouts, some of its starch turns to gum, causing it to be waxy when cooked. As soon as the sprouts appear on the old potatoes pick them off.

**Ways of Cooking.**

1. Baked—most digestible.
2. Boiled in jackets—small loss of nutriment, but the potatoes are apt to be dark.
3. Boiled—pared—better color, but larger loss of food material.
4. Sauted (commonly called fried)—too coated with grease to be digestible.
5. French fried—apt to be under done.
6. Creamed—considerable food value is added by the use of the cream sauce.

**Substitutes for Potatoes.**

Rice, macaroni, spaghetti, sweet potatoes, lye hominy, grits, etc.

**LABORATORY EXERCISES.****Baked Potato.**

1. Select smooth, medium sized potatoes.
2. Scrub clean with vegetable brush.
3. Place on baking sheet or in dripping pan and bake in hot oven until soft.
4. Press between the fingers in a towel to tell when they are done. Do not stick a fork into the potatoes while they are baking.
5. When they are done roll between the hands in a towel and break the skin to allow the steam to escape. If the steam is allowed to cool and condense in the potatoes they will be soggy.
6. Serve very hot with salt and butter.

**Boiled Potatoes.**

1. Select potatoes of same size, so that they will cook evenly.

2. Scrub clean and pare thinly.
3. Drop into boiling water and boil gently until soft (test with fork or knitting needle.)
4. Salt when half done.
5. When done drain off every drop of water and shake over the fire until dry.
6. Serve very hot with meat, gravy or butter.

**Mashed Potatoes.**

6 potatoes	1 t. salt.
3 T. butter	spk. pepper.
$\frac{1}{3}$ C. (?) milk.	

1. Mash or press hot, boiled potatoes through a ricer.
2. Add butter, salt, pepper and enough hot milk to moisten.
3. Beat until light and creamy and pile lightly in a hot dish.
4. Serve hot.

**Creamed Potatoes.**

2 T. butter	1 C. milk
2 T. flour	2 C. diced cooked potatoes
$\frac{1}{4}$ t. salt	spk. pepper

1. Melt butter in sauce pan, being careful not to scorch the butter.
2. Add flour, salt, pepper and stir until smooth.
3. Place on fire and let it cook until it bubbles.
4. Add milk and boil two minutes, stirring constantly. If too thick, add more milk.
5. Add potatoes. Re-heat, garnish with parsley and serve.

## NOTES ON LABORATORY WORK.

What difficulties did you find in the laboratory work?

How will you overcome these difficulties next time?

(Answer these questions after each exercise.)

## QUESTIONS AND SUGGESTIONS.

1. A plant is made up of root, stem, leaf and flower. What part of each of the following plants is used as food? Onion, pea, bean, white potato, sweet potato, turnip, cabbage, lettuce, cauliflower and asparagus?

2. Where are most of the potatoes used in this community grown?

3. How much were potatoes a bushel this fall? Last fall?

4. What is the reason for the difference in price, if any?

## READING NOTES.

**References.**

Farmers' Bulletin No. 298.

Norton, Food and Dietetics, p. 126.

Hutchison, Food and Dietetics, p. 235.

Williams and Fisher, Elements of the Theory and Practice of Cookery, p. 59.

Barrows, Home Science Cook Book, p. 158.

## 55

Date.	Name of Dish.	Results.	Remarks

**EXERCISE II.**

RICE.

**History.**

Rice is probably a native of the East Indies, but it is now cultivated in all parts of the world. It grows best in low, marshy lands in sub-tropical climates. Rice forms the chief food of almost one-half the population of the earth. With the exception of wheat it is more widely used than any other grain. At present the amount of rice raised each year in the United States is less than the amount used. The deficit must be imported from China, Japan or India. In 1909 the United States produced about 668,901,600 pounds of cleaned rice.

### Preparation for Market.

When rice is ripe it is cut, leaving a twelve-inch stubble, upon which the grain is allowed to lie loose for twenty-four hours. It is then put in shocks on dry ground in the shade to finish drying or curing, as it is called. This step is very important, for if the rice is not properly cured, the grains will be easily broken in the hulling machines and will have a chalky appearance. The rice is then threshed and spread on floors to dry. As it comes from the thresher it is known as "paddy" or "rough rice." It consists of the grain, a closely fitting skin and a stiff, hard husk. These two coverings are ground off in hulling machines. The rice is then clean, but is of a dull, creamy color and must go through the process of polishing. This is done by rubbing the grains between rollers covered with very soft moosehide or sheepskin. After polishing, it is separated into the various sizes and grades by means of gauze screens and is then barreled for the market.

In appearance, growing rice is halfway between barley and oats.



**Classification.**

Honduras or Carolina rice, a long, slender grain.

Japanese rice, a short, flat, oval grain.

Note.—*It is said that there are 1,400 varieties of rice grown, but the above are the two principal ones sold in the United States.*

**Composition.**

	Before polishing.	After polishing.
Starch,	76.8	79.4
Water,	12.0	12.4
Protein,	7.2	6.9
Fat,	2.0	.4
Fiber,	1.0	.4
Mineral,	1.0	.5

Rice is a nutritious food and is easily digested, but is lacking in fat, protein and mineral matter, so should be eaten with eggs, milk, butter, fruit, etc.

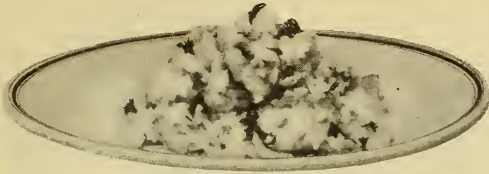
Fashion in this country demands that the rice grains be polished before being put on the market. From the table of composition it will be seen that almost all the fat and some of the protein is lost by this process.

Broken rice can be bought for one-half the price of whole grains, and, although the dish may not be as attractive looking, it is fully as nutritious and palatable.

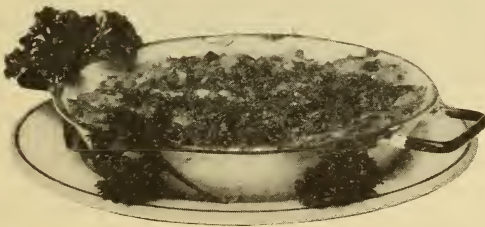
Rice loses a large amount of starch in boiling, but the water in which it is boiled can be used to thicken soup or for starching fine clothes, such as baby clothes, so that the material need not be wasted.

A longer time is required to steam rice than to boil it, but there is no loss of food material. Only as much liquid should be added as the rice will absorb (from three to four times as much liquid as rice).

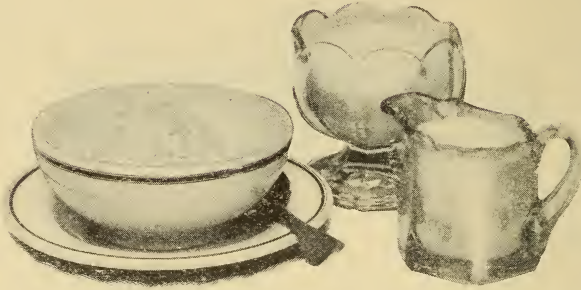
## WAYS OF SERVING RICE.

**As a Vegetable.**

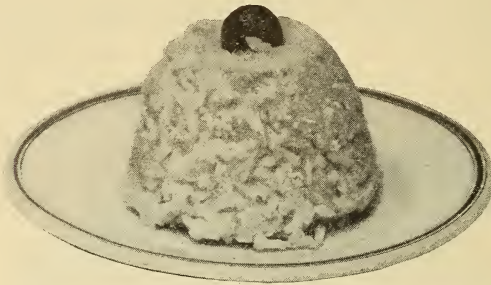
1. Seasoned with butter, salt, pepper and chopped parsley.
2. Re-heated in tomato sauce.
3. Re-heated in curry sauce.
4. Seasoned with salt and pepper and served with meat gravy.

**As an Entree.**

1. Escalloped with cheese.
2. Escalloped with cold meat or Hamburg steak.
3. Rice croquettes.

**As a Cereal.**

1. Plain, with cream and sugar.
2. Plain, with butter and sugar.
3. Steamed with raisins, served with cream and sugar.

**As a Dessert.**

1. Custard rice pudding.
2. Creamy rice pudding.
3. Molded in cups, served cold with jelly and cream.
4. Molded in cups, served hot with hard sauce.
5. Molded in cups, served hot or cold with stewed fruit.

Left-over boiled rice may also be used in making griddle cakes, muffins, fritters, waffles, etc.

## LABORATORY EXERCISES.

**Boiled Rice** (Chinese method).

1 C. Rice

2 qts. boiling water

1 T. salt

1. Pick over the rice and wash it well.
2. Add to rapidly boiling, salted water a few grains at a time so as not to stop the boiling. If the rice settles to the bottom, stir it gently with a fork or wooden spoon. Keep the grains dancing about in the water so they will not stick together.
3. Boil until grains are soft. (About 25 minutes.) Cut a grain in two; if there is no hard core in the center the rice is done.
4. Drain in colander and rinse with hot water.
5. Dry in open oven or on back of stove. Every grain should stand out plump and separate.

**Steamed Rice.**

1 C. rice

1 C. water and 2 C. milk

3 C. water or

1 t. salt

1. Put water in upper part of double boiler over the fire and bring to boil.
  2. Pick over and wash the rice and put into the boiling water.
  3. Boil five minutes, then place upper part of boiler over hot water, cover and steam from forty to fifty minutes, or until the grains are soft.
  4. Uncover and allow the steam to escape.
- Note.—If milk is used, boil rice in one cup of water for five minutes, then add the milk and place over hot water to steam.*

**Rice with Chopped Parsley.**

1 C. rice	2 rounding T. chopped parsley
3 T. butter	salt, pepper

1. Boil rice by Chinese method.
2. Wash parsley and chop fine.
3. Add butter, salt, pepper and parsley to the hot rice and serve with meat, in the place of potatoes.

**Rice with Tomato Sauce.**

2 C. tomatoes	3 T. butter
1 sliced onion	3 T. flour
2 pepper corns	$\frac{1}{4}$ t. salt
$\frac{1}{2}$ C. rice	

1. Boil rice by Chinese method.
2. Cook tomato, onion, pepper, and salt together until tomato is soft, then rub through a strainer.
3. Melt butter in a sauce pan
4. Add flour and stir until smooth.
5. Place on fire and cook until it bubbles.
6. Add strained tomato and boil two minutes, stirring constantly.
7. Add boiled rice to the tomato sauce, re-heat and serve as vegetable.

**Curry Sauce.**

3 T. butter	1 t. salt
2 slices onion	$\frac{3}{4}$ t. curry powder
3 T. flour	$\frac{1}{4}$ t. pepper
$1\frac{1}{2}$ C. scalded milk	

1. Brown onion in the butter.

2. Remove onion and add flour and seasonings to the butter.
3. Stir until smooth.
4. Place on fire and cook until it bubbles.
5. Add scalded milk and boil two minutes, stirring constantly.

### Escalloped Rice.

2 C. cooked rice	1 C. white sauce or tomato
$\frac{1}{2}$ C. grated cheese	sauce
(2 oz.)	$\frac{1}{2}$ C. buttered crumbs

1. Put a layer of rice in the bottom of a buttered baking dish.
2. Add a layer of white sauce, then one of grated cheese.
3. Repeat until the dish is full, then spread buttered crumbs on top.
4. Bake for twenty minutes, or until the crumbs are brown and the sauce bubbles up through the crumbs.

Note.—*For white sauce, use 1 C. milk, 1 T. butter, 1 T. flour,  $\frac{1}{3}$  t. salt. Make the same as tomato sauce.*

*For buttered crumbs, use 1 T. butter to  $\frac{1}{2}$  C. crumbs. Melt the butter in a sauce pan, add crumbs, and stir until all the crumbs are coated with butter.*

## NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Compare the cost, time, ease of preparation and nutritive value of potatoes with rice.
2. Can you suggest any case where the keeping qualities and the compactness would cause you to lay in a supply of rice rather than potatoes for a starchy vegetable?
3. What could you serve with rice to supply the lack of mineral salts?

## READING NOTES.

**References.**

Carpenter's Foods and their Uses, p. 63.

Carpenter's How the World is Fed, p. 56.

Farmers' Bulletin No. 417.



**EXERCISE III.**

1. OATS.

2. WHEAT.

3. RICE.

4. CORN.

**CEREAL BREAKFAST FOOD.**

Cereals are cultivated grasses, such as wheat, rice, oats and other grains. They are the most widely used of any vegetable food, partly because they are so easily and cheaply grown in almost all climates, and also, because they can readily be made into palatable and nourishing dishes that are easily digested.

Only the seeds of these plants can be digested by the human stomach. The remainder of the plant can be used as fodder for cattle and horses.

**Composition.**

These seeds, like the potato, are storehouses for food to the young plants and as starch is the easiest form in which plants can store food, we find that the grains are from 60% to 75%

starch. They also contain 6% to 16% protein, from 1% to 7% fat, and an average of 1% mineral matter.

Unlike the potato, raw cereals contain a very small amount of water—from 8% to 12%. In cooking, however, they absorb from two to four times their bulk in water so that the proportion of water to starch in cooked cereals is much like that of boiled potatoes.

The woody fiber or cellulose in all the cereals except rice, is tougher than that in the potato and requires longer cooking to soften.

### **Buying and Storing.**

Cereals sold in bulk are cheaper than those sold in pound packages, but the sealed package keeps out so much dust and dirt that it is worth the extra cost.

Do not leave cereals in the paper boxes after they have been opened as insects, dust, etc., will quickly find a lodging place there. Empty them into glass jars and keep the covers screwed down. It would be well to have several kinds on hand at the same time so as not to serve one kind continuously.

### **Classification.**

1. Cooked cereals.
2. Uncooked cereals.
  - a. Rolled.
  - b. Granular.

The ready cooked cereals such as puffed rice and wheat, toasted corn flakes, shredded wheat biscuits, etc., are very palatable and appetizing and are welcome changes from the cooked porridge, especially in summer. They should not be eaten exclusively, however. Those in which the starch has been

partly digested by the process of manufacture will tend to weaken the digestion and those that contain raw starch will overtax the digestion.

In the preparation of the rolled cereals the grain has been steamed and then passed through hot steel rollers. The heat partly cooks the starch and the great pressure to which the grains are subjected in passing between the rollers bursts open some of the cell walls and crushes some of the starch grains, so that the rolled cereals do not require as long cooking nor as much water as the granular cereals. They will absorb two times their bulk of water and should be cooked from three-quarters of an hour to two hours.

The granular cereals have not been cooked in the process of manufacture. They require four times their bulk of water and should be cooked from one to three hours.

One-third teaspoonful salt should be added to each cup of water for all cereals.

### **Cooking and Digestion of Starch.**

Uncooked starch is not readily digested by the human digestive system.

Three conditions are necessary to the thorough cooking of starch:

1. There must be a large amount of water present.
2. There must be a temperature of not less than  $212^{\circ}$  (boiling temperature) for at least part of the time.
3. It must cook for a long time. If it is kept at boiling temperature only part of the time, the length of time for cooking must be increased.

All starchy foods should be thoroughly chewed and mixed

with the saliva in the mouth, as the saliva is a very important aid in the digestion of starch.

### Use of the Double Boiler.

A double boiler consists of two parts; the lower part, which should be kept one-third full of boiling water, when in use, and the upper part in which the food is to be cooked. As long as the lower boiler is supplied with water the food in the upper part cannot burn nor become quite as hot as the temperature of boiling water.

A home-made double boiler can be made by placing one saucepan inside of another with a Mason jar cover, or support of some kind, to keep the upper saucepan from resting on the bottom of the lower one.



Home-made Double Boiler



Manufactured Double Boiler

### LABORATORY EXERCISES.

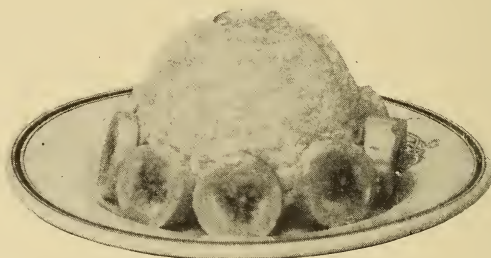
#### General Rules for Cooking.

1. Put water and salt in upper part of double boiler and place over fire.
2. When water is boiling, add cereal slowly so as not to stop the boiling of the water.
3. Boil until just too thick to pour, occasionally lift the mixture lightly with a fork to keep it from sticking. (If it is

stirred vigorously with a spoon it will become sticky and pasty.)

4. When it is thick enough, place it over hot water and cook from one to four hours.

Note.—*Cereals should always be cooked twice as long as required by the directions given on the package.*



### **Rolled Oats with Bananas.**

1 C. oats	$\frac{2}{3}$ t. salt
2 C. water	3 bananas

1. Follow general rules for cooking and cook one hour.
2. Wet individual cups in cold water, pack cereal in cups, let stand five minutes, then turn into individual cereal bowls.
3. Surround with sliced bananas and serve with cream.

Note.—*Sliced peaches, stewed apples or stewed prunes may be used instead of bananas. Some prefer a cereal too soft to be molded. In that case place fruit on top of cereal.*

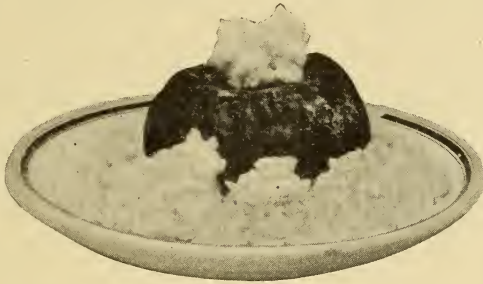
### **Cream of Wheat with Raisins.**

$\frac{1}{2}$ C. Cream of Wheat	$\frac{2}{3}$ t. salt
2 C. water	$\frac{1}{4}$ C. Sultana raisins

1. Follow general directions for cooking and cook one hour.
2. Stir in the raisins ten minutes before removing the cereal from the stove.

3. Serve with cream and sugar.

*Note.—A small baked apple or baked pear may be served with the cereal in winter when fresh fruit is scarce.*



### Baked Apple.

6 sour apples	$\frac{1}{4}$ t. cinnamon
6 T. sugar	$1\frac{1}{2}$ t. butter
$\frac{1}{2}$ C. cold water	

1. Wash and core apples.
2. Put into a graniteware baking dish.
3. Fill cavities with sugar and cinnamon and place  $\frac{1}{4}$  t. butter on top of each.
4. Surround with water and bake until soft.
5. Serve hot or cold with cream or with the syrup in which they were baked.

*Note.—Currants or English walnuts may be mixed with the sugar and filled into the cavities of the apples.*

*Apples are sometimes pared before baking, but they do not keep their shape as well and do not cook as quickly as when baked in their skins.*

**Corn Meal Mush.** $\frac{1}{2}$  C. corn meal $2\frac{1}{2}$  C. water

1 t. salt

1. Follow general directions for cooking and cook two hours.

2. Serve with butter and sugar, or cream and sugar, or pack into a brick-shaped bread pan which has been wet in cold water. When cold it can be cut in slices and fried.

*Note.—If corn meal is very fine, mix with  $\frac{1}{2}$  C. cold water before adding to the boiling water, to prevent lumping.*

**Fried Mush.**

1. Dip slices of cold mush in flour or fine crumbs and saute in butter until a light brown.

2. Serve with butter and maple syrup.

*Note.—Wheat or oat mush or cold boiled rice may be cooked in this manner.*

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Make a list of four different kinds of cereals easily obtained in your locality.
2. Plan the breakfasts for one week telling which cereal you would serve each time and how you would serve it.

READING NOTES.

**Suggested Topics:**

Fireless cookers.

Grain crops in U. S.

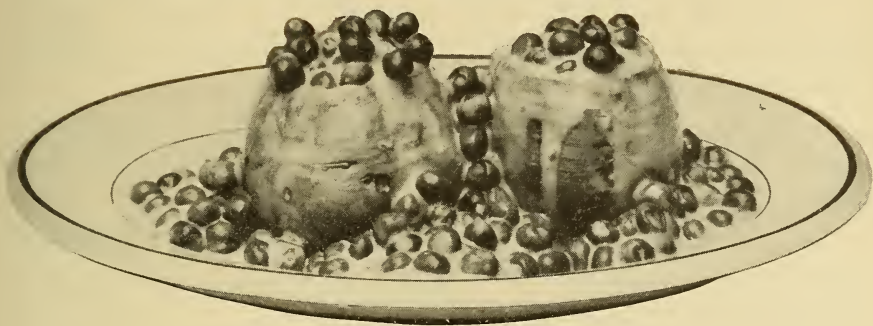
**References:**

Chapter III Foods and Cookery, Kinne & Cooley.

Farmers' Bulletin, 389.

Chapter IX Physics of the Household, Lynde.



**EXERCISE IV.**

## CREAMED DISHES.

**Sauces.**

The earliest form of sauce or gravy that was used with meat was a dressing of honey and spices, later the juice which had been drawn from the meat in cooking, was seasoned and poured over it when it was served. Still later a sauce was made by thickening the meat juice and probably some form of fat was added to make it richer.

The modern cook uses an endless number of sauces as dressings for eggs and vegetables as well as for meats. The cream sauce, white sauce or milk gravy, as it is variously known in different localities, is the commonest and simplest of these. The others are merely variations of this one form. Orion, a Greek, one of the original seven sages of the kitchen is said to have invented the white sauce.

**Value of Sauces in the Daily Diet.**

I. Sauces add variety to the diet by enabling us to serve the same food in several different ways. Take for example boiled cabbage. The ordinary way is to boil the cabbage with a piece of meat and serve it with vinegar. This may be varied

1. By re-heating plain boiled cabbage in white sauce.
2. By arranging boiled cabbage in a buttered baking dish with alternate layers of white sauce, covering with buttered crumbs and baking.
3. By serving on slices of toast with Hollandaise sauce (white sauce to which lemon juice and the yolks of eggs have been added) poured over it.

II. A small amount of food may be made to serve more persons by the addition of a sauce, thus using left-overs that might otherwise be thrown away.

III. The flavor of the strong juiced vegetables is somewhat disguised by the use of a sauce and made more palatable to some.

IV. Considerable food value is added to the dish by the use of a sauce.

Persons of weak digestion should not use thickened sauces too extensively unless they are made in the double boiler according to Method No. II. In the other methods the flour is too thoroughly coated with fat to be easily digested, and milk that has been boiled is less digestible than milk that has been heated in the double boiler and kept below boiling temperature.

## LABORATORY EXERCISES.

### Thin White Sauce.

1½ T. flour	¼ t. salt
1½ T. butter	1 C. milk

### Medium White Sauce.

2 T. flour	¼ t. salt
2 T. butter	1 C. milk

**Thick White Sauce.**

4 T. flour	1 C. milk
2 T. butter	$\frac{1}{2}$ t. salt

Note.—*In making a large quantity of sauce, the amount of butter may be reduced.*

**Methods of Mixing.****Method No. I. (American)**

1. Melt butter in sauce pan, being careful not to scorch it.
2. Add flour and salt and stir until smooth.
3. Place on fire and let it cook until it bubbles.
4. Add milk gradually and let it boil two minutes, stirring constantly. If too thick, add more milk.

**Method No. II. (Invalid Cooking)**

1. Mix flour and salt with a little cold milk. When smooth, add to the rest of the milk, place over hot water and cook thirty minutes, stirring frequently to prevent lumping.
2. Add butter and stir until melted.

**Method No. III. (French)**

1. Rub flour, salt and butter to a paste.
2. Let it cook until it bubbles, then add milk gradually.
3. Boil two minutes, stirring constantly.

**Uses.**

Thin white sauce is used for thickening soups, for moistening escalloped dishes and for cream toast.

Medium white sauce is best as dressing for warmed-over cooked meat and for cooked vegetables.

Thick white sauce forms the foundation of croquettes and souffles.

Tomato sauce may be made by Method No. I, substituting stewed and strained tomato for the milk.

For brown sauce, brown the butter and flour, increase the amount of flour to 3 T. to 1 C. liquid and use meat stock instead of milk.

### **Cream Toast.**

3 T. flour	$\frac{1}{2}$ t. salt
3 T. butter	2 C. milk
6 slices of toast	

1. Make white sauce by one of the above methods.
2. Cut stale bread in  $\frac{1}{3}$ -inch slices.
3. Put slices into wire toaster or on broiler and hold over fire.
4. Hold far enough from the fire so that they will dry thoroughly before they begin to brown. Then hold nearer the fire until they are a deep golden brown.
5. Dip each slice of toast into the white sauce, place on serving dish and pour remaining sauce over all.
6. Serve hot.

### **Creamed Cabbage.**

1 small head of cabbage     $1\frac{1}{2}$  C. medium white sauce.

1. Have water boiling.
2. Take off outside leaves of cabbage.
3. Cut cabbage in quarters and remove core.
4. Separate leaves of cabbage, wash and drop a leaf at a time into the boiling water.
5. Boil fifteen minutes, drain off water and cover again with boiling water and boil until tender.

6. Drain off water and reheat in  $1\frac{1}{2}$  C. medium white sauce.

### **Creamed Turnips.**

3 C. turnips cut in cubes      1 C. medium white sauce.

1. Wash and pare turnips and cut in  $\frac{1}{2}$ -inch cubes.
2. Drop into boiling water, boil ten minutes, drain and cover again with boiling salted water.
3. Cook until tender, then drain and reheat in white sauce.

### **Creamed Peas.**

2 C. shelled peas       $\frac{3}{4}$  C. medium white sauce.

1. Wash and shell peas and put on to cook in small quantity of boiling water.
2. Salt when half done.
3. When tender, drain and reheat in white sauce.

Note.—A teaspoonful of sugar may be added to the water in which the peas are cooked.

*Canned peas may be drained, rinsed, reheated in small quantity of boiling water, drained again and added to white sauce. Be sure to drain and rinse the canned peas to get rid of any chemical preservative that may have been used.*

### **Creamed Dried Beef.**

$\frac{1}{4}$  lb. sliced dried beef      1 C. medium white sauce.

1. Separate the meat into inch pieces and cover with hot water.
2. Let stand two minutes and drain.
3. Just before serving add to white sauce. If allowed to stand in the white sauce for any length of time it may cause it to curdle.

**Creamed Salt Codfish.**

1 C. codfish

1 C. medium white sauce

1. Pull codfish into shreds.
2. Cover with hot water and let stand ten minutes.
3. Drain, add to white sauce and reheat.
4. Garnish with hard boiled eggs and serve with potatoes boiled in the jackets. One tablespoonful of flour may be omitted and a well beaten egg stirred into the sauce just before serving.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. In what way does a sauce add to the food value of a dish?
2. Why would you not serve thickened sauces to children and persons of weak digestion?
3. Write a general recipe that could be followed in making any one of the following sauces:—white sauce, meat gravy, tomato sauce.

CREAMED DISHES

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READING NOTES.



**EXERCISE V.****CREAM SOUPS.****Classification of Soups.**

1. **Meat Soups.** Those with meat stock for foundation as, noodle soup, rice soup, chicken gumbo, bouillon, etc.

2. **Cream or Milk Soups.** Those with milk or white sauce for foundation as, cream of tomato soup, cream of asparagus soup, potato soup, oyster soup, cracker soup, etc.

*Note.—Purees are very thick vegetable soups.*

**General Rules for Preparing Cream Soups.**

1. Boil vegetables with seasonings until soft, then rub through strainer and add to an equal quantity of thin or medium white sauce, just before serving.

2. Reheat but do not boil as the acid in the vegetables will cause the milk to curdle if boiled or allowed to stand long.

3. To keep milk soups from curdling:—

- (a.) A speck of soda may be added to the strained vegetable pulp before it is combined with the white sauce.
- (b.) A sauce may be made of the butter, flour and strained vegetable pulp cooked together, the hot milk being added just before serving.
- (c.) A thickening of corn starch or flour mixed with cold water may be stirred into the strained vegetable pulp, then boiled until smooth. The butter and hot milk should then be added just before serving.

Adding flour or corn starch to these soups keeps the solid part of the vegetable pulp from separating from the liquids and is called “binding” the soup. The thickening must be boiled with the vegetable pulp.

If soup is too thick, add more hot milk; if too thin, a beaten egg may be added just before serving.

One quart of soup will serve four or five persons.

### **Serving Soup.**

Cream soups are suitable for the main course at supper or luncheon, but are too heavy if a full dinner is to follow.

Crackers, toast fingers, croutons or bread sticks may be served with soup. Celery, olives and pickles often accompany the soup course.

Avoid crumbling bread or crackers into soup. One glance at an untidy soup plate filled with soup-soaked bread crumbs will explain the reason for this rule. Crisply toasted croutons or the brittle little oyster crackers may be dropped a few at a time into the soup and eaten before they have time to become soaked and unattractive looking.

In serving soup, each bowl or plate should be heated and filled two-thirds full of soup, then set into a service plate and placed in front of a guest.

Soup is eaten with a round bowl soup spoon or a dessert spoon. The spoon should be placed on the table at the right of the knife, or if the teaspoons to be used later in the meal are on the table, these are placed at the right of the knife and the soup spoon at the right of the teaspoons.

In eating soup, the side of the spoon farthest from you should be dipped into the soup, the spoon should then be raised to the mouth and the soup silently sipped from the **side** of the spoon.

### Value of Cream Soups.

Cream soups are nourishing, easily digested and economical. The tough, indigestible parts of the vegetables are strained out, leaving only the finely divided tender portion to be combined with milk, butter, flour, etc. Vegetables too old or tough to be served in the usual way can be cooked for a long time and after straining used in cream soups. The tender parts of celery or asparagus may be served as a vegetable at one meal and the tougher portions used in a cream soup at another.

The celery leaves may be washed; dried and put away to use as seasoning for soup when celery is scarce or high in price.

### LABORATORY EXERCISES.

#### Cracker Soup.

5 T. powd. crackers	1 C. boiling water
$\frac{1}{2}$ t. salt	1 C. milk
1 slice onion	1 t. butter

1. Scald milk and onion in double boiler.
2. Stir boiling water into the powdered crackers and boil two minutes.
3. Remove onion and add milk to crackers and water.
4. Return to double boiler and cook ten minutes.
5. Add butter and salt and serve hot.

### **Cream of Corn Soup.**

2 C. corn	2 T. butter
2 C. boiling water	2 T. flour
2 C. milk	1½ t. salt
2 slices onion	spk. pepper

1. Chop corn, add water and simmer fifteen minutes, then rub through strainer.
2. Mix flour with 2 T. cold water and stir into strained vegetable pulp. Boil two minutes, stirring constantly.
3. Scald milk with onion. Remove onion and add milk to thickened corn pulp.
4. Reheat but do not boil.
5. Add butter and serve hot.

### **Potato Soup.**

3 medium sized potatoes	1½ t. salt
4 C. milk	spk. pepper
3 T. butter	2 slices onion
3 T. flour	1 t. chopped parsley

1. Make white sauce of butter, flour, salt, pepper and milk.
2. Boil potatoes and onion together. When soft, drain and press through a ricer.
3. Add white sauce gradually to the mashed potato.
4. Reheat but do not boil.

5. Sprinkle chopped parsley over the top and serve hot.

### **Cream of Tomato Soup.**

1 qt. tomatoes	4 T. butter
1 T. sugar	4 T. flour
2 slices onion	1½ t. salt
1 qt. milk	spk. pepper

1. Cook tomato, sugar and onion together, then rub through a strainer.
2. Melt butter, add flour, salt and pepper and cook until it bubbles. Add strained tomato and boil two minutes, stirring constantly.
3. Scald milk and add to tomato just before serving.

### **Cream of Asparagus Soup.**

1 can of asparagus	2 C. milk
2½ C. of water	4 T. butter
1 slice onion	4 T. flour
spk. pepper	1½ t. salt

1. Remove tips of asparagus and save to use as garnish for soup.
2. Cook stalks, water and onion together for twenty minutes then rub through a strainer.
3. Make white sauce of flour, butter and milk and add to strained asparagus.
4. Season with salt and pepper, add asparagus tips and reheat, but do not boil.
5. Serve hot with toast fingers.

**Cream of Salmon Soup.**

1 C. canned salmon	4 C. milk
1½ t. salt	2 T. butter
spk. pepper	4 T. flour

1. Remove bones and skin and pick salmon to pieces. Put through meat grinder or rub to a paste with a wooden spoon.
2. Make a white sauce of butter, flour, salt and pepper and add gradually to the salmon.
3. Reheat and serve hot with croutons.

**Croutons.**

Cut stale bread into one-third inch cubes. Put in pan and bake until a light brown. Stir occasionally so that they will brown evenly.

**Toast Fingers or Imperial Sticks.**

Cut stale bread into one-third inch slices. Cut slices into one-third inch strips and brown in oven.

**Bread Sticks.**

Roll bread dough into strips eight inches long and about the size of a lead pencil. Let rise until twice the size, then bake in quick oven until crisp and brown.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Would it be economy to use half water instead of all milk in making tomato soup? Give reasons.

READING NOTES.

References.

Theory and Practice of Cookery, Williams & Fisher, p. 248.

Home Science Cook Book, Barrows, p. 76.



**EXERCISE VI.****THE DINING ROOM.**

“A separate room for serving meals is one of the luxuries of modern life. Even a generation ago old-fashioned people in England and America used their dining rooms as living rooms. In the Middle Ages the nobleman and his servants ate in the hall. The tables consisted of boards resting on trestles. The seats were narrow benches or stools so made that they could be easily carried away when the meal was over. The meals eaten in private were served in the lord’s chamber. The media-

eval chamber developed into a private suite of living rooms, the outer one of which came to be used as the family dining room. Now a dining room is a part of the house plan of even the workingman's home." (Wharton and Codman.)

As meal time is practically the only occasion in the average American home when the whole family is gathered together, the room where these meals are served, whether it be a separate dining room or one end of the kitchen, should be as cheerful and attractive as possible. Not only should the room and its appointments be pleasing but each member of the family should do his or her share in making the hour at the table the cheeriest, brightest part of the day. Aside from the enjoyment to be gained from a pleasant supper hour, scientists tell us we profit physically as well. Our food digests more readily when we are cheerful and contented.

### **Decoration of the Dining Room.**

Mainly plants and flowers.

Few pictures.

Few ornaments.

No hangings except light, washable curtains.

### **Furniture.**

Plain, substantial furniture of good design should be used—all of the pieces harmonizing with each other and with the general decoration of the room.

### **Necessary Pieces of Furniture.**

1. Extension table.
2. Dining chairs.
3. Buffet or sideboard.
4. Serving table.
5. China closet.

**Floors.**

Hard wood if possible, or

Soft wood with the cracks carefully filled and the floor painted with some good floor paint.

A rug on which the dining table stands is the only permissible form of carpet.

**Daily Care of the Dining Room.**

1. Before starting the breakfast, open the windows and air the dining room.

2. Set the furniture in place and put fresh water on the flowers. Then close the windows and go to the kitchen and start the breakfast.

3. While the breakfast is cooking, set the table.

4. After breakfast, clear the table, brush the crumbs from the floor and rug and wipe the floor around the rug with a dust mop or with a Canton flannel bag slipped over the broom.

5. Dust the furniture with a piece of clean cheese cloth. Be careful to gather the dust into the cloth and not scatter it about the room. Have windows open while dusting.

6 Set furniture in place, close windows and adjust shades.

7. Brush up crumbs around table and air room after each meal.

**Weekly Cleaning.**

Once a week clean dining room thoroughly.

1. Open windows, close doors and see that all food and flowers are taken from the room.

2. Remove linens, cover tables and sideboard with cotton covers kept for the purpose.

3. Roll up small rugs to be cleaned outside.

4. Dust chairs and take into next room.
5. Brush walls with wall brush or bag slipped over broom.
6. Wipe plate rail, tops of doors and window casings.
7. Push dining table to one side of the room, dampen the broom in a solution of borax and water and sweep rug. To keep dust from flying, sweep with short strokes and do not lift broom at the end of each stroke. If center rug is small and easily handled it can be more satisfactorily cleaned out of doors by beating it on the wrong side and then sweeping both sides.
8. Sweep floor with broom and wipe with a clean mop or bag on broom.
9. Wash windows and mirrors with warm water and ammonia. Wipe with soft cloth and polish with soft paper.
10. Remove covers from table and sideboard, take out of doors, shake out the dust, fold and put away.
11. Dust furniture and woodwork with soft cloth.
12. Put out fresh linens, wash and put in place any pieces of china or glass used on the plate rail or sideboard. Avoid an array of glass or china in either place. It is better taste to have the pieces displayed few in number and simple in arrangement.
13. Bring in chairs, set furniture in order, close windows and adjust shades.

NOTES ON LABORATORY WORK.

Why is it necessary to be so careful about raising a dust?

What objections are there to sideboard and plate rail covered with china and cut glass?

## QUESTIONS AND SUGGESTIONS.

1. Mix 2 T. gelatine with 1 C. cold water. Dissolve over hot water and pour into two saucers. Cover tightly and put into the oven and bake for one hour to kill any bacteria or molds that may be on the gelatine. Remove from oven and set into ice box to harden. When cold put on table in dining room or kitchen. Remove the cover from one saucer and leave the other tightly covered. Sweep the dining room without any care in regard to dust. Put the two saucers aside for forty-eight hours. See which has the greatest crop of mold and bacteria at the end of that time.

Whence did the bacteria and mold come?

PICTURES OF GOOD DINING ROOM FURNITURE.



## HOME WORK.

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Date. Room Cleaned. Length of Time. Materials Used. Remarks.

**EXERCISE VII.****TABLE SETTING AND SERVING.**

Neatness, order, cleanliness and consideration for others are the principles that should underly all rules for table service. Even the humblest room with the cheapest of table furnishings will seem attractive if everything is neat and clean and the orderly placing of the utensils and furniture shows that thought and care have been given to their arrangement. It is not necessary to know the latest fad in table etiquette. When at a loss as to the correct thing to do, do that which will be the most convenient and pleasing to your guests. For example—the knives and spoons are placed at the right of the plate because they are used in the right hand—the soup plate is placed on a service plate so that it may be more easily handled—the water glass is filled only three-fourths full so that the water will not spill if the table is accidentally jarred, etc.

**Laying the Table.**

1. The table should first be covered with a silence cloth made of table felt or a heavy, white cotton blanket or a quilted pad made of two thicknesses of unbleached muslin between which is a layer of sheet wadding. This cloth, as its name implies, is to lessen the noise made in placing the dishes on the table, also, to make the tablecloth lie more smoothly and to keep the hot dishes from marring the table. The cloth should be turned under the edge of the table at the corners and securely fastened with safety pins to keep it from slipping when the tablecloth is put on.

2. The tablecloth should be placed over the silence cloth and should be absolutely smooth, straight and even, with the center fold of the cloth exactly in the middle of the table.

3. A few cut flowers or a small fern or a dish of fruit in the center of the table will add to its attractiveness. Only fresh flowers should be used and care should be taken not to have the bouquet or fern so large as to obstruct the view across the table. If flowers are used, select those that will harmonize with the main color in the luncheon. For example, purple asters would not look as well on the table when the meal included tomatoes, beets and possibly cherries as would a vase of red or white asters or a small fern. A little thought in matters of this kind helps to make housework interesting and keeps it from becoming drudgery.

4. A doily or centerpiece should be placed under the center decoration unless the tablecloth is a pattern cloth and has a figure woven in the center, in which case the doily will not be necessary.

5. Usually all of the silver to be used during the meal is placed on the table before the guests sit down. For an elaborate luncheon where a great many pieces of silver would be needed, only the utensils needed for the first course are on the table, the rest are placed as needed.

6. The plate should be placed right side up, one inch from the edge of the table at each place. The knife (or knives if more than one is used), should be placed at right of plate with sharp edge towards the plate; the forks, tines up, at left of plate. The spoons should be at the right of the knife in the order in which they are to be used, the one to be used first, farthest from the plate. The silver should be the same distance apart and the ends of the handles in line with the lower edge of the plate, one inch from the edge of the table.

7. The glass of water is placed at the tip of the knife and the bread and butter plate at the tip of the fork.

8. The napkin should be folded square and placed at the left of the fork with the open corner towards the handle of the fork.

Note.—*The plate, knives, forks, spoons, glass, bread and butter plate and napkin, properly arranged for one person is called a "cover."*

9. A salt and pepper shaker should be placed between each two guests in line with the upper edge of the bread and butter plates.

10. The gentleman of the house is called the host and usually sits at the end of the table nearest the pantry door. The lady of the house is the hostess and sits opposite the host facing the pantry door.

11. If all the serving is to be done at the table, the cups and saucers, the sugar bowl and cream pitcher should be placed in front of the hostess and a stand for the coffee on the table at her right. A carving knife and as many spoons as will be needed in serving the vegetables should be placed at the right of the host. The carving fork should be placed at his left.

12. A plate of butter with butter knife (or butter fork if the butter is served in balls) should be on one side of the table and the bread plate on the other.

### **Serving.**

There are three ways, in which a meal may be served, known as (1) the English style of service in which the food is all served on the table, (2) the Russian style, where all of the courses are served from the kitchen or sideboard, and (3) the compromise style which is a combination of the first two.

The English style is the pleasantest way of serving where there are few guests and not many servants. It adds to the

pleasure of the meal to see a genial host skillfully carving the roast and the simplest dessert gains in flavor when dished by the hands of a smiling hostess.

The Russian form of service is to be preferred if there is a large company to be served, provided there are well-trained servants to attend to the wants of the guests. This form of service lifts considerable responsibility from the host and hostess at the time of serving.

The compromise style is usually used at informal luncheons and frequently in homes where there are no servants it will be convenient to have possibly the salad course or the dessert served in the kitchen and the rest of the meal served at the table.

### **Suggestions to Be Followed Whatever the Style of Service.**

The waitress should see that the dining room is free from dust, well aired, of right temperature (about 70° F) and pleasantly lighted. She must see that everything is in readiness before the meal is announced.

The waitress should stand at the left of the guest who is being served whenever she is passing food from which he is to help himself. At all other times she serves from the right of the guest.

Cups of coffee should be set down at the right, beside the spoons.

Water glasses should be filled without moving them if possible. If it is necessary to bring them closer to the edge of the table, be careful not to touch them near the top.

A folded napkin or a tray covered with a doily should be used to protect the hand in passing dishes. Hold dish low enough to be easily reached by the guests. In passing jellies, vegetables, etc., have spoon so placed in dish that guests may

readily help themselves. In passing cream and sugar have handle of cream pitcher turned towards the guest.

Fill water glasses and place butter on bread and butter plates just before the meal is announced.

Have dishes for hot courses *hot* and for cold food *cold*. Dishes may be warmed in the warming oven or in hot water. Chill in the ice box for frozen desserts.

All of the dishes belonging to one course are removed before the next course is brought in. Remove the largest dishes first then the plates, etc. Never pile dishes, take one in each hand.

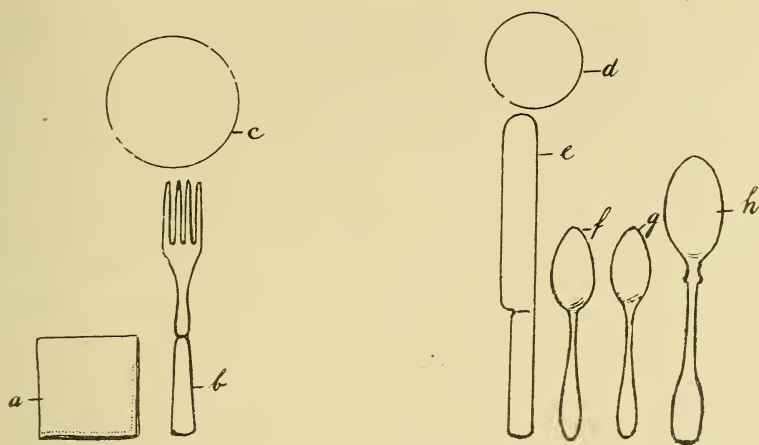
The bread and butter plates should be removed and the table crumbed just before the dessert course.

The glasses of water remain on the table throughout the meal and should be refilled as often as necessary.

### **Serving a Simple Three Course Luncheon, Compromise Style.**

#### MENU.

Tomato Soup		Croutons
	Pickles	
Creamed Beef		Baked Potatoes
	Hot Slaw	
Bread	Butter	Currant Jelly
Canned Cherries		Cake
	Coffee	



a. Napkin

b. Fork.

c. Bread and butter plate.

d. Water glass.

e. Knife.

f. Coffee spoon.

g. Dessert spoon.

h. Soup spoon.

Note.—If a butter spreader is used, place it on bread and butter plate.

1. Put silence cloth and tablecloth on table. Place doily and fern dish or vase of red or white flowers in center of table.

2. Arrange each place like diagram.

3. Place salts and peppers between each two guests and put dish of pickles with pickle fork at one end of the table and dish of jelly with jelly spoon at the other.

4. Arrange cups and saucers, sugar bowl and cream pitcher in front of the hostess.

5. Fill glasses three-fourths full of cold water (do not have ice in glasses) and place butter on plates just before luncheon is announced.

6. On sideboard place as many dessert dishes and plates as will be needed for the dessert course, also extra spoons, knives, forks, etc., in case one is dropped on the floor.

7. On serving table have plate of bread and dish of butter, tray with doily on it and pitcher of water on tray.

8. When guests are seated, bring in soup. Have filled soup plates on service plates. Bring in two at a time, one in each hand. Commence with hostess or the guest of honor. Stand at her right and place plate on table directly in front of her then go to right of next guest and place in same manner.

9. Return to the kitchen and bring two more plates of soup. Place in same way and continue until all have been served.

10. Have croutons in bowl with doily in bottom of bowl. Place tablespoon in dish and going to the left of the one served first with soup, let her help herself to the croutons; then pass to the left of the next guest and so on until all have been served.

11. Place dish of pickles on tray with fork beside it and pass the same as croutons.

12. When all have finished with their soup, remove soup plates on service plates in the same way in which they were placed.

13. When all have been removed, bring in platter of creamed beef and place directly in front of host. Have folded napkin under the platter to protect the hand and as you place it on the table slip the napkin out.

14. Have potatoes in a dish covered with a warm napkin. Place dish at left of platter.

15. Bring in warm plates and place in pile on the side-board. Take one in each hand, stand at right of host and place one plate in front of him. When he has filled the plate take it up, place empty plate in front of him then go to right of person for whom the plate was prepared and place it on the table in front of her.

16. Go to sideboard, get another warm plate, remove filled plate and place empty one in front of host. Place filled plate in front of next guest and proceed in same manner until all are served.

17. Go to kitchen, get dish of hot slaw, place on tray or on left hand with folded napkin under the dish. Place spoon in the dish and go to the left of each guest and allow them to help themselves to the slaw. Return the dish to kitchen when all have been served.

18. Pass bread on plate in the same way.

19. Place jelly on tray with spoon and pass to each guest. Do not commence with the same guest each time.

20. Pass bread, jelly and slaw as often as necessary and see that water glasses and butter plates are kept supplied.

21. If any guest wishes a second helping of meat and potato take his plate to the host and when it is filled, place it again in front of the guest.

22. When all are through with this course, remove meat platter, then potato dish, then carry out the plates, one in each hand, going to the right of each guest.

23. As there is no salad course, the bread and butter plates will be removed next, then the salts and peppers on a tray. Everything should be removed except the glasses, the teaspoons and the coffee service.

24. Crumb the table, using a folded napkin and plate or a crumb tray and scraper.

25. Bring in a bowl of cherries and place in front of hostess with berry spoon beside it.

26. Go to sideboard, place dessert dishes in plates, take one in each hand and standing at right of hostess, place one in front of her. When it is filled with cherries take it up, place

empty dish and plate in front of her. While she is filling that, place filled dish in front of guest and get another empty one from the sideboard, exchange for filled dish and proceed until all are served.

27. Bring in coffee and place on stand at hostess' right.

28. Pass cake on plate with folded napkin underneath.

29. When cups are filled place at right of each guest. If the hostess does not serve the cream and sugar in the coffee, place bowl and pitcher on tray and pass to the left of each guest.

30. If finger bowls are not used the waitress will have nothing more to do except pass the cake a second time and see that the glasses are refilled.

31. If finger bowls are used, remove plates when all are through and place finger bowls which have been half filled with water and placed on plate with doily between bowl and plate in front of each guest.

### **Serving without a Maid.**

If there should be no maid to wait upon the table, this meal could be easily served by members of the family. In that case the bread plate and the butter dish would be upon the table instead of on the serving table.

In the second course the hot plates would be placed in a pile in front of the host and when filled would be passed to those at the table. The slaw should be placed on the table and served on the plates by some member of the family.

The dessert course could either be dished in the individual dishes and placed on the serving table before luncheon was served or it could be served on the table the same as the meat course.

One member of the family could easily carry out the soiled dishes and bring in the next course, then quietly take her place at the table again. This would be excellent training for both girls and boys.

#### NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

Plan a breakfast, lunch and dinner for one day. Make a list of the dishes and silver needed for each. Draw a diagram of a single cover for each, showing the arrangement of the silver and dishes.

Send for dealers' catalogs of table silver and dishes. Paste cuts of the more attractive styles in your book with comments on their good and bad points.



## HOME WORK.

If possible, serve at home (1) a meal as you would if you were the hired waitress, (2) as you would if there were no maid to wait upon the table, (3) a meal where you act as hostess, pouring the coffee and serving the dessert.

Comment in your note book on the results of your experience.

READING NOTES.

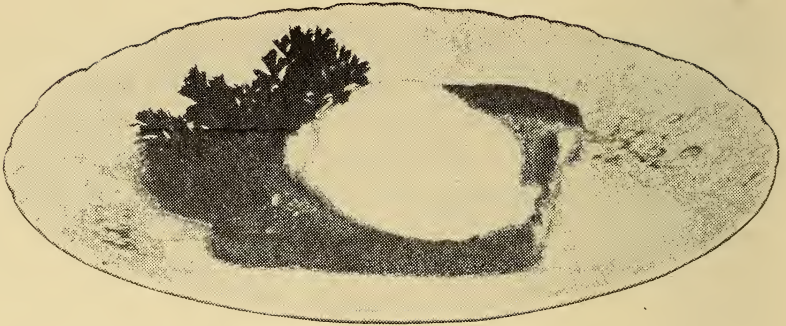
**Suggested Topic:**

Early Table Customs.

**References:**

Good Cheer, Hackwood.

Book of Days, Chambers.

**EXERCISE VIII.****EGGS.**

The common domestic hen's eggs are probably the most widely used form of animal food. The eggs of ducks, geese, guinea fowls, turkeys, some wild birds and even the eggs of the ostrich are used to some extent as food. We also find that turtle's eggs and the eggs of some kinds of fish are considered delicacies by a great many people. Hen's eggs are, however, most commonly used the world over.

The egg industry in the United States is extensive and is increasing in importance. In the last half of the year 1903, we exported 404,600 dozen eggs valued at \$102,000.

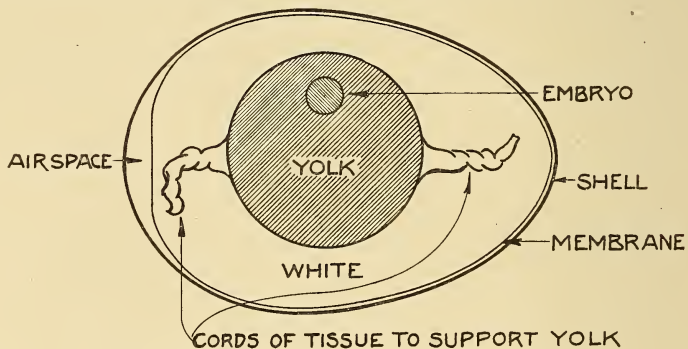


DIAGRAM SHOWING STRUCTURE OF EGG.

(Redrawn from Wilson's Domestic Science in Elementary Schools.)

**Structure.**

The outer covering of the egg, the shell, is of course for protection. It is very brittle and if examined under the microscope will be found to be quite porous. Because of these two facts it is provided with a very tough lining membrane which helps to keep water in the egg from evaporating and also prevents the loss of the contents of the egg should the shell be slightly cracked.

The white of the egg consists of a thick portion surrounded by a thin, watery portion.

The yolk is enveloped in a very thin membrane and is kept in position in the center by two spiral shaped strings of tissue. On the yolk will be found a small, round, light colored spot. This spot is the embryo or germ from which the little chick is to develop. Just as starch is stored in the seed to nourish the little plant when it first begins to grow, so are the yolk and white of the egg placed there to supply the chick with nourishment until it is ready to leave the shell.

**Composition.**

Since the contents of the egg is to furnish the only nourishment the chicken receives until it is fully developed and ready to hatch, the egg must contain all the food elements necessary to sustain life.

About one-sixth of the egg is albumin (a form of protein) used in building the different tissues of the chick. Seventy-four per cent is water to supply the water necessary in these tissues and in the circulating liquids. Fat, the most concentrated form of heat producing food, is there in quite large quantity to furnish heat and muscular energy and lastly there are the mineral salts, especially lime, for the bones and other tissues.

The white of the egg is made up of albumin, water and mineral matter; the yolk contains water, albumin, fat, minerals and some coloring matter.

Composition of edible portion of hen's egg compared with moderately lean meat (Bailey's Sanitary & Applied Chemistry):

	Hen's Egg.	Lean Meat.
Water	73.7	73.0
Fat	10.5	5.5
Protein	14.8	21.0
Mineral Matter	1.0	1.0

By comparing the composition of the egg with that of lean meat you will see that eggs make a good substitute for meat. Eight to ten eggs will weigh one pound and contain about the same nourishment that will be found in one pound of beef.

As there is no starch or sugar present in the egg, eggs should be served with such foods as rice, bread, potatoes, etc., or made into desserts with sugar, tapioca, etc.

### **Spoiling of Eggs.**

If eggs are kept for any length of time, some of the water will evaporate and bacteria-laden air will find its way into the egg. These bacteria soon cause the changes in the egg that we call spoiling. Sometimes if eggs are kept in a warm, damp place mold will form on the outside and push its way through the shell, ruining the contents of the egg as an article of food.

### **Preservation of Eggs.**

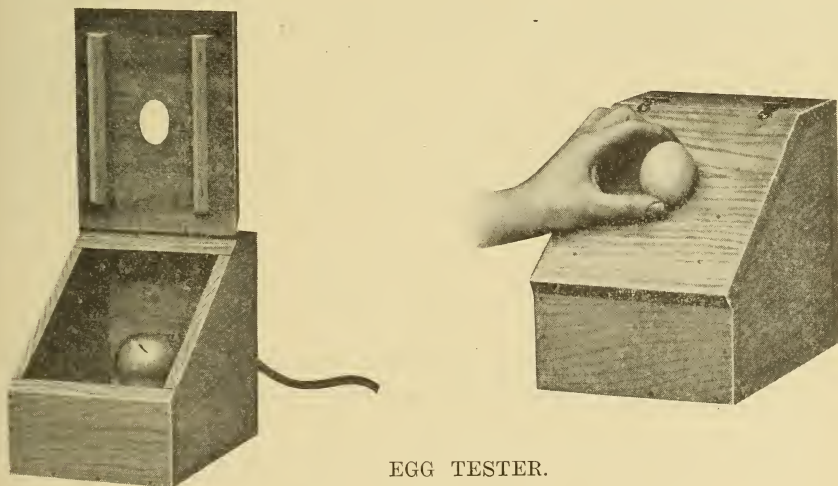
To keep eggs from spoiling we must exclude the air from them. This can be done by coating them with a solution of water glass (silicate of soda). To preserve with silicate of soda, dissolve 4 C. of water glass in ten quarts of water, pack the eggs, small end down, in a stone jar, then pour over them the solution

of water glass until the eggs are completely covered. Cover the jar and place in a cool place. Eggs will keep all winter packed in this way.

As bacteria need warmth if they are to grow and cause food to spoil, eggs can be kept from spoiling by being put in cold storage. Thousands of dozens of eggs are put into cold storage every summer and sold in the cities during the winter.

### Tests for Fresh Eggs.

1. Drop the egg into a bowl of water. If it sinks it is fresh, if it stands on end it is not quite fresh and if it floats it is probably spoiled.



EGG TESTER.

2. Hold the egg in front of a bright light and look through it. If it looks clear it is fresh, if it is opaque it is not fresh. This is called candling and is the test used by dealers before eggs are packed in cold storage.

### Effects of Heat on Albumin.

The word albumin comes from *Albus*, meaning white. Albumin hardens and turns white on being heated.

**Experiments.**

Have two saucepans of boiling water. Break an egg carefully into a saucer, remove one saucepan from the fire, slip the egg into the water. Cover the pan and set aside for eight minutes.

Break another egg into the other saucepan of boiling water. Keep the water boiling for three minutes.

Examine the two eggs and see which is more tender.

Test the temperature of the water in each saucepan.

Albumin becomes firm and jelly-like at 160° F., and gets hard and tough, therefore less digestible, at 212° F., or the temperature of boiling water. If an egg is cooked below boiling temperature long enough (from 45 to 60 min.) the yolk will be dry and mealy and the white will be tender. The old way of boiling an egg ten minutes to have it "hard boiled" produced an egg in which the yolk was dark and the white tough and indigestible.

**Practical Hints.**

The shell of a fresh egg is rough, not smooth and shiny.

Eggs should be kept in a cool, dry place.

Eggs should always be washed before being used.

When using several eggs, break them singly into a cup to be sure they are fresh.

Cover an unbroken egg yolk with water and put it in the ice box and it will keep for several days.

Rinse all egg dishes with cold water before washing them. Hot water hardens the albumin.

The clean shells from uncooked eggs may be used to settle coffee.

## LABORATORY EXERCISES.

**Soft Cooked Eggs.**

1. Put water on to boil.
2. Wash eggs.
3. When water is boiling, place eggs in water, cover the saucepan and remove to the back of the stove for eight to ten minutes, where the water will keep hot **but not boil**.

Note.—*Have the water completely cover the eggs while cooking.*

**Hard Cooked Eggs.**

Follow the recipe for soft cooked eggs. Let the eggs stand in the hot water from forty-five minutes to one hour.

**Goldenrod Eggs.**

4 T. butter	2 C. milk
3 T. flour	4 hard cooked eggs
$\frac{1}{2}$ t. salt	6 slices toast

1. Make a white sauce of the flour, butter, salt and milk.
2. Cut the whites of the eggs into small pieces, add to the white sauce and pour over the toast.
3. Rub the yolks through a strainer over the top of the toast.
4. Garnish with parsley; serve **hot**.

**Creamed Eggs.**

6 hard cooked eggs	2 C. medium white sauce
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1. Cut eggs in halves lengthwise or in  $\frac{1}{2}$ -inch slices crosswise.
2. Add to white sauce, reheat and serve with plain boiled potatoes.

**Scrambled Eggs.**

6 eggs	$\frac{3}{4}$ t. salt
$\frac{3}{4}$ C. milk	2 T. butter

1. Beat eggs slightly. Add milk and salt.
2. Melt butter in upper part of the double boiler, add the egg mixture, place over hot water and stir constantly until it becomes creamy.
3. Remove from fire, turn into hot dish or pour over slices of toast, garnish with parsley and serve immediately.

*Note.—If cooked too long, the eggs will separate and you will have a mixture of hard lumps of egg and water.*

**French Omelet.**

2 eggs	$\frac{1}{4}$ t. salt
2 T. milk or water	2 t. butter

1. Beat eggs slightly, add salt and milk.
2. Melt the butter in a frying pan and pour in the egg mixture. As the egg thickens, lift it slightly with a fork or knife, letting the uncooked part run underneath.
3. When creamy all through roll it up, rolling toward the left side of the pan and turn onto a hot platter. Serve at once.

**Poached Egg on Toast.**

6 eggs	6 slices toast
butter, salt, pepper.	

1. Make toast.
2. Have ready a shallow pan of water that is boiling gently.
3. Break eggs carefully into a saucer and slip them into

the water. **Do not break the yolks.** Have the water cover the eggs.

4. Remove the pan from the fire and let stand until the white is firm and a thin film covers the yolks.

5. Lift the eggs out carefully with a perforated skimmer and place on toast that has been slightly buttered.

6. Dust eggs lightly with salt and pepper and serve immediately.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Why does a stale egg float in water?
2. How many eggs will the average hen lay in a year?
3. At what season of the year are eggs most plentiful?
4. If you were going to raise chickens to sell what would be a good breed to raise?
5. If you wanted them for the eggs would you choose the same kind? See Farmers' Bulletins.





**EXERCISE IX.****MILK.**

Cows have been found to give more milk of a good quality for a given amount of feed and care than any other milk-giving animal. For this reason, wherever the climate is suitable, cow's milk is used almost exclusively. In some parts of the world other kinds of milk are used—goat's milk in the hilly districts of Europe, llama's milk in South America, the milk of the buffalo in India, mare's milk in Russia and camel's milk on the deserts, while in the Arctic regions they usually use the milk of the reindeer.

Two-thirds of all the milk produced in the United States is used for butter and cheese. In the year 1903 there was enough milk and cream sold in the United States to have furnished every man, woman and child with thirty gallons. It has been estimated that milk and cream together furnish sixteen per cent of the total food of the average American family. Every child should take in some form a quart of milk a day throughout the period of growth.

**Composition.**

As milk is the sole food of the young of mammals for a length of time varying from a few weeks to several months, milk, like the egg, must contain all the food elements necessary to sustain life. All milk is made up of protein, fat, sugar, water and mineral matter but there is quite a difference in the proportion of each ingredient found in the milk from different animals. Even the milk of the same animal will differ greatly at different times.

Average composition of cow's milk:

Water	87.0%
Protein (casein and albumin)	3.3%
Fat	4.0%
Carbohydrates (milk sugar)	5.0%
Mineral matter	.7%

While milk is a perfect food for the young animal for which it was intended, the various ingredients are not in the right proportion to form the only food of an adult. There is not enough carbohydrate to furnish the required amount of energy and there is so much water that it would be far too bulky a food for a grown person. Taken with carbohydrate foods, however, it forms a valuable addition to the diet.

The fat of milk is in the form of little globules floating in the milk. These fat globules being lighter than the rest of the milk, rise to the top, forming the yellowish layer known as cream. There is always some milk mixed with the cream and by the process of churning the fat globules are made to separate from the milk and stick together in the form of lumps of butter.

Skim milk (milk from which the cream has been removed) deserves a more important place in the daily dietary than is

usually given it. It contains all the constituents of the milk except the fat and a small per cent of the protein and can usually be substituted for whole milk in cooking. In the cities we generally pay almost as much for cream as we should have to pay for the whole milk from which the cream was taken. It would therefore be economy to buy the whole milk, remove the cream and have the skim milk left to use about the cooking.

Casein and albumin are the two kinds of **protein** found in milk. Casein is the more abundant and forms the greater part of the curd of milk used in making cheeses of all kinds. The albumin is more soluble and will be found in the watery portion of the milk after the curd has been separated from it. The casein can be made to separate from the milk by adding an acid as in the case of the natural souring of the milk or by the use of rennet, a digestive fluid taken from the lining of the calf's stomach.

The whey, after it has been separated from the curd contains the **water**, sugar, albumin, most of the mineral matter and a little of the fat. While the per cent of food material contained in the whey is small, it is sometimes used for invalids and persons of weak digestion. If the white of an egg be dissolved in it and fruit juice added for flavoring it makes a nutritious and palatable food that can sometimes be taken when whole milk could not be digested.

**Milk sugar** is not so sweet as cane sugar and is more easily digested. It occurs in quite a large quantity and is an important commercial product of milk. It should always be used in preparing modified milk for babies. Cane sugar is not a substitute for it.

In the natural souring of milk, certain bacteria, called lactic acid bacteria, get into the milk from the air and change some

of the milk sugar to an acid. This acid gives the sour taste to milk and also causes the casein to separate from the whey. Bacteria work faster when kept slightly warm (from 80° to 100° F.). For this reason we warm the milk in making cottage cheese, so that the curd will separate from the whey more quickly.

The **mineral matter** is more abundant in milk than in most of the common foods. Lime salts, so necessary in building bone, is one of the most important minerals found in the milk.

### Care of Milk.

Milk and butter absorb odors and impurities readily. They should be kept in covered dishes in a **cool, clean place**. Milk dishes should be used for milk only. They should be scalded and then turned upside down to drain and cool before the milk is put into them.

Milk almost always contains bacteria of many kinds. "The amount of bacteria in milk of a given age varies with the conditions; that from clean, healthy cows, with freshly washed udders, milked into well-scalded pails, in a clean place, free from air currents, by persons with clean hands and clothes, if quickly cooled and carefully handled may contain very few, while milk from ill-kept animals, untidily handled in a dirty place may contain enormous quantities." Farmers' Bulletin No. 363.

These bacteria may be killed by **sterilization**. This process however, changes the taste of the milk and makes it less digestible. **Pasteurization** does not injure the milk as much but it only partially destroys the bacterial life in the milk.

The wisest plan is to use milk that you know comes from a perfectly sanitary dairy. In case this cannot be procured,

pasteurize the milk at home until you can obtain clean raw milk.



### Pasteurized Milk.

1. Put milk into scalded bottles.
2. Cork the bottles with cotton that has been baked in the oven until a light yellow. .
3. Put an inverted, perforated pie tin in the bottom of a pail or kettle and set the bottles of milk on the tin.
4. Fill kettle with cold water until it reaches the top of the milk.

5. Heat the water to 160° F. or until small bubbles appear on top of the milk next to the glass.

6. Remove from the stove, cover kettle and let stand for twenty minutes.

7. Take bottles out of hot water and cool in water. Have water slightly warm at first so as not to break the bottles. Keep adding cold water until the milk is cold, then place in ice box until ready to use. Do not remove the cotton stoppers until you are ready to use the milk.

### **Sterilized Milk.**

1. Put milk in clean granite kettle and bring to full boil.

2. Cover tightly and let stand a few hours.

3. Repeat this process three times, then put milk into sterilized bottles and cork with sterilized cotton.

### **LABORATORY EXERCISES.**

#### **Butter.**

1 C. cream

$\frac{1}{8}$  t. salt

1. Put cream into a pint Mason jar and screw cover down tightly.

2. Shake the jar until lumps of fat appear.

3. Scald a wooden spoon or butter paddle, then chill it.

4. Gather the particles of butter into a ball and work with wooden spoon under cold water to wash out the sour buttermilk.

5. Put into bowl and press out the water.

6. Work the salt into the butter and put in a covered dish in a cool place.

**Cottage Cheese No. 1.**

1 qt. sour milk	$\frac{1}{2}$ t. salt
1 T. butter	cream to moisten

1. Remove the cream and put aside to use in moistening the cheese.

2. Heat the milk in double boiler. Let the water in the lower part of the boiler just simmer. If milk gets too hot the curd will be tough and stringy.

3. When the curd separates from the whey, strain through a cheese cloth. Let the whey drip out; do not squeeze dry. If the milk is rather sour, pour cold water through the curd and let it drain out.

4. Add the salt, butter and cream to the curd and stir until smooth.

*Note.—Cottage cheese may be served plain or may have carraway seed or chopped chives, parsley, olives or pimentoes mixed with it. It may be served on a lettuce leaf with a spoonful of mayonnaise or boiled dressing as a salad or it may be used as a filling for sandwiches.*

**Cottage Cheese No. 2.**

1 qt. sweet milk	1 T. butter
1 rennet tablet or 1 T. pepsin	$\frac{1}{2}$ t. salt
cream to moisten	

If you do not like the slightly sour taste of cottage cheese No. 1 or have no sour milk on hand, use the foregoing recipe, No. 2.

1. Heat sweet milk in double boiler to 100° F. or to body temperature.

2. Dissolve the rennet tablet in a little cool milk and stir into the warm milk.

3. Let stand until the curd has set, then stir with a spoon to break up the curds.

4. Strain through cheese cloth and proceed as for Cottage Cheese No. 1.

### Rennet Dessert.

3 C. milk	$\frac{1}{2}$ t. vanilla
3 T. sugar	$\frac{2}{3}$ of one rennet tablet

1. Heat milk in double boiler until **luke warm** or the same as body temperature. (If too warm the rennet will not act.)

2. Dissolve rennet tablet in 1 T. luke warm water. Add this with sugar and vanilla to the milk.

3. Stir well and pour into molds or into cups in which it is to be served and let stand in a warm room to stiffen. When firm set in the ice box to chill. (Do not shake nor stir the custard after it has been put into the moulds or the curds and whey will separate.)

4. Serve plain or with chocolate sauce.

### Chocolate Sauce.

2 T. cocoa	$\frac{1}{2}$ T. cornstarch
$\frac{1}{4}$ C. sugar	$\frac{1}{2}$ C. water

1. Mix cocoa, sugar and cornstarch together.

2. Add water and boil two minutes, stirring constantly.

3. Pour carefully over the custard. (Rennet custard is very tender and breaks easily.)

## NOTES ON LABORATORY WORK.

What other ways are there of using sour cream and milk besides making butter and cheese?

Would it pay to buy cream and milk at retail prices to make butter and cheese? Figure the cost of home-made and factory made butter per ounce.

## QUESTIONS AND SUGGESTIONS.

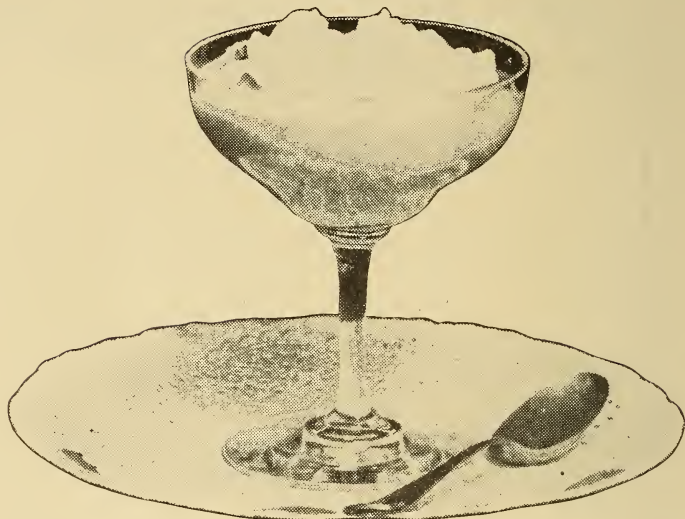
1. Where do the cheese and butter factories get their supplies of milk and cream?
2. What determines the price paid for milk and cream at these factories?
3. Would the skimmed milk be of enough value to the farmer to pay for buying and using a cream separator?
4. Investigate kinds and prices of separators and churns.
5. What is the Babcock apparatus? How is it used?

## READING NOTES.

Read the laws of your state and city in regard to the sale and care of milk and milk products.

Why does the state interest itself in this matter?



**EXERCISE X.****CUSTARDS.**

A custard is a combination of milk and eggs, sweetened and flavored, then baked or steamed. Thudichum, in the *Spirit of Cookery*, implies that custards were originally invented as a cheap substitute for thick cream. Custards now have their own place in cookery, supplying important food elements that would not be supplied by even the best of cream. The word custard was once spelled custade, from the French *crustade*, a pie with a crust. It has now come to mean the filling of the custard pie rather than the crust of the pie.

**Kinds of Custards.**

Custards are either soft or stiff custards according to the way in which they are cooked and the proportion of egg to milk they contain. For soft custards two whole eggs or the yolks

of three are used with one pint of milk. For stiff custards, three whole eggs or five yolks are needed to thicken one pint of milk. Soft custards are cooked in the double boiler and stirred constantly while cooking. They are as thick as heavy cream when done. Stiff custards are baked in greased molds, surrounded by water or steamed until they are firm.

### Composition.

As protein is the chief ingredient in all custards, they should be cooked below boiling temperature. The double boiler is used for soft custards and stiff custards are set into a pan of water to bake. Occasionally starchy foods, such as tapioca, sago, rice, etc., are combined with custards. In that case the starchy food should be cooked for some time before it is added to the egg mixture.

### Tests for Custards.

A soft custard is done (1) when it coats the spoon, (2) when it feels thick as you stir it and (3) when the foam disappears from the top.

A stiff custard is done when a knife dipped into the center of it will come out clean.

### Hints in Making Custards.

1. Custards are always strained to remove the strings of tissue that hold the yolk of the egg in place. Soft custards are strained after cooking, stiff custards before cooking.

2. The milk should be scalded to be sure that it is sweet and to hasten the process of cooking.

3. In combining the egg and hot milk or whatever liquid is used in making the custard, *always pour the hot milk onto the*

*egg*, stirring constantly. Do not pour the egg into the milk. If a thin stream of egg should be poured into the whole quantity of hot milk there would be enough heat in the milk to quickly harden the albumin in the egg and you would have a lumpy custard. If the milk is poured into the egg slowly, the egg will cool the milk enough so that they will combine to form a smooth custard.

4. If a custard is cooked too long or at too high a temperature it will curdle. Should this happen to a soft custard, set the upper part of the double boiler into cold water immediately and beat with the Dover egg beater until the custard seems smooth, then strain it. If a stiff custard should curdle there is no remedy.

5. Add flavoring extracts to soft custards after they are cold, otherwise the heat will cause the flavoring to evaporate.

6. Custards are usually served very cold.

### LABORATORY EXERCISES.

#### Baked Custard.

2 C. scalded milk	4 T. sugar
3 whole eggs or 5 yolks	spk. salt
nutmeg	

1. Scald milk in double boiler.
2. Beat eggs slightly and add sugar and salt.
3. Add hot milk slowly, stirring constantly.
4. Strain into greased cups and grate nutmeg over the top.
5. Set into a pan of water and bake in a slow oven until firm. (Dip a silver knife into the center of the custard, if it comes out clean the custard is done.)
6. Set in ice box to chill.

7. When cold turn out of molds and serve plain or with preserved fruit. If the custard has been made with the yolks of eggs, it may be served with a soft custard sauce made with the whites, making a yellow and white dessert.

### Soft Custard.

2 C. milk	4 T. sugar
2 eggs or 3 yolks or 3 whites	spk. salt
$\frac{1}{2}$ t. vanilla	

1. Scald milk in double boiler.
2. Beat eggs slightly and add sugar and salt. (If the custard is made with the whites of the eggs add 2 T. of the cold milk to them before beating to keep them from being frothy.)
3. Add hot milk slowly, stirring constantly.
4. Cook in double boiler until thick. Stir while cooking to prevent lumping.
5. Remove from fire, strain and when cold add vanilla.
6. Serve as sauce for puddings, baked custards, etc., or may be served plain with cake as a simple dessert.

### Floating Island.

2 C. scalded milk	spk. salt
3 egg yolks	$\frac{1}{2}$ t. vanilla
4 T. granulated sugar	3 egg whites
3 T. powdered sugar	

1. Make soft custard of first five ingredients.
2. Just before you are ready to serve, beat the whites of the eggs as stiffly as possible, then add the powdered sugar. (If allowed to stand long after being beaten the whites will settle and become watery.)
3. Pile the whites on the custard and serve cold.

Note.—*Cocoanut or boiled rice may be added to the custard before the whites are put on or the cocoanut may be sprinkled over the whites.*

### Tapioca Cream.

2 T. minute tapioca or	$\frac{1}{3}$ C. sugar
4 T. pearl tapioca	spk. salt
2 C. scalded milk	1 t. vanilla
2 eggs	

1. Cook tapioca in milk until it is transparent. (The pearl tapioca will take longer to cook than the minute tapioca.)
2. Beat eggs and add sugar and salt.
3. Pour hot tapioca over the egg mixture, stirring constantly.
4. Cook in double boiler until it thickens.
5. When cool add flavoring. Serve cold.

Note.—*Tapioca cream may be made with the yolks of the eggs and a meringue made of the whites the same as for Floating Island. Fruit tapioca may be made by pouring the tapioca custard over any kind of sliced fruit, either fresh or canned.*

### Strawberry Custard.

2 C. scalded milk	$\frac{1}{2}$ t. vanilla
3 egg yolks	3 egg whites
4 T. sugar	3 T. powdered sugar
spk. salt	1 C. preserved strawberries
	stale cake

1. Make custard of first five ingredients.
2. Cut stale cake in triangular shaped pieces and cover the bottom of a glass dish with them.

3. Add layer of strawberries then another layer of cake and pour the custard over all.

4. Make a meringue of the whites and pile on top of the custard just before serving. Serve very cold.

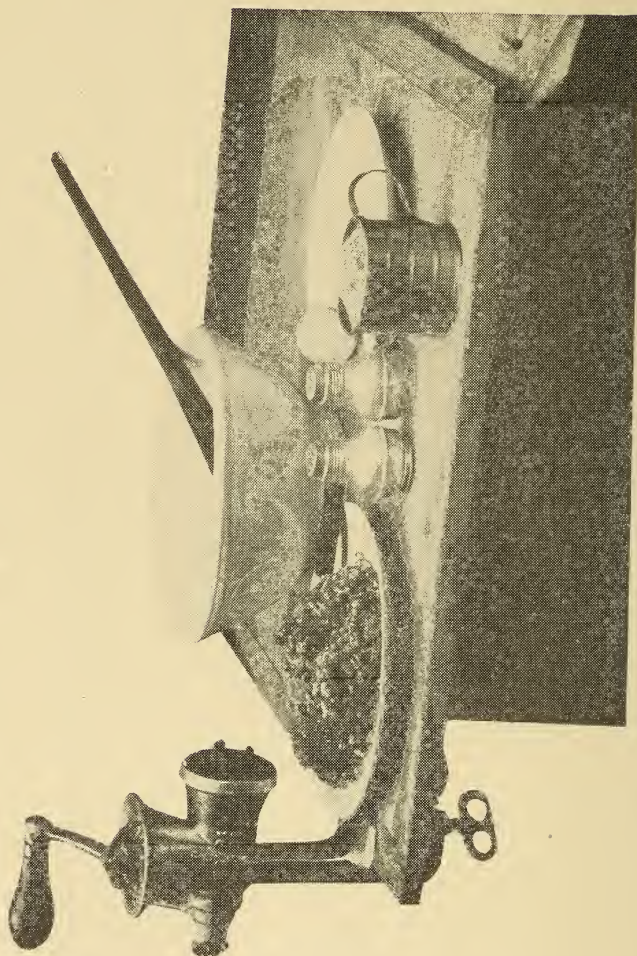
NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. What is tapioca?
2. What is the difference between pearl tapioca and minute tapioca?
3. Why do you cook the tapioca in the milk before adding the eggs?

READING NOTES.





HAMBURGH STEAK.

**EXERCISE XI.****MEAT.**

The word meat usually means the flesh of cattle, pigs and sheep. The word poultry is used for the flesh of chickens, geese, turkeys and all domestic fowls; while the flesh of wild animals such as deer, moose, rabbits, quail, partridges, etc., is called game.

The market name for the flesh of the ox is beef; calf is veal; hog is pork; sheep is mutton; lamb is lamb; and deer is venison.

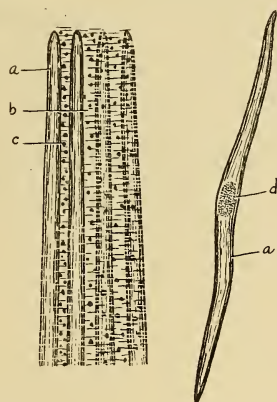
**Structure.**

DIAGRAM SHOWING STRUCTURE OF MEAT.

a. Muscle fiber. b. Connective tissue. c. Fat globule.

Under the microscope, lean meat will be seen to be made up of muscle fibers lying very close together, wrapped with a thin, tough membrane called connective tissue. Between the fibers are fat globules in greater or less quantity according to the age and condition of the animal. These muscle fibers are tubes filled with protein. When the animal is alive the protein is in a liquid

form. Soon after the animal is killed the protein thickens and the muscles become stiff and hard. If the meat is allowed to hang in cold storage for a number of days the protein again becomes liquid and the walls of the tubes become softer and more tender.

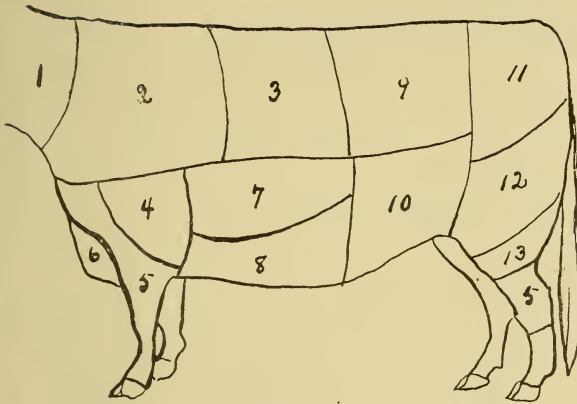
Muscle fibers vary in length. The shorter the fiber the more tender and digestible the meat. Meat will be more tender when it is cooked if it is cut across the grain of the meat or at right angles to the length of the fibers.

The older the animal and the more the muscle is used the thicker will be the walls of the muscle fibers and the more connective tissue there will be around the fibers, consequently the meat will be tougher. This meat is juicier and richer in flavor, however, than the more tender portions. Also the kind of feed upon which the animal has fed affects the flavor and tenderness of the meat.

### Cuts of Meat.

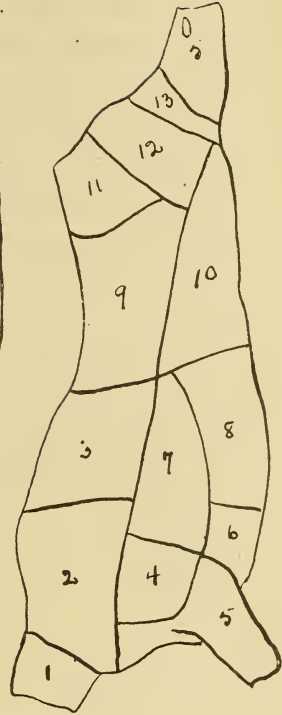
The methods of cutting up an animal for the market and the names by which the different cuts are known vary somewhat in different localities. The following diagrams will give the relative location of the more common cuts of beef, veal, lamb and pork, both in the animal before it is dressed and in the dressed side as it hangs in the meat market.

## USES OF DIFFERENT CUTS.



BEEF.

- |                  |                         |
|------------------|-------------------------|
| 1. Neck          | 8. Navel                |
| 2. Chuck         | 9. Loin                 |
| 3. Ribs          | 10. Flank               |
| 4. Shoulder clod | 11. Rump                |
| 5. Shank         | 12. Round               |
| 6. Brisket       | 13. Second cut of round |
| 7. Plate         |                         |

**Beef.**

Neck—soups and stews.

Chuck—roasts, pot roasts and steaks.

Ribs—the first six, beginning at the loin are used for roasts. The third, fourth and fifth ribs are the best and are called prime ribs.

Short ribs—the lower ends of the rib roasts are used for braising.

Shoulder clod—roasts and pot roasts.

Shank—soups.

Brisket—corning and stews.

Plate and navel—corning and stews.

Loin—steaks (sirloin and porterhouse).

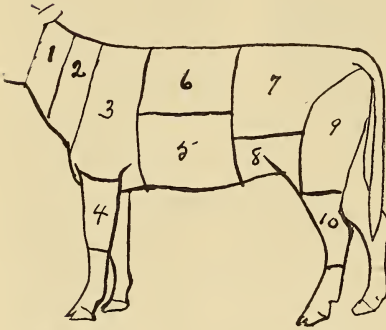
Flank—corning, flank steak.

Rump—steaks, roasts, pot roast and boiling beef.

Round—steaks and Hamburg.

Tongue—boiled either fresh or salted.

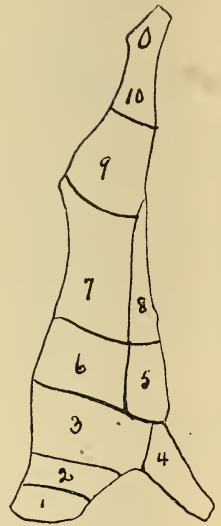
Tail—oxtail soup.



VEAL.

1. Neck
2. Chuck
3. Shoulder
4. Fore shank
5. Breast

6. Ribs
7. Loin
8. Flank
9. Leg
10. Hind shank



### Veal.

Head—mock turtle soup.

Neck—stews and pot pie.

Shoulder—roast or chops.

Breast—stews and roast (stuffed).

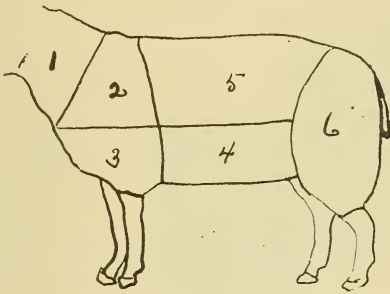
Ribs—chops.

Loin—chops; thick end—roasts.

Leg—upper part, veal steak or cutlets; lower part—roast or fillet.

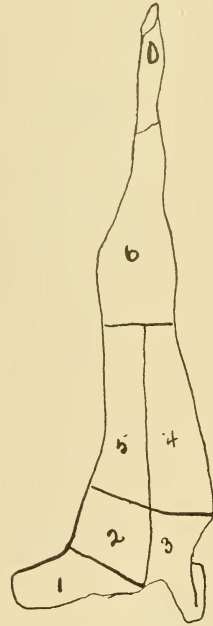
Shank or knuckle—soups and stews.

Feet—calf's-foot jelly.



LAMB.

- |             |          |
|-------------|----------|
| 1. Neck     | 4. Flank |
| 2. Chuck    | 5. Loin  |
| 3. Shoulder | 6. Leg   |



### Lamb.

Very young lamb, sometimes called "hot-house lamb," whole forequarter or whole hindquarter used for roast.

When it is a little older, the rib chops are cut off making a short forequarter roast. The hindquarter is used as a roast the same as in "hot-house lamb."

Just under a year old:

Neck—broth and stews.

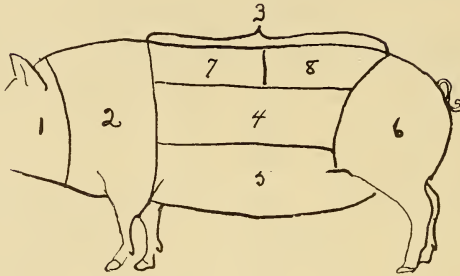
Chuck—chops and stews.

Shoulder—roast.

Flank—stews and breading.

Loin—chops.

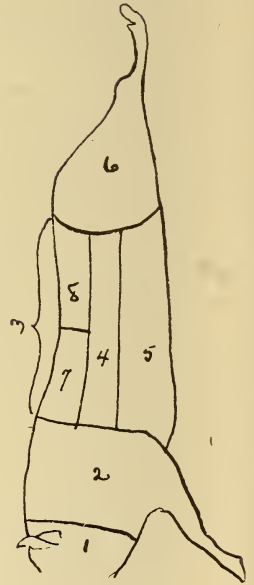
Leg—roasts.



PORK.

1. Head
2. Shoulder
3. Back
4. Middle cut

5. Belly
6. Ham
7. Ribs
8. Loin



### Pork.

Head—head cheese or souse.

Shoulder—roasted fresh or pickled and smoked and sold as New England ham or cottage ham.

Back—roast.

Middle cut—spareribs; the outer layer of fat is cut off and used for lard.

Belly—salt pork and bacon.

Ham—roasted fresh or pickled and smoked.

Upper part of ribs—chops or roast.

Loin—chops or roast.

Fat—lard.

Trimnings of lean from the shoulders, hams, etc., used for sausage.



CHUCK STEAK.

### Beefsteaks.

The most common beefsteaks are

1. The **chuck steak** is found in the region of the shoulder blade. It is somewhat stringy and the lean is streaked with fat. It usually contains an "L" shaped bone, which is a cross section of the shoulder blade.



PORTERHOUSE STEAK.

2. The **porterhouse steak**, sometimes called short steak, tenderloin steak or Delmonico steak, is found between the ribs and the hip bone, and has a "T" shaped bone in it. The cuts nearest the ribs have meat only on one side of the bone. When the cut is far enough back to reach the tenderloin muscle there will be meat on both sides of the bone and the further back the cut is made, the larger will be the tenderloin part of the steak. This is the tenderest, but not the best flavored part of the animal. It is also the most expensive cut.



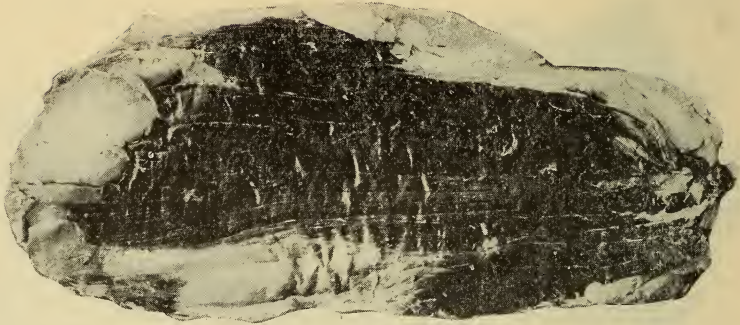
LOIN STEAK.

3. **Loin steak** is found in the region of the hip bone. It will contain a round bone, a broad flat bone or a long bone according to the cut. This is a tender, good flavored steak.



ROUND STEAK.

4. **Round steak** is cut from the upper part of the hind leg. It is oval in shape and contains a small round bone.



FLANK STEAK.

5. There are two **flank steaks** in each animal, lying next to the inner surface of the flank. This steak has no bone, is oval in shape, dark in color, with the muscle fibers running lengthwise.

**Composition.**

Meat and poultry supply sixteen per cent of the total food material, thirty per cent of the protein and fifty-nine per cent of the fat in the American dietary. The carbohydrate foods supply a larger per cent of protein in the average diet than does meat, but the protein found in these vegetable foods is generally admitted to be in a less available form. Meat, therefore, is really our most important source of protein food, though it is also a very expensive source.

**Average Composition of Very Lean Beef.**

Water	75.90%
Protein (myosin, albumin, fibrin)	18.36%
Gelatine	1.64%
Extractives	1.90%
Fat	.90%
Minerals	1.30%

Meat contains a large amount of water but, unlike the carbohydrates, it does not take up more water in cooking. Even when cooked in water it tends to lose rather than gain in weight.

Gelatine is obtained from the connective tissues of the meat and the cartilage of the bone by long boiling. It is the gelatine that has been drawn from the meat and bone that often causes the broth from veal to stiffen like jelly when cold. Gelatine has somewhat the same chemical composition as protein but it will not build new tissue. It will furnish heat and energy.

The extractives give flavor to the meat and act as stimulants. Beef extracts and cleared soups contain only the extractives and a little gelatine. They do not contain any appreciable amount of nourishment.

Even lean meat contains a small amount of fat, though it may be invisible to the naked eye. Very fat meat is not as digestible as lean meat, probably because the fat forms a coating around the protein and prevents the action of the digestive juices.

The muscle tubes are filled with the "juice" of the meat which is made up of protein, extractives, minerals and water. As the juice contains a large per cent of the nutriment and almost all of the flavor it is important to know how to retain the greater part of it in the meat during the preparation of the meat for the table. A few experiments will give some rules to follow.

Ex. 1. Put a piece of raw beef into half a glass of water and let it stand ten or fifteen minutes. Notice the color of the water. Heat the water and notice the coagulated albumin floating on the surface.

Ex. 2. Take a piece of meat the same size as the one used in the previous experiment, cut it in small pieces and put it into half a glass of water and let it stand the same length of time. Which is the deeper color? Which contains more albumin?

Ex. 3. Put two pieces of beef on white plates. Sprinkle one liberally with salt and let both stand ten minutes. Notice the juice around the piece that was salted.

Ex. 4. As meat is largely protein, we would expect to cook it below boiling temperature to keep it from being tough. Put a piece of meat in a cold skillet, place the skillet on the stove where the meat will cook very slowly. Notice the moisture in the pan around the meat.

Ex. 5. Take another piece of meat, heat the pan very hot and sear the meat on all sides, then turn the fire down to finish cooking. Notice that there is almost no moisture in the pan around the meat. The coating of albumin formed by searing the meat on all sides holds in the juices.

In broiled, roasted or boiled meat we wish to keep the juices in the meat; in soups we wish to draw all of the juices out into the broth, and in stews we want part of the juice in the meat and part of it in the gravy.

### **Cooking of Meats.**

Meat is cooked to give it a better flavor and make it more palatable, to soften the connective tissue and to kill any parasites that may be in the meat.

Beef and mutton may be served rare, that is, the inside of the meat should be pink in color. If it is purple it has not been cooked enough, if it is white it has been cooked too much. Veal and pork should be well done.

Only the tenderest cuts should be broiled or roasted. The tougher parts need long, slow cooking in water. If a small amount of vinegar be added to the water in which meat is cooked it will help to soften the fibers and make the meat more tender. A tablespoonful of vinegar spread over a steak half an hour before it is cooked will make it less tough.

*Frying* is cooking in fat enough to float the food.

*Sauteing* is cooking in a small amount of fat. (Often improperly called frying.)

*Broiling* is cooking with just enough fat to keep the food from sticking to the pan or broiler.

*Note.*—*Broiling may be done over the coals or under the gas flame or in an iron frying pan. In pan broiling the fat should be drained off as fast as it cooks out of the meat. Steaks or chops for broiling should be cut at least one inch thick.*

## LABORATORY EXERCISES.

### Pan Broiled Steak.

1. Wipe the steak on all sides with a cloth wrung out of cold water.
2. Heat a cast iron frying pan almost red hot, rub a piece of suet over the pan and put in the meat.
3. Cook it on one side for ten seconds then turn it over and cook the other side for ten seconds. When it is well seared on all sides reduce the temperature and let it cook a little more slowly until the meat is pink on the inside, turning it occasionally. Test it by cutting into the meat next to the bone.
4. Season with salt, pepper and butter and serve on a *hot* platter immediately.

**Hamburg Steak.**

1 lb. chopped beef	$\frac{1}{4}$ t. pepper
1 t. salt	2 T. chopped parsley
1 t. lemon juice	$\frac{1}{2}$ C. crumbs

1. Wipe meat with a wet cloth and put through the food chopper.

2. Mix all ingredients together, form into balls one inch thick and broil.

*Note.*—Do not buy ready-ground meat. Buy the meat and grind it yourself. The butcher will not wash the meat before he grinds it and his chopper may not be clean.

**Creole Steak.**

1 lb. chopped round	1 egg yolk
$\frac{1}{2}$ C. tomato pulp	1 t. salt
$\frac{1}{2}$ C. bread crumbs	$\frac{1}{4}$ t. pepper
1 slice onion	

1. Wash and grind meat.
2. Mix ingredients together and form into loaf.
3. Bake in covered pan in moderate oven  $\frac{1}{2}$  hour, then uncover and brown.
4. Serve with tomato sauce.

*Note.*—See Exercise II for recipe for Tomato Sauce.

**Beef Stew.**

$1\frac{1}{2}$ lbs. beef	3 carrots
6 small potatoes	3 T. flour
1 onion	salt and pepper

1. Wash meat and cut in one inch cubes.

2. Melt some of the fat in the bottom of the pan, add one-third of the meat and brown in the fat.

3. Add the rest of the meat and enough cold water to cover.

4. Bring quickly to the simmering point and simmer until meat is slightly tender.

5. Add vegetables, salt, and pepper and cook until the vegetables are done.

6. Remove the vegetables and meat from the liquid, make a smooth paste of the flour and a little cold water and add to the liquid. Let boil until slightly thick, stirring constantly.

7. Arrange meat and vegetables in the center of a hot platter and pour the gravy over all.

### Beef Pot Roast.

3 lbs. of beef (rump or shoulder clod).

1 C. tomatoes                      1 large onion

1 rounding t. salt

1. Wipe meat with wet cloth.

2. Heat kettle very hot. Melt some of the fat and sear the meat on all sides.

3. Slice the onion in the bottom of the kettle, place the meat on the onion and pour the tomato over the meat.

4. Cover the kettle closely and place on the back of the stove where the meat will cook slowly for two and one-half hours. Add salt when meat has been cooking one hour.

5. When the meat is done remove to a hot platter.

6. Add a small amount of water to the broth in the kettle. Make a smooth thickening of flour and water and add to the broth. Boil two or three minutes, stirring constantly.

7. Strain gravy to remove bits of onion and tomato.

**Veal Loaf.**

2 lbs. chopped veal	3 T. cream or milk
$\frac{1}{3}$ lb. chopped fat	1 t. pepper
salt pork	2 t. salt
$\frac{1}{2}$ C. cracker crumbs	1 egg well beaten

1. Wash the meat and remove the skin, bone and membrane. Put through the food chopper.
2. Add the rest of the ingredients, mix well and pack into a well greased bread pan.
3. Cover with greased paper and bake in slow oven two hours.
4. When cold remove from pan and slice thinly.

**Broiled Bacon.**

1. Scrape bacon, slice very thinly and remove rind.
2. Place slices on a fine wire broiler, place broiler over a dripping pan and bake in a hot oven until the bacon is crisp and brown, turning once.
3. Drain on soft paper.
4. Serve with poached egg and apple sauce.

Note.—*Bacon may be pan broiled if the fat is poured off as fast as it cooks out of the meat.*

**Apple Sauce.**

6 apples	$\frac{1}{3}$ C. sugar
$\frac{1}{2}$ C. water	spk. nutmeg

1. Wash, pare, core and slice apples.
2. Put into porcelain kettle, add water and cook until apples are very soft.
3. Add sugar and nutmeg, stir until sugar is dissolved, then beat with wire spoon until light.

## NOTES ON LABORATORY WORK.

1. How would you wash a piece of meat before cooking it?

Answer:

2. How would you regulate the temperature of the oven for a roast?

Answer:

3. When would you salt a steak?

Answer:

4. How would you form the coating of albumin on the outside of a piece of boiling beef to prevent the escape of the juices?

Answer:

5. What temperature would you have the water into which you put the meat for soup?

Answer:

6. When would you salt it?

Answer:

7. At what temperature would you cook it?

Answer:

8. What difference would you make in the preparation of a stew?

Answer:

## QUESTIONS AND SUGGESTIONS.

1. What is the federal government doing to protect us against the sale of unwholesome meat?
2. If the government pays for this inspection why does the consumer have to pay a higher price than he would if the meat were not inspected?
3. Against what dangers are we guarded by these precautions of the Department of Agriculture?
4. Draw a map of the United States and locate the chief beef-packing centers.

READING NOTES.

Suggested Topics:

Cattle Raising in the U. S.  
Argentine Beef.



**EXERCISE XII.****BEVERAGES.**

The word beverage comes from the French word, meaning to drink. We drink to satisfy thirst and as thirst is the natural craving of the body for water, pure water should be a part of every one's daily diet. We have been so long accustomed to pleasing the appetite with the flavor of different kinds of beverages that we have almost lost sight of the fact that their chief value is in the water that they contain. Some of these flavoring materials, however, have a stimulating and refreshing effect and some have a slight food value. Tea, coffee, and cocoa are the most widely used beverages.

**TEA.****History.**

Tea has been grown in China and Japan for more than 1,500 years, and, although it was not introduced into Europe

until the seventeenth century, it is now used daily by more than half of the inhabitants of the world. Great Britain uses more tea than any other English speaking nation. China, Japan, India, Ceylon and Java are the greatest tea growing countries. A small amount of tea is grown in the United States in the Southern and Gulf States. Farmers' Bulletin No. 321 gives an interesting account of our "Home Grown Tea."



TEA PLANT.

a. Pekoe. b. Souchong. c. Congou.

**Manufacture.**

Tea is made from the young leaves of the tea plant, a flowering shrub belonging to the camellia family. The many different varieties of tea may all come from the same plant, the size of the leaf, the care in handling and picking and the method of curing contributing to the differences in the teas when they are finally ready for market.

The tea made from the first tiny leaves on the plant is called

Pekoe or Flowery or Orange Pekoe. The word pekoe means hair, the young leaves being covered with a long silky hair. This makes the finest flavored tea and is very expensive, sometimes bringing as much as twenty dollars a pound. The leaves next lower down on the stalk are used for Souchong tea and sometimes the still larger leaves are used for a tea called Congou. Each plant furnishes from three to four pickings a year.

Any of these teas may be black or green according to the way in which they are cured.

For green tea the leaves are put into ovens to be roasted as soon as they are picked. They are then rolled by hand and again roasted for several hours. When the tea is ready for market it is a dark green color. Artificial coloring is sometimes used but the United States government has now passed a law prohibiting the sale of artificially colored teas in this country.

The leaves for black tea are allowed to stand in the sun to wither after picking. They are then worked by hand and moistened, then left in piles to ferment. They are finally dried in a charcoal furnace. During this drying or roasting process the leaves turn black.

These teas are then sorted and packed in lead-lined boxes ready for shipping to foreign markets.

### Composition.

The most important ingredients of tea are theine, tannic acid and a light oil that gives to the tea its characteristic odor. The theine is a mild stimulant that is beneficial to adults if not taken to excess. Tannic acid is the same substance that is extracted from tanbark and used in the manufacture of leather. When taken into the stomach it injures the lining of the stomach and hinders digestion. It also prevents the wear-

ing out of body tissue. There is much less tannic acid in black tea than in green tea.

## COFFEE.

### History.

Coffee is supposed to get its name from Kaffa, a province of Abyssinia where the tree probably originated. There is no coffee grown in the United States, but we use more of it than any other country.



COFFEE PLANT.

a. Blossom. b. Berry. c. Pulp. d. Bean.

**Manufacture.**

The coffee tree grows in all tropical countries. It is an evergreen tree with fruit that resembles our cherry except that each berry usually contains two seeds with the flat sides towards each other.

The berries are picked from the trees and taken to the factories where the pulp is cleaned from the seeds. The seeds are then dried in the sun for several weeks after which the two closely fitting husks or skins surrounding the seeds are removed. The seeds are then sorted according to size and packed into bags ready for shipment. All of the work of cleaning and sorting is now done by machinery though much of it used to be done by hand. The raw coffee bean is of an olive green color and is comparatively tasteless. It must be roasted to a rich brown color to bring out the appetizing flavor and fragrance that we are accustomed to.

Mocha and Java are the two best known brands of coffee. Very little of the so-called Mocha coffee ever grew in Arabia, and but little of the Java coffee ever saw the island of Java, the names being merely given to certain kinds of coffee beans.

**Composition.**

Coffee contains caffeine, a substance similar to the theine in tea, tannic acid and an aromatic oil besides several other less important ingredients. The effect of coffee on the body is very much like that of tea. Its stimulating power and action on the tissues of the body being beneficial to a grown person if not taken to excess, but decidedly harmful to a growing child.

**Buying Coffee.**

After coffee is roasted, it loses its flavor rapidly, especially if it has been ground. For this reason for family use it should

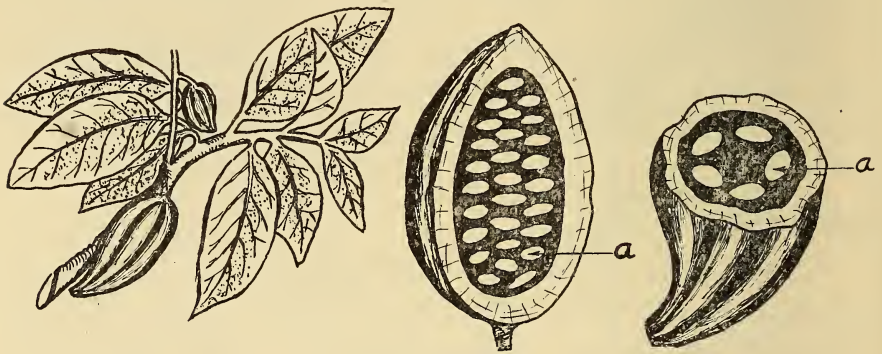
be purchased in small quantities and kept tightly covered. If it can be roasted and ground at home of course it will be less liable to lose its flavor.

For filtered coffee the grains should be pulverized and for boiled coffee they should be ground coarse or medium.

## COCOA.

### History.

Mexico is the home of the cacao tree from which we obtain chocolate and cocoa. Cortez found the Aztec Indians using this delicious drink when he conquered Mexico. He carried it back with him to Spain and from there its use has spread all over the world. Several hundred million pounds of cacao beans are used every year.



COCOA PLANT.

a. Cocoa bean.

### Manufacture.

Chocolate is made from the seeds of the cacao tree. The seeds occur in even rows inside a cucumber-shaped pod from eight to twelve inches in length, each pod containing from

twenty to forty seeds. When the pods are ripe they are cut from the trees by means of knives on long poles. The seeds are removed from the pods and allowed to ferment to get rid of part of the bitter flavor that is characteristic of the unfermented seed. They are then roasted and shipped to the various chocolate factories. Here the shells are removed and the inner part of the bean broken up into cocoa "nibs."

In the manufacture of bitter chocolate, the cocoa nibs are run through hot rollers and ground to a soft paste which is then run into molds and allowed to harden. If sweet or flavored chocolate is to be made the sugar and flavoring are added before the paste is poured into the molds.

The fat in the chocolate is objectionable to some people, so a large amount of this fat is removed by means of pressure and the dry substance left is then ground to a powder and sold as cocoa. The fat is sold as cocoa butter to be used for ointments, salves, etc.

### Composition.

Cocoa contains a stimulant called theobromine, similar to the theine and caffeine in tea and coffee, though its stimulating effect is believed to be less than that of tea or coffee. Cocoa also contains fat and starch in quite large quantities, so that cocoa, unlike tea and coffee, is a real food. Cocoa nibs contain about fifty per cent fat and from eight to twelve per cent starch.

### Hints in Making Tea, Coffee and Cocoa.

1. One heaping T. coffee, one level t. tea or one rounding t. cocoa to one C. liquid is the proportion usually allowed to each person.

2. Tea should *never* be boiled. If it is boiled it will contain enough tannic acid to make it unfit to be taken into the stomach.

3. Cocoa should *always* be boiled to cook the starch.
4. Sometimes a small amount of cornstarch is mixed with the powdered cocoa before cooking to make it seem richer and creamier; one-half t. cornstarch to each rounding t. cocoa.
5. A few drops of vanilla added to the cocoa just before it is served improves the flavor for some.
6. A spk. of salt added to coffee and to cocoa will help bring out the flavor.
7. When milk, instead of cream, is used with coffee it will seem richer if it is heated before being added to the coffee.

### LABORATORY EXERCISES.

#### Hot Tea.

3 rounding t. tea      6 C. *boiling* water

1. Put freshly drawn water on to boil.
2. As soon as it is boiling scald an earthen or granite teapot, put in the tea and pour the boiling water over it.
3. Let stand five minutes then pour tea into cups or into another teapot. If the water is allowed to stand longer on the tea leaves more tannic acid will be drawn out.

Note.—*If the tea is too strong weaken with boiling water. Tea may be served plain or with cream and sugar or with thin slices of lemon and sugar. At afternoon teas, whole cloves or accasia buds are sometimes served in tea.*

#### Iced Tea.

3 rounding t. tea      5 C. boiling water  
cracked ice

1. Scald teapot and make tea according to direction for hot tea.

2. When tea has steeped five minutes pour into a pitcher and let cool.

3. Before serving, add cracked ice and serve with thinly sliced lemon and sugar.

**Boiled Coffee.**

6 heaping T. coffee	2 egg shells or 1 egg
1 C. cold water	5 C. boiling water

1. Scald coffee pot.
2. Mix one-half C. cold water, crushed egg shells and coffee together and put into coffee pot.
3. Pour on boiling water and let boil three minutes.
4. Add remainder of cold water and let stand five minutes to settle.

**Cold Water Coffee.**

6 heaping T. coffee    6 C. cold water

1. Scald coffee pot.
2. Put coffee in muslin bag and put into coffee pot with cold water.
3. Bring slowly to boil and let boil three minutes.
4. Remove from fire and let stand one minute. Put back on stove and let boil three minutes more. Remove bag and let coffee pot stand where coffee will keep hot but not boil until ready to serve.

**Filtered Coffee.**

6 heaping T. pulverized coffee    6 C. boiling water

1. Put strainer in coffee pot and put coffee into strainer.
2. Place coffee pot on stove and pour the boiling water

through the coffee  $\frac{1}{2}$  C. at a time. After pouring on  $\frac{1}{2}$  C. cover the coffee pot and allow the water to drip through slowly, then add another half cup and repeat until all the water has been added.

3. If stronger coffee is desired or if the coffee has not been finely ground, pour the coffee out of the coffee pot and re-filter it.  
**Iced Coffee.**

Make coffee by any of the above methods, then pour into a pitcher and allow to cool. Add cracked ice and serve in glasses with cream and sugar.

### COCOA.

4 T. cocoa	1 C. water
4 T. sugar	4 C. scalded milk
$\frac{1}{8}$ t. salt	

1. Scald milk in double boiler.
2. Mix cocoa, sugar and salt together.
3. Add water and let boil two minutes to cook the starch thoroughly.

4. Add milk and let it get hot but not boil. (Milk that has boiled is not as easily digested as milk that has not been boiled.)

5. Beat with Dover egg beater until frothy to prevent a scum forming on top, then serve at once.

*Note.—If cocoa must stand after it is made, keep it hot in the double boiler and beat again before serving.*

### Chocolate.

2 oz. chocolate	$\frac{1}{4}$ C. sugar
1 C. water	4 C. milk
$\frac{1}{8}$ t. salt	

Cut chocolate in fine pieces and mix with sugar, salt and water, then follow directions for making cocoa.

*Note.—Chocolate or cocoa may be served with a spoonful of whipped cream on top or a marshmallow may be dropped on top of the hot beverage instead of the cream.*

## NOTES ON LABORATORY WORK.

1. Why not use all milk in making cocoa?
2. What objections are there to giving children hot milk flavored with a little tea or coffee?
3. Why are eggs or egg shells sometimes added to coffee?
4. Will shells from cooked eggs clear coffee as well as shells from uncooked eggs? Why?

## QUESTIONS AND SUGGESTIONS.

Good tea costs eighty to ninety cents a pound, while good coffee can be bought for thirty-five cents. Which is more expensive, a cup of tea or a cup of coffee?

READING NOTES.



**EXERCISE XIII.****FLOUR MIXTURES.****Structure and Composition.**

The wheat grain is made up of the bran, germ and heart. The three outside layers or bran coats contain cellulose, mineral matter, some protein and some coloring matter. The heart contains starch, gluten and a small amount of cellulose and mineral matter. The germ is rich in fat and protein, but it is usually removed in the manufacture of the flour because the fat would soon become rancid and render the flour unfit for use.

**Kinds of Flour.**

Wheat is made into Graham flour, whole wheat flour and white flour (sometimes called patent flour). Graham flour is made from the whole grain; whole wheat flour is made after the first two coats of bran have been removed; white flour has all of the bran and the germ removed by the process of grinding and sifting that it goes through.

As the bran contained in the Graham flour and whole wheat flour is mostly cellulose which cannot be digested by the human digestive system, these flours do not contain as much nourish-

ment as is found in white flour. They do contain more mineral matter, however, and the cellulose is useful for persons who take little exercise because it increases the action of the intestines.

	Wheat Grain	White Fl.	Graham Fl.	Whole Wheat Fl.
Water	10.05	12.80	11.30	11.40
Protein	11.09	10.80	13.30	13.80
Fat	2.10	1.10	2.20	1.90
Starch	71.90	74.6	69.50	71.00
Fiber	1.80	.20	1.80	.90

Experiment. Put two tablespoonfuls of flour in a piece of cheesecloth and tie in the form of a bag, then squeeze the bag in a bowl of cool water until the starch is washed out of the flour. Untie the cheesecloth and examine the tough, rubber-like substance left in the bag. It is gluten, the form of protein found in wheat. Put this ball of gluten on a plate in the oven. As the water turns to steam and expands the gluten stretches like rubber. If baked long enough the thin wall of gluten becomes hard and holds its shape. This is what happens when our flour mixtures are put into the oven to bake.

Try the same experiment with cornmeal. There is no gluten in corn.

### Wheat Flour.

Patent wheat flour is usually used for all flour mixtures except in bread making, where we sometimes use flour made from rye or other grains.

There are two kinds of wheat, winter wheat and spring wheat. Winter wheat is planted in the fall and harvested in the early summer. This is a soft wheat and the flour contains a large per cent of starch. It is used for cakes, pastry, etc.

Spring wheat is planted in the spring and harvested in the fall. The grains are hard and the flour contains less starch and more gluten (the protein in wheat) than does the winter wheat. The flour made from spring wheat is called bread flour.

Frequently the two kinds of wheat are blended so as to produce a flour that will be suitable for either bread or pastry.

Macaroni flour is wheat flour especially rich in gluten.

### **Batters.**

A batter is a mixture of flour and liquid thin enough to be beaten with a spoon, the word batter meaning to beat. If the mixture is so stiff that it can be handled upon a molding board, it is called a dough.

### **Kinds of batters.**

Batters are divided according to their consistency or thickness into pour batters, stiff drop batters and soft drop batters. If a batter is so thin that it will pour in a steady stream from the spoon it is called a pour batter; if it is thick enough to drop in a large lump, it is a stiff drop batter and if it is so soft that it will start to pour from the spoon and then drop in a soft lump, it is called a soft drop batter.

Different kinds of flour vary so much that it is impossible to tell the exact amount of liquid that will be needed in any given mixture. It will be necessary to know the correct consistency or thickness of the batter and add liquid to the mixture until it is of the proper consistency. In general the proportion of liquid to flour is:

Pour batter 1 C. liquid to 1 C. flour.

Soft drop batter  $\frac{1}{2}$  C. liquid to 1 C. flour.

Stiff drop batter  $\frac{1}{3}$  C. liquid to 1 C. flour.

### Other Ingredients Contained in Flour Mixtures.

A mixture consisting only of flour and milk or water would be tough, heavy and tasteless when baked. It is therefore necessary to add other ingredients to have a food that is palatable and digestible.

Salt is added to take away the "flat" taste; fat (commonly called shortening) in the form of butter, lard, dripping, suet, etc., is used to make the cooked food more tender. Baking powder, or soda with sour milk or molasses; or air beaten into eggs will make the food lighter and more porous, therefore more digestible.

These additions make a change in the batter as well as in the taste and texture of the food after it is cooked.

Shortening will tend to make the batter thinner and if a large amount of shortening is used, less liquid will be needed.

Eggs make a batter thinner but the cooked food will be stiffer and tougher because the heat of the oven hardens and toughens the albumin in the egg. Shortening added to the mixture will overcome this toughness. A batter that contains many eggs and little fat should be baked at a very low temperature. In changing a recipe, if fewer eggs are used, the amount of flour should be increased or the amount of liquid decreased. It would be better to decrease the amount of liquid as recipes are usually written with the baking powder, flavoring, etc., calculated to the amount of flour, therefore any change in the amount of flour would make a change in the other ingredients necessary.

### Methods of Mixing.

There are three methods of putting flour mixtures together, called the batter method, the dough method and the cake method.

The amount of shortening used and the texture desired in the finished product decides which process shall be used.

### **Batter Method of Mixing.**

1. Mix and sift the dry materials. (If sifted two or three times, more air will be mixed with the dry materials and the food will be lighter.) If granulated sugar is used it can be stirred into the other dry materials after sifting.

2. Add beaten egg to half the milk and stir into the dry materials.

3. Add enough more milk to make the batter the desired consistency.

4. Add the melted butter, beat well and cook immediately. If allowed to stand it will not be so light.

Flour should always be sifted before it is measured. It should then be put lightly into the cup with a spoon and leveled off with a knife. Do not shake or rap the cup to level it or the flour will pack and you will have more than a cupful. In measuring part of a cupful, fill the measuring cup a little above the right mark in the cup and then lift out the flour to the rim with a spoon. If only  $\frac{1}{4}$  C. is needed it will be quicker and more accurate to measure it by tablespoonfuls.

### **Baking.**

Experience is the only safe guide to follow in telling when an oven is the right temperature. It will be some help until one has become experienced to tell the heat of the oven by testing it with the bare hand. If you can hold the hand in the oven until you can count thirty you have a **hot oven**. If the hand must be taken out before you have counted thirty it is too hot, if you can hold it longer it is not hot enough. For **moderate oven** you

should be able to hold the hand there until you can count forty and for a **slow oven** you should be able to count forty-five.

If the oven is too hot even with the fire turned low, open the oven door slightly or set a pan of cold water into the oven.

In baking batter mixtures the length of time for cooking can be divided into fourths. At the end of the first quarter the mixture should begin to rise; at the end of the second quarter it should continue to rise, but not brown; the end of the third quarter should find it well risen and beginning to brown, and at the end of the fourth quarter if the muffin or cake is done, it will have pulled away from the side of the pan; and if pressed lightly on top with the finger it will feel firm and will spring back into place. A clean straw, knitting needle or wooden toothpick put into the center of the muffin will come out clean if the muffin is done.

If the oven is too hot the muffin or cake will bake on top before it has risen enough, then in its effort to rise it will burst through the crust that has formed and will be rough on top.

If there are large holes in the muffins after they are baked it is because the oven was too hot, the mixture was too thin or there was too much baking powder in it.

## LABORATORY EXERCISES.

### Griddle Cakes.

1 C. flour	1 C. milk
$\frac{1}{2}$ t. salt	1 egg
2 t. baking powder	1 T. melted butter

1. Mix and sift dry materials.
2. Add the beaten egg to half the milk and stir into the dry materials.

3. Add enough more milk to make a pour batter. Stir in the melted butter and beat well.

4. Heat a griddle hissing hot, grease with a piece of fat, salt pork, and pour the batter onto the griddle by spoonfuls. Bake until the under side is brown and bubbles begin to form on top, then turn and brown the other side. Be sure the cake is well browned on the under side before it is turned. Do not turn it a second time or it will not be as light.

*Note.—If large bubbles rise at once to the top of the cakes, the griddle is too hot, if the top stiffens before the under side is brown the griddle is not hot enough.*

Serve the griddle cakes as soon as baked. They may be served with butter, with butter and syrup or with butter and sugar. They are sometimes baked in large cakes and spread with butter and then with granulated sugar or crushed maple sugar. As soon as the second one is baked it is placed on the first and spread with butter and sugar. This is continued until there is a pile of eight or ten. They are then cut in sections as you would a layer cake. This makes a nice Sunday night supper in the winter.

### Plain Muffins.

2 C. flour	4 T. sugar
$\frac{1}{2}$ t. salt	1 C. (?) milk
3 t. baking powder	1 egg
2 T. melted butter.	

1. Mix and sift dry materials three times.
2. Add half of the milk to the beaten egg and stir into the dry materials.
3. Beat well and if too thick, add enough more milk to make a soft drop batter.

4. Add melted butter.

5. Fill well greased muffin pans about two-thirds full and bake about twenty minutes in a moderate oven.

### Graham Muffins.

1 C. Graham flour	4 T. sugar
1 C. white flour	1 C. (?) milk
4 t. baking powder	1 egg
$\frac{1}{2}$ t. salt	1 T. melted butter

Mix by the batter method of mixing.

### Rice Muffins.

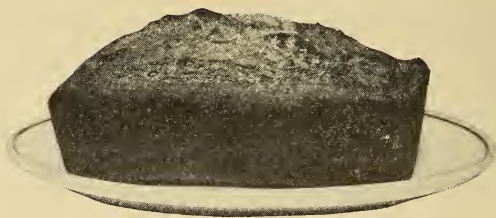
2 C. flour	$\frac{1}{2}$ C. cooked rice
4 t. baking powder	1 C. (?) milk
$\frac{1}{2}$ t. salt	1 egg
2 T. sugar	2 T. melted butter

1. Mix and sift dry materials.

2. Add well beaten egg to one-half the milk and stir into the dry materials.

3. Add the rice and enough more milk to make a soft drop batter.

4. Add the melted butter and bake in well greased muffin pans in moderate oven from twenty to twenty-five minutes.

**Corn Cake.**

1 C. cornmeal	4 T. sugar
$1\frac{1}{4}$ C. flour	1 C. (?) milk
5 t. baking powder	1 egg
1 t. salt	1 T. melted butter

1. Mix by the batter method of mixing.
2. Bake in a well greased shallow pan, in a hot oven for twenty minutes.

*Note.—If the corn cake is baked in a deep bread pan, use a moderate oven and bake from thirty-five to forty minutes.*

## NOTES ON LABORATORY WORK.

1. Why are griddle cakes harder to digest than bread?
2. Why is a piece of fat pork better than butter to grease griddle?
3. If you left the egg out of the recipe for griddle cakes, what other change would you make in the recipe? Why?

## QUESTIONS AND SUGGESTIONS.

Draw map of the United States and locate chief wheat-growing districts. Chief flour-milling cities.

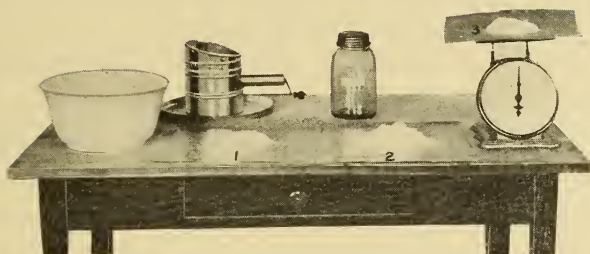
How much would you save by buying flour by the barrel instead of by the 24-pound sack?

READING NOTES.

**References.**

The Story of a Kernel of Wheat.  
Farmers' Bulletin No. 389.



**EXERCISE XIV.****LEAVENING AGENTS.**

To leaven is to cause to rise or to make light. Unless something is added to a flour mixture to make it light and porous the digestive juices will not be able to penetrate it and it will be hard to digest. It will also be less palatable.

**Methods of Making Batters Light.**

There are a number of materials that are used for this purpose. Probably the first used was air which was beaten into the mixture itself or into eggs before they were added to the batter. When the batter was baked the bubbles of air expanded, the gluten of the flour and the albumen of the eggs kept the air from escaping from the mixture. As it expanded it pushed the batter up with it; then when the heat was sufficient to cook the dough, the walls of the little cells formed by the air bubbles became firm enough to hold themselves up and the result was a light, porous loaf.

Probably the use of yeast came next. This is a rather slow process however, for it is necessary to wait for the yeast plant to grow and form enough bubbles of gas to make the bread rise.

Scientists have discovered that these bubbles of gas can be produced instantly by putting together certain harmless chemi-

cals and that the gas given off by these chemicals has the same effect on the bread (as far as making it light is concerned), as does that produced by the yeast plant.

One of these chemicals is baking soda, which will give off a gas called carbon dioxide gas when it is mixed with water and an acid. Soda combined with water only, will give off enough gas to raise the dough, but it will give a bitter taste and yellow color to the food. When the soda is combined with an acid in just the right proportion, the food will taste neither bitter nor sour. The acid has destroyed the bitter taste of the soda and the soda has destroyed the sour taste of the acid. If cream of tartar is the acid used there will be a substance called Rochelle salts formed. It will be in such small quantity that it will not be noticed in the food.

The acids usually used with soda in cooking are sour milk, molasses and cream of tartar or tartaric acid. Some very old cook books use a few spoonfuls of vinegar with the soda.

### **Baking Powder.**

Soda and cream of tartar used to be kept separate and combined as needed by the house-wife. Because of the difficulty of measuring the correct proportion of each ingredient we more often now use what we call baking powder. Baking powder is made of soda and cream of tartar carefully weighed and thoroughly mixed and sifted, with enough corn starch mixed with them to keep the powder from absorbing moisture and losing strength.

Sometimes acid phosphate, alum and other cheap acids are used in the manufacture of baking powders. The acid phosphate makes a very good baking powder but alum baking powder and all cheap powders should be avoided. They are not cheap in the long run.

**Experiments.**

Ex. 1. Put into a test tube  $\frac{1}{6}$  t. baking soda and pour  $\frac{1}{4}$  C. hot water on it. The foaming is caused by the gas that is being given off.

Ex. 2. Put into a test tube  $\frac{1}{6}$  t. soda and add 2 T. cold water. Very little gas is given off.

Ex. 3. Put a little more than  $\frac{1}{3}$  t. cream of tartar into another tube with 2 T. cold water. Stir until dissolved. Very little gas is given off.

Ex. 4. Mix the contents of the last two tubes together. The foaming shows that gas is being given off.

Ex. 5. Heat the tube gently. More gas is given off.

Ex. 6. Add  $\frac{1}{4}$  t. soda to  $\frac{1}{2}$  glass sour milk. Add  $\frac{1}{4}$  t. soda to  $\frac{1}{4}$  glass of New Orleans molasses. Notice the bubbles that form in both glasses, showing that gas is being given off.

**General Proportions of Cream of Tartar, Molasses, and Sour Milk to be used with Soda:**

1 t. soda to  $2\frac{1}{8}$  t. cream of tartar.

$\frac{2}{3}$  t. soda to 2 C. thick sour milk.

1 t. soda to 1 C. New Orleans molasses.

If your recipe calls for sweet milk and baking powder and you wish to use sour milk and soda, allow  $\frac{1}{3}$  t. soda to each cup of sour milk. Each  $\frac{1}{3}$  t. soda will make 1 C. flour light. For each additional cup of flour add 2 t. baking powder.

From  $1\frac{1}{2}$  t. to 2 t. baking powder is the amount usually allowed for each cup of flour. The more eggs used, the less baking powder will be needed, as the eggs hold the air which is beaten into the mixture.

Batters made light by any of the quick leavening agents should be baked as soon as they are mixed to prevent the escape of the gas.

## LABORATORY EXERCISES.

**Baking Powder.**

$\frac{1}{2}$  lb. bicarbonate of soda     $1\frac{1}{8}$  lb. cream of tartar  
4 oz. cornstarch

1. Mix soda and cornstarch together and sift three or four times in a fine flour sieve.

2. Add the cream of tartar and sift seven or eight times. Put into Mason jars and screw the covers down tightly. (Always keep the baking powder can tightly covered to prevent the baking powder losing strength.)

**Ginger Bread.**

$2\frac{1}{4}$ C. flour	1 C. molasses
1 t. soda	$\frac{1}{2}$ C. boiling water
$1\frac{1}{2}$ t. ginger	1 egg
$\frac{1}{2}$ t. salt	4 T. melted butter

1. Mix and sift dry ingredients.

2. Add boiling water to the molasses and stir into the dry ingredients.

3. Add well beaten egg and melted butter. Beat well.

4. Pour into a buttered shallow pan and bake about 25 min. in a moderate oven. If the bottom of the pan is lined with a sheet of buttered paper, the ginger bread will be less apt to burn on the bottom.

Note.—*This recipe may be made without the egg.*

**Ginger Drops.**

3 C. flour	$\frac{1}{2}$ t. salt
1 t. cinnamon	$\frac{1}{2}$ C. butter
1 t. cloves	$\frac{1}{2}$ C. sugar
1 t. ginger	1 C. molasses
1 t. soda	1 C. boiling water

2 well beaten eggs

1. Mix and sift dry ingredients.
2. Mix sugar, butter, molasses and hot water together and add to the dry materials.
3. Add the well beaten eggs last and bake in well greased gem pans or in shallow cake pan in a moderate oven.

Note.—*This makes a nice pudding if served with a warm vanilla or lemon sauce.*

**Vanilla Sauce.**

1 C. boiling water	2 T. flour
$\frac{1}{2}$ C. sugar	2 T. butter
	1 t. vanilla

1. Put water on to boil.
2. Mix sugar and flour together and stir into the boiling water.
3. Boil five minutes, stirring constantly.
4. Remove from the fire and add butter and vanilla.

Note.—*A sour sauce may be made by adding 1 T. vinegar or lemon juice.*

**Rolled Ginger Bread.**

6 C. flour	1 C. molasses
1 t. soda	1 C. cream, or 1 C. milk and 6
1 t. ginger	T. melted butter
	1 t. salt

1. Mix and sift dry ingredients.
2. Add the molasses and enough cream to make a soft dough.
3. Turn onto a well floured board and roll  $\frac{1}{2}$  inch thick. Cut into pieces  $2\frac{1}{2}$  inches square and bake on a well greased baking sheet in hot oven.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Figure the cost of a pound of home-made cream of tartar baking powder. A pound of commercial baking powder.
2. How much soda and how much baking powder would you need for the recipe for Plain Muffins, if you used sour milk instead of sweet milk?

READING NOTES.

**Suggested Topics:**

Manufacture of cream of tartar.

Manufacture of New Orleans molasses.



**EXERCISE XV.****QUICK DOUGHS.**

A dough is a flour mixture stiff enough to be handled on a board. Quick doughs are those that are made light by means of baking powder, soda and sour milk or soda and cream of tartar.

To give the light, flaky appearance that we associate with well made biscuits and other quick doughs, it is necessary to have all of the materials as cold as possible. Where it is practicable it will be well to measure the flour and put it into the ice box for an hour before mixing. Of course the lard and milk will be kept in the ice box or in some other cool place.

Handle quick doughs as little as possible.

**Dough Method of Mixing.**

1. Mix and sift dry materials three times.
2. Cut the shortening into the dry materials with two knives. (If the tips of the fingers are used the warmth of the hand will soften the shortening and the dough will not be as light.)
3. Add enough milk or water to make a soft dough. Mix with a knife and stir as little as possible. When one part of the flour is moistened push it to one side and moisten another

portion, then mix all lightly together. *Do not beat* the mixture.

4. Turn onto a floured board. Toss the dough with a knife until all sides are coated with flour then pat or roll to the desired thickness.

5. Cut with floured biscuit cutter.

6. Bake in hot oven.

Biscuits and other quick doughs are done if they are well risen, if they are brown on top and if the sides seem firm when pressed lightly with the finger.

As a rule a hot oven is required for all quick doughs.

### LABORATORY EXERCISES.

#### Baking Powder Biscuits.

2 C. flour	$\frac{1}{2}$ t. salt
3 t. baking powder	2 T. shortening
$\frac{2}{3}$ C. (?) milk	

1. Mix and sift dry ingredients three times.

2. Cut the shortening into the dry materials with two knives. The mixture should have something the appearance of cornmeal when the shortening is well worked into the flour.

3. Add enough milk to make as soft a dough as can be handled on the board.

4. Turn dough on floured board and roll or pat till  $\frac{3}{4}$  of an inch thick.

5. Cut with floured biscuit cutter and place on floured baking sheet and bake in a hot oven twelve to fifteen minutes. Cut the dough as economically as possible so as to have few pieces left to work over. Biscuit dough should be handled as little as possible.

**Drop Biscuits or Emergency Biscuits.**

2 C. flour                       $\frac{1}{2}$  t. salt  
3 t. baking powder      2 T. shortening  
                          $\frac{2}{3}$  C. (?) milk

1. Mix the same as baking powder biscuits.
2. Add milk enough to make a stiff drop batter and drop by tablespoonfuls one inch apart, on a well greased baking sheet.
3. Bake twelve to fifteen minutes in hot oven.

**Egg Tea Rolls.**

2 C. flour                       $\frac{1}{2}$  t. salt  
4 t. baking powder      3 T. fat  
                         1 egg

1. Mix dry ingredients and sift three times.
2. Cut in shortening with two knives.
3. Add beaten egg to one-half the milk and add gradually to the dry ingredients.
4. Add enough more milk to make a soft dough.
5. Turn onto a floured board. Roll lightly to  $\frac{1}{2}$  inch thickness.
6. Cut into oblong pieces and with a floured knife crease through the center of each piece lengthwise.
7. Brush the top of each roll with the white of egg and sprinkle with granulated sugar.
8. Place on greased baking sheet and bake in hot oven twelve to fifteen minutes.

**Cinnamon Rolls.**

2 C. flour	2 T. fat
4 t. baking powder	$\frac{2}{3}$ C. (?) milk
$\frac{1}{2}$ t. salt	$\frac{1}{4}$ C. sugar
$\frac{1}{3}$ t. cinnamon	

1. Mix as for baking powder biscuit.
2. Roll  $\frac{1}{4}$  inch thick, brush with melted butter and spread with sugar and cinnamon.
3. Roll like jelly roll and cut into pieces 1 inch thick.
4. Stand pieces on end on a well greased tin and bake in hot oven fifteen minutes.

Note.—*One-half cup finely chopped fruit (raisins, currants or citron) may be spread over the dough before it is rolled up.*

**Cheese Biscuit.**

2 C. flour	3 T. butter
4 t. baking powder	$\frac{2}{3}$ C. (?) milk
$\frac{1}{2}$ t. salt	grated cheese

1. Mix like baking powder biscuits.
2. Roll one-fourth inch thick.
3. Spread one-half of the dough with grated cheese, sprinkle with salt and pepper and fold the other half of the dough over the cheese.
4. Roll lightly with the rolling pin to make the two layers stick together, then cut with small biscuit cutter and bake on floured pan twelve to fifteen minutes in hot oven.
5. Serve hot with salads.

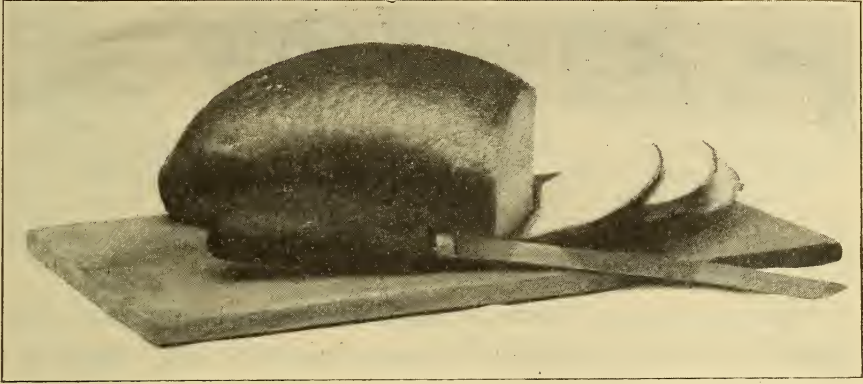
NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Why should one have a hotter oven for biscuits than for muffins?
2. How do the recipes for cheese biscuits, cinnamon rolls, egg tea rolls and emergency biscuits differ from baking powder biscuits?
3. If you knew the recipe for baking powder biscuit could you make any of these other quick doughs from it?
4. Can you suggest any other variation of the baking powder, biscuit recipe?

READING NOTES.



**EXERCISE XVI.****BREAD MAKING.**

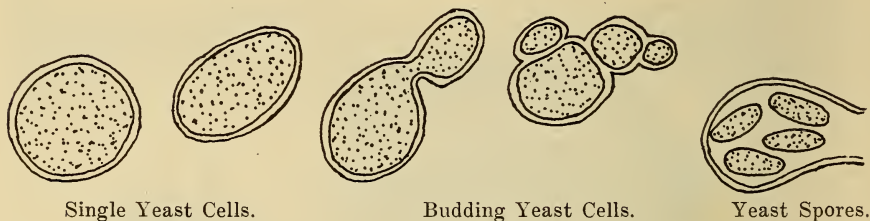
Bread in some form is more widely used than any other food except milk. In some sections of the world, bread constitutes almost the sole article of diet and if made from flour rich in gluten forms a very well balanced meal.

A description of the various breads of different countries would make an interesting study: the tortilla, a thin, unleavened cake of coarsely ground corn, baked on a heated iron plate by the Mexican Indian; the rice flour biscuit of Japan; the fine-flavored loaf made from hand-ground wheat in Palestine; the hoe cake of the southern Negro; the schwartz-brod of the German peasant, etc. The average person, however, in speaking of bread means the golden brown, yeast-leavened loaf of our modern bakeries.

**Yeast.**

The use of yeast as a leavening agent is thousands of years

old. A microscopic examination of some bread made over 4400 years ago in Egypt showed the presence of dead yeast cells.



### Structure of Yeast.

Yeasts are tiny plants so small that when separated, they cannot be seen except by the aid of a microscope. Each one of these plants consists of a single round or oval cell with a transparent wall. This cell is filled with liquid and granular cell substance called protoplasm.

Under proper conditions a bud will grow to the size of the original cell then separate and in turn send out buds. Again the cells may remain attached to each other until a chain of four or five cells is formed.

The conditions necessary to the growth of the yeast plant are air, warmth, water, some form of sugar and some food from which it can obtain nitrogen. Starch will be changed into sugar for the use of the yeast plant if there is no usable form of sugar present.

If the yeast plant has to go for a long time without food and water, it will sometimes divide into spores (a kind of seed). The outside wall will then break down and these spores will float around in the air until they are given the right conditions when they will commence to grow the same as the original yeast cell. These spores can stand more unfavorable conditions without being harmed than the yeast cell.

**Method by Which Yeast Raises Dough.**

As the yeast plant grows it changes the sugar into alcohol and into a gas called carbon dioxide gas. When these bubbles of gas are given off inside the bread dough, they are caught and held by the rubber-like gluten in the flour and in their efforts to escape push the dough up and cause the bread to rise and become light and porous. This process of changing sugar into alcohol and carbon dioxide gas is called fermentation.

**Effect of Heat on the Yeast Plant.**

If any plant is to grow well it must receive the right amount of heat as well as the proper soil. Bearing in mind the fact that the faster the yeast plant grows the more bubbles of gas it will give off, the results of the following experiments will show at what temperature the yeast plant thrives best.

**Experiments.**

Put 1 t. molasses into each of three glasses. Soften a cake of compressed yeast with 2 T. of water. Put one-third of the softened yeast into each glass.

Ex. 1. Pour one-half cup of cold water into one glass of yeast and molasses and set it into the ice box or out of the window if the weather is cold.

Ex. 2. Pour one-half cup of luke warm water into another of the glasses of yeast and molasses and set the glass into a pan of warm water.

Ex. 3. Pour the yeast and molasses in the last glass into one-half cup of boiling water and when cool enough so it will not break the glass pour it back into the glass and set it into a pan of luke warm water.

In half an hour examine the three tumblers. In which is the yeast working best?

Place the glass from the ice box into a pan of warm water. Does any change take place?

What effect does cold have on yeast?

What is the best temperature for your bread if you want it to rise?

Yeast grows best at a temperature of 70° to 80° Fahrenheit. At 160° F. or over, the yeast plant will die. At a very low temperature, the yeast plant is chilled and its action is made slower, but if the temperature is then raised to 70°, the yeast plant will revive and commence to work.

### **Kinds of Yeast.**

Compressed yeast, dry yeast, liquid yeast and wild yeast are all used in raising bread.

Compressed yeast is obtained from the distilleries. It is washed many times to remove the impurities, is then mixed with a small amount of starch and pressed into cakes. These are wrapped in tinfoil to exclude the air and kept in a cool place until used. There are many millions of yeast plants in each two-cent cake of yeast.

Dry yeast is made by mixing the distillers yeast with corn-meal. It is then pressed into cakes and dried. Dry yeast will keep much longer than compressed yeast, but is a little slower to act when making bread.

Liquid yeast is made by mixing a cake of yeast with boiled potatoes, salt and the water in which hops have been steeped. This is allowed to stand until the yeast grows and fills the whole mixture with bubbles of gas. A cupful of this yeast is used to lighten the bread dough. The last cupful of each mixture of liquid yeast can be used to start a new mixture of potatoes, hops and water. So many bacteria get into this yeast from

the air that after a time it will be necessary to start the liquid yeast afresh with a cake of compressed or dried yeast. The bacteria would give the bread a bitter taste.

All yeast is originally obtained from wild yeast floating in the air. If these wild yeasts drop into a sweet, moist food they will commence to grow and cause the food to ferment. "Salt rising" bread is raised by wild yeast. The salt is added to keep the bacteria that drop into the sponge with the yeast from giving the bread a bad taste.

### **Liquids Used in Yeast Batters.**

Milk, water, milk and water, boiled potatoes and water are the liquids used in bread making.

If milk is used it must be scalded to kill the milk-souring bacteria. The growth of these bacteria would hinder the growth of the yeast. It would also sour the bread.

### **Kinds of Flour.**

Wheat will produce the best loaf of bread for the amount of money expended and is more generally used for bread making than any of the other grains.

Bread made from the coarser flours such as graham, whole wheat, oat meal, etc., contain a smaller per cent of nourishment than the white flour breads because the bran they contain consists of indigestible cellulose. They are, however, considered healthful foods for those who live an indoor life, as the cellulose stimulates the action of the intestines.

### **Points in Bread Making.**

1. Bread dough should be a soft dough.
2. If bread is to have only two risings, all of the flour should be added when the bread is first mixed.

3. Use as little flour as possible when kneading bread the second time. It will look streaked if flour is kneaded into it after the first rising.

4. Before forming dough into loaves, knead it until all the gas bubbles are broken down, to make it fine grained, with no large holes in it.

5. If bread is allowed to rise too long, bacteria will change the alcohol into acetic acid and the bread will taste sour. *Never let your bread wait for you.* Attend to it as soon as it is ready. If it is impossible to knead it when it has risen enough, stir it with a knife until all the gas cells are broken down, then let it rise again.

6. Bread is kneaded

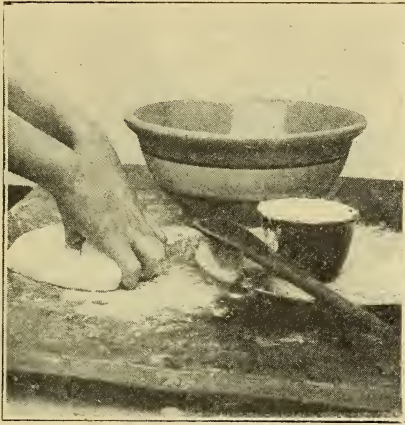
(1) To make it of uniform texture. The gas bubbles that form first are large and irregular in shape. Kneading breaks them up into small bubbles of uniform size. It is also kneaded

(2) To develop the gluten. We find in wheat flour two substances (gliaden and glutenin) which when mixed with water and well kneaded unite and form gluten, the sticky substance in the dough.

7. Bread is baked to make it palatable, to cook the starch, to drive off the alcohol and carbon dioxide gas and to kill the yeast plants. Half baked bread will cause indigestion.

### Directions for Kneading.

1. Slip the fingers under the edge of the dough farthest



from you and fold the dough towards you about two-thirds of its length. (Fig. 1.)



2. Then press the dough hard with the palms of the hands, (Fig. 2) giving the dough a little rolling motion from you.



3. Turn the dough towards the left one-fourth of the way round so that the end of the dough that was at the right will be farthest from you. (Fig. 3.)

4. Repeat until the dough is well kneaded, being careful to keep the smooth side of the dough next to the board.



### **Bread Mixer.**

A bread mixer greatly reduces the labor of bread making

in the house. The mixing, rising and kneading are all done in the mixer. The bread board will only be needed when the bread is ready to be formed into loaves. It takes less strength to turn the crank of a mixer than to knead dough by hand and the bread will be of more uniform texture especially if one is inexperienced in the art of bread baking.

### Method of Mixing Yeast Batters and Doughs.

1. Scald the liquid.
2. Soften the yeast cake with 1 T. luke warm liquid. (Lukewarm means the same as body temperature. Test with the little finger. If the liquid feels neither warm nor cool to the finger, it is the proper temperature.)
3. Add sugar, salt and shortening to the hot liquid.
4. Cool to body temperature and add the softened yeast.
5. Add one and one-half times as much flour as you have liquid then beat well.
6. If the bread is to rise three times, cover the dish and set in a warm place and let rise until it has doubled in bulk. If it is to rise only twice proceed from No. 5 to No. 7.
7. Beat thoroughly then add as much flour as you can beat in with a spoon.
8. Turn onto a well-floured board, roll dough in flour, then knead it with the hands until smooth and of even texture throughout.
9. Put the dough into a greased bowl, brush over with water or lard to keep from drying on top and set in a warm place to rise. If you wish the bread to rise rapidly surround the bowl with water as warm as you can hold the back of your hand in.
10. When the dough has risen to twice the size turn it

onto the board and knead until all the bubbles are broken down. Use as little flour as possible for this kneading.

11. Form into loaves and put into greased baking pans. Be sure the dough is smooth on top and fits well into the corners of the pans.

12. Brush the top with melted lard or water and set in warm place to rise until twice its size.

13. Bake in moderate oven forty-five to sixty minutes for one pound loaves.

14. Turn the bread frequently during the first fifteen minutes of baking so that it will rise evenly. It should not begin to brown until it has been in the oven at least twenty minutes.

15. When bread is done, remove from pans, brush upper crust with water to soften it and set on rack to cool where the air can reach all sides.

16. When cool put away in stone jar or ventilated bread can. Do not wrap in cloth or it will mold.

### **A Perfect Loaf of Bread.**

A loaf of bread consists of the crust, which is the brown, outside portion and the crumb, the white inner part.

A perfect loaf of bread should be a golden brown color on top, sides and bottom. It should be evenly risen in the pan, with the crust smooth and even, not cracked nor protruding over the sides. If well baked it will feel firm when pressed and will spring back quickly when pressure is removed. When cut, the crumb of the bread should be creamy in color, should slice smoothly without crumbling and the holes should be small and uniform. The taste should be sweet and nutty.

When learning to bake bread it would be a good plan to fill out the following score card after each baking. By comparing

methods and results, any faults could be corrected and in a short time perfect loaves of bread would be produced each time.

### Score Card.

Date.....

	Score Perfect	1 Trial	2 Trial	3 Trial
Kind and amount of Flour.....	.....	.....	.....	.....
Kind and amount of Liquid .....	.....	.....	.....	.....
Kind and amount of Yeast.....	.....	.....	.....	.....
Time required for Rising .....	.....	.....	.....	.....
Time required for Baking .....	.....	.....	.....	.....
Baking:—				
Is the bread thoroughly baked?.....	15.	.....	.....	.....
Is it an even golden brown on all sides?.....	5.	.....	.....	.....
Is the loaf good shape?.....	5.	.....	.....	.....
Taste:—				
Is there the slightest sour taste?.....	10.	.....	.....	.....
Is the flavor good? .....	15.	.....	.....	.....
Texture of Crumb:—				
Is the bread light? .....	20.	.....	.....	.....
Are the holes small and even? .....	10.	.....	.....	.....
Is the bread firm and not crumbly? .....	10.	.....	.....	.....
Is the crumb a creamy white or is it dark? ..10.	.....	.....	.....	.....

**Amount of Yeast Needed.**

If the bread is to rise quickly a large amount of yeast must be used and the bread must be kept warm. Less yeast will be needed in the summer than in the winter. The following proportions will help some in judging the amount to be used.

1/4 yeast cake to 2 C. liquid will take eight hours to rise in winter time.

1/6 yeast cake to 2 C. liquid will take eight hours to rise in summer time.

1 yeast cake to 2 C. liquid will take five hours if kept warm.

2 yeast cakes to 2 C. liquid will take three hours if kept warm.

2½ yeast cakes to 2 C. liquid will take one and one-half hours if kept warm.

This large amount of yeast adds materially to the cost of the bread.

**LABORATORY EXERCISES.****Raised Buckwheat Cakes.**

2 C. milk

$\frac{3}{4}$  C. bread flour

$\frac{1}{2}$  t. salt

1½ C. buckwheat flour

1 T. molasses

$\frac{1}{3}$  of 1 yeast cake

1 egg

1. Scald milk.
2. Add salt and molasses.
3. Soften yeast in 1 T. luke warm water.
4. When milk is luke warm add softened yeast and flour.
5. Beat well, cover with clean cloth and set to rise over night.

6. In the morning add the egg well-beaten and cook the same as plain griddle cakes.

### Raised Muffins.

1 t. salt	2 T. butter or lard
4 T. sugar	$\frac{1}{2}$ of 1 yeast cake
2 C. milk or milk and water	4 C. bread flour

1. Scald liquid.
2. Add salt, sugar and shortening.
3. Soften yeast cake in 1 T. luke warm water.
4. When liquid is luke warm add softened yeast and flour.
5. Beat well, cover and set in warm place to rise.
6. When light add egg well beaten.
7. Pour into well greased muffin pans and bake in moderate oven.

### Bread.

1 C. boiling water or	1 t. lard
scalded milk	$\frac{1}{4}$ yeast cake
1 t. salt	3 C. flour
	1 T. sugar

Follow general directions for bread baking.

### Raisin Bread.

1 C. scalded milk	1 t. lard
1 t. salt	$\frac{1}{4}$ yeast cake
3 T. sugar	3 C. flour
$\frac{1}{2}$ C. raisins (seeded)	

1. Follow general directions for bread making.
2. Before forming dough into loaves stir in the raisins which have been washed and cut in halves.

**Graham Bread.**

1 C. scalded milk	1 t. sugar
1 t. salt	$\frac{1}{4}$ yeast cake
1 t. lard	$1\frac{1}{2}$ C. bread flour
2 C. (?) graham flour	

1. Make a sponge of the first six ingredients following the general directions for breadmaking.
2. When the sponge is light, add enough graham flour to make the dough stiff enough to knead.
3. Let rise until light, then form into loaves and let rise again.
4. Bake well in a moderate oven.

**Raised Biscuits.**

Any of the above bread doughs may be made into biscuits instead of one loaf.

To form into biscuits roll the dough quite thin with rolling pin then cut with biscuit cutter or cut the dough into equal portions with a knife and shape into round balls with the fingers.

A hotter oven is needed for baking biscuits than for bread.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Why should you have a slower oven for bread than for biscuits?
2. Figure the cost of a loaf of home-made bread counting your time as worth the same as that of the baker in the factory. Compare with the cost of a loaf of baker's bread.
3. What reason is there for learning to make bread if there is little likelihood of your ever having to do it?

READING NOTES.

**Suggested Topics:**

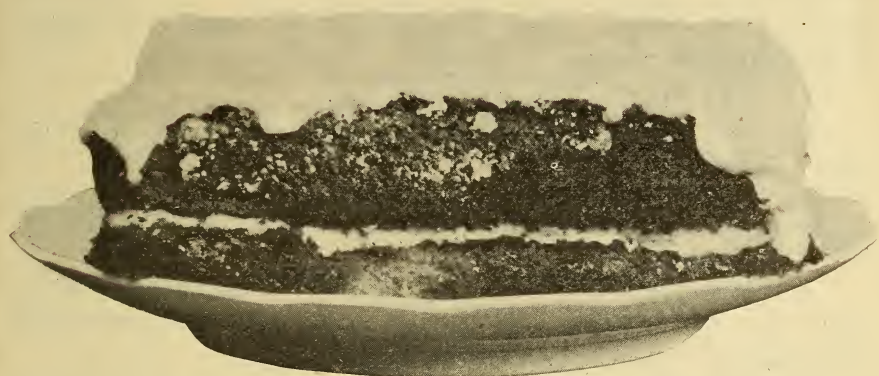
Factory Made Bread.

Primitive Bread Making.

Bread Making in Other Lands.

## HOME WORK.

Fill out score card every time you make bread at home.

**EXERCISE XVII.**

## CAKE MIXTURES AND PUDDINGS.

## CAKES.

Cake are divided into two classes:—butter cakes and butterless cakes or sponge cakes.

**Butter Cakes.**

The ingredients used in butter cakes are the same as those used for griddle cakes, plain muffins, etc., the difference being in the amount of each ingredient used. The fine texture desired in butter cakes and the quantity of butter used, make it necessary to use a different method of mixing from those used for griddle cakes, muffins and biscuits.

**Cake Method of Mixing.**

1. Sift flour, baking powder and salt together.
2. Cream the butter; that is, work the butter with a wooden mixing spoon until it becomes soft and creamy.
3. Add sugar gradually, creaming it with the butter. As

the butter becomes thick with sugar add part of the egg yolks, well-beaten. Continue adding sugar and egg alternately until all has been added. Keep the mixture the same consistency throughout the process of mixing.

4. Add the flavoring and beat well.

5. Add one-third of the dry material and one-third of the milk. Beat well.

6. Add another third of the dry materials and another third of the milk and beat again.

7. Add the rest of the dry materials and after beating them into the mixture, add enough more milk to make a soft drop batter.

8. Beat the whites of the eggs to a stiff froth, add them to the cake mixture and cut and fold them in. The whites should be well mixed with the rest of the batter but the air cells formed by beating the whites of the eggs must not be broken down. The expansion of the air by the heat of the oven is to help to make the cake rise.

*Note.—Cakes are lighter if the whites are added last, but a very good plain cake can be made by beating the whites and yolks together and adding them to the butter and sugar.*

### **Cutting and Folding.**

To cut and fold two mixtures together, pour one mixture onto the other, then put the edge of the spoon into the center of the dish, lift a spoonful of the batter and turn it over. Continue doing this until the two mixtures are well blended. A tablespoon is better for this purpose than a mixing spoon, as the sharp edge of the tablespoon will cut through the batter without mashing as many of the air cells as the broad edge of the wooden spoon would.

**Baking.**

The same oven tests and methods of baking are used for butter cakes as are used for muffins. Layer cakes and cup cakes will need a hotter oven than will be needed for a loaf cake.

Cake will bake more quickly and more evenly in a "Turk's head" pan (one with a funnel through the center) than it will in a large solid loaf. If the cake contains molasses, it needs a slower fire towards the end of the baking to keep it from scorching.

**Cookies.**

Cookies are cake doughs mixed thick enough to roll out or thick enough to hold their shape when dropped by spoonfuls on a greased baking sheet.

Cookies should be baked in a quick oven.

**PUDDINGS.**

The French word "boudin" from which our word pudding is supposed to have come, means sausage. Though we still have a few meat sausages that are called puddings, the word is generally understood to mean a boiled, baked or steamed dessert, composed of several different foods as apples and bread crumbs, biscuit dough and fruit, rice, milk and eggs, etc.

Puddings are usually served warm with a pudding sauce or cream poured over them.

Left over pieces of cake, stale bread, stewed fruit, boiled rice, etc., can be made into palatable and nourishing puddings that will not be recognized as "warmed over" foods.

Care should be taken to have a light pudding follow a heavy meal and the hearty, nourishing pudding to supplement the light meal. The time honored plum pudding to complete a five or six course Christmas dinner is a crime against good digestion.

## LABORATORY EXERCISES.

## CAKES.

**Feather Cake.**

6 T. butter	1 C. (?) milk
$1\frac{1}{3}$ C. sugar	3 C. flour
3 eggs	5 t. baking powder
2 t. vanilla	

1. Grease cake pan well, put a sheet of white paper in bottom of the pan and grease it.
2. Sift flour, baking powder and salt together three times.
3. Cream the butter and add the sugar and beaten egg alternately. Beat well.
4. Add  $\frac{1}{3}$  of the flour mixture and  $\frac{1}{3}$  of the milk to the butter, sugar and egg and beat well.
5. Add another third of the flour and milk and beat again.
6. Add the rest of the flour and enough more milk to make a soft drop batter.
7. Add vanilla and beat well.
8. Put cake into pan at once and bake in a moderate oven.

**Spice Cake.**

4 T. butter	$2\frac{1}{2}$ C. flour
$\frac{1}{2}$ C. sugar	2 t. cinnamon
1 egg and 1 yolk	$\frac{3}{4}$ t. cloves
$\frac{1}{2}$ C. New Orleans molasses	1 t. soda
$\frac{1}{2}$ C. (?) sour milk	$\frac{1}{4}$ t. salt

1. Grease cake pan.
2. Sift flour, soda, salt and spice together three times.
3. Cream the butter and add the sugar, egg and molasses. Beat well.

4. Add flour and milk alternately, adding just enough of the last third of the milk to make a soft drop batter.

5. Bake in a moderate oven.

Note.—*This cake may be baked in two layers and put together with uncooked icing.*

### Uncooked Icing.

1 egg white	1 t. lemon juice or
7 R. t. powdered sugar	$\frac{1}{2}$ t. flavoring extract

1. Beat egg white very stiff.

2. Add sugar 1 t. at a time beating with Dover egg beater after each addition.

3. Add flavoring and spread icing between layers and on top of cake.

Note.—*This will make enough icing for a two layer cake.*

### Oatflake Cookies.

$\frac{3}{4}$ C. shortening	1 t. cinnamon
1 C. sugar	$\frac{3}{4}$ t. soda
2 eggs	1 C. oatflake (rolled oats)
$1\frac{3}{4}$ C. flour	$\frac{1}{2}$ C. sour milk
$\frac{1}{4}$ t. salt	1 C. chopped raisins

1. Wash and chop raisins.

2. Grease baking sheet.

3. Sift flour, soda, salt and cinnamon together.

4. Cream shortening and add sugar and beaten egg alternately.

5. Mix one-third of flour with raisins.

6. Add rest of flour and part of milk to sugar and eggs.

7. Add oatflake and raisins and enough milk to make a stiff drop batter.

8. Drop by teaspoonfuls on greased baking sheet, keeping cookies one inch apart.

9. Bake in hot oven about fifteen minutes.

10. Remove from baking sheet as soon as baked.

### Eggless Cookies.

3 T. shortening	4 t. baking powder
$\frac{3}{4}$ C. sugar	$\frac{1}{2}$ t. salt
$\frac{2}{3}$ C. (?) milk	1 t. cinnamon
2 C. flour	$\frac{1}{4}$ t. allspice

1. Grease and flour baking sheet.
2. Mix and sift flour, baking powder, salt and spice.
3. Cream shortening and add sugar. Moisten with part of the milk while creaming.
4. Add flour and milk alternately until all the flour has been added and enough milk to make a soft dough.
5. Turn onto a floured board and roll one-fourth inch thick.
6. Cut with floured cookie cutter and bake in hot oven about fifteen minutes.

Note.—*One t. vanilla may be used instead of the spice. The biscuit method of mixing may be used.*

### Peanut Cookies.

4 T. butter	3 t. baking powder
$\frac{1}{2}$ C. sugar	$\frac{1}{2}$ t. salt
2 eggs	$\frac{1}{4}$ C. milk
2 C. flour	1 t. lemon juice
1 C. chopped peanuts	

1. Mix by cake method of mixing. Mixture should be a stiff drop batter.

2. Drop by teaspoonfuls on greased baking sheet, keeping cookies one inch apart.

3. Place one-half of a peanut on top of each and bake in a moderate oven about fifteen minutes.

*Note.—Three cups of peanuts in the shell will make about one cupful of shelled peanuts.*

### Scottish Macaroons.

2 eggs	$\frac{1}{3}$ t. salt
$\frac{1}{2}$ C. sugar	1 t. baking powder
1 C. rolled oats	$\frac{2}{3}$ T. butter (melted)
$\frac{1}{3}$ C. cream of wheat or fine bread crumbs	$\frac{1}{3}$ C. shredded cocoanut

1. Beat eggs and add sugar gradually.

2. Add remaining ingredients and drop mixture by teaspoonfuls one inch apart on greased baking sheet.

3. Bake in moderate oven until brown.

4. Remove from baking sheet as soon as they come from the oven.

### PUDDINGS.

#### Rice Pudding.

2 C. boiled rice	spk. salt
1 egg	1 pt. scalded milk
$\frac{1}{2}$ C. sugar	$\frac{1}{2}$ C. raisins
spk. nutmeg	

1. Pick over and wash raisins.

2. Beat egg, add sugar, salt and hot milk.

3. Stir in rice and raisins and turn into a buttered pudding dish.

4. Set pudding dish in pan of water and bake in moderate oven until a knife thrust into center of pudding will come out clean.

### Bread Pudding.

1 pt. scalded milk	$\frac{1}{4}$ C. sugar
1 C. stale bread crumbs	$\frac{1}{8}$ t. salt
1 egg	1 t. vanilla or lemon extract

1. Soak bread in milk until soft.
2. Beat egg and add sugar, salt and flavoring.
3. Add milk and crumbs and turn into buttered pudding dish.
4. Bake same as rice pudding.

Note.—*Variations:*

(a) *One-half cup raisins or currants may be added to plain bread pudding.*

(b) *Chocolate bread pudding may be made by adding 3 T. cocoa to sugar.*

(c) *Yolks of two eggs may be used instead of one whole egg.*

*A meringue, made by beating the whites of the eggs stiff and then adding 1 T. powdered sugar, may be spread over the pudding after it is baked. The pudding should then be set back into the oven to brown the meringue.*

### Bread and Butter Pudding.

2 eggs	spk. salt
2 C. milk	$\frac{1}{2}$ C. raisins or currants
4 T. sugar	stale bread
	butter

1. Cut stale bread in one-fourth inch slices and spread with butter.

2. Cut slices into triangular shaped pieces and put a layer in the bottom of the buttered pudding dish.

3. Cover with one-half the raisins which have been picked over and washed.

4. Repeat, having top layer buttered bread.

5. Beat the eggs, add sugar, salt and scalded milk and pour mixture over pudding.

6. Bake same as rice pudding.

7. Serve with cream or hard sauce.

### Cottage Pudding.

1 T. butter	2 C. flour
$\frac{1}{2}$ C. sugar	3 t. baking powder
1 egg	$\frac{1}{2}$ t. salt
$\frac{2}{3}$ C. (?) milk.	

1. Mix by either cake method or batter method of mixing. Mixture should be a soft drop batter.

2. Bake in a shallow pan in moderate oven.

3. Cut in squares and serve hot with vanilla or lemon sauce. See Exercise XIV for Vanilla Sauce.

### Brown Betty.

4 C. sliced apples	$\frac{1}{4}$ C. brown sugar
2 C. soft bread crumbs	$\frac{1}{4}$ t. cinnamon
$\frac{1}{3}$ C. water	$\frac{1}{4}$ t. nutmeg
$\frac{1}{2}$ lemon, juice and grated rind	$\frac{1}{4}$ C. butter

1. Melt the butter and stir the crumbs into it.

2. Mix sugar, cinnamon, nutmeg and lemon rind.

3. Put one-third of the crumbs into a buttered baking dish.

4. Add one-half the apples.

5. Sprinkle with one-half the mixed sugar and spices, add one-half the water and lemon juice.

6. Repeat. Cover with the remaining crumbs and bake about forty-five minutes. Cover at first to prevent crumbs browning too fast.

7. Serve with cream and sugar or lemon sauce.

### Hard Sauce.

$\frac{1}{3}$ C. butter	$\frac{1}{2}$ t. lemon extract
1 C. powdered sugar	$\frac{1}{2}$ t. vanilla
spk. nutmeg	

1. Cream butter and add sugar gradually.
2. Add vanilla and lemon extract.
3. Heap on serving dish and sprinkle nutmeg over the top.
4. Put in ice box until ready to serve.

Note.—*The stiffly beaten white of an egg may be beaten into the sauce after the flavoring has been added. It will make the sauce lighter*

NOTES ON LABORATORY WORK.

## QUESTIONS AND EXERCISES.

1. Rice pudding, bread pudding, and bread and butter pudding are variations of what recipe?
2. Why should the former puddings be baked in a pan of water?

READING NOTES.

HOME WORK.

Date.	Name of Dish.	Result.	Remarks.

**EXERCISE XVIII.****SALADS.**

Long ago the word **salad** suggested a dish of green herbs dressed with salt, vinegar and other condiments; now the word means salted. Eggs, meat, fish, nearly all kinds of vegetables, fruits, and nuts are combined with a slightly acidulated dressing containing salt, pepper, mustard, oil, butter, or cream.

At present salads are used more extensively in France than in any other country, although they are rapidly gaining favor in America.

That salads were used extensively by the people of antiquity is proven by the writings carved upon the Pyramids which show how much garlic, radishes and onions were eaten by the workmen during their building. Herodotus tells us that the cost of these vegetables amounted to sixteen hundred talents of silver, or more than one million dollars.

The early Jews served lettuce, dandelions, mint, etc., combined with oil and vinegar at the Passover. Romans regulated the use of vegetables by law, compelling the people to combine them freely with meats in their dietaries.

### **Salad Plants.**

Chief among salad plants is **lettuce** which belongs to the dandelion family. It was probably first cultivated on some of the islands of the Mediterranean Sea. In 1520 it was introduced into England and during the reign of Henry VII, the gardener at York Palace received a reward for bringing lettuce and cherries to Hampton Court. Today lettuce is universally cultivated in hot houses and gardens and may be obtained all the year round.

**Endive**, sometimes called winter lettuce, belongs to the dandelion family. It was first cultivated in China and Japan and introduced into Europe in the sixteenth century. It is valued for salads because it may be obtained in the winter when there is a scarcity of other salad plants.

**Water cress** belongs to the mustard family. It grows wild near springs and along the banks of small streams. It is cultivated for market by sowing the seed along the margins of streams or in tanks of water in which a deep layer of sand has been placed. The garden variety is known as pepper grass.

**Celery** is a native of Europe but it is now widely grown in our country, especially in Michigan, Ohio and New York. The seeds for the earliest celery are sown in hot beds and the plants are set out five or six weeks later, being banked up to keep the sun off and thus produce the white color.

**Celeriac**, or the turnip rooted celery, is also used for salads.

**Chives** is a hardy plant which grows wild in Europe. It is

cultivated for its delicate green leaves which are a good substitute for onions in salads, soups, etc.

One of the most common salad plants is the **cucumber**, which belongs to the melon family. That it has long been cultivated is proven by reference made to it in the Old Testament. It came into general use in England in the seventeenth century. It is commonly made into pickles, especially a variety known as gherkin.

### **Food Value.**

The salad plants have but little food value, yet they are refreshing, wholesome and appetizing.

The green vegetables contain mineral salts necessary to the well being of our bodies, the oil (either olive, cotton seed or corn oil) or butter used in the dressing are easily digested forms of fat while the lemon juice or vinegar gives sufficient acid.

In the more complex salads, nutritious foods are mixed with those that are savory or crisp.

### **Care of Salad Plants.**

Great care must be exercised in the cleansing of all salad plants. Cut off the earthy roots, remove coarse or discolored leaves, then wash thoroughly even though they look clean. Each lettuce leaf must be carefully examined lest tiny insects of the same color cling to it. Other salad plants must be cared for in the same way.

After thorough cleansing let them stand about half an hour in very cold water to crisp them, then drain and dry by swinging in a wire basket, a piece of net or cheese cloth. Wrap in a soft cloth or place in a covered dish then set in a cool place until serving time. If any water clings to the leaves, it must be care-

fully wiped off with a soft cloth before the dressing is added, for if the leaves are wet the dressing will run off.

### **Garnishes.**

To fringe celery, cut off roots and leaves and scrape off any brown spots, then wash and cut in two-inch lengths. Beginning on the round side at one end, cut down one-half inch, making as many thin slices as possible, then turn the stalk and cut these slices in the opposite direction. Cut the opposite end in the same way. Place in very cold water and the ends will turn back. A few drops of lemon juice or vinegar in the water helps to keep the celery white and crisp. Use the delicate tips and leaves in garnishing.

Radishes may be cut to represent tulips. Use round radishes, wash, cut off the leaves and rootlets, beginning at the root end make five or six incisions three-fourths the length of the radish; then slip the knife under the sections of skin and cut down as far as the incisions extend. Place in cold water and the sections of skin will turn back, giving a flower-like appearance.

To shred lettuce lay several leaves together and cut in one-fourth inch strips with the shears.

### **Salad Accompaniments.**

If the salad is to be served as a separate course, wafers, bread and butter sandwiches, cheese sandwiches, lettuce sandwiches, or cheese straws may be served. If the salad is a light one even chopped meat or egg sandwiches may be served with it. Salted nuts and olives often accompany the salad course.

### **Points in Salad Making.**

Judgement, deftness, and skill are required in salad making, as a salad must not be oily nor acid; but well blended, fresh, attractive, and appetizing both in appearance and taste.

Salads are easily prepared and require no expense for fuel. Some vegetables suitable for salads may be obtained all the year round.

All green vegetables must be clean, crisp and cold.

Salad materials that are cut should be uniform in shape.

Meat for salad must be freed from skin and gristle.

To *marinate* means to *pickle*, that is, add salt, pepper, oil, and acid to salad ingredients and allow to stand until well seasoned.

All cooked vegetables or meat salads should be marinated before serving. Any salad dressing may be used to marinate a salad but French dressing is most often used. This marinating liquid is called a marinade.

The marinade must be carefully drained off before a mayonnaise or boiled dressing is added, lest it thin the dressing.

The ingredients composing a salad should not be combined until time for serving.

Where salads are dressed at the table, mix oil and seasonings, pour over the materials and toss until every part is well coated, then add the lemon juice or vinegar and toss again. If the acid is added first, the oil will not cling.

To vary the flavor, rub the salad bowl with a clove of garlic or slice of onion or rub a piece of bread with garlic and place in the bowl.

## LABORATORY EXERCISES.

## SALAD DRESSINGS.

**French Dressing.**

$\frac{1}{2}$ t. salt	2 T. lemon juice or vinegar
$\frac{1}{4}$ t. pepper	4 to 6 T. olive oil

1. Mix the seasonings.
2. Add the olive oil and mix well.
3. Add the acid, a few drops at a time and beat well until the dressing thickens slightly.

Note.—*French dressing may be varied by rubbing the bowl with a clove of garlic or a slice of onion or by the addition of celery salt, horse-radish, mustard, Worcestershire sauce, tomato catsup, etc.*

**Boiled Dressing.**

1 C. weak vinegar	$\frac{1}{2}$ C. sugar
1 t. mustard	Few grains cayenne
$\frac{1}{2}$ t. salt	4 T. butter or olive oil
$\frac{1}{8}$ t. pepper	2 eggs
2 T. flour	1 C. cream or milk

1. Mix dry ingredients.
2. Add eggs and beat well.
3. Heat vinegar to the boiling point and pour slowly over the above mixture while stirring.
4. Cook over hot water, stirring constantly until thickened.
5. Add olive oil or butter.
6. Thin with sweet or sour cream.

**Cream Dressing.**

$\frac{1}{2}$ t. salt	$\frac{3}{4}$ C. sweet or sour cream
Few grains cayenne	1 egg
1 t. mustard	3 T. butter
1 t. sugar	3 T. vinegar or lemon juice
$\frac{1}{2}$ T. flour	

1. Mix dry ingredients.
2. Add egg and beat well.
3. Add butter or olive oil and cream.
4. Cook over hot water, stirring constantly until thickened.
5. Remove from the fire, add vinegar slowly while stirring.

**Dressed Lettuce, Endive or Water Cress**

1. Wash, crisp and dry materials.
2. Arrange attractively in a salad dish.
3. Serve with French dressing.

Note.—*Sliced tomatoes, cucumbers, radishes, may be served on all of the above salads.*

**Cabbage Salad.**

1. Remove wilted leaves from a small head of cabbage and let stand in cold water until crisp.
2. Cut out the stalk, dry and chop the cabbage fine.
3. Serve with salad dressing.

Note.—*1 C. finely cut celery or peanuts may be added.*

**Potato Salad No. 1.**

- |                                   |                           |
|-----------------------------------|---------------------------|
| 2 C. boiled potatoes cut in cubes | 1 C. diced cucumbers      |
| 1 C. celery                       | $\frac{1}{2}$ small onion |
- Salad dressing to moisten

1. Mix lightly.
2. Add salad dressing.
3. Garnish with hard cooked eggs, celery tips, curled celery, or thin slices of radish.

### Potato Salad No. 2.

6 medium sized boiled potatoes	1 sweet red pepper (fresh or canned)
3 apples	2 C. celery
1 small onion	3 C. (?) salad dressing

1. Cut potatoes and apples in  $\frac{1}{2}$ -inch cubes. (Drop apples into salad dressing as soon as cut to keep them from turning dark.)
2. Chop onion and pepper very fine.
3. Cut celery into  $\frac{1}{2}$ -inch pieces.
4. Mix all together lightly and moisten with  $\frac{1}{2}$  the salad dressing.
5. Let stand in cold place one hour, then drain off all the thin liquid in bottom of dish and add rest of salad dressing.
6. Serve on lettuce leaf.

### Cucumber and Tomato Salad.

1. Peel tomatoes. The skin may be easily loosened by first scraping the surface of the tomato with the back of a vegetable knife, and then peel. If the tomatoes are scalded to remove the skins, they are not so firm.
2. Slice tomatoes on a bed of lettuce.
3. Dice cucumbers and pile on each side.
4. Serve with French or mayonnaise dressing.

**Daisy Salad.**

Hard cooked eggs    Mayonnaise or boiled dressing

1. Cut whites in long strips.
2. Arrange on a bed of lettuce or cress as the petals of a daisy.
3. Put yolks in the center or mash through a potato ricer and sprinkle over the salad.
4. Put a spoonful of dressing at one side of the lettuce.

**Water Lily Salad.**

6 hard cooked eggs    1 head lettuce  
boiled salad dressing

1. Wash lettuce thoroughly.
2. Save 6 medium sized perfect leaves and cut the rest into thin shreds.
3. Remove the shells from the eggs and cut each egg around the center in points like this ^^^ being careful to push the point of the knife through to the center of the yolk.
4. Separate each egg into halves when cut.
5. Mix shredded lettuce with salad dressing.

6. Arrange whole lettuce on individual plates.
7. Make a nest of the shredded lettuce on each whole leaf and put a spoonful of dressing on each.
8. Place eggs on the salad dressing.
9. Serve cold.

### **Stuffed Egg Salad.**

6 hard cooked eggs     $\frac{1}{3}$  C. boiled ham finely chopped

1. Cut eggs in half lengthwise, keeping whites in pairs.
2. Remove yolks and mash or put through a potato ricer.
3. Add ham.
4. Mix with salad dressing.
5. Form into balls, refill whites.
6. Arrange on lettuce leaves.
7. Place a teaspoonful of salad dressing beside each egg.

### **Salmon Salad.**

1 can salmon drained,    1 C. celery  
   boned and flaked    1 small onion minced  
3 small boiled potatoes  
   diced

1. Mix materials lightly.
2. Pour over marinating liquid and let stand until seasoned.
3. Drain, add salad dressing.
4. Serve on lettuce.
5. Garnish with thin slices of lemon dipped in finely cut parsley.

### **Banana Salad.**

1. Peel bananas and cut in half lengthwise.

2. Roll in mayonnaise or cream dressing.
3. Sprinkle with nut meats broken by hand.
4. Serve on lettuce.

**Waldorf Salad.**

2 C. diced apples	1 C. English walnut meats
1 C. cubed celery	broken by hand

Salad dressing

1. Mix ingredients and moisten with salad dressing.
2. Serve on lettuce or remove the tops from red or green apples, scoop out the pulp and refill the shells with the salad.

*Note.—The diced apples should be mixed with the dressing or dropped into acidulated water at once or they will turn black.*

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Give several reasons for using salads in the dietary.
2. Plan two dinners and two luncheons, using a salad in each. Explain why you selected each salad for each menu.
3. Begin a salad calendar. For each month put down the names of the salad plants, most easily obtained in your locality at that time.

## READING NOTES.

Read concerning the planting, care and cultivation of some one salad plant. Make notes on same.



**EXERCISE XIX.****ICES AND ICE CREAMS.**

In the summer time, especially, frozen desserts are acceptable. If eaten slowly and in moderate quantities they are not only harmless but beneficial. It frequently happens in some cases of stomach trouble that ice cream is the only nourishment the patient can take for a time. It is absolutely necessary in such instances to know that the ice cream is pure and wholesome. If it is made at home, one can be sure that nothing of a harmful nature gets into the dessert.

**Classification of Frozen Desserts.****Made with Water.**

1. Water ice—water, fruit juice, and sugar.
2. Granite—a water ice containing small pieces of fruit.
3. Frappe—a water ice frozen very rapidly so that it is coarse grained, with little crystals of ice in it.
4. Sherbet—a water ice with either beaten white of egg or dissolved gelatine added when mixture is half frozen to give the consistency of cream.

**Made with Milk.**

1. Philadelphia ice cream—cream, milk, sugar, flavoring.
2. French ice cream—a custard of eggs, milk and sugar with cream and flavoring added.
3. Mousse—whipped cream, sweetened and flavored, frozen without stirring.
4. Frozen Puddings—a custard with various fruits, flavoring and thickenings added.

**Principles of Freezing.****Experiments:**

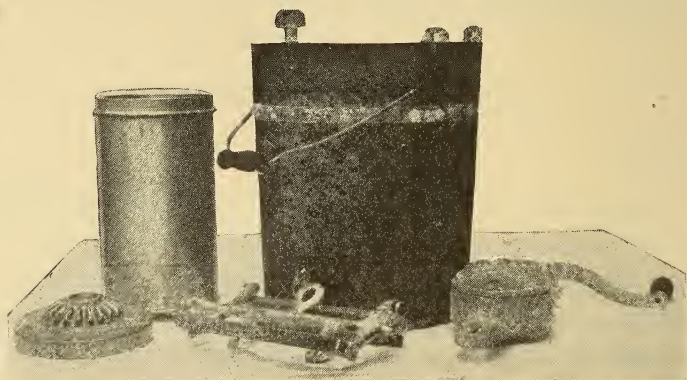
1. Test with a thermometer the temperature of (1) water, (2) cracked ice, (3) cracked ice and salt.
2. Set a tin cup of water into a bowl of cracked ice and another into a bowl of cracked ice and salt. In half an hour test the temperature of the water in each cup—Notice the frost on the outside of the bowl containing the ice and salt. Where did the moisture that has condensed on the outside of the bowl come from?

When a solid changes to a liquid it takes up heat from surroundings. For example, when the ice in the ice box changes to water it absorbs heat from the butter and other food in the ice box, making them colder. The faster the ice melts, the faster it will absorb heat.

We make use of this fact in freezing ices and ice creams.

We put the mixture that we wish to freeze into a metal can because heat passes through metal easily. We set this can into a wood tub (wood is a poor conductor of heat) and pack ice and salt between the can and tub. If the outside receptacle were made of metal it would take longer and would use more ice to freeze the cream because the ice would absorb as much heat from the air outside as it did from the cream inside the can.

Salt makes ice melt, therefore if we add salt to the cracked ice, the mixture in the can will freeze still more quickly. Even the melting of the salt in the ice water causes a little heat to be taken up from the cream.



### Directions for Freezing.

1. Scald the can and dasher. Be sure the water is **boiling**

hot so that the can will be perfectly sterilized. Cases of ptomaine poisoning have been traced to ice cream coming from a can that was not sterilized. Ice cream that has been allowed to stand and melt should not be re-frozen for fear that the bacteria have had time to work in it. If there is any left-over ice cream and it cannot be repacked and kept frozen, it should be put into a double boiler, before it has time to melt, and thoroughly scalded. It may then be put into the ice box and frozen later or used to make bread puddings or custards.

2. Place the can in the pail, fit all parts together and turn the crank to see that every part is working properly.

3. Remove cover and put mixture to be frozen into the can. Do not fill the can more than three-fourths full as the mixture expands in freezing. Replace the cover and pack with ice and salt.

4. To prepare the ice and salt, place the ice in a burlap bag and pound with a mallet until the ice is broken into small pieces.

5. Fill the space between the can and tub with alternate layers of ice and rock salt. Use one measure of salt to three measures of ice. If more salt is used the cream will freeze so rapidly it will be coarse grained. The ice and salt may be mixed together before the freezer is packed instead of putting them around the tub in alternate layers.

6. Turn the crank steadily until the mixture is frozen.

7. Remove the dasher and pack the cream solidly in the can.

8. Put a clean cloth or piece of paraffin paper over the top of the can and fit a cork tightly into the hole in the cover.

9. Drain the water from the freezer, repack with ice and salt and allow the cream to stand an hour or more to "ripen."

This makes the cream better flavored and more solid than if it is used as soon as it is frozen.



### LABORATORY EXERCISES.

#### Lemon Ice.

- |             |                                  |
|-------------|----------------------------------|
| 1 qt. water | $\frac{3}{4}$ C. lemon juice     |
| 2 C. sugar  | $\frac{1}{2}$ t. vanilla extract |

1. Boil sugar and water together for 10 minutes.
2. Cool the syrup and add the lemon juice.
3. Turn into the freezer and freeze.

#### Orange Ice.

- |             |                              |
|-------------|------------------------------|
| 1 qt. water | 2 C. orange juice            |
| 2 C. sugar  | $\frac{1}{4}$ C. lemon juice |

Make the same as lemon ice.

#### Pineapple Ice.

- |             |   |
|-------------|---|
| 1 qt. water | $\frac{1}{4}$ C. lemon juice            |
| 2 C. sugar  | 1 can pineapple or 1 fresh<br>pineapple |

1. Chop pineapple very fine.
2. Add pineapple to syrup and lemon juice.
3. Freeze the same as lemon ice.

### Strawberry Ice.

1 qt. water	1 qt. strawberries
2 C. sugar	$\frac{1}{4}$ C. lemon juice

1. Rub berries through colander.
2. Add to remaining ingredients and make the same as lemon ice.

*Note.—If whole fruit of any kind is to be added to any frozen dessert, it must first be preserved in sugar syrup or in alcohol to take up the water. Otherwise the pieces of fruit will be hard lumps of ice when the cream is frozen.*

### Sherbets.

To any of the recipes for fruit ices add one stiffly beaten egg white when the mixture is half frozen. Stir in the egg white thoroughly with a long handled wooden spoon, then finish freezing.

### Philadelphia Vanilla Ice Cream.

1 pt. cream	$\frac{1}{4}$ t. salt
1 pt. milk	1 T. vanilla
1 C. sugar	

1. Mix ingredients together.
2. Stir until sugar is dissolved then freeze.

**French Vanilla Ice Cream.**

2 C. scalded milk	1 egg
$\frac{3}{4}$ C. sugar	1 pt. cream
$\frac{1}{4}$ t. salt	1 T. vanilla

1. Beat egg and add sugar and salt.
2. Add the scalded milk, while stirring.
3. Pour into double boiler and cook ten minutes, stirring constantly.
4. When cool, add the cream and vanilla.
5. Turn into freezer and freeze.

*Note.—If the cream is thick enough to whip, put one-half of it into the upper part of the double boiler, put cold water in the lower part, then beat the cream with Dover egg beater until thick. Stir this into the custard when the custard is half frozen. This will make a much smoother ice cream.*

**Chocolate Ice Cream.**

1. Add two squares of melted chocolate to the hot custard in recipe for French vanilla ice cream.
2. Cool and freeze.

**Strawberry Ice Cream.**

Mash 2 C. of strawberries with 1 C. sugar and add to either recipe for vanilla ice cream.

**Apricot Ice Cream.**

$\frac{1}{2}$ lb. dried apricots.	1 pt. cream
2 C. sugar	$\frac{1}{4}$ t. salt
2 C. scalded milk	2 eggs

1. Pick over and wash apricots.
2. Cover with water and let stand several hours.

3. Put on to cook in water in which they were soaked.
4. Simmer until soft, then rub through colander.
5. Make custard of sugar, milk, salt and eggs.
6. Add cream and freeze.
7. When half frozen stir in the apricot pulp and finish freezing.

*Note.—Almost any dried fruit may be used.*

### **Frozen Rice Pudding.**

$\frac{1}{2}$ C. rice	1 C. sugar
1 qt. milk	1 T. vanilla
1 egg	1 C. figs chopped fine

1. Cook rice in milk in upper part of double boiler for  $\frac{3}{4}$  of an hour.
2. Beat egg, add sugar and salt.
3. Stir the rice and milk into the egg, then return the mixture to the double boiler and cook for five minutes.
4. Cool, add vanilla and chopped figs and freeze.

### **Raspberry Mousse.**

1 qt. cream	$1\frac{1}{2}$ T. granulated gelatine
3 C. raspberries	$\frac{1}{3}$ C. water
	1 C. sugar

1. Wash and pick over berries.
2. Add sugar and let stand one hour.
3. Rub through a fruit sieve.
4. Add water to gelatine.
5. Let stand ten minutes then set bowl into hot water until gelatine is dissolved.
6. Add gelatine to raspberries and stir until mixture begins to thicken, then fold in the stiffly beaten cream.
7. Put into a mold, cover tightly and pack in ice and salt. (1 part salt to 2 parts ice.) Let stand four hours.

NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Why do we have paddles and a dasher in an ice cream freezer? Why are they not needed in making mousse?
2. Compare the cost of strawberry ice with the cost of strawberry ice cream. Which is more nourishing?
3. Is a dish that contains very little food value of any use in the diet?

## READING NOTES.

**References:**

Lynde's Household Physics.

## HOME WORK.

Date.	Name of Dish.	Results.	Remarks.

**EXERCISE XX.****CRANBERRIES.****Introduction.**

The cranberry is one of the few fruits that can be obtained fresh during the winter season. Because of the large amount of acid and small amount of sugar present, it does not spoil readily and can be kept in barrels or crates for weeks after harvesting. The only care that must be taken is to keep the fruit from freezing.

Less than seven per cent of the cranberry is sugar, therefore, its chief value is in the mineral matter it contains. It is also valuable as an appetizer.

We usually think of cranberry sauce in connection with roast turkey or roast chicken, just as we associate baked apples with pork, and currant jelly with roast lamb. The acids of these fruits are said to aid in the digestion of the fat in the meat.

Cranberries may also be used for dessert in pies, puddings and ices, or the stewed fruit may be served with cake.

**LABORATORY EXERCISES.****Cranberry Jelly.**

1 qt. cranberries	1½ C. water
2 medium sized apples	2 C. sugar

1. Pick over and wash cranberries also wash, pare, core and slice apples.

2. Add water and boil until berries and apples are soft, then strain.



1. Sift flour, baking powder and salt together three times,
2. Add half the milk to the beaten egg and stir into the dry materials.
3. Add enough more milk to make a drop batter.
4. Melt butter and stir into the mixture.
5. Grease a baking dish, preferably a cake pan with a funnel in the center.
6. Pour marmalade into the bottom of the pan and pour the batter on top of the marmalade.
7. Bake in a moderate oven until the crust pulls away from the sides of the tin and feels firm when pressed lightly with the finger.
8. When the pudding is done, turn it wrong side up on a plate and serve with either vanilla sauce or hard sauce.

### Cranberry Roly Poly.

- |                           |                           |
|---------------------------|---------------------------|
| 2 C. flour                | 2 T. sugar                |
| 4 t. baking powder        | 3 T. lard or butter       |
| $\frac{1}{2}$ t. salt     | $\frac{2}{3}$ C. (?) milk |
| 1 C. cranberry marmalade. |                           |

1. Mix and sift dry materials three times.
2. Cut in lard with two knives.
3. Add enough milk to make a soft dough.
4. Turn onto a floured board and roll one-half inch thick.
5. Spread with marmalade and roll up like jelly roll. Be careful not to have marmalade too near the edge of the dough.
6. Place in buttered dish and steam  $1\frac{1}{2}$  hours.
7. Serve in slices with foamy sauce.

**Foamy Sauce.**

$\frac{1}{2}$ C. sugar	2 T. butter
2 T. flour	1 t. vanilla
1 C. boiling water	1 egg white

1. Mix sugar and flour together.
2. Add boiling water and cook five minutes, stirring constantly.
3. Remove from stove, add vanilla and butter, then pour onto the stiffly beaten egg white. Serve at once.

**Cranberry Ice.**

3 C. cranberries	$1\frac{1}{2}$ C. sugar
4 C. water	juice of 1 lemon

1. Pick over and wash berries.
2. Add one cup of water and boil 15 minutes, then rub through the strainer.
3. Make a syrup by boiling sugar with the remaining 3 cups of water.
4. When cool, mix cranberry juice, syrup and lemon juice together.
5. Put in freezer and freeze. (In packing freezer, allow 3 C. of cracked ice to 1 C. of coarse salt.)

**Cranberry Sherbet.**

Make the same as cranberry ice. When half frozen, add the stiffly beaten white of one egg and finish freezing.

NOTES ON LABORATORY WORK.

QUESTIONS AND SUGGESTIONS.

Why do we seldom can cranberries?

## READING NOTES.

**Suggested Topic:**

Cranberry Culture.

**References: ..**

Government Bulletin No. 176.

How the World Is Fed, Carpenter.

World's Work for 1913.



**EXERCISE XXI.****CANDY.****Sugar Manufacture.**

Sugar, the chief ingredient of all pure candies, is obtained from sugar cane, sugar beets and the sugar maple. The juice from these plants is boiled to evaporate the water and the syrup is then allowed to crystallize.

To obtain a pure white granulated sugar, this raw sugar must then be subjected to a refining process, during which it is remelted, bleached, filtered and again boiled down until it is thick enough to crystallize, after this the sticks are cut into cubes by machinery. If granulated sugar is wanted, the syrup is poured into a centrifugal machine which whirls it around and around until the crystals of sugar are separated from the syrup.

Either the loaf sugar or the granulated sugar may be ground very fine and sold as powdered sugar.

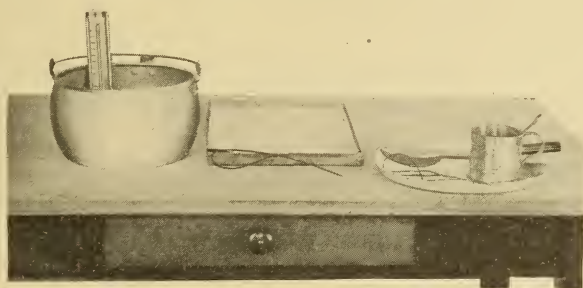
Molasses is a sweet, sticky, dark colored liquid which is separated from raw sugar during the crystallization process. This too is refined to produce different grades of syrup.

### **Candy as a Food.**

Candy is a useful article of food if it be eaten at the right time and in proper quantities. It should be taken as any other food would be, at meal time and in small amounts.

### **Candy Making.**

A sugar thermometer is a great help in the making of candies, but a little experience with a few simple tests, will enable anyone to tell when the candy reaches the desired temperature.



### **Boiled Sugar Tests.**

1. The blow  $230^{\circ}$
2. The feather  $232^{\circ}$

Twist a broom straw into a loop at one end and dip it into the syrup. A film will form across the loop. Blow against this film; if it stretches out into a bubble, the *blow* stage has been reached.

At the *feather* stage, the film will break and stand out from the loop with fine feathery edges.

3. Soft ball 238°

4. Hard ball 248°

Hold a teaspoon in a cup of ice water and drop a little syrup into the spoon. At the *soft ball* stage, this will form into a soft, elastic ball that will just hold its shape when held lightly between the fingers. At this stage a fine thread of sugar, at least three or four inches long, will fly from the end of the spoon like a cobweb. This is the *icing test*.

At the *hard ball* stage, the ball will not be easily pressed out of shape. Hold the ball under the ice water while making the *soft ball* and *hard ball* tests.

5. Crack 300°

At this stage, the syrup will harden in ice water so that it will break off brittle when struck a sharp blow.

6. Caramel 350°

When sugar begins to caramelize, it changes to a yellow color. Care must be taken not to let the syrup burn.

### Hints on Candy Making.

(1) Granite or aluminum kettles and wooden spoons are best for candy making.

(2) Get everything ready to receive the cooked candy before starting to work. Sometimes a moment's delay at a critical point will ruin a whole batch of candy. Grease pans, get out waxed paper, shell and chop nuts, separate whites and yolks of eggs, if eggs are to be used, etc., etc.

(3) If you wish candy to be fine grained or not to grain at all, *do not stir it after it begins to boil*.

(4) A small amount of acid, as vinegar, lemon juice or cream of tartar, cooked with the sugar, will help to keep it from graining.

(5) When *pulling* candy, do not put anything on the hands to keep the candy from sticking. Keep the hands as cool as possible and pull with the tips of the fingers.

### LABORATORY EXERCISES.

#### Peanut Brittle.

1 C. granulated sugar     $\frac{1}{3}$  C. chopped peanuts

1. Heat the sugar in a granite pan until it is melted, stirring constantly. Be careful not to burn it. This is called caramelized sugar.

2. When sugar is melted add the chopped nuts and pour quickly onto a greased tin.

3. Mark into squares when slightly cool.

Note.—*One cup of peanuts in the shell will make one-third cup of shelled peanuts. English walnuts may be used instead of peanuts. One pound of walnuts in the shell will make  $1\frac{1}{3}$  C. to  $1\frac{1}{2}$  C. walnut meats.*

#### Butter Scotch.

2 C. brown sugar    4 T. butter

$\frac{1}{4}$  C. Karo syrup    3 T. vinegar

4 T. water

1. Mix ingredients in saucepan.

2. Stir until it boils, and then cook *without stirring* to the crack stage.

3. Pour into greased pan.

4. Cut into squares when cool.

#### Molasses Taffy.

2 C. brown sugar    2 T. vinegar

1 C. molasses    2 T. butter

1 t. soda

1. Melt butter in kettle; add remaining ingredients and boil without stirring to the crack stage.

2. Add soda, mix quickly and pour into buttered pans.

3. As it cools, fold the edges of the candy to the center of the plate.

4. When cool enough to handle, pull until almost white, then cut into sticks.

### Popcorn Balls.

1 C. molasses                      1 T. vinegar

2 C. brown sugar              1 t. soda

popcorn

1. Follow directions for molasses taffy.

2. Just before removing from the fire, stir in enough popcorn to thicken it.

3. Dip up the mixture by the spoonful and roll into balls as soon as it is cool enough to handle. Then roll these balls over and over in kernels of popcorn until no more will adhere to the balls.

Note.—*Shelled peanuts mixed with the popcorn make a delicious "Cracker Jack."*

### Panocha.

2 C. brown sugar              1 C. cream or milk

2 T. butter                      1 t. vanilla

$\frac{1}{2}$  C. chopped nuts

1. Cook sugar and cream and butter to *soft ball* test.

2. Set sauce pan in a pan of cold water until cool enough so that you can hold your hand on the bottom of the sauce pan.

3. Stir until the candy begins to thicken, add nuts and stir until it begins to sugar.

4. Pour quickly on a buttered pan.
5. Cut in squares and cool.

### Stuffed Dates.

2 lbs. dates	2 oz. peanut butter
$\frac{1}{4}$ C. English walnut meats	fondant

1. Separate and wash dates.
2. Dry on a clean towel.
3. Cut through one side of each date, lengthwise, and remove seeds.
4. Fill the cavity in one-third of the dates with peanut butter and one-third with chopped English walnuts.
5. Roll pieces of fondant the shape and size of the date seed, and place in the cavities of the remaining dates.
6. Put  $\frac{1}{2}$  C. granulated sugar in a paper bag. Drop in a few of the stuffed dates at a time and shake until coated with sugar.

### Uncooked Fondant.

$\frac{1}{3}$ C. cream	4 C. powdered sugar
	flavoring

1. Stir powdered sugar into the cream a spoonful at a time until thick enough to knead with the hands.
2. Work in the hands until smooth. Then separate into three or four pieces.
3. Work a few drops of a different flavoring extract into each piece.
4. Shape some of the cream into small balls and press half an English walnut kernel on each side.
5. Fill some seeded dates with cream.

6. Mix shredded cocoanut with some of the cream and form into balls.

*Note.—This makes a very good cream candy if used at once. It dries out and becomes hard on standing.*

#### NOTES ON LABORATORY WORK.

## QUESTIONS AND SUGGESTIONS.

1. Visit a candy factory if possible.
2. What part of the work is done by girls and women?
3. How are they paid, by the hour or by piece work?
4. Figure cost of one pound of home made candy, counting your time as of same value as girl in factory.
5. Compare with cost of same grade of factory made candy.
6. What is the *glucose*, that is used in candy factories so extensively? Is it harmful?







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