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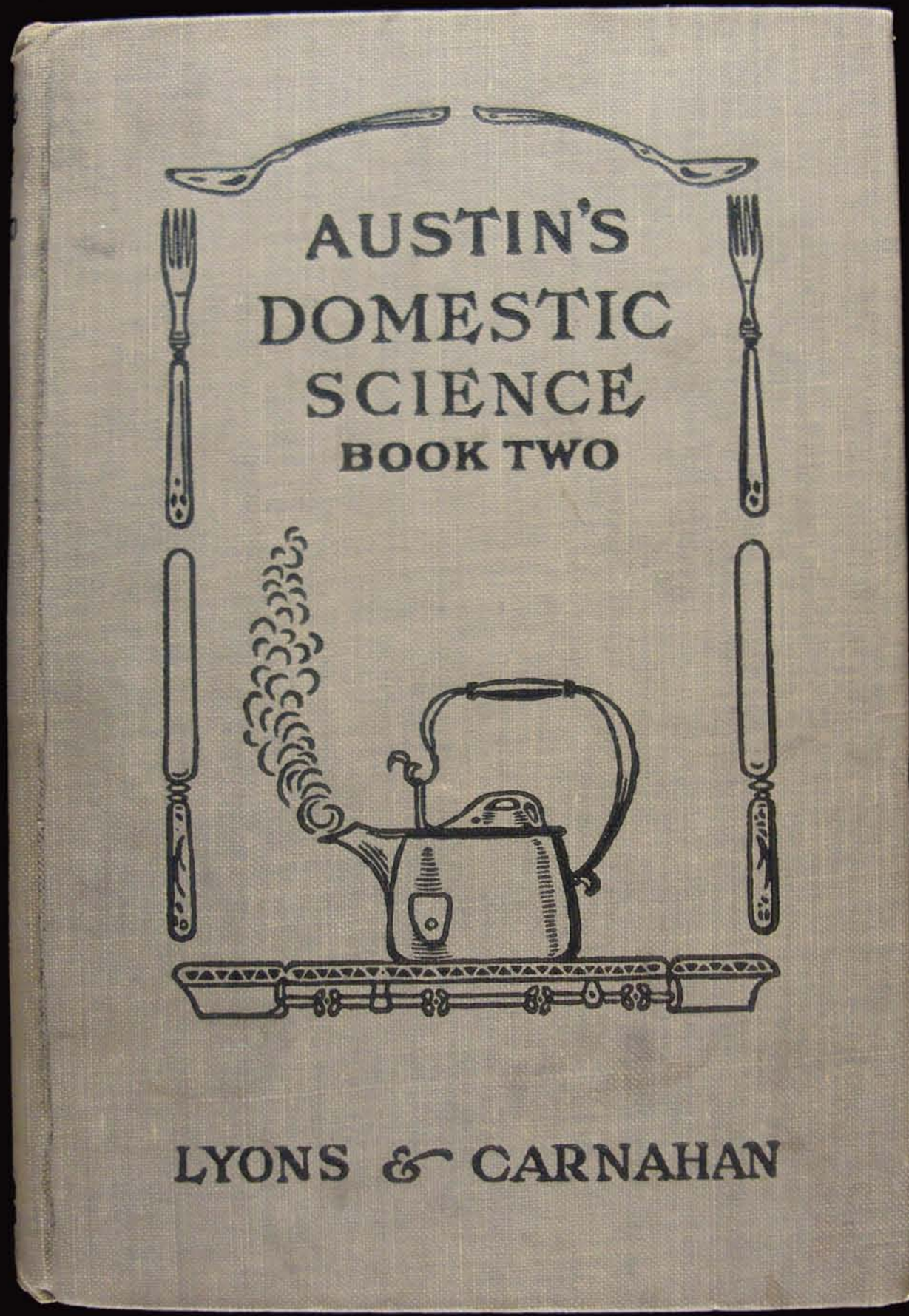

DOMESTIC SCIENCE

BOOK TWO

BY

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MATERIAL COLLECTED BY A COMMITTEE OF DOMESTIC SCIENCE
TEACHERS COÖPERATING FROM DIFFERENT
SECTIONS OF THE COUNTRY

LYONS & CARNAHAN
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PREFACE

This book is the second in a series of three books designed to furnish a complete course of instruction in Domestic Science. While it is desirable that the work of Book One shall be done before that of Book Two, it is not necessary, for the work of the latter, although in advance of that given in Book One, may be very profitably taken up independently. The glossary, the review of technical terms, table of measurements, table service and etiquette given in Book One, together with the preparation of many dishes involving the same or similar principles and operations to those prepared in the first book, make possible and profitable the study of this book as an independent unit.

In Book Two, as in the previous book of the series, the lessons are carefully worked out in detail, the instructions clear and simple, the manner of presentation pedagogical, the steps in every process being given in the order of operation and the underlying principles clearly set forth, so that any grade teacher may by its use teach Domestic Science as easily and accurately as she teaches any other branch in the curriculum. Another strong feature of the book is the character of the subject-matter, which is practical and economical, nothing being asked of the student which is not suggested by the needs of the ordinary household and nothing necessitating an extravagant expenditure in order to do the required work.

The reading lessons, which are interspersed at intervals throughout the book, present interesting and valuable information on the various foods in a pleasing manner.

The character of the illustrations is obvious at a glance. They make graphic utensil, process, or finished product, whichever the clear presentation of the given lesson seems to demand.

In short, in this book is offered to the public schools of the country the second member of a series of books which shall make possible the teaching of Domestic Science in the grades and common schools with the maximum of results and the minimum of expenditure.

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O hour of all hours, the most bless'd upon earth,
Blessed hour of our dinners!

. . . . .

We may live without poetry, music, and art,
We may live without conscience, and live without heart;
We may live without friends; we may live without books;
But civilized man cannot live without cooks.
He may live without books—what is knowledge but grieving?
He may live without hope—what is hope but deceiving?
He may live without love—what is passion but pining?
But where is the man that can live without dining?

—Owen Meredith.

DOMESTIC SCIENCE

BOOK TWO

STUDY OF FRUITS

Lesson I

FRUITS (Reading)

Fruits are the most delicious of foods; they are also the most decorative. Poets have praised them; artists have painted them. They rank with flowers in romantic attraction and with the homelier foods in nutritive value. Translucent grapes, oranges, nectarines, and apples are often used as table decorations in place of flowers. So delicate and sweet are the flavors of many fruits that they can be likened only to the fragrance of flowers. The two grow intermingled in warm climates and poets and painters alike have joined them in the creation of their fancy.

The grape has been sung more than any other fruit because of its use in wines and the appeal in this form to the wild poetic spirits of the earlier verse-writers. It is to the "fruit of the vine" that Omar Khayyam sings praises in his Persian poem, *The Rubayiat.* But the grape itself has actual beauty of form and color and texture, its skin being as bloomy as that of the peach — sometimes a soft purple overlaid with a fine frost of bloom. There are fruits, like the wild crabapple, that attract the eye and repel the palate; but the grape both pleases the eye and gratifies the palate, vying in delicacy of flavor and lusciousness with the peach, the orange, the apricot, the plum,

and the strawberry. By many it is placed at the very head of all fruits.

As an industry, fruit-raising in America has developed marvelously during the past two or three decades. This is chiefly because of the irrigation of the semi-desert lands in the west and southwest. These soils seem to be perfectly adapted to fruit-raising and the climate is suited to many fruits, so that when water was secured and applied to the land by irrigation processes, the result was that the desert literally bloomed and produced rich harvests of fruit.

Experiment has also proved it possible to raise certain of the hardier fruits in the southern states where it was formerly supposed they would not thrive.

Of the more tropical fruits, it has been found necessary to import fewer and fewer, as olives and dates and figs are now grown in California, and some of the southern states are producing the tropical and semi-tropical fruits.

The Biblical "Mount of Olives" suggests the Holy Land as the ancient home of the olive, and it is still grown extensively throughout Smyrna, Syria, Greece, and other Mediterranean countries, where the fig tree is most at home.

Definition:

The fruit of a plant is really the seed together with the outer protective covering. Sometimes it is encased in a husk, sometimes in a shell, and sometimes the seed is embedded in a thick pulp, as in the grape, peach, and apple. When we refer to fruit, we usually mean those fruits that are sweet and can be eaten uncooked, or can be cooked, sweetened, and served as dessert.

Composition of fruits:

Most fresh fruits contain large percentages of water and cellulose. They contain almost no protein, which is the tissue-building material, and not much starch after they have ripened. In ripe fruit the starch has almost all been turned into sugar. Some fruits also contain a substance, called pectin, which causes

fruit to jelly. Another important content of most fruits is an acid. The vitamines and minerals of fruits are also very important.

Food value of fruit:

Fruits are deficient in protein and in fat. Their chief service in food value, then, is their carbohydrates, or starch and sugar material. In green fruit, the carbohydrate is chiefly in the form of starch, but in the ripe fruit this is changed to sugar and pectin. Like vegetables, fruits supply bulk to the food because of their large amount of cellulose. They are less rich in mineral salts than vegetables, but supply fully as much water and more acid. Because of the large amount of water and the acids they contain, fruits are very cooling and refreshing to the system. That is probably why they are so popular during hot, summer weather, and with feverish invalids.

The most wholesome of fruits seem to be those containing some acid in large amount, as the apple, with its malic acid, the grape, with its tartaric acid, and the orange with its citric acid. The acids are said to act as blood purifiers. Soft-pulped fruits, such as peaches, pears, and plums, are more wholesome when eaten alone than are more solid fruits, such as bananas, raisins, and figs. Many-seeded fruits may prove harmful if eaten alone in large quantities. Fruits have various effects upon digestion, these effects being most apparent in uncooked fruit.

The chief uses of fruits in the diet may be summed up as follows:

To furnish nourishment
To act as blood purifiers
To give a stimulus to appetite
To serve as medicine
To aid in digestion
To give variety in food

General rules about fruit:

Only sound, ripe fruit should ever be eaten. Unripe fruit is indigestible because of the raw starch and astringent acids

it contains. On the other hand, over-ripe fruit, or fruit that is commencing to spoil, has an even worse effect because of the bacteria which have caused the fruit to spoil. Very often this under-ripe or over-ripe fruit can be made safe for eating by thorough cooking.

As a rule, if fruit is to be eaten raw it should be eaten some time before a meal or between meals. In the case of berries containing many seeds, this rule does not hold; they should be eaten with some bulky food. Because of the large water content of fruit, it interferes with digestion if taken at the close of the meal.

Sweet fruits are best combined with some starchy food, such as cereals; acid fruits may interfere with the digestion of the starch in cereals. Cream should not be served with acid fruits.

Fruit is best for eating when freshly gathered; melons are an exception to this, being better when chilled before being served; in general, if fruit cannot be served soon after being gathered, it should be served cold, or, as we say, chilled.

All fruits should be cleaned before being served. Although they may not appear unclean, since they have passed through several hands and have been exposed to the dirt in orchard, street, store, and delivery wagon, they must necessarily be far from clean.

Berries should be rinsed quickly in cold water and drained at once. If allowed to soak, they become soft and their flavor is affected. All smaller fruits, such as plums, grapes, and apricots may be rinsed. The larger fruits may be scrubbed or wiped.

In cutting, crushing or cooking fruits, only silver, earthen, granite, or enameled utensils should be used.

Lesson II

Fresh Fruits

Apples:

The many varieties of apples which are so commonly cultivated today have all come from the crab, or wild apple, which is a native of Britain, where it has been known for many years.

Apples contain a large amount of cellulose, so they are a firm fruit; they contain malic acid, which gives them their tart, or sour, taste and makes them a laxative. Apples also contain a great deal of water and sugar, some mineral salts, and a large amount of pectin, which makes them especially desirable for jelly-making. Apples may be kept in a temperature nearly at the freezing point, being best when kept cold. They are kept best if wrapped separately in papers, as are oranges when shipped. In storing apples, all which are not perfectly sound should be taken from the pile, as one bad spot will quickly contaminate many sound apples.

Fig. 1.—
Composition of Apple

Fig. 2.—
Polishing Apples

Serving apples uncooked:

Apples may be polished by rubbing them with a dry cloth. They may be served at a meal, but are usually served between meals. When served at a meal they may be prettily arranged in a suitable dish and garnished with apple leaves. Between meals they are often served to the individual on a small plate, a silver fruit knife being placed at the right of the polished apple on the plate. The apple should be pared and cut into small pieces to be eaten.

Pears:

Like apples, pears are natives of England. They are less cellular and less acid than apples and better adapted for eating raw. They do not keep so well as apples.

FIG. 3.—
Composition of Pear

Serving pears uncooked:

Pears may be polished and served the same as apples.

Peaches:

Peaches, which came originally from China, are now grown extensively in the southern states and in the more temperate northern states. Peaches contain less sugar than other common fruits, and, excepting the stone, they contain only about one or two per cent of solid matter. Their juicy, tender flesh is very desirable because of its pleasing flavor.

Serving peaches uncooked:

Cut very ripe peaches into halves and remove the skins and stones; place a layer of these halves in the can of an ice cream freezer and sprinkle it with sugar. Add more layers, sweeten, and so continue till the desired amount is prepared. Pack the can in chopped ice and salt and let it stand two or three hours, or until the peaches have become thoroughly chilled, but not frozen. Remove them from the can, place the halves in the shape of a wreath on a large dish and sprinkle them with powdered sugar. Whip and sweaten cream and pile it in the hollows of the halves.

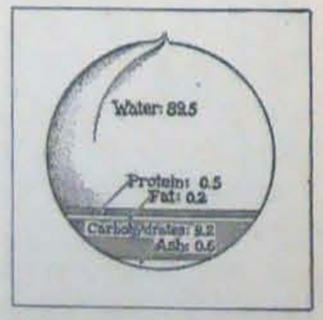

FIG. 4.—
Composition of Peach

Serving:

The chilled peaches should be used for dessert at luncheon or dinner. The dish should be placed in front of the hostess with a large silver spoon at her right and individual china or glass dishes at her left.

Citrous fruits:

The orange grew in India long ages ago, but it was then quite different from the orange we now know, being merely a berry, and full of seeds. By careful cultivation it has been changed into the large, juicy, delicious fruit that is grown so abundantly in Florida and California, along the Mediterranean coast, and in many other regions. Other citrous fruits growing in the United States and in common use as food are the lemon and the grape fruit. Like the orange, they are found in the tropics and in warmer parts of the temperate zones.

FIG. 5.—
Composition of Orange

All the citrous fruits have large quantities of free citric acid in their composition; their water content is large; their rind is rich in oil and their juice contains vitamines. The white portion underneath the colored rind is very cellular and tough and so is indigestible.

Serving oranges uncooked:

1. Wash the orange and cut it into halves, crosswise. Serve one-half to each person, the half being placed stem or blossom end down in the center of a small plate with an orange spoon on the plate at the right of the orange. This is a favorite way of serving oranges at breakfast. They should be served at the beginning of the meal. If sweet, it is better not to use sugar with them. Sugar hides the flavor of fruit and almost always gives an unnecessary addition of carbohydrate.

2. Wash and peel an orange. With a thin-bladed, sharp knife cut down from the surface to the center on one side of the membrane enclosing a section of the pulp, then cut down close to the pulp on the other side of the membrane; a third time cut down to the center, close to the next membrane, and take out the section of pulp thus loosened in one piece. So proceed till all the pulp is removed and only the cellular membrane is left in one piece.

Remove the seeds from the sections. Place the pulp in a large dish and if desired, add sugar. The hostess may serve the fruit from a large dish, placing a portion in the individual dish for each guest.

3. Wash the orange. Cut away all the peel but a band about an inch wide, which may be left around the center of the orange.

a *b* *c*

Fig. 6.—Oranges for Serving. (*a*) Peel rolled inward. (*b*) Section spread on the band of peel. (*c*) Band of peel shown about the orange

Cut the band at a place where two sections of the orange join. Cut the sections apart, leaving all attached to the band. This may be arranged around a mound of sugar.

4. Wash the orange; score it in eighths from the stem nearly to the opposite end, and loosen the sections of peeling; loosen the sections of pulp from each other without removing them from the peel at the blossom end. The orange may be served in this way on a small plate, or the ends of the sections of peel may be rolled inward to form a border around the base of the fruit.

Serving:

Oranges so prepared should be placed on individual dessert plates and served to each guest or set at each place before the guests are seated, if served for breakfast.

Grape fruit:

Wash or wipe grape fruit and cut it into halves crosswise; with a thin-bladed, sharp knife or scissors cut the pulp from the rind the whole distance around; cut the pulp from the membrane separating the sections, and remove the membrane or tough portion in one piece. This may be losoened by cutting

it from the stem or blossom end with the scissors. Place a generous amount of sugar on the pulp left in the skin and set the whole half on or near the ice to cool. Serve on an individual plate with a spoon.

Pineapple:

The pineapple is a native of the tropical parts of America; it is ordinarily very coarse and full of fibrous membrane, and has little sweetness or flavor. Those which are very carefully guarded, especially those grown in hothouses, are very luscious and have a very delicate flavor. Pineapples contain a substance which aids in the digestion of protein, and pineapple juice is said to be useful in killing germs in the mouth and throat.

Fig. 7.—Composition of Pineapple

Pineapple uncooked:

1. Cut off the hard outer part of the pineapple and then remove the "eyes," or slice the pineapple first and then remove the rind and "eyes." Hold the whole apple firmly with one fork, with another fork shred the soft, juicy part, and with a knife cut off the shredded part. If desired, sugar may be added to the cut or shredded fruit, but the addition of sugar makes the fruit less valuable. The fruit may be placed in a large dish to be served by the hostess, or it may be served in individual dishes. It should always be served cold.

2. Cut off the base of a large pineapple so that it will stand upright on a plate. Cut off the top and with a knife and strong spoon or scoop dig out the pulp of the apple and separate it from the hard center. Put the shell of the apple on the ice to become chilled. Peel and slice lengthwise some sweet orange. Mix the orange and pineapple together and sweeten to taste. Put them into a freezer and pack in salted ice for an hour or so. When ready to serve, turn the chilled mixture into the chilled shell of the pineapple. Garnish the base with the leaves of

the top of the pineapple. Bananas and lemon juice, strawberries, or peaches may be used in place of the orange.

Serving:

Use this as a dessert for luncheon or dinner, and serve it with macaroons or plain cake. It should be served from the table by the hostess.

Bananas:

Bananas are natives of India, but are now raised extensively elsewhere. They require almost no attention and are said to yield more real food material to the acre than any other plant. They are, as has been said, rich in carbohydrate and they also contain fat and protein. In the ripe banana, as in all ripened fruits, the carbohydrates are in the form of sugar and gum; but the bananas that are bought in northern markets are picked while green and so, even though they are yellow when sold, they have not ripened as they should, and the carbohydrate is still part starch. For this reason, cooked banana is more wholesome than the raw food.

Fig. 8.—Composition of Banana

Bananas uncooked:

Bananas may be sliced and served with cream and sugar. If the slices are cut slanting, they will be larger.

Melons:

Since half or more of melons is waste matter and almost all the rest is water, and since the edible part contains no indigestible fiber, they are a very good addition to the summer diet. Melons are most wholesome when eaten right after being picked and chilled.

Watermelons:

1. Chill the melon after wiping it clean. Cut a slice off each end so that the halves may stand firmly on a plate or platter. Cut the melon in halves crosswise and stand each half on a dish garnished with green leaves. At the table the hostess may scoop out the pulp with a tablespoon in egg-shaped pieces and serve them on chilled plates. However, the pulp may be scooped out beforehand and served from a dish or from half of the melon shell.

2. Chill the cleaned melon. Cut a section three or four inches thick from the center of the melon; cut away the rind, leaving only the red pulp, which can be placed on an average-sized serving plate and cut as pie is when served.

3. Cut the chilled melon into halves, crosswise. Cut off the ends so that the halves can rest firmly on a plate. Garnish the plate with green leaves. Cut wedge-shaped pieces from the melon, and serve with the rind attached.

Fig. 9.—Strawberries Ready to Serve

Serving:

Some like sugar on watermelon and some like salt. Either or both may be passed at table, but not served with the individual portion. Watermelon is eaten with a fork or spoon.

Muskmelon:

1. Clean the melon; chill it, cut it into halves, and remove the seeds. Place one-half on a small plate with a spoon. Put crushed ice in the cavity. Pass sugar, cinnamon, or paprika and salt when serving.

2. Wash and chill the melon; cut it into halves and remove the seeds. Mix sliced peaches, shredded pineapple, sliced orange, and sugar. Chill the fruit mixture and serve it in the chilled and halved melon, on a dessert plate with a spoon.

Strawberries uncooked:

1. Place the strawberries in a colander, pour cold water over them, drain them immediately, hull them and then turn into

a dish. Serve the strawberries with sugar and cream. All berries may be served in the same way.

2. The French serve fine large strawberries unhulled. Needless to say, these berries must be thoroughly washed. Pulverized sugar is passed, a spoonful of which each guest places on the dish at the side of the berries.

Finger privileges at the table:

There is a number of things that fastidious and well-bred persons now eat at the dinner table without the aid of knife, fork, or spoon.

Strawberries served without being hulled are taken with the fingers.

The berry is taken by the hull between the thumb and finger, dipped into the sugar, and eaten.

Lesson III

Grape Cornstarch Mold

Materials used:

Class Rule	Home Rule
4 tb grape juice	1 c grape juice
4 tb water	1 c water
2 tp sugar	½ c sugar
speck of salt	$\frac{1}{16}$ tp salt
2¼ tp cornstarch	3 tb cornstarch
a few drops of vanilla	½ tp vanilla
2 tb cream	1 c cream

Utensils needed:

Saucepan, 2 bowls, Dover egg beater, knife, molds, pastry bag, spoons

Work to be done:

1. Mix the cornstarch, sugar, and salt together.
2. Heat the grape juice in the saucepan.

3. Add the mixture of dry ingredients to the hot fruit juice, stirring the whole mixture until it is smooth and thick.
4. Pour the thickened mixture into a wet mold.
5. Set the mold aside to cool.
6. When the mold has become cold, beat the cream till very stiff. Add sugar and beat again.
7. Put the stiffly beaten cream into the pastry bag. (See Figure 11.)
8. Take the cornstarch mixture from the mold and place it in a glass dish.
9. With the pastry bag spread the cream over the mold in some artistic and attractive way.

Fig. 10.—Mold

Serving:

The molds in which the cornstarch pudding is cooled may be individual or not, as desired. This dish makes an attractive dessert for either luncheon or dinner.

Principles:

Because of its nutritive value, cornstarch mold is and should rightly be a common dessert in most homes. Grape cornstarch mold is a very palatable and nutritious variation of the ordinary dish.

Unfermented grape juice, such as was used in making the mold, is a very wholesome and nutritious beverage and should be in more general use than it now is. From it a great variety of desserts can be made at small expense.

"Its uses are many. It is used in sickness, convalescence, and good health, as a preventive, restorative and cure; by the young, by persons in the prime of life, and by those in old age. It is used in churches for sacramental purposes, at soda fountains as a cool and refreshing drink; in homes, at hotels and at

restaurants as a food, as a beverage, as a dessert, and in many other ways. It is food and drink, refreshment and nourishment, all in one." A great many experiments to determine its nutritive value and its effect upon the system have been made both in this country and abroad. Chemical analysis has shown it to contain less water, protein, fat, and ash, but more carbohydrates than does milk. These carbohydrates, which are in the form of sugar, make grape juice a heat- and energy-producing food. Furthermore, when taken in a mixed diet it relieves intestinal disorders and seems to cause a gain in weight. Nothing but good can be said for the use of unfermented grape juice in the diet.

The addition of cream to grape cornstarch mold increases the food value of the dish by supplying fat.

The pastry bag:

The pastry bag, which is a bag made of rubber, or some firm, heavy material, such as duck or ticking, can be bought or made at home. To make this bag, fold a square of the material into a triangular shape and sew together with a felled seam two of the free edges. Cut a small piece off the point, thus making an opening into which the metal tubes (see cut) may be fitted. The tubes, made of various metals, may be bought either singly or in sets. With the sets, a metal, threaded ring is supplied; this can be fastened to the small opening of the bag and the tubes screwed into it.

Fig. 11.—Pastry Bags and Tubes

In filling the bag, roll back the edges of the material at the large end and put in the mixture so that the part just above the tube is filled and the sides of the bag are not smeared.

To use the bag, hold it in the left hand and twist the top of it with the right hand, forcing out the mixture by the twisting. Guide the tube with the left hand. Various shapes can be made by holding the bag in various positions.

Cleaning up:

1. What kind of water should be used to rinse greasy utensils?
2. Rinse the tubes and bag with hot water. Dry the bag carefully.
3. If the bag is made of cloth, scald it by boiling it for a few minutes after it has been rinsed.
4. Wash and replace all utensils according to former directions.

What has been learned:

1. Because unfermented grape juice is nutritious, wholesome, and palatable, it is a valuable addition to the diet.
2. How to make and use the pastry bag.

Supplementary Recipes

Grape Nectar

Juice of 2 lemons
juice of 1 orange
1 pt water
1 pt grape juice
1 c sugar

Serve the nectar ice-cold. If served from a punch bowl, it adds to the appearance to add a sliced lemon and orange.

Grape Syllabub

½ qt sweet cream
whites of 2 eggs
½ c grape juice
1 c powdered sugar

Divide the sugar into halves. Beat the cream until stiff and the egg whites until dry. Add half the sugar to the cream, the other half to the egg whites. Mix the cream and egg well. Add the grape juice and pour the mixture over sweetened strawberries and pineapples or oranges and bananas.

Bohemian Cream

2 glasses grape jelly
1 pt thick sweet cream

Stir the cream and jelly together. Put the mixture into individual molds and set them on ice. Serve these with macaroons or lady fingers.

Lesson IV

Baked Bananas

Materials used:

Class Rule	Home Rule
¼ banana	6 bananas
⅛ tb butter	2 tb butter
¼ tb sugar	⅓ c sugar
1/16 tb lemon juice	2 tb lemon juice

Utensils needed:

Paring knife	small bowl
shallow granite pan	spoons

Work to be done:

1. Pare and cut the banana into halves lengthwise.
2. Place the slices of banana in the shallow granite pan.
3. Mix together the melted butter, the sugar, and the lemon juice.
4. Pour one-half of the mixture over the banana.
5. Place the pan in a slow oven and bake twenty minutes.
6. While baking, baste the banana occasionally with the remainder of the sirupy mixture. Where else has basting been done? (See page 15, Book One.)

Serving:

Baked bananas make a very acceptable dish in place of fresh fruit at breakfast. They may also be used as dessert for luncheon.

A slice of lemon may be served with each individual portion of this dish as additional tartness is necessary to make this fruit, when cooked, palatable to some people.

Principles:

Bananas are very rich in carbohydrates and also contain fat and tissue-building materials; consequently they are a very good food. Because bananas are rich in starch, cooking is very beneficial in bringing out their full food value and flavor. Much of the carbohydrate in bananas is present in the form of

sugar, so they are very sweet. Unlike most fruits, they contain no acid; the lemon juice is added to supply this substance and thus increase their food value and palatability.

Why can potatoes be cooked by baking? Name some other foods that can be baked without the addition of moisture. Because bananas contain a relatively small amount of water in proportion to the starch, they cannot well be cooked in dry heat, such as is used in baking, without the addition of some liquid.

Cleaning up:

1. What kind of water should be used for soaking the dish in which the bananas were baked? Why?
2. Remove any discoloration from the pan with some scouring agent; what may be used?

What has been learned:

1. Bananas are a very nutritious food.
2. Bananas need cooking to bring out their full value.
3. Lemon juice, by adding acid to bananas, adds to their palatability and value as food.
4. Bananas lack moisture, hence they cannot be cooked by dry heat without the addition of water.

Lesson V

Stewed Apples

Materials used:

1 apple	1 tb sugar	water

Utensils needed:

Pan	paring knife
bowl	spoon
granite saucepan and cover	

Work to be done:

1. Wash the apple and pare it.
2. Cut the apple into quarters and remove the core.

3. Place the quartered apple in the saucepan; if the apple is very juicy, only a very little hot water need be used; if the apple is very dry, more water must be added.

4. Set the saucepan over the fire; cook rapidly, without stirring, for five or ten minutes.

5. When the apple is soft, it is done.

6. Put half of the sugar into the bowl; turn the sauce from the saucepan into the bowl and sprinkle the rest of the sugar over it.

7. Cover the bowl closely and let it set; the sauce may be served hot, warm, or cold.

8. If the sauce is to be served cold, let it remain covered until it is cold.

Serving:

Stewed apples should be served in individual china or glass dishes. Like baked bananas, they may be used either at breakfast or luncheon. Some people like cream served with any stewed fruit.

Principles:

The apple should be cooked rapidly in ordér to retain the delicate flavor. For the same reason, only just enough water to cook the apple thoroughly should be added; also, for the same reason, all stirring, either while cooking or after cooking, should be avoided. Keeping the sauce covered till it is cold retains the flavor.

If a large amount of sauce is to be made, drop the pieces of apple, after they have been pared and cored, into cold water to which a little vinegar has been added. This prevents their turning dark colored. They must then be drained before being cooked in boiling water.

What is there in apples that makes them taste sour, or tart? Do bananas have the same substance in them? What vegetable contains it? When fruits which contain acid are cooked with sugar, the sugar is changed to a substance which is called invert sugar. This invert sugar is not so sweet as cane sugar, its sweetening power being one-third less. Therefore if the sugar is added to the fruit after it is cooked, less sugar will be required, for then the acid will not turn the cane sugar into invert sugar, this change being produced only during the cooking. When the sugar is added after the fruit is cooked, the fruit pulp is not really sweetened, though the juice is. Fruit sweetened in this way always has a finer flavor.

Why should a granite saucepan be used to cook the apple? What other kind of pan might be safely used? What kinds must not be used? What could be done with the skins and cores?

Cleaning up:

1. Keep all apple parings, stems, cores, and other refuse in the pan till they can be emptied into the garbage can or pail.

2. Be careful that the towels do not become stained with the fruit. This can be avoided by using the holders for handling hot utensils, and by using the dishcloth and not the dish towel for wiping the desk or table.

What has been learned:

1. In cooking apples, the delicate flavor can best be retained by rapid cooking with little or no stirring, and by keeping the sauce covered during and after cooking.

2. Dipping pared apples into cold water with a little vinegar in it prevents discoloration.

3. Apples contain an acid.

4. Cooking sugar with an acid changes the sugar to invert sugar.

5. Invert sugar has one-third less sweetening power than common sugar.

6. If sugar is added after the fruit is cooked, less is required.

Lesson VI

Apple Sauce

Note to Teacher: This lesson may be combined with the last one. The two should be compared.

Materials used:

½ of an apple — ¼ c water — ¼ c sugar

Utensils needed:

Pan — pan and cover
bowl — spoon
paring knife — measuring cup

Work to be done:

1. Wash, pare, core, and quarter the apple.
2. Put the water and sugar into the saucepan and boil it for two minutes.
3. Put the apple into the sirup and cook it, without stirring, until it is clear and transparent.
4. Pour the sauce into the bowl and let it remain covered till served. Why covered?

Serving:

Serve the same as the stewed apples of the last lesson.

Principles:

Although this lesson seems very similar to the stewed apple lesson there are several dissimilarities in the methods used in the two and the finished products are also dissimilar.

Which have the sweeter pulp, the apples which were stewed or those of this lesson? In which method of cooking was the greater amount of sugar used? Why was not the pulp of the stewed apple sweet? Why was the sugar not added to the stewed apples while they were cooking? In the sauce of this lesson is there any invert sugar?

The method of making a sirup of sugar and water in which to cook fruit for sauce is quite common, especially when soft fruits are to be thus prepared. In which of the two lessons

did the apples seem to retain their shape better? Soft fruits, such as apples, very easily lose their original shape when cooked. Why? When soft fruits are cooked in a sirup, the sirup has a hardening effect upon them, so that the shape is much better kept. Cooking fruit in sirup also sweetens the pulp as well as the juice, so that the resulting sauce is more palatable. Fruit so cooked requires much more sugar. Why? Which sauce has the finer flavor?

What has been learned:

1. Fruit cooked in sirup retains its shape.
2. Fruit cooked in sirup has a different flavor from that cooked without sugar.
3. Fruit cooked in sirup requires more sugar.

Lesson VII

Stewed Prunes

Materials used:

1 c prunes — water

Utensils needed:

Saucepan — cup — bowl

Work to be done:

1. Wash the prunes.
2. Put the prunes into the saucepan and add enough cold water to cover them; soak them several hours or over night.
3. Cook the prunes by moderate heat for at least one hour in the water in which they were soaked, keeping it below the boiling point.

Serving:

These are served in the same way as are the stewed apples, but stewed prunes are also often used as a foundation for various puddings.

Principles:

Dried fruit is fruit from which the water or moisture has been evaporated by some means. At present, this is done in one of two ways, either by kiln drying or drying by direct

exposure to the rays of the sun. The latter method has been practiced by man from the earliest time. Uncivilized man dried not only fruits, but even meat and fish, in this way. Getting rid of the moisture makes the fruit less liable to spoil, providing it is not again allowed to become moist.

As the population grew and there came a greater demand for dried foods, man ceased to rely upon the sun to dry the foods, for sun drying is always more or less uncertain unless one lives in a desert region. Thus it came about that appliances were made in which the foods could be dried evenly by a gentle application of heat.

Before dried fruits are cooked or while they are being cooked, the water which has been evaporated must be replaced or the food will remain hard and unpalatable. To replace the water, either soak the fruit for several hours in cold or warm water, and then cook it in the same water, or cook it at a very low temperature, merely letting it simmer for several hours.

Fruit must be cooked in the same water in which it is soaked, because part of the food material dissolves and so will be lost if the soaking water is thrown away.

Prunes are so very sweet that if they are cooked long enough to bring out the sweetness, no sugar need be added to them. They, like bananas, are lacking in acidity. What was added to the bananas to remedy this? If a slice or two of lemon is added to the prunes while they are cooking, they, too, are very much improved.

What has been learned:

1. Dried fruit must be soaked a long time or else cooked slowly for a long time to restore its water content and bring out its natural sweetness.
2. Dried fruit must be cooked in the same water in which it is soaked to avoid loss of the food material which dissolves in the water.
3. If prunes are cooked long enough, they are sweet enough without adding sugar.

VEGETABLES

Lesson VIII

Potato in the Half Shell

Materials used:

Class Rule	Home Rule
1 medium-sized potato	6 medium-sized potatoes
1 tp butter	2 tb butter
1 tb hot milk	3 tb hot milk
salt, pepper	salt, pepper
½ egg	2 eggs

Utensils needed:

Vegetable brush	fork
pan	egg beater
teaspoon	wire whip
tablespoon	plate or platter
bowls	omelet pan
knife	baking tin

Work to be done:

1. Wash the potato well, using the vegetable brush.
2. Place the potato in a baking tin and bake in a moderate oven until it is soft.
3. Cut the potato into halves lengthwise and scoop out the inside, turning it into the omelet pan.
4. Break the egg, separating the white and yolk. Beat the yolk until it is thick and lemon-colored.
5. Mash the potato. Add the butter, milk, salt, pepper, and egg yolk.
6. Stir the whole over the fire until it is hot and well mixed. Beat it with a fork until it is creamy.

7. Beat the egg white till it is stiff and dry. Carefully fold it into the mixture, reserving a little.

8. Refill the potato shell, brushing it over with a little egg white. If desired, a little grated cheese may be sprinkled over the top.

9. Put it into a hot oven and bake it about eight minutes, or until the top is delicately browned.

Serving:

Serve the potato on a fancy plate on which is placed a folded napkin. Potato in the half shell may be used as the principal dish at luncheon or with the meat course at dinner. It should be eaten with a fork.

Principles:

In what two ways is the potato mixture made light? What are the principles underlying the two ways?

This dish may properly be termed a composite dish. What is a composite dish? Starch, or heat- and energy-giving material, is supplied by the potato. The tissue-building element is supplied by the white of the egg, the yolk, and the milk. Fat, the other energy-giving material, comes from the yolk of the egg and the butter. Mineral matter is found in the potato, the milk, and the egg. Potatoes also contain vitamines.

The potato belongs to the large class of fuel foods known as carbohydrates, while the egg is a protein food. Carbohydrates are so called because they have a great deal of carbon in their composition. When taken into the body, this carbon unites with oxygen, producing heat. This is the reason carbohydrates are called fuel foods. Fats, which have still more carbon in their composition, are also fuel foods.

Protein, meaning "I take first rank," is a tissue-building food. Protein was given the name because it is the most important food. All proteins contain a great deal of nitrogen and are therefore often called nitrogenous foods. It is this nitrogen which makes them different from the carbonaceous foods, which do not contain any. The tissues of all animal

bodies, including the human body contain a great deal of the element nitrogen. Since protein substances are the only foods consumed which contain nitrogen, they are often called the tissue-building foods. The mineral salts are also tissue builders.

Cleaning up:

1. Put the egg dishes to soak in cold water.
2. In washing the dishes, proceed according to directions given in previous work.

What has been learned:

1. Potato in the half-shell is a composite dish.
2. The potato is largely a carbohydrate food.
3. Milk contains protein and carbohydrate.
4. The albumen of the egg is a protein.
5. The yolk of the egg contains fat and protein.
6. Mineral matter is supplied by nearly all organic foods.
7. Proteins contain nitrogen. So do the tissues of the body. Hence proteins are called tissue-builders.
8. Mineral salts are tissue builders.

Lesson IX

Baked Beans

Suggestion to Teacher: This lesson should be given as a class demonstration.

Materials used:

Home Rule

1 pt beans	1 tp salt
¼ to ¾ lb salt pork	1 tb molasses
1 tp mustard (if desired)	1½ tb sugar

Utensils needed:

Bean pot	spoon
measuring cup	knife

Work to be done:

1. Soak the beans over night in cold water. Soft water is preferred. If soft water cannot be obtained and hard water must be used, add a teaspoonful of soda to it.

Fig. 12.—Utensils for Baking Beans

2. In the morning, drain off the water, cover the beans with fresh water, heat them slowly, and cook them till the skins burst when you blow upon a few in a spoon.

3. Rinse them thoroughly in hot water.

4. Pour scalding hot water over the pork, remove a one-fourth inch slice, and put this in the bottom of the bean pot.

5. Cut through the rind of the other piece of pork, making cuts or scores every half-inch to the depth of an inch.

6. Put the beans and scored pork into the jar, leaving a little of the rind of the pork exposed.

7. Mix the salt, mustard, molasses, and sugar, adding a cup of boiling water.

8. Pour this mixture over the beans, adding enough hot water to come to the top of the jar.

9. Put the cover on the bean-pot and bake the beans in a slow oven six or eight hours, taking the cover off for the last hour so that the top may become brown and crisp.

Boston Brown Bread

Materials used:

Class Rule	Home Rule
$\frac{1}{8}$ c cornmeal	1 c granulated cornmeal
$\frac{1}{8}$ c ryemeal	1 c ryemeal
$\frac{1}{8}$ c graham	1 c graham flour
$\frac{1}{16}$ tp soda	$\frac{3}{4}$ tp soda
$\frac{1}{2}$ tp baking powder	3 tp baking powder
$1\frac{1}{2}$ tb molasses	$1\frac{3}{4}$ c sweet milk
4 tb sweet milk	$\frac{3}{4}$ c molasses
pinch of salt	1 tp salt
a few raisins	raisins

2 c sour milk and $1\frac{3}{4}$ tp soda may be substituted for the sweet milk and baking powder.

Utensils needed:

Bowls	knife
measuring cup	sieve
teaspoon	baking powder can or custard cup
tablespoon	kettle or saucepan

Work to be done:

1. Mix and force the dry materials through a coarse sieve.

2. Add the molasses and the milk. Stir the mixture until it is well mixed. If raisins are to be used, seed them and add them here and there as the batter is turned into the mold.

3. Turn the batter into a well-buttered baking powder can. If this is not available, use a custard cup covered with a piece of coarse wrapping paper. Fill the can only two-thirds full. Why?

4. Butter the cover, place it in position, and tie it down with a string.

5. Place the mold in a kettle or saucepan containing boiling water, with an asbestos mat underneath to keep the water boiling uniformly. Let the water come halfway up around the mold, cover the kettle closely, and steam the mold, adding more water if necessary. The bread will be done in about 60 minutes. The full recipe requires from 3 to $3\frac{1}{2}$ hours.

6. Test by lifting off the cover and looking at the bread. If the paper covering is used, break a hole in the paper. Or the bread may be tested by breaking off a small piece at one side with a fork or knife. If doughy, it is not done.

7. Remove the mold from the steamer, and put it in the oven for ten or fifteen minutes to dry out. The full recipe requires an hour.

Serving:

Because of the hearty nature of these two foods, they make a complete meal in themselves. They should be served hot at dinner. They are often served either cold or hot at luncheon, and they are liked by many people for breakfast. Because of their hearty nature, they make a better food for winter than they do for summer.

FIG. 13.—Boston Brown Bread

Principles:

(a) In what two food principles are beans very rich? They lack fat, and for this reason the pork is combined with them in baking.

Dried beans have lost so much water by evaporation that they require a long soaking to restore it. This soaking softens them. It has the added advantage of removing a bitter taste peculiar to beans. The substance causing this flavor is soluble in cold water.

Legumin, the protein of beans, is very similar to the protein of milk. Hard water is very likely to contain a mineral substance known as lime salt. Legumin has the property of combining with the lime salts, forming a substance not very readily dissolved and thus making the beans hard to soften. Soda also has the property of combining with the lime salts, forming a substance that is precipitated. Therefore, if soda is added first to the water, this will combine with the lime salts preventing them from combining with the legumin. It is

better, however, to soak the beans in soft water, as this does not contain the lime salts.

(b) What are the advantages of steaming? What precaution must be taken?

Molasses is slightly acid, therefore a little soda must be used in the batter to neutralize it. If sour milk is used, ½ tp of soda to 1 c of milk should be used. The proportion of soda to molasses in a batter is ½ tp to 1 c of molasses.

Boston brown bread is a composite food. By what are the different food principles supplied?

Besides the presence of the different food principles, another point in favor of its use in the diet is the cheapness of its ingredients. With the baked beans, it forms a very hearty and nutritious food.

Cleaning up:

How can the discoloration caused by baking be removed from the bean pot?

How should the utensil used to contain the molasses be treated? Why?

What has been learned:

1. Beans should be soaked either in soft water or in hard water to which soda has been added to facilitate softening.
2. Pork or some other fatty food should be combined with the beans to supply fat, the food principle lacking.
3. Long soaking removes a bitter taste peculiar to beans.
4. Soda is added to a batter in which molasses is used, to neutralize the acid in the molasses, the proportion being 1 tp to 1 c.
5. Boston brown bread should be baked in the oven after being steamed, in order to dry it out.
6. Boston brown bread is a cheap as well as a nutritious food.

Lesson X

Bacteria (Reading)

As the visible world is made up of good and bad, desirable and undesirable, so is the microscopic world. There are good bacteria and bad bacteria. In the bacterial world, as in the visible world, we hear more about the bad than the good. The fact is that we could not long exist without the friendly bacteria, for we should be overwhelmed with waste matter. They are the true scavengers of the world. But we have to acknowledge the presence in the world of an over-abundance of unfriendly bacteria. These are the deadliest of foes to mankind.

Bacteria have not been known very long to scientists. Less than fifty years have elapsed since they have been definitely studied and there is still much to learn about them. The knowledge of how best to combat them is spreading rapidly and it is a knowledge every housewife should possess. The housewife has long known as "germs" the organisms causing such diseases as typhoid fever, smallpox, and diphtheria, but she is just beginning to appreciate the fact that microbes that cause the souring of milk and the spoiling of food belong to the same family.

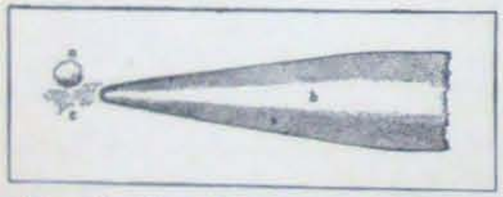

Fig. 14.—Size of Bacteria. (*a*) Grain of dust. (*b*) The Point of a needle. (*c*) Bacteria.

Bacteria are the smallest and simplest of living organisms. Many are not more than one fifty-thousandth of an inch and the largest are not more than one ten-thousandth of an inch in diameter. For a long time the scientists were undecided as to whether they were plants or animals, but now all are agreed that they are plants. Very little besides their external appearance is known of them. Some are rod-shaped, some round, and some are spiral in form; nearly all have the power of motion;

especially is this likely to be the case with those living in liquids.

Wherever other animals or plants can live, whether it be in the air, the soil, or the water, there bacteria are also present.

The reason such very minute organisms can cause so much harm is that they are present in such great numbers, this abundance being due to the ease and rapidity of their growth and multiplication. Bacteria grow and reproduce more rapidly than any other living organism known; in this fact lies the chief cause of their great danger to mankind. If there were only one single bacterium in a cup of milk, by the end of half an hour this one would have divided itself into two, provided the right conditions for growth existed in the milk. At the end of another

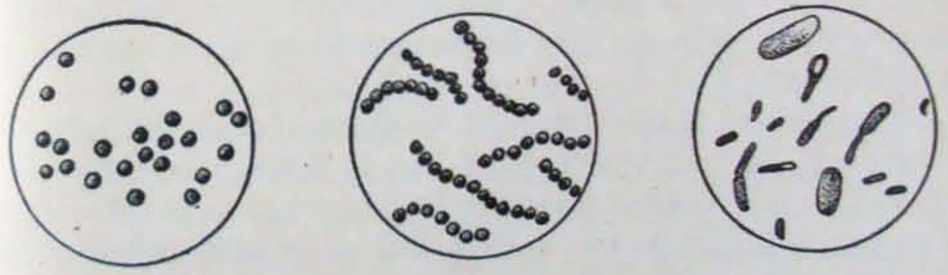

Fig. 15.—Forms of Bacteria

half hour, each of the two would have divided into halves, and formed two new bacteria. At the end of the third half hour each of the four would have gone through the same process again, making eight. And so the growth and multiplication would continue, until by the end of the twenty-four hours there would be thousands of bacteria in the cup of milk.

The method of reproduction most common to bacteria is the simplest method known. It is called fission. Organisms which multiply in this way simply lengthen out a little and then divide straight through the middle. Each of the halves grows until it reaches the length of the original organism and then each divides into halves, and so the process goes on indefinitely. In fission, each of the halves which have been formed receives

exactly the same amounts of all the contents of the mother cell, and this rule is followed as long as fission takes place.

Some bacteria have, in addition, another method of multiplication, or multiplication by the formation of spores. Inside the living organism a little round body appears. This often is broader than the body of the original organism, but whether it is or not, it ultimately breaks through and moves about freely, while the parent organism disappears entirely. Under right conditions, the spore will grow and give rise to a new individual. Those bacteria which form spores are more dangerous than those which do not, because the spore does not need food until it begins to develop, and it has a thick protective covering which makes it able to withstand very extreme temperatures both of heat and of cold. For this reason the spore is able to tide the organism over any very adverse condition which may arise. (See Figure 15.)

It was stated that if the right conditions for growth existed in the cup of milk, the bacteria would grow. They depend upon food and water for growth just as much as do all other living organisms. A few do live and grow without air, but most of them must have air also.

The foods most easily and commonly attacked by bacteria are the proteins. The proteins already studied are the albumen of eggs, the casein of milk, the gluten of flour, and the legumin of peas and beans. A food which contains any of the above ingredients has the corresponding protein element, and is correspondingly open to the attacks of the bacteria. For this reason such foods spoil readily. Pure starch and sugar cannot be used as food for bacteria, but sugar can be used if it is in a water solution and starch if it is in combination with the other food elements. It is for this reason that sugar is used in preserving fruits. Fats may be attacked by bacteria, but less readily than the protein; when thus attacked, they become rancid.

The only form in which bacteria can exist without moisture is in the spore form. Spores are very resistant to drying and can

live almost indefinitely in a perfectly dry state. In this lies the great danger of the spore-forming bacteria. It is not enough, however, that bacteria are supplied with an abundance of food and water; the temperature of the substance by which they are surrounded must also be of the right temperature for their growth. Human beings seem to thrive best in the moderate temperatures of the temperate zones. No such statement can be made with regard to bacteria, for the different kinds have different temperatures at which they grow most rapidly. However, none can grow below the freezing point of water, though they may continue to live in such a temperature. And neither is there any species which can grow at the boiling point of water, nor can they live in this temperature if it is applied long enough; even spores must succumb in the end. But there are some bacteria which grow best in a temperature not far from freezing and there are others which grow best in a much higher temperature. Ranging between these two extremes are the best growing temperatures for all the other species of bacteria. As the bacteria grow they must consume food. They do this by taking out of the attacked substance just what they want, with the result that the food remaining is changed and will ultimately fall to pieces; if left long enough, it will disappear entirely. When milk sours, eggs rot, and meat becomes putrid, one knows that bacteria are living and growing upon or within the substance.

Lesson XI

Corn a la Southern

Materials used:

Class Rule	Home Rule
¼ c corn	1 can corn
½ egg	2 eggs
¼ tp salt	1 tp salt
a few grains of pepper	a few grains of pepper
½ tp melted butter	1½ tp melted butter
¼ c scalded milk	1 pt scalded milk

Utensils needed:

Baking dish	utensils for measuring
double boiler	bowl for beating eggs
egg beater	

Work to be done:

1. Place the oven over the fire.
2. Scald the milk in the double boiler.
3. Beat the eggs slightly.
4. Add the beaten eggs to the corn, with the salt and pepper, and mix thoroughly.
5. Add the scalded milk and stir.
6. Butter the baking dish. Pour in the mixture and bake it in a moderate oven.

Fig. 16.—Corn in Casserole

Serving:

Corn prepared in this way can be used as a vegetable at dinner, or as the principal dish at a luncheon. It should be served from the baking dish. This may be concealed by a napkin folded about it and then placed on a pretty plate, or it can be placed within the silver dish or casserole provided for it. It should be served by the host upon the dinner plate, and should be eaten with the fork.

Principles:

This is a very nutritious composite dish. Name the food principles it contains. When eggs and milk are combined what do you get?

Cleaning up:

Soak the dish in which the mixture was baked in cold or lukewarm water. Why?

Lesson XII

Cocoa and Chocolate

Note to Teacher: Divide the class into two sections; let one section make cocoa, and the other chocolate.

Cocoa

Materials used:

Class Rule	Home Rule
¼ c scalded milk	2 c scalded milk
¼ c boiling water	2 c boiling water
a few grains of salt	a few grains of salt
¼ tb cocoa	2 tb cocoa
¼ tb sugar	2 to 4 tb sugar

Utensils needed:

Granite pan	utensils for measuring
double boiler	Dover egg beater
wooden spoon	

Work to be done:

1. Mix the dry ingredients in the granite pan.
2. Pour the boiling water upon the mixture slowly, stirring all the time.
3. Let the mixture boil five minutes.
4. Add the milk and let it boil a minute or two longer.
5. "Mill" the mixture (with a Dover egg beater) by beating it two minutes, or until a froth forms.

Chocolate

Materials used:

Class Rule	Home Rule
¼ sq chocolate	1½ sq Baker's chocolate
1½ tp sugar	4 tb sugar
3 tb boiling water	1 c boiling water
8 tb milk, scalded	3 c milk, scalded
2 or 3 grains of salt	a few grains of salt

Utensils needed:

Use the same utensils as for cocoa.

Work to be done:

1. Scald the milk.
2. Place the chocolate in the pan and set it within another pan in which there is some boiling water. Melt the chocolate.
3. Add the sugar and salt to the chocolate.
4. Add the boiling water slowly, stirring all the time.
5. Place the pan directly over the fire and let the contents boil one minute.
6. Add the chocolate to the scalded milk; stir.
7. "Mill" as in making cocoa.

Serving:

Cocoa may be served either at luncheon, dinner, or breakfast, or at all three meals, just as preferred. In many homes it is also served in the afternoon to callers and at afternoon and evening social affairs. A spoonful of whipped cream is often placed on each cup just before serving.

Fig. 17.—A Chocolate Service

Both cocoa and chocolate should be drunk from the cup. A spoon is used only in sipping to ascertain if the flavor is right.

Principles:

Cocoa and chocolate are very nourishing drinks because they are made partly of milk and because considerable nutritive material in the form of mineral matter, fat, carbohydrate, and protein is contained in the cocoa and chocolate. Both cocoa and chocolate are made from the bean of the cacao tree of South America. Cocoa, as we receive it, has been separated from the natural oil; in chocolate, the oil has not been removed. For this reason the chocolate is the more nutritious of the two.

Cocoa and chocolate contain a substance known as theobromine, a substance which resembles the caffeine of coffee and has the same effect upon the digestion. They also contain tannin, but it is slightly different from that found in tea. Unlike tea and coffee, cocoa and chocolate must be boiled to be palatable. They are less stimulating than either of the other two.

As has been said in the foregoing lesson, milk contains a small amount of albumin,* a protein. This, as was seen in the lessons on eggs, hardens when heat is applied, even if this heat is below the boiling point. It is this coagulated albumin which rises to the surface of milk when it is heated, forming a scum. To prevent the formation of this scum, which is unsightly, the cocoa or chocolate is beaten with the Dover egg beater until a froth appears. This process is called "milling"; by it the layer of coagulated albumin is broken up into minute fragments.

Cleaning up:

1. How should milk dishes be cleaned? Why?

What has been learned:

1. Cocoa and chocolate are more nutritious, but less stimulating than tea or coffee.
2. The albumin in milk coagulates and rises to the surface when milk is heated. This scum is removed or prevented by milling.

*Albumin, a protein constituent found in milk and other foods, is not identical, as formerly supposed, with albumen, the white of egg.

MILK

Lesson XIII

Milk (Reading)

Milk is one of the best foods for man; it is as perfect a food for the infant as the egg is for the unhatched chick. But as the child grows to manhood or womanhood, more nourishment is required than milk alone is able to supply, hence it is not so perfect a food for man; it must therefore always be used in combination with other foods which supply what the milk lacks. What food principle does corn used with milk supply? This can perhaps be better understood when the composition of milk is known.

Milk is not purely tissue-building, or protein food, neither is it, strictly speaking, a heat-producing food, but it is a mixture of the two. The nutritive constitutents of the milk are held in solution by a large amount of water, for milk is about 87% water. The chief protein constituent in milk is called casein, although there is a small amount of albumin present. (What other food contains albumin?) Three and three-tenths per cent of the milk is protein, or tissue-building material. The carbohydrate in milk is present in the form of lactose, or milk sugar, lactose meaning *pertaining to milk*. It is the lactose, of which there is about 5% present, which gives to milk its sweet taste. It is this same lactose which necessitates the use of a double boiler in heating milk, for when milk is exposed directly to the heat of the fire, the lactose burns, because it is as sensitive to heat as is the cane sugar of which caramel is made.

Fat is also present in all milk which has not been skimmed, although the amount present varies in the milk from different

cows. All are familiar with cream, which is the fat of milk. Average milk contains about 4 per cent of fat. As milk is the only food for infants for a long time, it is necessary that it contain some material out of which the body may build its frame-work. This material is present in the form of mineral matter. Milk contains about three-fourths of one per cent of mineral matter.

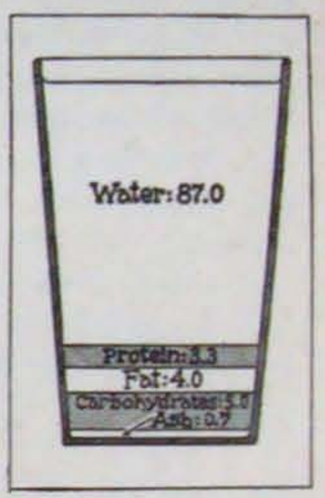

Fig. 18.—Composition of Milk

Because a cup of milk contains so much water, if a person were to live on milk alone it would be necessary to drink a great many cups of it each day in order to supply the necessary amounts of other food principles. Drinking such large quantities of milk is not comfortable nor convenient. So man learned early and perhaps unconsciously to combine with milk other foods which are richer in proteins and carbohydrates, and which supply the bulk which the milk alone lacks, for our bodies are not able properly to digest and take care of the food eaten unless there is a certain amount of bulk supplied. This bulk is supplied chiefly by the cellulose, or woody tissues, of plant foods, such as vegetables and cereals. In order, then, that man may get a large enough supply of all the food principles and of bulk, he combines with milk such protein foods as sugar and vegetables. When cereals and milk are combined, man is supplied with both carbohydrates and proteins, for cereals contain both, just as does milk. Drinking milk with our meals serves the same purpose as does a more direct combination of milk with our food in cooking.

Milk also contains vitamines. We do not yet know just what vitamines are but we do know what some of the results due to their absence, will be. We know there are at least three types

of vitamines and some scientists believe that there might be a fourth. We know little children will not grow if they do not receive sufficient vitamines. A certain form of blindness, scurvy and beri-beri are diseases known to be caused by deficiency of vitamines.

What has been learned:

1. Milk consists of approximately 87% water, 3.3% protein, 5% carbohydrate, 4% fat, and a little less than 1% mineral matter.

2. Casein is the protein of milk; lactose, the carbohydrate.

3. Lactose burns readily; for this reason milk should never be heated directly over the fire.

Lesson XIV

Custard Soufflé

Materials used:

Class Rule	Home Rule
¾ tb butter	3 tb butter
1 tb flour	¼ c flour
¼ c scalded milk	1 c scalded milk
1 egg	4 eggs
1 tb sugar	¼ c sugar

Utensils needed:

Double boiler	buttered pudding dish
egg beater	utensils for measuring
2 bowls	wooden spoon
granite pan	

Work to be done:

1. Place the oven over the fire.
2. Scald the milk.
3. Beat the yolks of the eggs until they are thick and lemon-colored and mix the sugar with them.
4. Melt the butter, mix the flour with it, and add the scalded milk. What precautions must be observed and why?
5. Pour the mixture on the yolks, stirring all the time.

6. Let the mixture cool.
7. Beat the whites until stiff and dry.
8. When this is cool, fold in the whites.
9. Turn the whole into a buttered pudding dish and bake from 30 to 35 minutes in a slow oven.
10. Serve the custard at once with foamy sauce.

Foamy Sauce

Materials used:

Class Rule	Home Rule
½ egg white	whites of 2 eggs
¼ c powdered sugar	1 c powdered sugar
1 tb hot milk	¼ c hot milk
5 drops vanilla	1 tp vanilla

Utensils needed:

Bowl	egg beater
double boiler	utensils for measuring

Work to be done:

1. Beat the eggs until they are stiff.
2. Add the sugar gradually, still beating the eggs.
3. Add the milk and vanilla and continue beating. The sauce should be light and creamy. This should be made while the soufflé is baking, put on while the latter is hot, and served at once.

Serving:

This dish, like an omelet, will fall unless served before it is allowed to cool. It makes a very palatable dessert for either luncheon or dinner. It should be served from the dish in which it is baked.

Principles:

The principle underlying the making of custard soufflé is just the same as that underlying the making of omelets. Just as great care must be exercised in baking it, and like the omelets it must be served with a hot sauce immediately after it is taken from the oven.

Custard soufflé, when well done, is a very light, puffy food.

Was any leavening agent used in making it? What was used to make the omelet light and puffy? Whenever it is desired to make any article of food light by means of air, the air must be entangled within the uncooked food in considerable quantities. Eggs are most commonly used when it is desired to entangle air within the food, because by beating the eggs the air is quickly and easily incorporated within them and the sticky quality of the albumen of the egg prevents the ready escape of the air after it has once been incorporated with the egg. Whenever eggs are beaten, it is done with the purpose of entangling as much air as possible within them.

After the air has been secured, great care must be exercised lest some of it escape. It is for this reason that beaten white of egg is nearly always folded into a food, and the food is seldom stirred after the egg white has thus been added. Excessive stirring would break large numbers of the little sacks of albumen containing the air, thus allowing it to escape.

As in the omelet, so in this dish, not enough flour has been added to stiffen the batter.

When air is heated, it expands to many times its original volume. If the walls surrounding it are elastic, they will be forced out by the expanding air; in this way the batter is made porous. What will happen to the air within the walls of albumen when it is cooled? When considerable flour is added to a batter made light in this way, it combines with the albumen of the egg and stiffens the dough so that the result is a light, spongy food, such as well-made cake or bread. When but very little or no flour is added to the mixture, there is nothing that will give stiffness to the delicate walls of albumen and the result is that they fall down, or collapse, as soon as the pressure within them is removed. That is the reason an omelet or a custard soufflé always falls when it has cooled.

Cleaning up:

What kind of water should be used in cleaning these dishes? Why?

What has been learned:

1. Air when heated expands to many times its original volume.
2. Air incorporated into a batter expands, thus forcing the walls surrounding it apart, making a light, porous food when done.
3. Flour added to a batter helps to make the expanded walls of albumen firm so that they will not collapse when the pressure within them is withdrawn.
4. Any food which is light and porous when done, but to which no flour has been added, must be served hot so as not to give the delicate albumen walls a chance to collapse.

Lesson XV

Bacteria (Reading)

In Lesson X an attempt was made to give a little general information on bacteria. This lesson will tell more specifically how bacteria get into the milk supply and what harm they may cause there. Like all other forms of plant and animal life, bacteria must have food and warmth and moisture or they will die. You already know that protein compounds make the best food for bacteria, and that these organisms can use sugar only when in a water solution, and starch only when mixed with protein and other food elements.

Therefore you will see that milk is an ideal food and home for these lively little creatures of the microscopic world, for milk has protein for them in the form of casein, and sugar in the form of lactose, and both are in a water solution. When it is freshly drawn from the cow, milk has an ideal temperature for the growth of bacteria. Therefore it is not surprising that milk, unless it is cooled almost to freezing, or boiled, should be swarming with many kinds of bacteria, unless extra precautions have been taken to exclude them.

A dairy is a good breeding place for bacteria. No place can be more congenial to the enterprising microbe, which has the advantage of its pursuers in that it is invisible to the naked eye —as secret in all its movements and functions as the fairy folk of Ireland or the "ghaists" of Scotland.

Of the bacteria which elect to live in the dairy, some breed in manure, others live on the stock food, some come from the cows themselves, and others may come with the milk. Over two hundred different kinds of bacteria have been counted, and as all of them are incessantly busy and incessantly increasing, the result is apt to be all too apparent in a short time, even though the tiny causes are quite invisible. Imagine if you can, ten thousand bacteria in a cubic centimeter. Then stretch your imagination a little farther and picture several hundreds of thousands of bacteria in the same space—which is a very small space indeed. But some milk sold in cities has been found to contain bacteria in these numbers.

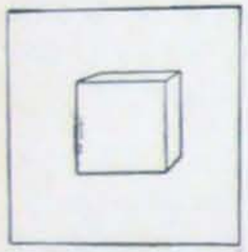

Fig. 19.—Cubic Centimeter

However, not all these bacteria are harmful. Some are known to be harmless, but when these are present it is almost a sure sign that harmful ones are present also. Certain bacteria are even useful in the dairy industry, for butter of good flavor cannot be obtained without them.

The harmful bacteria, the most important class, may be divided into two kinds: (1) Those having an injurious effect on milk, causing it to become sour, discolored, or slimy; (2) those apparently not affecting the milk, but having an injurious effect upon the person using the milk. Disease germs are of the latter class. Diseases which are frequently spread by milk are typhoid fever, scarlet fever, diphtheria, tuberculosis, and the different types of digestive troubles, of which cholera infantum is an example.

There are three distinct causes of impure milk. These are:

(1) Disease of animals and persons handling the milk; (2) uncleanliness in the stable; (3) uncleanliness outside the stable.

Cows are liable to some diseases which also affect man; tuberculosis, or consumption, is the most common of these. Milk affected with these germs from the cow has often been shown to be the cause of tuberculosis in small children. In many states and in some large cities dairymen must now have their cows inspected for tuberculosis by a government official. If any animal is found infected with the disease, she is immediately disposed of. The other diseases are not often transmitted from the cow, for cows are not likely to have them. When the germs causing those diseases are present in the milk, they get into it from the outside. If any one of the attendants handling the milk has one of the diseases, the germs are likely to get into the milk.

Fig. 20.—An Unsanitary Barn

Fig. 21.—A Sanitary Barn

But the greatest source of impurities in milk is the stable. Here dirt gets into the milk from three sources, namely, the cow, the milker, and the air. When a barn is carelessly cleaned, the air swarms with bacteria and these drop by millions into the open pail. A barn should be kept scrupulously clean, the cows should be kept clean, and the attendants when milking,

should wear clean white suits. The milk pail used should not be open, but covered all over the top and there should be a round strainer through which the milk should pass. As soon as the cow has been milked, the milk should be removed from the barn.

Outside the stable, the most important sources of infection are unclean dairy utensils and impure water. Utensils are often so poorly made or poorly cared for that milk will get into the seams and corners, where it remains, a fit breeding place for countless bacteria. Milk utensils should first be rinsed in cold water, because hot water cooks the casein and causes the milk to adhere to the utensil. Then the utensil should be washed in hot soapy water and rinsed with *boiling* water, never with cold water, because the latter may contain some of the organisms from which it is desired to free the utensils. Then if the utensils be exposed directly to the sunlight, so much the better, for the sunlight kills bacteria as well as does boiling. "Water from cisterns, shallow wells, or streams, or that which has long been exposed to the air cannot be relied upon as being pure. Sometimes surface drainage or seepage from **cesspools** or barn yards finds a way through the ground to the well, and in this way typhoid fever germs have often been known to pollute the milk."

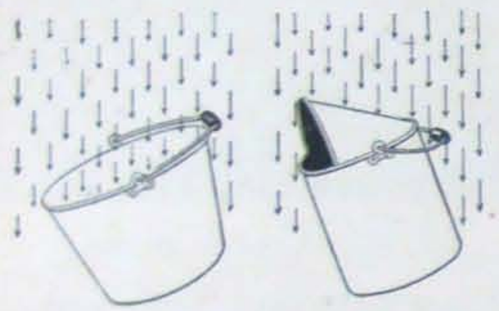

FIG. 22.—Two Kinds of Milk Pails. The open pail admits much dirt; the covered pail keeps it out

To be sure, therefore, that the milk is in good condition when it leaves the dairy, the following rules should be observed:

1. The barn and its surroundings should be kept scrupulously clean.
2. The attendants should be healthy and cleanly.

3. The cows should be inspected once each year for contagious diseases.
4. The water supply should be examined and known to be above suspicion.
5. The greatest care should be used in handling and caring for utensils.
6. The milk should be cooled as soon as possible after being drawn that the bacteria present may be given as little opportunity as possible for growth.
7. The milk should not be left exposed to the air.

Lesson XVI

PASTEURIZED MILK

Materials used:
1 c milk

Utensils needed:
Half-pint bottle
some cotton
rubber cork
deep pan

Work to be done:

1. Sterilize the bottle by placing it edgewise in a pan of cold water, bring slowly to the boiling point, and boil 20 minutes.
2. Place the cotton in the oven and bake it in order to sterilize it.

FIG. 23.—Domestic Pasteurizer

3. Place the milk in the bottle and cork it with cotton.
4. Fold several thicknesses of paper and place on the bottom of the pan. Place the bottle on the paper, and pour in enough

water to reach as high up on the neck of the bottle as does the milk.

5. Heat gradually to 150°, or until small bubbles appear in the milk next to the glass.

6. Keep at this temperature 40 minutes.

7. Sterilize the cork in hot water, but do not boil it. Cork the bottle and set it in a cool place.

Serving:

Pasteurized milk should be served to infants and to small children and invalids whenever it is suspected that the milk supply is not so good as it ought to be.

Principles:

It has been stated in the preceding lesson that milk is a frequent carrier of disease germs, because it is such a good medium for their growth and there are so many opportunities for their entrance into the milk. For this reason one can never be perfectly sure that the milk supplied by the dairyman or purchased at the store is fit to be used. When investigators learned what great dangers are often hidden away in very innocent-looking milk, they immediately went to work to discover some method by which those dangers could be averted. The first man to discover a good method was Pasteur, a French scientist. From his work has developed the process known as Pasteurization of milk.

It was stated in the reading lesson on bacteria that none of these organisms will live at the boiling temperature of water if this intense heat be applied for a long enough time. Therefore boiling milk for a few minutes must necessarily kill all the bacteria present. The milk is then said to be sterilized. How was the bottle for the milk sterilized? Sterilize means to make void of life.

But there are certain objections to sterilized milk. It does not taste so good as does milk which has not been boiled, and it is much more difficult for young children to digest. In Pasteurized milk, the taste is not impaired because the milk is not

heated to the boiling point; it is almost as easily digested by the young child as is fresh milk; and most of the bacteriological organisms have been killed. For these reasons, Pasteurized milk is preferable to boiled milk.

To Pasteurize milk, the liquid should be subjected to a temperature of 160° F. for ten minutes or longer. Below 160° F. the albumin in the milk is not coagulated. Above that, it is. Milk should never be heated so that the albumin coagulates. Why? After the milk is removed from this temperature, it must be cooled rapidly and never under any circumstances be exposed to the air.

Perhaps some will wonder why it is that a temperature below boiling will kill the bacteria present. The reasons are very simple. In the reading lesson on bacteria it was stated that spores were able to resist very high temperature. But bacteria which are most likely to be present in milk are, fortunately for us, not the spore-forming kind; those commonly present may be killed by a temperature of 160° if applied steadily for some time.

What has been learned:

1. Because milk is such an excellent carrier of germs, it must be rendered safe to use either by steriiizing or pasteurizing.

2. Pasteurizing milk is heating it from 155° to 170° F. from ten to forty minutes. Pasteurized milk tastes better and is more easily digested than sterilized milk.

Lesson XVII

Cottage Cheese

Materials used:

Class Rule	Home Rule
¾ c sour milk	1 qt sour milk
½ tp butter	1 tb butter
a few grains of salt	½ tp salt
1 tp cream	2 or 3 tb cream

Utensils needed:

Double boiler	wooden spoon
piece of cheesecloth	utensils for measuring
strainer	bowl

Work to be done:

1. Heat the milk slowly in the double boiler. Do not let the temperature get above 100° F.

2. Heat until the solid portion of the milk (curd) and the liquid portion (whey) separate.

3. Fit the cheesecloth into the strainer. Strain the milk through.

4. Squeeze the curd until it becomes quite dry.

5. Place the curd in the bowl and mix with it the salt, butter, and cream, using the wooden spoon or a fork.

6. Shape the cheese into balls.

Serving:

If desired, the balls may be rolled in finely-cut parsley before they are sent to the table. Have a lace paper doily upon the plate underneath the cheese. Cottage cheese may be served with celery at the close of the dinner in place of dessert. When the salad does not accompany the game or roast, this cheese is ordinarily served with it before the dessert. Cottage cheese is often served with bread and butter at luncheon or at supper. It is eaten with a fork.

Principles:

The souring of milk is due entirely to a species of bacteria known as lactic acid bacteria, or the bacteria which produce acid in milk. These organisms get into the milk from the dust and dirt in the air, and from unclean receptacles. A doctor in Boston sterilized some bottles and into these he had some milk placed which was freshly drawn and which had not come in contact with the air. The bottles were tightly corked with sterilized corks and the doctor took them with him on an ocean voyage. The last bottle was opened in Berlin and its contents were just as sweet as on the first day they were bottled. Thus

it is seen that if milk could be put into nothing but sterilized utensils and never exposed to the air, it would keep sweet much longer than it does.

The lactic acid bacteria work on the sugar present in the milk, changing it to lactic acid. This acid gives to milk a sour taste whenever it is present. Like vinegar or any other acid, it causes the protein substance, casein, to coagulate. Thus are formed the two substances in milk known as the curd and the whey. The curd is solidified casein, the whey is water with the milk sugar and some mineral matter dissolved in it.

The changes produced in milk by the presence of lactic acid bacteria occur most rapidly at a temperature of from 70° to 90° F. because between these two temperatures the lactic acid bacteria grow the best. Below 80° their growth is checked and at a low temperature it ceases entirely; above 90° F. the organisms are killed. For this reason the milk should be cooled as quickly after it is drawn as is convenient.

In what food element is cottage cheese very rich? In making cottage cheese, never allow it to become warmer than 100°; for if the temperature is allowed to rise higher than this, the cheese will become tough because of the undue hardening of the casein.

Cleaning up:

1. Soak the piece of cheesecloth in cold water, then rinse it thoroughly in the same water to remove all adhering particles of cheese.

2. Wash the cloth in warm, sudsy water, rinse it in hot water and hang it up to dry.

3. Remove all dishes, wash, and put them away as has been directed in other lessons.

What has been learned:

1. The souring of milk is due to lactic acid bacteria.

2. Lactic acid bacteria are not normally present in milk; they get into it from the outside.

3. Lactic acid bacteria grow best at a temperature of from 70° to 90° F.

4. Milk should be cooled as soon as possible.

Lesson XVIII

Rennet Custards

Materials used:

Class Rule	Home Rule
½ c milk	1 qt milk
½ tb sugar	4 tb sugar
2 or 3 drops of vanilla	1 tp vanilla
⅛ of a junket tablet dissolved in ½ tp water	1 junket tablet dissolved in 1 tb water
a very little salt	¼ tp salt

Utensils needed:

Mold for the junket
double-boiler
utensils for measuring

Work to be done:

1. Heat the milk until lukewarm.
2. Add the sugar, salt, and flavoring.
3. Dissolve the junket tablet and add it to the milk.
4. Let the mixture stand in a warm room until set; then place it in the ice box to cool.

Serving:

Serve from the bowl in which the custard was set, either with plain or with whipped cream. This custard may be used as a dessert at either luncheon or dinner. It is especially good for children or invalids.

Principles:

In this lesson another form of coagulation of milk has been illustrated. The junket tablet which was used to thicken the

milk has another name, rennet, a substance prepared from the lining of a calf's stomach. The walls of a calf's stomach secrete a substance known as rennin. This substance hardens the milk the moment it reaches the stomach, just as the junket tablet hardened the milk in the mold.

The same substance, rennin, is found in the lining of the human stomach, where it aids in the digestion of milk. The milk hardens immediately when it reaches the stomach. Many people are in the habit of gulping down a glassful of milk all at once. This is injurious to them because naturally the milk then reaches the stomach all at once, and is hardened into a large mass which it is difficult for the stomach to digest. Milk should be taken slowly and in small mouthfuls. Then it reaches the stomach at short intervals, where the rennin hardens it into small portions as it comes. Milk taken this way will cause no digestive trouble and will give greater benefit to the person drinking it. At all times it should be remembered that milk is a food, not simply a beverage. What food element does it contain? When it is used in the diet, less of other food is necessary.

Cleaning up:

1. Wash and put away all utensils just as in the other lessons on milk.

What has been learned:

1. The coagulation of milk caused by the junket tablet resembles the coagulation of milk caused by the rennin in the stomach.
2. Rennin is the substance in our stomachs which prepares milk for digestion.
3. Milk should *never* be swallowed hastily in gulps.
4. Milk is a *food*, not merely a beverage.

Lesson XIX

The Dairy Industry (Reading)

The very name of a dairy suggests the sweet breath of a cow, the taste of fresh buttermilk, the gay whir of a barrel churn, and the flushed cheeks of a busy dairy maid at work patting butter into balls. Perhaps the poetry of the dairy is much like that of the plow and the hoe—all in the mind of the looker-on. Still the dairy, if properly cared for, is always full of wholesome odors and agreeable suggestions.

The dairy industry is practiced in all countries, from the frozen lands of the Laplanders to the sun-baked deserts of the Arabs. The Laplanders keep large herds of reindeer. These are the only animals that can subsist on the scanty vegetation of northern Europe; from the reindeer the Laplanders get their milk supply, using them as well for purposes of transportation. If more milk is obtained at any one time than can be used, it is frozen into bricks, which are kept till needed and then melted.

The Arabs get their milk from their camels. In parts of Europe there are hundreds of people who use no other milk than that from goats, and in Asia there are tribes whose sole milk supply is furnished by mares. But in our country and in most other civilized countries, the cow furnishes the milk; indeed, the bulk of the world's milk and butter supply comes from this animal.

In order to have a successful dairy industry, the climate must not be too severe at times, pasturage must be good and abundant and the soil must be of such a nature that grain crops for additional food can be grown. In addition, one must not be too far from the markets in which there is a demand for the product, though this latter condition has been to a large extent overcome by the modern methods of rapid transit and refrigerator cars, for even milk may be produced several hundred miles from the city in which it is to be delivered fresh to the consumers each day.

In many states of our country, ideal conditions for dairying exist and in these states enormous quantities of milk, butter, and cheese are produced. The states in the Mississippi Valley produce the largest amounts; after them come the North Atlantic States.

In former days all the butter used was made on the farms or in the homes of those who were going to use it, and it is still true that much of the butter produced in our country is made on the farms. Any one who has visited a country store between the hours of ten o'clock in the morning and one o'clock in the afternoon, during which hour the farmers arrive in town in the greatest numbers, have seen them bringing their rolls or jars of butter into the stores. If one should take the trouble to examine the butter as it is brought in, one would find it to be of many different flavors, textures, and colors. Then the question would naturally come into one's mind as to why this should be so.

The knowledge of how to obtain good butter of uniform quality and color is not very old, it is true, and unfortunately, it has not yet become very wide-spread. It is a lack of knowledge and carelessness in the handling of the material which cause so much poor butter to be made. There is no food used by man which requires such care in production, handling, and distribution as do the dairy products, and no other foods are so easily ruined by carelessness.

What should be the condition of the cows and of the barn in which they are kept? What precaution should be used during the milking and later? Why are all these precautions necessary? In making butter it is very important that the milk and cream should be kept sweet until one is ready to churn the butter. The delicate flavor of butter is produced by the action of certain bacteria, called lactic bacteria. (See Lesson XVII.) But why, one wonders, must the cream be kept sweet if the flavor of butter is produced by allowing the cream to sour? The reason is this: There is only one class of bacteria which can produce the desired

flavor in butter. All bacteria, when they grow, cause decay and give rise to certain flavors and odors in the food upon which they are feeding. If the milk or cream is allowed to sour in a haphazard way, the souring may be produced by lactic acid bacteria, but very often it is not, as the different and often repugnant flavors of the butter in the country store testify. In order always to be sure that one is getting the desired flavors in one's butter, one must know that the cream is ripened, as the souring process is called, by the right kind of bacteria.

This can be determined only by the use of a starter. A starter is merely some soured skimmed milk containing only the lactic acid bacteria. Any one can make a starter by allowing some skim milk to sour. If it has a firm curd, breaking readily, when poured, into a creamy mass that contains no hard lumps and is not ropy nor stringy, and the flavor is mildly acid, the starter is good. When it will not break with a square fracture, or is ropy, or the whey gathers on its upper surface, harmful bacteria are present. The starter should not be allowed to become sharply acid.

When some of this is placed in sweet cream, which should be at a temperature of from 70° to 80° F., the lactic acid bacteria begin to grow and multiply rapidly, and in a very little while, twenty-four hours or so, the cream should be ripened enough to churn. The amount of starter used and the temperature of the cream aid in determining this. Ordinarily one gallon of starter to ten of cream is used. One should not allow the ripening to continue too long, as then the delicate flavor and aroma are lost. The cream should be stirred two or three times while it is ripening, as this causes it to ripen more uniformly.

The temperature of the cream when churned is a very important factor. If the temperature is too high, the butter will come quickly, but it will be soft and oily, and can not be worked; if too low, it will take too long for the butter to come. The butter should come in about thirty or thirty-five minutes. Experience has shown that in the warm summer months the

cream should have a temperature of about 50° or 55° F.; in winter it should be about 60° F. In order to get this temperature, the cream must be cooled by either ice or cold water during the last half of the ripening process.

In churning butter, a steel or wooden barrel churn is the best to use. All wooden utensils used in handling butter should be very carefully scalded and rinsed. When the butter granules have reached the size of wheat kernels, churning should be stopped, the buttermilk drawn off, and a quantity of water two degrees cooler than the temperature of the cream when it was put into the churn should be added. Then the churn should be turned three times; the water should be drawn off, and the salt should be evenly sprinkled over the butter as it is gently tossed into layers by the paddles. When the salt has thus been added, the butter is ready to be removed to the working table.

Paddles, working table, and worker should be treated with hot water, then with cold, just as were the butter hands before they were used. Then the butter is worked across the width of the table and then turned over upon itself from the upper and lower ends. This is done two or three times, depending upon the temperature of the butter. One can determine when the butter is worked enough by lifting it up on one end with the paddle after having first made a gash across it to facilitate its bending. If it seems to want to cling together, it needs more working. When worked sufficiently it should be packed in jars, covered with cheesecloth, and set away in a sweet, clean, cool place.

Much of the butter brought into the country store is not fit for use. The merchant buys it, but at a much lower price a pound than he receives for butter which he sells. He never pays cash for it, the person selling it always taking his pay in trade.

Thus country merchants often accumulate large quantities of this unsalable butter. All this butter, together with poor

butter obtained from other sources, is shipped away to a factory, where it is renovated; the merchants who sell this butter to the factory receive a small price for it. At the factory all these grades of poor butter are turned into immense vats where they are melted and washed with cold water or sometimes with a solution of caustic soda. After this the butter is allowed to stand until the curd and other materials settle. Then the oil is drawn off, rechurned with milk, salted, colored, and worked. It is sometimes sold as fresh butter, but this is illegal. It should be sold in packages which are plainly labeled "renovated" or "process butter," so that the purchaser may know what he is getting. Renovated butter has poor keeping qualities; it is better to use a cheaper fat, such as cotton-seed oil or one of the lard substitutes, for cooking purposes.

Lesson XX

Cream Puffs

Materials used:

Class Rule	Home Rule
2 tb butter	½ c butter
¼ c boiling water	1 c boiling water
1 egg	4 eggs
¼ c flour	1 c flour
whipped cream	½ c thick cream
lemon extract	lemon extract
a little sugar	a little sugar

Utensils needed:

Omelet pan	utensils for measuring
wooden spoon	bowl for whipping cream
baking sheet	egg beater

Work to be done:

1. Place the oven on to heat.
2. Place the butter and water in the omelet pan and let them boil.

3. Add the flour all at once to the boiling butter and water, and stir vigorously.
4. Add the egg gradually until all the ingredients are thoroughly mixed. Beat them well.
5. Butter the baking sheet.
6. Drop by spoonfuls upon the sheet, one and one-half inches apart. Buttered muffin rings may also be used.
7. Bake 45 minutes in a moderate oven. When the time is up, remove only one from the oven and place it on a plate. If it does not fall, it is done and the others may be taken out; if it does fall, it is not done and the others should be left in longer.

Fig. 24.—Filling Cream Puffs

8. Make a cut in the side of each with a sharp knife to admit the whipped cream, which should be sweetened a little and flavored with lemon extract.

Serving cream puffs:

Cream puffs may be served as dessert at dinner. They are enjoyed by all children and are easily digested, hence may be used at children's parties. They may be brought in on individual plates, or they may be served on individual plates at the table, the hostess serving them as she does all other desserts.

Lesson XXI

Serving Butter

Butter is served at all meals except formal dinners. The butter should be molded into round balls or other suitable forms, but, before molding, the utensils must first be soaked in

boiling hot water for ten minutes and then chilled in ice-cold water. Unless this is done, the butter will stick to them. Wood is very porous and soaking it in hot water fills the pores and then the butter will not stick. They are placed in ice water to cool so they will not melt the butter.

To form the balls, the butter must be very cold; dip the butter hands into the cold water after each mold has been made and before making a new one. If human hands are used, roll a piece of butter the size of a teaspoonful between them until a round ball is formed.

Fig. 25.—
Butter Hands

The ball of butter is placed on the bread and butter plate, except at formal luncheons, when the small butter plate is preferred. Butter should be placed on the plate provided for it just a minute or two before the guests sit down. The remainder should be placed on the sideboard and when wanted should be served by the waitress with a silver pick. Butter dishes are made with a reservoir for melted ice underneath. The water resulting from the melting ice should be emptied out before the butter is served the second time.

Garnish a butter plate with a few clover leaves or blossoms, a sprig or two of cress or parsley, or with nasturtiums.

Principles:

Butter is composed largely of the fat of milk. The fat is present in the milk suspended in the form of countless numbers of tiny globules not more than $\frac{1}{1500}$ of an inch in diameter. They are lighter than the rest of the milk, hence, when milk stands, they rise to the surface in the form of cream. Each little globule is surrounded by a thin envelope of albumin. What besides milk contains albumin? Butter is obtained from cream by dashing it about in the churn. As the churn is turned, the cream falls from side to side and this causes the surrounding envelope of albumin to break from the little

globules and these globules then adhere to each other, forming a lump of butter.

When the lumps of butter become as large as peas, the buttermilk must be drained off. Some casein is usually skimmed off with the cream and it becomes entangled with the fat globules of the butter. But this is washed out with the buttermilk. The butter is then salted. The salt helps to keep the butter sweet, or, in other words, acts as a preservative.

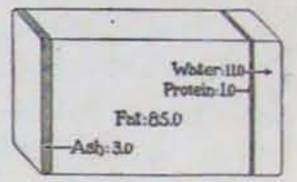

Fig. 26.—
Composition of Butter

Butter contains on the average 11% water, 85% fat, 1% casein and albumin, and 3% salt and mineral matter. Is it then a heat producer or a tissue builder? With what kind of foods is it most frequently used? Why? Cream and butter are the two most easily digested fat foods we have.

Cleaning up:

1. How should butter dishes be cleaned?
2. How should the egg beater be cared for? The butter hands?

What has been learned:

1. Butter is the fat of milk.
2. It is made by breaking the albumin covering of the globules, which then adhere to each other.
3. Butter contains 85% fat, 11% water, 1% casein and albumin, and 3% salt and mineral matter.
4. Cream and butter are the most easily digested of all the fats.

Lesson XXII

Oleomargarine (Reading)

Instead of an attempt to deceive the public, the invention of oleomargarine was designed to help those who could not afford to buy butter.

Napoleon III, who was ruler of France in 1870, wished to do something to ameliorate the condition of the very poor people,

of whom there were great numbers in that country. He offered a prize to the person who should invent a butter substitute which should taste and look like butter, be as wholesome and nutritious, and yet be cheaper. Many chemists competed for this prize, and it was won by Mage-Mouries, a native of France.

America soon made use of the discovery. As early as 1886, laws were made by the government regarding the product. The first oleomargarine made here was manufactured in secret and sold as butter. This is where all the trouble started—trouble that has given oleomargarine a bad name, whereas it deserves a good one. It is perfectly legitimate for any one to make and sell oleomargarine as such, but when the manufacturers sold it as butter for prices that were paid for butter, they were deceiving the public. The fraud was discovered, and the discovery resulted in so much talk and controversy that the United States government decided to make laws that would safeguard the purchaser and prevent the dealer from deceiving his patrons. A law was therefore made levying a tax of ten cents a pound on all oleomargarine which was colored to resemble butter. The product uncolored was taxed only one-fourth of a cent a pound.

However, it was soon discovered that this did not protect the purchaser. It is easy to color a tub of oleomargarine. The coloring matter is the same that is used in coloring butter. This coloring matter is annatto, a vegetable dye obtained from Brazil. A dealer could buy any desired number of casks of uncolored oleomargarine and one cask of the colored article. The cask of colored oleomargarine he would place under his counter and from this he would sell to his customers either at the advanced price of colored oleomargarine or as butter, depending on the extent of his daring.

When the tub of colored oleomargarine was emptied, he would quietly color the contents of one of the other tubs and then refill the emptied tub and sell this product, which had cost him much less than if he had bought it colored, for the same

prices and as the same stuff as the original contents of the first tub. This deception was practiced by dealers all over the country and it was very difficult to detect their fraud.

The government had then to devise new laws which would do away with all these petty frauds and really protect the consumer. Laws were made requiring the manufacturer to pack this product in a certain characteristic manner. According to the latest law, firkins, or tubs, used for oleomargarine must not have been used for anything else previously. All firkins, tubs, or other wooden receptacles must not contain less than ten pounds and each package must be marked, stamped, and branded as required by the Bureau of Internal Revenue. Retailers must sell only from the original package and this must always be kept in plain view of the purchaser. Manufacturers may also put it up in one, two, or three-pound packages, which must be properly marked and labeled with government stamps. On the package must be printed exactly what the package contains. It is not safe to buy oleomargarine in bulk, as it is here that the greatest frauds are practiced.

In addition to these regulations there are also certain other laws enforced. Manufacturers of oleomargarine must pay a license of six hundred dollars for the privilege of manufacturing it. The retailer who sells only the uncolored product must pay six dollars a year for the privilege; if he sells the colored product, he must pay forty-eight dollars a year. The wholesale merchant who handles only the uncolored product pays two hundred dollars a year for the privilege; if he handles the colored product, he must pay six hundred dollars. But in spite of all these precautions, frauds often occur and the government officials are continually on the watch. Whenever a dealer is found selling the oleomargarine as butter, or otherwise practicing deception, he is made to pay a suitable penalty.

Seeing that this product caused so much controversy and trouble, our government further decided to find out of what materials it was composed. Several samples were bought at

different places and were given to the government chemists to decide of what they were made. These chemists were able to compute the average composition of this article of food. The most important ingredient, because it is present in the greatest amount, is the oil. The average package of oleomargarine contains 34.29 per cent of this oil. This oil is made in our great packing houses from the fats of animals, especially from beef suet. The suet is cooled and then cut up by machinery and cooked at a temperature of about 150° F. This temperature melts the fat of the suet. This fat is drawn off into tierces and allowed to cool, thus becoming hardened. The oleo oil of this fat is obtained by a method of pressing which takes out the stearine, the other compound in the fat, leaving the clear liquid oleo oil.

Milk was found to be present to the extent of 20.09 per cent. This is added to give a butter-like consistency and flavor to the product. Sixteen and twenty-seven hundredths per cent of a package of oleomargarine was found to be "neutral." This is a high grade of lard, made in the packing plants of leaf fat only. It is a tasteless fat, without color or odor, free from acids and impurities and having a very smooth, fine grain. Cottonseed oil was found to be present to the extent of 14.36 per cent. This oil resembles the other oil very much and has the added advantage of being very cheap. The other important constituents are, salt 7.33 per cent, cream 3.09 per cent, and butter 2.98 per cent. Traces of stearine, peanut oil, sesame oil, glucose, and eggs are also found.

All these ingredients are placed in huge, steam-propelled churns where they are moved about until the particles of fat, from contact with the milk, acquire a resemblance to the globules of fat in true butter. Then the whole mass is drained into large vats of ice-cold water where it remains until the globules of fat form into lumps like those found when butter is churned. These are then gathered into a huge wooden worker in which are many paddles worked by machinery. The salt is not added

with the other ingredients, but is worked into the mass at this stage. After working, the product is stamped into molds, or in other ways made ready to be sold.

Scientists who have studied the matter of the wholesomeness of oleomargarine have not been able to discover that it is any less wholesome than butter. People who eat the fats of meat and salads made with salad oil eat the same fats that are the chief constituents of oleomargarine. But oleomargarine cannot be considered a substitute for butter for it does not contain the growth-promoting vitamine that is present in butter. This vitamine is especially needed by children and hence butter should always be used as a spread for their bread.

European countries are the greatest consumers of oleomargarine. There the population is very dense, the price of butter high, and many of the people very poor, so a great deal of the butter substitute is used. Holland is the greatest manufacturer of this product. A single factory in Rotterdam produces as much of the product in one year as do all the factories in the United States combined; but the ingredients of which it is made are manufactured chiefly in the United States.

The term "butterine" is but another name for oleomargarine.

Lesson XXIII

Welsh Rarebit

Materials used:

Class Rule		Home Rule	
$\frac{1}{6}$ c grated cheese	$\frac{1}{4}$ c milk	$\frac{1}{2}$ lb grated cheese	$\frac{1}{2}$ c milk
$\frac{1}{3}$ tb butter	$\frac{1}{3}$ tp corn starch	1 tb butter	1 tp corn starch
$\frac{1}{12}$ tp mustard	$\frac{1}{6}$ tp salt	$\frac{1}{4}$ tp mustard	$\frac{1}{2}$ tp salt
pepper		pepper	
salted crackers or toast		crackers or toast	

Utensils needed:

- Measuring cup
- saucepan or double boiler
- teaspoon
- tablespoon
- grater
- knife
- bowls

Work to be done:

1. Grate the cheese on a coarse grater.
2. Measure the cheese without packing.
3. Melt the butter in a saucepan and make a white sauce with the milk and corn starch. If the saucepan is used, place an asbestos mat under it.

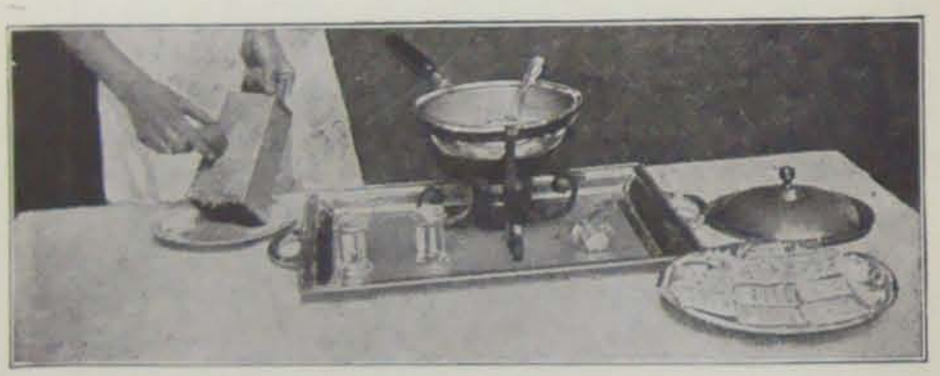

Fig. 27.—Grating Cheese. Chafing dish on a tray

4. Add the grated cheese, stirring constantly until the cheese is melted.
5. Add the seasonings.
6. Pour the mixture over the cracker and serve *at once.*

Serving:

This dish, because it can be made in the chafing dish, is much used for Sunday evening supper or for lunch later in the evening.

Finger privileges at the table:

When Welsh rarebit is served informally and crackers are used, they are taken in the fingers to eat, but otherwise forks are used.

Principles:

Cheese, when made of unskimmed milk, consists of lumps of protein surrounded by envelopes of fat. The fat makes it very difficult for the digestive juices to get at the protein; but the finer the cheese is divided, the more easily is digestion accomplished. This is the reason why cheese is more easily digested when it is finely divided and dissolved and cooked with other foods. In eating cheese, why should we be careful to chew it well?

When the cheese is melted, it is sufficiently cooked. Long cooking at a high temperature makes it tough, stringy, and indigestible. What effect does hard cooking have on the protein of the eggs? on the casein of the milk?

Cheese has no starch in it. Therefore it should be used with a starchy food to make it a perfect dish. When used in combination with milk and eggs, it makes a very nutritious dish that can well take the place of meat in the diet. Why? Can such a dish properly be called a composite dish?

Cleaning up:

Follow directions given in preceding lessons.

What has been learned:

1. Cheese is a protein food. Long, hard cooking renders it tough and stringy.
2. In order to be digestible, cheese should be finely divided.
3. Soda causes cheese to dissolve more rapidly.
4. Cheese should be used in combination with a starchy food, such as crackers or bread.
5. Cheese in combination with milk and eggs is a substitute for meat in the diet.

Lesson XXIV

Cheese Fondue

Materials used:

Class Rule	Home Rule
2 tb scalded milk	1 c scalded milk
2 tb soft bread crumbs	1 c soft stale bread crumbs
2 tb cheese	1 c mild cheese
½ tp butter	1 tb butter
⅛ tp salt	½ tp salt
¼ egg, beaten	3 eggs

Utensils needed:

Measuring cup	Dover beater	bowls
teaspoon	double boiler	buttered baking dish
tablespoon	wire whip	ramekin
knife	platter	

Work to be done:

1. Scald the milk in the double boiler.
2. Break the bread into small pieces.
3. Cut the cheese into small pieces.
4. Add the bread, cheese, butter, and salt to the milk.
5. Break the egg, separating the yolk from the white.
6. Beat the yolk till it is thick and lemon-colored. Add this to the milk mixture.
7. Beat the white till stiff and dry.
8. Carefully fold the beaten white into the mixture.
9. Turn the whole into a buttered baking dish or ramekin, setting this in a pan containing water. Why?
10. Bake the fondue in a moderate oven. Test it by inserting a silver knife. What should be the appearance of the knife when the fondue is done? What other dish is tested in this manner?

Serving:

Because of the large amount of protein contained in the cheese and eggs, this dish may be used as the principal dish at luncheon or it may take the place of meat at dinner. It may be served by either the host or hostess, as preferred, from the dish in which it was baked. It is eaten with the fork.

Principles:

Why is the cheese combined with bread crumbs? How will the cheese be dissolved in the dish? What effect does dissolving cheese have upon its food value?

A dish containing milk, eggs, and cheese in combination is very similar to custard. Hence, in baking the fondue, the dish containing it should be set in a pan containing water. The baking should take place with the application of a gentle heat. Why? A fondue, like a custard, must not be heated too long or it will become watery.

The food value of cheese is great. A pound of cheese contains about three times as much protein and twice as much fat as a pound of beef. When used with some starchy food, it may well form the main part of a meal. Bread, macaroni, and potatoes are regarded as the best forms of starch with which to eat it.

Cleaning up:

What removes discoloration resulting from baking?

What has been learned:

1. Cheese fondue is a composite dish.
2. It is similar to custard in composition, and requires the same precautions in cooking.

Additional Recipe

Cheese Soufflé (F. M. Farmer)

2 tb butter	¼ c grated cheese
3 tb flour	yolks of 3 eggs
½ c scalded milk	whites of 3 eggs
½ tp salt	a few grains of cayenne

Met the butter, add the flour, and when well mixed, add scalded milk gradually. Then add salt, cayenne, and cheese. Remove from the fire; add yolks of eggs beaten until lemon-colored. Cool the mixture, and fold in whites of eggs beaten until stiff and dry. Pour into a buttered baking dish and bake 20 minutes in a slow oven. Serve immediately.

EGGS

Lesson XXV

Curried Eggs

Materials used:

Class Rule	Home Rule
½ egg, hard-boiled	3 hard-boiled eggs
⅓ tb butter	2 tb butter
⅓ tb flour	2 tb flour
a pinch of salt	¼ tp salt
1/12 tp curry powder	½ tp curry powder
a few grains of pepper	⅛ tp pepper
¼ c hot milk	1 c hot milk

Utensils needed:

Granite pan, wooden spoon
utensils for measuring, double boiler

Work to be done:

1. Melt the butter.
2. Add the flour and seasonings. Mix.
3. Add the hot milk and let the mixture boil.
4. Cut the eggs in eighths lengthwise and reheat in the sauce.

Serving:

This is a good way to warm over cold boiled eggs. The dish may be used either at breakfast or luncheon. They are served from the table by the host or hostess either on the plate or in individual dishes.

Principles:

The part of the egg which we eat contains 73.7% water, 14.8% protein, 10.5% fat and 1% mineral matter, or ash. A cooked egg does not vary in composition from the uncooked.

The yolk contains considerable fat and ash, while the white is practically free from fat and has a very small ash content. The white contains more than twice as much water as the yolk and a little less protein. The water is present in such a way that it is not visible, but it is combined with the other constituents so that the whole food is more or less moist or juicy. Eggs are not quite so concentrated a food as is cheese, but they are more concentrated than milk or oysters. Their water content is about the same as that of lean meat.

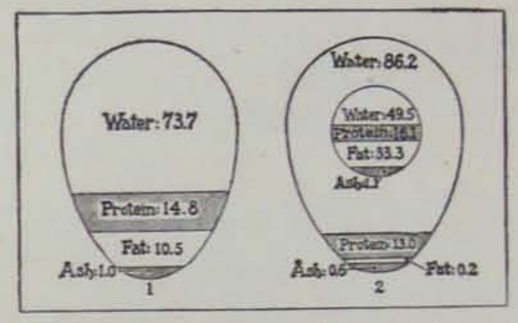

Fig. 28.—(1) Average Composition of Edible Part of Egg. (2) White and Yolk of Egg

Many dietary studies made in the United States have shown that eggs even at 22 cents a dozen are a cheaper source of nutrient than are sirloin steak or chops or any of the other more expensive cuts of meat. Because of the ease with which they are properly cooked, the ease and rapidity with which they are digested by the human body, the variety they give to the diet, and their nutritive value, eggs should be used quite freely in our meals when their price does not exceed 25 cents a dozen.

Cleaning up:

Soak the dishes in cold water, then wash in hot, sudsy water, and rinse well.

What has been learned:

1. Eggs contain 73.7% water; 14.8% protein; 10.5% fat, and 1% mineral matter.
2. The white contains nearly twice as much water, less protein, and much less mineral matter than the yolk.
3. The yolk is rich in fat, protein, and mineral matter.
4. Eggs below 25 cents a dozen are a cheaper source of nutrients than expensive cuts of meat.

PASTRY

Lesson XXVI

Lemon Pie

Materials used:

Class Rule	Home Rule
4 tb pastry flour	1½ c pastry flour
⅛ tp salt	½ tp salt
1¼ tb shortening	4 to 8 tb shortening
cold water	cold water (about 4½ tb)
Filling:	
6 tb sugar	¾ c sugar
1½ tb cornstarch	3 tb cornstarch
6 tb boiling water	¾ c boiling water
1 egg yolk	2 egg yolks
1½ tb lemon juice	3 tb lemon juice
grated rind of ½ lemon	grated rind of one lemon
½ tp butter	1 tp butter
Meringue:	
1 egg white	2 egg whites
1 tb sugar	2 tb sugar

Utensils needed:

Measuring cup	bowls	grater
sifter	rolling pin	pie tin
teaspoon	case knife	molding board
tablespoon	double boiler	

Work to be done:

1. Mix and sift the flour and salt.
2. Chop ⅔ tb lard into the flour, reserving the rest.
3. Add the cold water, using the knife to mix. Add the water drop by drop towards the last.

4. Pat and roll the paste on a slightly floured board until about ⅛ inch thick.
5. Spread or dot the remaining shortening over the paste and sprinkle lightly with flour.
6. Either fold it up or roll it like a jelly roll.
7. Pat and roll it again; fold it up or roll.
8. Roll it out ⅛ inch thick, keeping it as circular as possible.
9. Cover the plate or pie tin with the paste, being careful that there are no bubbles underneath.

Fig. 29.—Making a Fluted Rim

10. Make a raised or thickened rim. Prick the paste with a fork.
11. Bake the paste in a moderate oven.

Filling

1. Mix the cornstarch and sugar.
2. Add the boiling water and boil in a double boiler, stirring constantly until it is thickened. Add the butter.
3. Beat the egg yolks till they are thick and lemon-colored.
4. Wash the lemon thoroughly with a vegetable brush.
5. Grate the yellow part of the rind off.

6. Combine the egg yolk, lemon rind, and lemon juice with the thickened mixture (which has been removed from the fire).
7. Allow the mixture to cool.
8. Fill the pie crust with the mixture.
9. Beat the egg white until it is stiff and dry.
10. Beat in the sugar. Add a little flavoring, if desired.

FIG. 30.—Making a Fancy Design with Pastry Bag, and Spreading Meringue with a Spoon

11. Cover the pie with meringue: (a) Put it on smoothly. (b) Drop it on by spoonfuls, making a rough surface. (c) Or put a part of it on smoothly, and press the rest through a pastry tube, putting it on in fancy designs.
12. Bake the pie in a slow oven till the meringue is delicately browned.

Serving:

Pie is used as a dessert. If served from the table, it is placed in front of the hostess, who takes out each piece with a pie knife and places it on a dessert plate to be served to each person at the table.

Principles:

Pastry flour makes a crust that is more tender than one made with bread flour. It is more starchy than bread flour, but has less gluten, the substance in flour which gives it its elasticity; therefore, more pastry flour must be used than bread flour.

The addition of some of the shortening after the water has been added makes the crust more flaky and light, as more air is incorporated in the process of rolling out the paste. Why was the cornstarch mixed with the sugar before it was added to the water? In what other foods have the starch and sugar been added in the same way?

In adding the mixture to the egg, cooking is not necessary, as there is enough heat present to cook the egg sufficiently. How should an egg mixture be cooked? Why should the meringue be baked in a slow oven? A meringue is different from an omelet in that it contains no other ingredient but the egg white and sugar. An omelet is made light just as much by the steam as by the air.

Cleaning up:

Scrub the grater with a vegetable brush.

What has been learned:

1. Pastry flour has more starch and less gluten than bread flour.
2. More pastry flour must be used in a given recipe than bread flour.
3. Addition of shortening to paste after the water has been added makes the crust more tender.

Additional Recipe

CHOCOLATE PIE

FILLING:

¼ c grated chocolate	2 tb butter	5 tb cornstarch
1 c hot water	1 c sugar	2 egg yolks

Lesson XXVII

Mince Pie

Materials used:

Filling

Class Rule	Home Rule
½ c chopped apple	3 qt chopped apple
⅛ c seeded raisins, chopped	1 lb raisins
1 tb suet	1½ lb suet
¼ tb molasses	3 c sorghum molasses
1 tb boiled cider	1 qt boiled cider
⅛ c currants	1 lb currants
weak vinegar; grape juice or other fruit juice may be used	2 lemons, rind and juice
¼ c sugar	3 c sugar
⅛ tb cinnamon	2 tb cinnamon
1/16 tp cloves	1 tp cloves
⅛ nutmeg, grated	2 tb mace
⅛ tp mace	½ lb citron
¼ tp salt	3 lb lean beef
¼ c chopped meat (cooked) moistened with meat stock or water	2 tb salt
	1 nutmeg
	6 oranges
¼ orange	

Paste

Flour, salt, shortening, water. How much of each? (See Lesson XXVI.)

Utensils needed:

Chopping bowl
chopping knife
tablespoon
teaspoon
knives
measuring cup
salt spoon
pie tin
molding board and rolling pin
bowl
sifter
nutmeg grater

Work to be done:

1. Wash, peel, core, and slice the apples. Wash raisins and currants.
2. Seed the raisins.
3. Chop the apples and raisins.
4. Run the meat and suet through a meat grinder.
5. Mix all the ingredients together, moistening with meat stock.
6. Cook the mince meat for fifteen minutes.
7. Make a plain paste and line the pie tin. Brush the paste with egg white. Set it in the oven a moment to glaze it.
8. Turn in the mincemeat filling.
9. Brush the edge of the crust with cold water.
10. Cover the pie with the second crust, which has been gashed to allow for the escape of steam.
11. Bake the pie in a slow oven.
12. If there is any mincemeat left, heat it gradually, stirring often. Let it simmer an hour, then store it in fruit jars in the same manner as canned fruit.

Serving:

Tradition has made this a dish used especially at Thanksgiving and Christmas. At these times it is often served in conjunction with pumkpin pie. When this is done, a small piece of each should be served on the same plate. A piece of cheese may also be added.

Finger privileges at the table:

Cheese is taken with the fingers.

Principles:

What are the sugar-supplying ingredients of mince pie? the fat-supplying ingredients? the starch-supplying ingredients? What supplies protein? What supplies acid? Can mince pie be called a composite dish?

The meat which is used in mincemeat must be chopped very fine before it is added to the remaining ingredients. Because of this fact, tougher parts of meat may be used, since the tough tissues are cut apart when the meat is ground. Meat from

the neck is often used for mincemeat, though the lower part of the round, or other tough cuts may be used equally well. Such meat has the added advantage of being comparatively cheap.

When cooking tough cuts of meat for mincemeat, it is well to remember the rule for cooking eggs. Place the meat in boiling water, then lower the temperature so that it will stay just below the boiling point. It should be kept at this temperature until the meat is perfectly tender, which will be for hours if the piece is very tough. A fireless cooker furnishes the most economical method of cooking such meat. The long slow cooking at low temperature below the boiling point will dissolve the tough connective tissues and the low temperature also prevents the hardening of the proteins which are contained in the meat.

The sugar and spices which are added to the mincemeat not only give it flavor, but also aid in preserving it. Any food containing quite large quantities of sugar and spices should be cooked in a slow oven, for they are likely to burn.

Cleaning up:

Soak the chopping bowl in cold water. After it has been washed and rinsed, it should be set in the sun to dry before it is put away.

Pour boiling water into the meat grinder. Take it apart, unscrewing the blades; thoroughly wash and dry them.

The grater can be cleaned by using a brush.

What has been learned:

1. Sugar and spices in a food act as preservatives.
2. Foods containing sugar and spices must be cooked by a slow fire, for they burn easily.
3. Cheap, tough cuts of meat are best for mincemeat.
4. Tough cuts for mincemeat should be cooked in water just below the boiling point.

CAKES

Lesson XXVIII

Walnut Cake

Materials used:

Class Rule	Home Rule
2 tp fat	$\frac{1}{2}$ c fat
$\frac{1}{4}$ c sugar	1 c sugar
$\frac{3}{4}$ of egg yolk	3 egg yolks
$\frac{1}{8}$ c milk	$\frac{1}{2}$ c milk or water
$\frac{1}{2}$ c flour	$1\frac{3}{4}$ c flour
$\frac{5}{8}$ tp baking powder	$2\frac{1}{2}$ tp baking powder
$\frac{1}{2}$ egg white	2 egg whites
3 tb walnut meats	$\frac{3}{4}$ c walnut meats

Utensils needed:

2 bowls	teaspoon
sieve	stirring spoon
measuring cups	Dover egg beater
knife	baking tin
tablespoon	

Work to be done:

1. Put the oven on to heat.
2. Butter the baking tin.
3. Cream the butter, add the sugar and cream till the sugar is dissolved.
4. Break the eggs, separating the whites and yolks.
5. Beat the yolks and add them to the creamed sugar and butter. Beat.
6. Add the milk and flour alternately, sifting the baking powder in with the last of the flour. Why?
7. Cut or chop the nut meats and add them.

8. Beat the egg whites till stiff and dry.
9. Fold the egg whites into the batter carefully. Why?
10. Fill the buttered tin two-thirds full of batter.
11. Test the oven with the paper test for cake, that is, white paper should brown in 5 minutes.
12. Bake the cake for forty-five minutes. Test it and remove it when done.

Serving:

For the service of cakes refer to the lessons on cake-making in Book One.

Cake is taken with the fingers unless it has a soft or sticky frosting, in which case a fork is used.

Principles:

What is the effect of creaming and beating? Why should egg whites be folded in carefully? How and why should the tin be buttered? Why should the tin be filled only two-thirds full? How can one tell when the oven is hot enough for butter cake? When is a cake done? In what way does the addition of the walnut meats add to the value of the cake?

Cleaning up:

1. Use cold or warm water for rinsing batter dishes. Why not hot water?
2. Use cold water for rinsing the egg dish. Why not hot water?
3. Observe the usual care in washing and rinsing towels and cloths and putting away dishes.

What has been learned:

The butter-cake method of mixing ingredients, explained in Book One, is reviewed in this lesson.

Lesson XXIX

Spanish Cake with Caramel Frosting

Materials used:

Class Rule	Home Rule
2 tp fat	½ c fat
¼ c sugar	1 c sugar
½ egg yolk	2 egg yolks
2 tp milk	½ c milk or water
7 tb flour	1¾ c flour
¾ tp baking powder	3 tp baking powder
¼ tp cinnamon	1 tp cinnamon
½ egg white	2 egg whites

Frosting

6 tb brown sugar	1½ c brown sugar
3 tb thin cream or milk	¾ c thin cream or milk
⅛ tb butter	½ tb butter

Utensils needed:

Pan	measuring cups
2 bowls	spoons
saucepan	knife
sieve	layer cake tins
Dover egg beater	

Work to be done:

1. Put the oven on to heat.
2. Butter the cake tins.
3. Cream the butter, add the sugar, and cream till the sugar dissolves.
4. Beat the egg yolk, add to the mixture, and beat again.
5. Mix and sift the dry ingredients and add alternately with the milk.
6. Beat the egg whites till they are stiff and dry.
7. Fold the egg whites into the batter.

8. Put the batter into the tins.

9. Bake the cake in the oven at the right temperature for butter cake.

Frosting:

1. Mix all the ingredients for the frosting in the granite saucepan and boil them till the mixture forms a soft ball in cold water.

2. When boiled enough, remove the pan from the fire and beat the frosting till of the right consistency to spread.

3. Remove the layers of cake from the pans as soon as taken from the oven; to do so, invert the cake in the pan. If the cake sticks, loosen the edges with a knife.

4. Place one layer on a large plate.

5. With a bread knife, first dipped in water, spread a layer of the caramel frosting over the layer.

6. Place a second layer of cake upon the first, and spread frosting over this.

7. Spread the frosting on the sides of the cake also.

Serving:

The service of this cake is the same as that of other cakes.

Principles:

Cake should not be hurried from the pan. If the cake sticks, loosen the edges with a knife and let the pan rest on its side till the weight of the cake itself loosens it. Layer cake tins often have an arrangement for loosening the cake.

In frosting cake it is necessary to work rapidly, as the frosting, when it reaches the spreading stage, hardens very rapidly. The frosting should be smooth and evenly spread on the cake. Wetting the knife aids in getting the frosting on smoothly and quickly. If a cooked frosting is used, it may be spread on a cake while the latter is hot or after it becomes cold. If the frosting is uncooked, it is best to have the cake at least warm.

Cleaning up:

1. Rinse and wash batter dishes in the usual way.

2. Rinse and wash the frosting dish as all sugary dishes should be washed.

What has been learned:

1. Method of making caramel frosting.

2. Cakes should not be hurried from the pan if they stick; they should be removed as soon as possible after taking them from the oven.

3. Cooked frostings may be spread on warm or cold cake.

4. Uncooked frosting spreads best on warm cake.

Supplementary Recipe

LILY CAKE

Materials used:

⅓ c fat	2½ tp baking powder
1 c sugar	3 egg whites
½ c milk or water	½ tp lemon extract
1¾ c flour	¾ tp vanilla

Use the butter-cake method of combining.

Lesson XXX

CHOCOLATE FRUIT CAKE

Materials used:

Class Rule	Home Rule
4 tp fat	⅓ c fat
4 tb sugar	1 cup sugar
1 tb cocoa	¼ c breakfast cocoa
¾ egg yolk	3 egg yolks
2 tb cold water	½ c cold water
5 tb bread flour	1¼ c bread flour
¾ tp baking powder	3 tp baking powder
¼ tp cinnamon	1 tp cinnamon
⅛ tp salt	¼ tp salt
4 tp cherries	⅓ c candied cherries
4 tp chopped seeded raisins	⅓ c chopped seeded raisins
4 tp chopped walnut meats	⅓ c chopped walnut meats
¾ egg white	3 egg whites
¼ tp vanilla	1 tp vanilla

Utensils needed:

Pan	spoons
2 bowls	knife
Dover egg beater	deep baking pans
measuring cups	paper and scissors

Work to be done:

1. Put the oven on to heat.
2. Turn the baking tin bottom side up. Fit a piece of white paper over the bottom and sides; turn the pan over and fit the paper into it. Butter the paper and the edges of the pan.
3. Cream the butter, add the sugar, and cream till it is dissolved.
4. Add the cocoa to the creamed butter and sugar and mix.
5. Beat the egg yolks and add to the mixture.
6. Add water.
7. Mix and sift dry ingredients and add to the mixture, beating thoroughly.
8. Cut up the raisins and nut meats; dredge them (sprinkle flour upon) and add them and the floured cherries to the batter.
9. Beat the egg whites till they are stiff and dry.
10. Fold in the egg whites and add vanilla.
11. Put the batter into the pan and bake about an hour in a moderate oven.

Serving:

Rich cakes like this should be used but sparingly in the diet. This cake is especially nice served with vanilla ice cream.

Principles:

What method of combining ingredients was used in making this cake? Sometimes a paper is fitted into the bottom of a cake pan; there will then be no danger of the cake's sticking to the pan; it can easily be loosened from the edges of the pan with a knife, so that when inverted, the cake, paper and all, will fall out. Removing the paper from the cake is an easy matter. The paper helps to keep the bottom of the cake from burning during the long slow baking.

The fruit is heavier than the remainder of the batter, hence it tends to fall to the bottom during the first part of the baking. The flour with which it is dredged serves to anchor it in the batter.

A cake of this kind requires long, slow baking because of the presence of spices and fruits, which burn easily.

White Mountain Cream

Materials needed:

Class Rule	Home Rule
$\frac{1}{3}$ c sugar	$\frac{1}{3}$ c boiling water
5 tb boiling water	1 egg white
$\frac{1}{3}$ egg white	1 tp vanilla or $\frac{1}{2}$ tb lemon juice
a few drops vanilla	1 c sugar

Utensils needed:

Dover egg beater	granite pan	measuring cup
bowl	wooden spoon	

Work to be done:

1. Place the water and sugar in the granite pan and bring them slowly to the boiling point, stirring all the time with the wooden spoon.
2. Let the syrup boil gently, without stirring, until it spins a long slender thread when a spoon is dipped into it and held up.
3. In the meantime, place the white of egg in the bowl and beat stiff, using the Dover egg beater.
4. When the syrup threads, pour gradually over the egg white and beat all the time.
5. Continue beating until the frosting is thick enough to spread.

Caution:

1. If frosting is not beaten long enough, it will run.
2. If frosting is beaten too long, it will not be smooth; in the latter case, add a drop or two of boiling water and stir.
3. If nuts or candied fruits are to be used on the frosting, add them before the frosting has had time to become firm.

This frosting, when properly made, is soft inside, has a bright, glossy surface, and does not stick nor adhere to the knife when cut.

Cleaning up:

Observe the usual rules for batter dishes.

What has been learned:

1. Papering tins keeps cake from sticking and burning and makes the greasing of the tin unnecessary.

2. Fruit when added to cake batter should be dredged with flour to keep it from settling to the bottom of the cake.

3. Fruit cakes require long, slow cooking to keep the spices and fruits from burning.

Supplementary Recipes

Golden Spice Cake

½ c butter
½ c brown sugar
1 egg
4 egg yolks
½ c molasses
½ c milk or water
2¼ c flour
1 tp cinnamon
½ tp soda
½ tp cloves
¼ tp grated nutmeg
a few grains cayenne
a few gratings of lemon rind

Use butter-cake method of combining. Bake in a moderate oven one hour, and cover with White Mountain cream.

Dark Fruit Cake

½ c butter
¾ c brown sugar
¾ c raisins, seeded and cut in pieces
¾ c currants
½ c citron, thinly sliced and cut in strips
½ c molasses
2 eggs
½ c milk or water
2 c flour
½ tp soda
1 tp cinnamon
½ tp allspice
½ tp mace
¼ tp cloves
½ tp lemon extract

Use butter-cake method of combining; bake one and one-quarter hours in deep pans.

Lesson XXXI

Cambridge Gingerbread

Materials used:

Class Rule	Home Rule
1 scant tb butter	⅓ c butter
2 scant tb boiling water	⅔ c boiling water
3 tb molasses	1 c molasses
1 tb egg	1 egg
½ c flour	2¾ c flour
1/10 tp soda	½ tp soda
1½ tp salt	½ tp salt
⅙ tp cinnamon	1 tp cinnamon
⅙ tp ginger	1 tp ginger
½¼ tp cloves	¼ tp cloves

Utensils needed:

Pan
2 bowls
sieve
measuring cups
spoons
Dover egg beater
baking pan

Work to be done:

1. Put the oven on to heat.
2. Butter a shallow pan.
3. Add the butter to the boiling water to melt it.
4. Add the molasses to the water mixture.
5. Beat the egg well and add it to the water mixture.
6. Mix and sift all the dry ingredients.
7. Add the dry ingredients, beating well.
8. Pour the batter into the buttered pan.
9. Bake the gingerbread in a moderate oven.

Serving:

Gingerbread is served hot. By some it is used as cake, by others as bread; in the latter case it is served with butter. It is less rich than other cakes.

Principles:

Molasses, because it contains a larger amount of acid than sour milk, requires a larger amount of soda to neutralize the acid. In this cake the soda not only neutralizes the acid, but it is also the leavening agent.

Cake containing spices and molasses must be baked in a moderate oven because spices and molasses burn easily.

Cleaning up:

1. Rinse the sticky molasses dishes in hot water. Cold water hardens the molasses and makes it harder to remove, but hot water dissolves it.

What has been learned:

1. Molasses contains more acid than does ordinary sour milk.
2. Spices and molasses burn readily, so cakes containing spices should be baked slowly in a moderate oven.
3. Cold water hardens molasses, therefore it should not be used for rinsing utensils which have molasses on them; hot water should be used.

Lesson XXXII

Lady Fingers

Materials used:

Class Rule	Home Rule
1 egg white	3 egg whites
5⅓ tp powdered sugar	⅓ c powdered sugar
⅔ egg yolk	2 egg yolks
5⅓ tp flour	⅓ c flour
a pinch of salt	⅛ tp salt
a few drops of vanilla	¼ tp vanilla

Utensils needed:

2 bowls
Dover egg beater
egg whip
spoons
sieve
plate
large baking tin
white paper
pastry bag and tubes
fork

Work to be done:

1. Put the oven on to heat.
2. Beat the egg yolk till it is thick and lemon-colored.
3. Beat the whites till they are stiff and dry. (Beat with the egg whip on a large plate.)
4. Add the sugar gradually to the beaten whites and continue beating.
5. Add the yolks and flavoring to the whites.
6. Sift the salt and flour together and cut and fold them into the egg.
7. Put the batter into the pastry bag.
8. Cover the bottom of the pan with the paper and do not butter the paper.
9. With the pastry bag make shapes about three inches long and one inch wide on the unbuttered paper.
10. Sprinkle powdered sugar over the batter.
11. Test the oven as for sponge cake by using a small piece of white paper. It should turn the paper light brown in five minutes.
12. Put the cakes in the oven and bake about eight minutes.
13. With a knife, remove the cakes from the paper when they are taken from the oven.

Serving:

Lady fingers are often served with frozen desserts; they may be used for lining molds that are to be filled with whipped cream mixtures; they are very nice if put together in pairs with whipped cream between them.

Finger privileges at the table:

When served dry, lady fingers are taken with the fingers.

Principles:

This batter is a typical sponge-cake batter because it contains no liquid, shortening, nor leavening agent except the egg. Why must the egg white be beaten until stiff and dry? What other foods have been made light wholly or in part by beating air into egg white? How does air make the batter light in baking?

Why does this cake not fall when cooled? The greatest caution must be taken in mixing ingredients and in cutting them into the beaten egg whites; the cells of albumen formed by beating the air into the egg are the only leavening agent; if broken down, the air will escape and the cake must fall.

Tins should not be greased for sponge-cake batters.

What has been learned:

1. Sponge-cake batters contain no liquid, shortening, nor leavening agent except egg.
2. Great care must be taken in mixing sponge-cake batters.
3. Tins should not be greased for sponge-cake batters.
4. The oven test for sponge cake.

Supplementary Recipes

Sponge Drops

The lady finger batter may be dropped from the tip of a spoon on unbuttered paper, sprinkled with sugar, and baked eight minutes in a moderate oven.

Sunshine Cake

Materials:

10 egg whites	6 egg yolks	1 c flour
1½ c powdered sugar	1 tp lemon extract	1 tp cream of tartar

Use sponge-cake method of combining ingredients.

Lesson XXXIII

Jelly Roll

Materials used:

Class Rule	Home Rule
1 egg	3 eggs
⅓ c sugar	1 c sugar
½ tp milk	½ tb milk
⅓ tp baking powder	1 tp baking powder
1½ tp salt	¼ tp salt
⅓ c flour	1 c flour
⅓ tb melted butter	1 tb melted butter
jelly	jelly

Utensils needed:

2 bowls	measuring cups	spoons
sieve	dripping pan	knife
Dover egg beater	paper and scissors	

Work to be done:

1. Line the bottom of the dripping pan with paper, and butter the paper and the sides of the pan.
2. Put the oven on to heat over a low fire.
3. Beat the egg white stiff and dry.
4. Combine the yolks with the sugar and milk and beat well.
5. Fold the whites in carefully.
6. Fold in the sifted dry ingredients next.
7. Add the melted butter last.

Fig. 31.—Rolling Cake in Paper

8. Pour the batter into the pan, spreading evenly.
9. Bake the batter in a very moderate oven for about twelve minutes.
10. When baked, take the cake from the oven and turn it onto a paper sprinkled with powdered sugar.
11. Take the paper from the bottom of the cake, and quickly cut a thin strip from the sides and end of the cake.
12. Spread quickly with the jelly and roll.
13. Roll the cake in the paper so that it will keep its shape.

Serving:

This makes a very nice luncheon or picnic cake. It is used in any of the ways in which the other cakes are used.

Principles:

The sponge-cake method of mixing the ingredients is used here. How does it differ from the butter-cake method of com-

bining ingredients? The batter is not fine-grained because it is not beaten. Are butter-cake batters fine-grained? Why? Why is not sponge cake beaten? Why does an omelet fall when cooled? The gluten of the flour gives stiffness to the walls of the air cells of a well-baked sponge cake so that it does not fall when cooled.

Sponge cake should be baked in a very moderate oven. Why?

In rolling jelly cake, one must work very rapidly or the cake will crack. The crust must be cut off because, being harder than the rest of the cake, it would crack and make the cake hard to roll.

What has been learned:

1. The sponge-cake method of making ingredients reviewed.
2. In making a rolled cake, one must work rapidly.

COOKIES

Lesson XXXIV

Peanut Cookies

Materials used:

Class Rule	Home Rule
2 tb flour	$\frac{1}{2}$ c flour
$\frac{1}{4}$ tp baking powder	1 tp baking powder
a few grains of salt	$\frac{1}{4}$ tp salt
3 tb chopped peanuts	$\frac{1}{2}$ c chopped peanuts
$\frac{1}{2}$ tb butter	2 tb butter
1 tb sugar	$\frac{1}{4}$ c sugar
1 tb egg	1 egg
$1\frac{3}{4}$ tp milk	2 tb milk

Utensils needed:

Meat grinder	egg beater
bowl for mixing	wooden spoon
sieve	utensils for measuring
bowl in which to beat eggs	baking sheet

Work to be done:

1. Place the oven on to heat.
2. Shell and remove the skins of enough peanuts to make the desired amount of meats when ground.
3. Grind the peanuts medium fine.
4. Shell and halve enough peanuts to place a half on each cooky.
5. Cream the butter and sugar.
6. Beat the egg white light and add to the butter and sugar.
7. Add the milk. Mix.
8. Mix and sift the dry ingredients; add the ground peanuts and mix.

9. Add the dry ingredients to the other mixture; stir thoroughly.

10. Butter the pan.

11. Drop the batter by the teaspoonful upon the buttered sheet, one inch apart. Why?

12. Place one-half peanut on the top of each portion of batter.

13. Bake the cookies in a moderate oven ten minutes, or until they turn a light brown.

Fig. 32.—A Plate of Peanut Cookies

Serving:

Cookies may be used in many of the ways in which cake is used. They are laid upon a pretty china plate upon which is first laid a dainty paper or linen doily.

Principles:

What kind of batter is used in cookies which are dropped from a spoon upon the buttered sheet?

Cookies may be divided into two classes, the drop cookies and the rolled cookies. Drop cookies are a little easier for beginners to manipulate; to roll cookies successfully requires some skill.

Cookies are nearly always combined by the butter-cake method.

Cleaning up:

1. What should be done with the skins and shells of the peanuts?
2. Sweep the floor carefully that no skins or shells are left upon it.
3. How should batter dishes be cleaned?

What has been learned:

1. There are two classes of cookies, dropped and rolled.
2. Drop cookies are easier to make than rolled cookies.
3. Cookies are combined by the butter-cake method.

Lesson XXXV

Boston Cookies

Materials used:

Class Rule	Home Rule
2 tb fat	$\frac{2}{3}$ c fat
3 tb sugar	1 c sugar
$\frac{1}{3}$ egg	2 eggs
$\frac{1}{8}$ tp soda	$\frac{2}{3}$ tp soda
$\frac{3}{5}$ tp hot water	1 tb hot water
7 tb flour	$2\frac{1}{6}$ c flour
a few grains of salt	$\frac{1}{3}$ tp salt
$\frac{2}{15}$ tp cinnamon	$\frac{2}{3}$ tp cinnamon
1 tb chopped nuts	$\frac{1}{2}$ to 1 c chopped nuts
$\frac{1}{2}$ tb chopped raisins	$\frac{1}{3}$ c raisins

Utensils needed:

Medium fine meat grinder	baking sheet
bowl and spoon for mixing	egg beater and bowl for eggs
utensils for measuring	sieve

Work to be done:

1. Place the oven over the fire.
2. Chop the nuts and raisins.
3. Cream the butter; add the sugar gradually.
4. Beat the eggs well; add to the butter and sugar.
5. Add the water to the mixture.
6. Mix and sift all the dry ingredients except the nuts and raisins.
7. Add half the flour to make a batter and stir thoroughly.
8. Flour the fruit and nut meats in the remaining flour.
9. Add them to the batter; mix thoroughly.
10. Drop the batter by teaspoonfuls on the buttered sheet, one inch apart.
11. Bake the cookies in a moderate oven till brown.

Serving:

These cookies are very rich because of the fruits and nuts

they contain. They should, therefore, be used sparingly. Serve them in the same manner that other cookies are served.

Principles:

Boston cookies represent one type of cookies, namely, cookies that are not rolled. Such cookies are called by the general term of drop cookies because they are dropped from a spoon upon the buttered sheet. They are the easiest and quickest cookies to make, as not much skill is required in manipulating them.

What has been learned:

1. Drop cookies are those which are dropped from a spoon upon a buttered sheet.

Lesson XXXVI

Sugar Cookies

Materials used:

Class Rule	Home Rule
1 tb fat	½ c fat
2 tb sugar	1 c sugar
¼ beaten egg	2 eggs
½ tb milk	2 tb milk
3 tb flour plus enough to make a dough	3 c flour
¼ tp baking powder	2 tb baking powder
a few grains of salt and nutmeg	¼ tp salt
	½ tp grated nutmeg

Utensils needed:

Baking sheet	sieve
egg beater	molding board
mixing bowl and spoon	rolling pin
bowl in which to beat the eggs	cooky cutter
utensils for measuring	

Work to be done:

1. Cream the butter. Add the sugar and mix thoroughly.

2. Beat the eggs slightly, add the eggs to the milk, and mix.
3. Mix and sift the dry ingredients.
4. Add the dry ingredients to the mixture gradually, stirring all the time.
5. If not stiff enough to roll, add more flour, but do not add more than is absolutely necessary.
6. Flour the board slightly; place the dough on the board.
7. Cut off a small portion; pat and roll it out to the thickness of ⅛ inch.
8. Dip the cutter into flour, then cut out a cooky; dip again into the flour and cut out a cooky, continuing thus until all the cookies have been cut out.
9. Place the cookies close together on a sheet and bake in a moderate oven until light brown.
10. Pick up the trimmings, and put at one side.
11. Roll out the remainder of the dough. Last of all, roll the trimmings together and cut into cookies. Always get as many cookies out each time as possible, for the trimmings do not make so good cookies because, being handled more, they contain more flour.

Serving:

Serve the cookies in any of the ways in which other cookies are served.

Principles:

Rolled cookies must have more flour added to them than drop cookies have because they are to be manipulated so much with the hands. But if they have too much flour they will become hard or tough. In drop cookies there is not enough flour added to keep the cookies in shape, hence they spread out and they must be placed some distance apart on the sheet; rolled cookies have enough flour to enable them to keep their shape, hence they are put close together on the sheet.

Cleaning up:

1. Scrape the molding board with a knife to remove any dough which may be adhering to it. Place the scraps in a tin.

2. Sift the flour which was on the molding board into a bowl
3. Throw all scraps into the garbage can.
4. Return the unused flour to the flour barrel.
5. Wash the board and rolling pin in lukewarm, sudsy water; scrubbing the board with a little brush will aid in cleaning it.

What has been learned:

1. Rolled cookies have more flour added to them than have drop cookies so that they may be rolled.
2. The stiffness of the batter keeps the cookies from spreading on the sheet.

Lesson XXXVII

Gingersnaps

Materials used:

Class Rule	Home Rule
4 tb flour	$3\frac{1}{4}$ c flour
$\frac{1}{8}$ tp soda	$\frac{1}{2}$ tp soda
$\frac{3}{8}$ tp salt	$1\frac{1}{2}$ tp salt
$\frac{1}{4}$ tb ginger	1 tb ginger
2 tb sugar	$\frac{1}{2}$ c sugar
4 tb molasses	1 c molasses
2 tb shortening	$\frac{1}{2}$ c shortening

Utensils needed:

Sieve	bowl and spoon for mixing
utensils for measuring	board and rolling pin
granite pan	cooky cutter

Work to be done:

1. Place the molasses and sugar in the granite pan and heat the mixture to the boiling point.
2. Add the shortening.
3. Mix and sift the dry ingredients.
4. Stir the dry ingredients into the mixture.
5. Chill the mixture thoroughly. If it is not chilled thoroughly, or if it is not kept chilled while being rolled, more flour will have to be added and then the cookies will become hard rather than crisp and snappy.

6. When chilled, place the dough on the floured board and cut as directed for sugar cookies.
7. Bake the cookies in a moderate oven.

Serving:

Serve in the same manner that other cookies are served.

Principles:

What is a shortening? Name some materials that may be used as shortening. Why is shortening used in batters?

These cookies contain a great deal of molasses plus shortening, which may be either lard or butter or a mixture of both or some of the manufactured products now being used in place of these two. Since molasses and shortening both become very stiff when chilled, one does not need to add so much flour to stiffen the batter when it is kept stiffened by chilling. The less flour that has to be added, the more sure one can be of getting crisp snaps. Adding a great deal of flour to gingersnaps will harden them just as surely as it would harden the sugar cookies or any other kind of cookies. Sugar cookies may also be chilled to advantage.

Cleaning up:

Clean up just as in the previous lesson.

What has been learned:

1. Chilling the gingersnaps hardens the shortening and the molasses, thus necessitating the use of less flour.

Additional Recipes

Variations of Sugar Cookies

In all these variations do just as was directed in the class rule for Sugar Cookies, but substitute the indicated flavors for the nutmeg.

Vanilla Cookies

Substitute 1 tp vanilla for the grated nutmeg.

Chocolate Cookies

Substitute 3 tb of cocoa or grated chocolate for nutmeg. These are good covered with White Mountain Cream.

Caraway Cookies

Add 3 tb caraway seeds to the sifted flour. Omit the nutmeg. Roll ¼ inch thick.

Cocoanut Cookies

Add ½ c shredded cocoanut to the sifted flour. Omit the nutmeg. Roll ¼ inch thick.

Molasses Cookies

2½ c flour
1 tp soda
1 tp salt
½ c shortening, melted
2 tp ginger
1 c molasses
2 tb water

Mix and sift the dry ingredients. Mix the molasses and water and add the melted shortening. Add the dry ingredients. If not stiff enough, add more flour. Roll and bake as directed for gingersnaps.

Rich Cookies

½ c butter
½ c sugar
1 egg, well beaten
¾ c flour
½ tp vanilla
raisins, nuts, or citron

Cream the butter, add the sugar gradually, then add the egg, flour, and vanilla. Drop from the tip of the spoon in small portions on a buttered sheet two inches apart. Spread thinly with a knife first dipped in cold water. Put four raisins on each cooky, almonds blanched and cut in strips, or citron cut in small pieces.

Oatmeal Drop Cookies

1 c sugar
¾ c butter or lard
2 eggs
½ tp soda
1 tp salt
1 c shredded cocoanut
4 tb sweet milk
1 tb cinnamon
2 c flour
2 c oatmeal
½ c raisins

Cream the butter and sugar. Add the milk and the egg beaten slightly. Roll the raisins in flour. Mix the spices, soda, and flour, and sift all together. Add the flour to the oatmeal and mix. Add this to the batter, stirring well. Last of all, add the fruit and cocoanut, and mix well. Drop by the teaspoonful upon a buttered sheet one and one-half inches apart.

CANDY MAKING

Lesson XXXVIII

White Fondant

Materials used:

Class Rule	Home Rule
One-third of the home recipe	6 c sugar 1½ c hot water ¼ tp cream of tartar

Utensils needed:

Granite pan	utensils for measuring
wooden spoon	cup for cold water
buttered platter	a tiny piece of white cheese-cloth
a thermometer	

Work to be done:

1. Place the ingredients in a granite pan.
2. Heat gradually to the boiling point and let the mixture boil gently.
3. Boil until a temperature of 238° F. is reached or until a soft ball is formed when a little is dropped in cold water.
4. While cooking, crystals are apt to form on the sides of the pan. These must be removed or the whole mass may crystallize. Dip the bit of cheesecloth in cold water, wring it out and wash away the crystals, rinsing the cloth in the cup of cold water.
5. When a soft ball forms in cold water, remove from the fire and pour gently onto the buttered platter. Do not jar more than is necessary or it will crystallize. Do not scrape the pan into the platter, or crystals will form. If a few crystals are added, the whole mass may crystallize.
6. Allow the fondant to cool until the fingers may be inserted without fear of burning.

7. With a wooden spoon work the mass back and forth until the mixture becomes thick, white, and lumpy.

8. Then knead the fondant with the hands back and forth just as in kneading bread. The longer this is done, the more

Fig. 33.—Candy-making Utensils

creamy the fondant will become. If it feels grainy to the touch, it has been allowed to crystallize and ought to be recooked with a little more water added.

9. Put the fondant into a bowl, cover it with oiled paper, and let it stand twenty-four hours.

Bonbons

The centers of bonbons are made of fondant shaped into round balls. White fondant may be flavored as desired. Vanilla is usually preferred as a flavor. To flavor, catch a little flavoring on a wooden toothpick, take a little fondant in the hand, push the toothpick into it, withdraw, and then work the fondant back and forth so that the flavoring will be well mixed with it. Colorings should be added in the same way, care being taken that not too much is used.

Cocoanut Centers

Work as much shredded cocoanut as possible into a small quantity of fondant.

Nut Centers

Surround pieces of nut meat with fondant, using just enough to cover the meat. French candied cherries may also be added. Let the balls stand until the next day, then dip.

To Dip Bonbons

Materials used:

Fondant, desired flavorings, and colorings.

Utensils needed:

Fondant dipper (a two-tined fork or a hat pin will do just as well).

2 bowls, two sizes.

Some glazed or oiled paper.

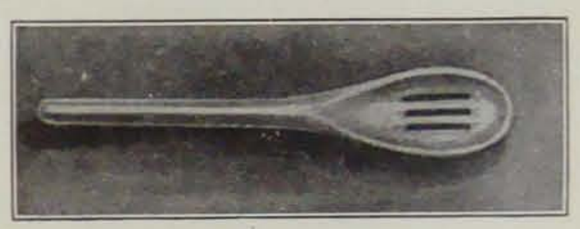

Fig. 34.—Fondant Dipper

Work to be done:

1. Place the fondant in the smaller bowl, set this in a bowl of hot water, and allow the fondant to melt. The bowl of fondant should remain in the hot water while the dipping is being done.
2. Color and flavor the fondant as carefully as for the centers.
3. Drop the centers in the melted fondant, one at a time.
4. Stir the bonbon until it is covered and remove it to the glazed paper.
5. Stir the fondant between dippings that no crust may be allowed to form.

Serving:

Bonbons and other dainty candies are served at formal dinners just after the dessert course. They are placed in suitable glass or silver dishes and are passed by the waitress to each guest in turn, who helps himself to what he desires.

Finger privileges at table:

Bonbons are taken with the fingers.

Principles:

Bonbons should never be made on a rainy day, as the damp atmosphere has an unfavorable effect on the boiling sugar.

In making fondant, the same principles are involved and the same precautions must be observed as in making boiled frostings.

It is safer in making fondant to use the thermometer, as this is more accurate than testing in cold water, especially for beginners. The following table gives the tests for syrups of different densities:

Small thread,	215 degrees F.	Soft ball,	238 degrees F.
Pearl	220 degrees F.	Hard ball,	248 degrees F.
The blow (hair)	230 degrees F.	Crack ball,	310 degrees F.

In making chocolate creams, make the centers as for fondant, melt the chocolate just as fondant was melted, and proceed to dip the cream as directed.

Cleaning up:

1. Why should candy utensils be washed in hot water?
2. The floor should be washed up with clean, warm, sudsy water. The cloths should be wrung dry before the floor is wiped with them.

What has been learned:

1. The method of making fondant.
2. A table of thermometer tests for boiling sugar solutions.

MEATS

Lesson XXXIX

BROILED BEEFSTEAK WITH MAITRE D'HOTEL BUTTER

Materials used:

Class Rule	Home Rule
A small piece of sirloin steak	desired amount of steak
¾ tb butter	3 tb butter
¼ tp lemon juice	1 tp lemon juice
⅛ tp salt	½ tp salt
a pinch of pepper	⅛ tp pepper
a tiny pinch of chopped parsley	½ tp chopped parsley

Utensils needed:

Meat broiler
bowl
sharp knife
wooden spoon
utensils for measuring
fork
hot platter
heavy block or board

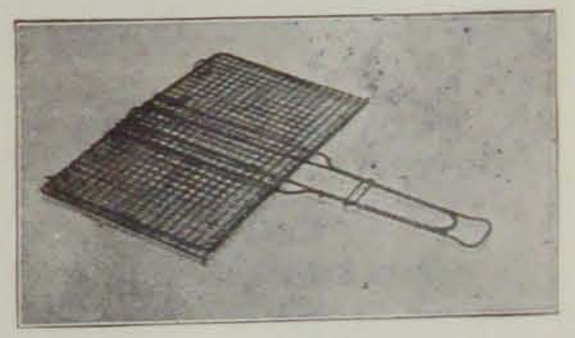

FIG. 35.—Meat Broiler

Work to be done:

1. Lay the steak on the block or board; with a sharp knife trim off superfluous fat and the heavy tough skin around the outer edge. This shrinks in cooking, hence should never be left on.
2. Place the platter where it will become warm.
3. Have the coals glowing, without flame or smoke.
4. Have the broiler hot.
5. Grease the broiler with a piece of suet.

6. Place the steak in the broiler and hold it close to the fire about ten seconds. Do not hold it so long that drops of beef juice come out on the surface which is not exposed to the heat.

7. Turn the broiler and sear the other side ten seconds.

8. Turn again and again about every ten seconds for two minutes. The meat should then be well seared, but not burned.

FIG. 36.—Sirloin Steak

9. Hold farther from the fire, turning every other minute or so for six minutes if the steak is one inch thick, and eight minutes if it is one and one-half inches thick.

10. Sprinkle a little salt and pepper on the steak on each side and expose each side to the heat a second to allow the seasoning to cook in.

11. Place on the hot platter, spread with Maitre d'Hotel Butter and serve at once.

MAITRE D'HOTEL BUTTER

1. Cream the butter.
2. Add the lemon juice gradually.
3. Then add the other ingredients and mix.

Serving:

Steak should be garnished with slices of lemon, with sprigs of parsley or watercress, or with the greens alone in bunches.

Potatoes in some form should always be served with steak. French fried, Saratoga, either Irish or sweet potatoes baked, mashed potatoes, and escalloped potatoes are all appropriate.

The person who is to carve the beefsteak should know at a glance where the tough and the tender parts lie, and how to carve it so that the tender parts will be distributed impartially

FIG. 37.—Porterhouse Steak

among the guests. The platter should be so placed before the carver that the broad end of the steak is at his right. (1) Hold the steak firmly with the fork, and cut out the bone, beginning at the upper right-hand side. (2) Lay this to one side. The tenderloin lies below the bone; the sirloin is the part above the bone. (3) Holding the steak firmly, cut it into long strips through both the sirloin and the tenderloin. (4) Serve a piece of each portion on each plate. With a spoon dip up a portion of the platter gravy and pour it over the steak.

Table etiquette:

In cutting steak, one should hold the knife and fork as shown in Figure 38, keeping the elbows close to the side. Only one mouthful, or small piece, should be cut at a time.

Principles:

Broiling is cooking by direct exposure to heat over hot coals or over a gas flame. Only tender cuts may be cooked in

this way. In broiling, the object is to retain the juices of the meat. To do this the meat must be exposed to an intense heat, first on one side and then on the other, so that both surfaces will become seared, thus preventing the escape of the juices. Meat contains a great deal of protein. This is present in several different forms, one of which is albumin. What else contains albumin? At what temperature does albumin harden? When the steak is exposed to such intense heat, the albumin on the surface of the meat becomes hardened and the exposed meat fibers shrink in just the same way as the tough membrane, which was cut away from the steak, would shrink if exposed to heat. In this way an outer coating is formed which keeps the juices within the meat.

Fig. 38.—Cutting at Table

Why should eggs be cooked below the boiling point? Why is milk not heated above 170° F. in pasteurizing? For the same reason steak must be lifted some distance above the fire to be cooked after its surfaces have been seared. The albumin and other proteins in the meat are just as susceptible to heat as are the protein of the egg and the milk; and they are rendered just as indigestible by the hardening action of the heat as are the proteins previously studied. For this reason, steak should never be cooked so that it is browned all through; it is then hard and indigestible. Properly cooked steaks should be browned only one-eighth of an inch from each surface; the interior should be juicy, firm to the touch, and of an even red color.

Steak seems to increase in size when it is broiled. This is because the steam caused by the heating of the juices within it demands more room and, in seeking it, it expands the tissues just as it expanded the batter in the popovers.

When it is desired to cook meat so that all the juices are retained, salt should never be added until just before the meat is to be taken from the fire because salt always causes the meat juice to exude.

When broiling steak over a wood or a coal fire, one should see to it that all the dampers are open so that the smoke which comes from the fat which drips down upon the fire may go up the chimney and not fill the room.

Cleaning up:

1. Soak the broiler in hot water.
2. Save the bone and clippings for the soup kettle.
3. Gather the suet together in a bowl and try out, that is, cook until all the fat is melted.
4. Wash all the utensils in hot, sudsy water. Use sapolio or other scouring agent on the broiler to make it smooth. Rinse the utensils in clear, hot water.

What has been learned:

1. Broiling is cooking by direct exposure to heat on hot coals or over a gas flame. The object is to retain the juice of meats.
2. Searing is heating the surface of the meat so intensely hot that a coat of hardened albumin is formed.
3. After meat has been seared, it should be cooked at a lower temperature so as not to harden the protein compounds in it.
4. Some of the juices of meat are changed to steam in cooking. This steam puffs up the meat.
5. In broiling over a wood or a coal fire, the dampers should be opened so that the smoke may be carried up the chimney.
6. Salt has a tendency to extract meat juices; therefore, when it is desired to retain the meat juices, salt is not added until the meat is done.

Lesson XL

Hamburg Steak

Materials used:

Class Rule	Home Rule
2 tb chopped meat	1 tb onion juice or grated onion
5 or 6 drops onion juice	½ tp salt
⅛ tp salt	1 egg
1 tp egg	a dash of pepper
a few grains of pepper	1 lb round steak

Utensils needed:

Meat grinder
fine grater
sharp knife
heavy board
spatula
mixing spoon
utensils for measuring
hot platter
frying pan or omelet pan

Work to be done:

1. Place the meat on the board and with the sharp knife remove the bone, if one is present, and the tough membrane. Cut the meat into small pieces.

2. Put the pieces of meat through the meat grinder. Place the bowl on a chair underneath the meat grinder to catch the juice. The juice contains protein and mineral matter in solution.

3. Grate the onion very fine or scrape off the desired amount of juice by scraping a slice with the sharp knife.

4. Add the onion juice, egg, and seasonings to the meat, and mix thoroughly with a fork or spoon.

5. Shape with the hands into fat cakes, one and one-half inches across and three-fourths inch thick. Do not press them hard.

6. Place the frying pan over the fire and allow it to get very hot.

7. Rub a piece of suet, bacon rind, or other fat over the surface of the pan, and place the meat cakes on the pan.

8. Allow the cakes to sear a minute on one side, then turn them with the spatula, being careful not to break them.

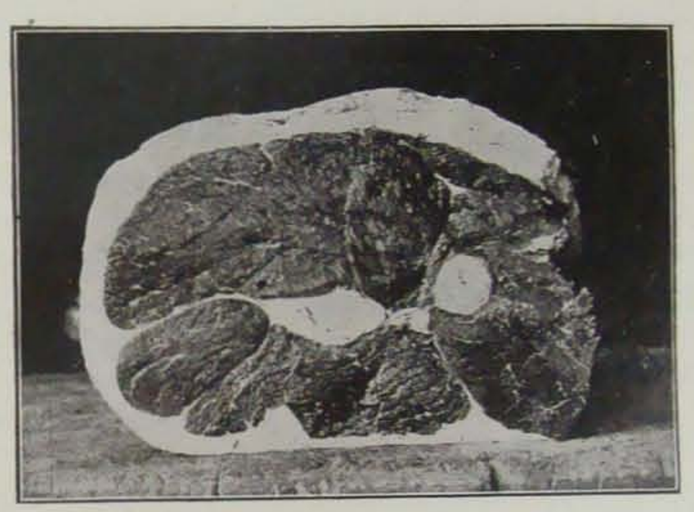

Fig. 39.—Round Steak

9. Turn them when the second side is seared and continue turning until done. These cakes need not be turned so often as steak.

10. After five or six minutes, test by making a cut into the side of one cake and pulling it apart. If cooked enough, remove to the hot platter. If preferred, these may be broiled directly over the fire as is steak.

Brown Sauce

Materials used:

Class Rule	Home Rule
½ tb butter	2 tb butter
½ tb flour	2 tb flour
1/16 tp salt	¼ tp salt
1/16 tp pepper	¼ tp pepper
¼ c water	1 c brown stock or water

Utensils needed:

Pan in which steak was broiled	measuring utensils	spoon
	strainer	

Work to be done:

1. Return the pan to a gentle fire after the steak has been removed.
2. Place the butter in the pan and let it melt.
3. Add the flour, mix, and let it brown.
4. Add the water or stock. (Stock gives a richer flavor.) Stir.
5. Add the seasonings.
6. Strain the mixture into the gravy dish. This is done to remove any particles of meat which may have been in the pan.

NOTE: If the sauce does not brown enough from the butter and flour, add a drop or two of Kitchen Bouquet. A drop of Worcestershire sauce will give a piquant flavor to the gravy.

Serving:

Place the meat balls upon a suitable platter and garnish with parsley. When serving, pick a meat ball up with the fork and place upon the individual plate. Serve any style of potatoes used with broiled steak. Hamburg steak is also especially nice served with tomato sauce. (See Lesson XLV.) Garnish with parsley or water cress.

Principles:

In this lesson one method of cooking the tougher cuts of meat, like round steak, is illustrated, but before the method can be fully understood one must know something about the structure of meats.

Lean parts of meat have practically the same structure without regard to the animal or the part of the animal from which they come. All lean meat is made up of prism-shaped bundles of muscle fibers, or tubes, held together with connective tissue. These tubes are so small that they cannot be seen except with the aid of a microscope. Within the tubes is a watery fluid which holds in solution protein, mineral matter, and other substances. These tubes of muscle fibers are held together by

means of connective tissue, thus forming bundles. A bundle can be easily seen with the naked eye. A piece of round steak, because it is always sliced off at right angles to the bundles and because its bundles are very coarse, shows them very plainly. Such a bundle is composed of hundreds of the little tubes. The walls of the tubes are very delicate elastic membranes composed of material containing proteins.

The toughness or tenderness of meats depends upon two things, namely, the character of the walls of the muscle tubes and the character of the connective tissue which holds the tubes and bundles together. In young animals, the walls of the tubes are young and tender; as the animal grows older and is made to work, the walls of the muscle tubes and the connective tissue become thick and hard. The same holds true concerning the flesh of poorly nourished animals.

Round steak, cut from the round, comes from one of the most used parts of the animal; other tough steaks are also cut from the loin and the rump. Because round steak is usually more or less tough, depending upon the condition and age of the animal from which it came, it is usually not broiled as is the sirloin steak, for broiling should be applied only to tender cuts of meat. The tougher cuts must either be cooked a longer time at a lower temperature or they must be treated in some way which will render them fit to be broiled. This was accomplished in the Hamburg steak by first cutting away any connective tissue which was visible; and further by cutting up the connective tissue and fibers into little pieces by passing the meat through the grinder. Sometimes very tough meat is passed through twice, first being cut by one of the coarse knives and then broken into finer pieces by means of a fine knife. This method of rendering tough pieces of meat fit to be used is very common, as in making veal and other meat loaves, which, by the way, should always be made of tough cuts to be economical.

After the piece of round steak was cut up, it was mixed with a little egg. What nutrient was thus added to the food? It

was not necessary to add this to increase the protein value of the meat balls; it was added to enable the housewife the better to keep the cooked food in shape while turning it. The little particles of meat have a tendency to drop apart when cooked; the egg keeps them together. The onion was added to give a flavor which is pleasing to most people. The method of cooking the Hamburg steak is essentially the same as that used in cooking the steak. Cooking in this way is called pan broiling. If preferred, all broiling may be done in this way and the finished product is just as juicy and well-flavored as if it had been broiled over the coals, if the cooking is carefully done.

Cleaning up:

1. Soak the pan in hot water.
2. Wash utensils as usual; scour the pan with sapolio to keep it bright and smooth.

What has been learned:

1. Pan broiling is broiling meat in a pan over a hot fire.
2. A piece of meat consists of prism-shaped bundles held together by connective tissue.
3. Each bundle is made up of hundreds of hollow fibers.
4. Within the hollow fibers is a liquid which holds proteins, mineral matter, and other substances in solution.
5. The toughness or the tenderness of the walls of the fibers and of the connective tissue depends upon the age of the animal, its food, and the amount of work it has done.
6. Tender cuts may be broiled; tough cuts must have their toughness modified before they can be broiled.

Lesson XLI

Roast Beef

Note to the Teacher: A lesson like this must almost necessarily be a demonstration lesson because of the high price of roasts. But if means will allow, each two girls should be given a very small roast to cook.

Materials used:

A properly prepared roast — a little flour — salt

Utensils needed:

A dripping pan with a rack — spoon

Work to be done:

1. Wipe the meat with a damp cloth.
2. Place the meat on the rack in the dripping pan.
3. Dredge the meat and pan with flour.
4. For a large roast, have the oven as hot as for bread, that is, hot enough to turn white paper dark brown in six minutes. The roast should be seared in ten minutes.

Fig. 40.—Meat Roaster

5. Then lower the temperature. Or heat the spider as hot as for Hamburg steak; rub it with a little suet, and sear the meat in the spider. Then dredge with flour and salt and place on the rack in the pan and roast. If the meat is seared in this way, the oven need not be so hot.
6. Leave the roast in the oven ten or twelve minutes to each pound.
7. A roast that is seared in the oven should be salted after it has been seared.
8. If the roast is very lean, lay a few pieces of fat on the bottom of the pan.

9. If there is danger that the flour will become too brown, add a few drops of water.

10. Baste every ten minutes with the drippings in the pan, or put the cover on the roasting pan. This prevents the

FIG. 41.—A Rib Roast Stripped and Rolled. Ninth, Tenth, Eleventh, and Twelfth Ribs after Stripping

escape of the steam, which condenses when it strikes the cover and falls back on the roast, basting it.

THE GRAVY

1. Pour the fat from the pan.
2. Allow 1 tb fat and 1½ tb of flour for each cupful of gravy.
3. Put the fat in the pan, add the flour, and stir over a hot fire until it is well browned.
4. Add boiling water and stir the mixture.
5. Boil the gravy for three minutes. Season it to taste. If it is not brown enough, how can it be made so?
6. Strain the gravy into a gravy dish.

Serving:

A rolled roast of beef is placed on the platter on one of its ends. The platter should be so large that when the slices are cut they will not fall off. The strings or skewers which hold the roast together should be removed and a fancy skewer inserted, if desired, before it is sent to the table. The roast is carved in slices across the end; in this way each person gets some of the well-browned fat surrounding the roast, a part of the very tender meat, and a part of the less tender meat. The fork should be inserted in the open space below the eye (center) of the meat, and should be kept in this position until several

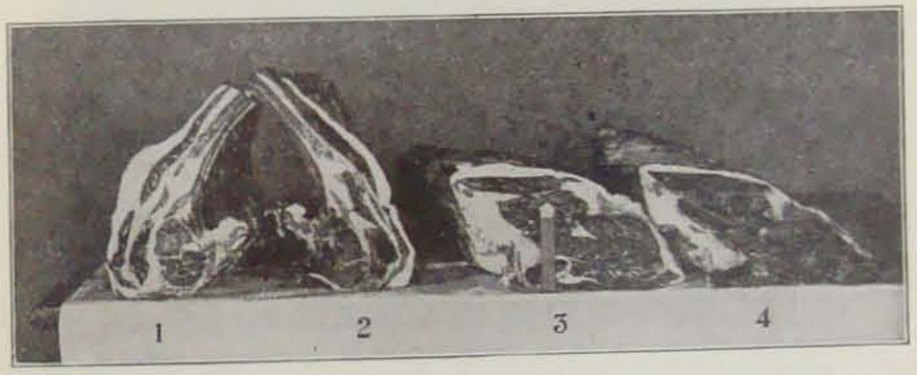

FIG. 42.—Prime Ribs and Loins. (1 and 2) Prime ribs, first-class meat. (3 and 4) Loins, a lower grade of meat

slices have been cut. The slices should be thin and delicate, without any jagged edges, but not so thin that they break apart. The outside slice should not be served unless someone wants a piece that is well done.

A rib roast need not be stripped from the ribs. Such a roast should be so placed on the platter that it rests on the ends of the ribs and that part of the back bone to which they are attached; the ribs then form an arch over the platter and the meat is exposed to the carver. The meat should first be loosened from the bone. Place the fork in the center of the meat and hold it firmly, leaving it in position until the meat has been freed entirely from all the bones. Place the knife between the ribs

of the roast at the small end and serve them at that end. Then insert the knife at the top of the roast near the back bone and follow it down to the ribs. Here turn the knife so that it will follow along the ribs until the small end is reached. It sometimes happens that only half of the roast will be needed for one meal; in that case, separate only half of the meat from the bone.

Fig. 43.—Prime Rib and Short Loin Cuts

When the meat is separated from the bones, it should not be lifted from its position upon them. To cut it into slices, insert the knife at the highest point of the meat near the back bone and cut down in parallel lines towards the ribs. The fork should not be removed until all the slices have been cut. Cutting the roast in this way cuts it across the grain and gives to each person a part of the surrounding fat, a piece of very tender meat, and a piece of less tender meat. When ready to serve, pick the pieces of meat up with the fork held in the right hand, place a slice of meat upon the plate, lay the fork down, take up a spoon and pour a spoonful of the platter gravy or meat juice upon the meat. Why should one use the platter gravy? In order that it may not become cold and unpalatable, have the platter

very warm when the roast is placed upon it. Serve a roast with mashed potatoes at dinner.

Note to Teacher: It is not so difficult for the pupils to learn to carve and serve if they are allowed to do the actual work under supervision. Let each pupil do a little share of the work, the others watching meanwhile.

Principles:

Roasting is cooking by exposure to the action of the dry heat of an oven. The earliest method of roasting was to cook before an open grate or in front of the coals on a spit.

Roasting, like broiling, is a method of cooking suitable only for tender cuts of meat, as it must be done rapidly. The cuts

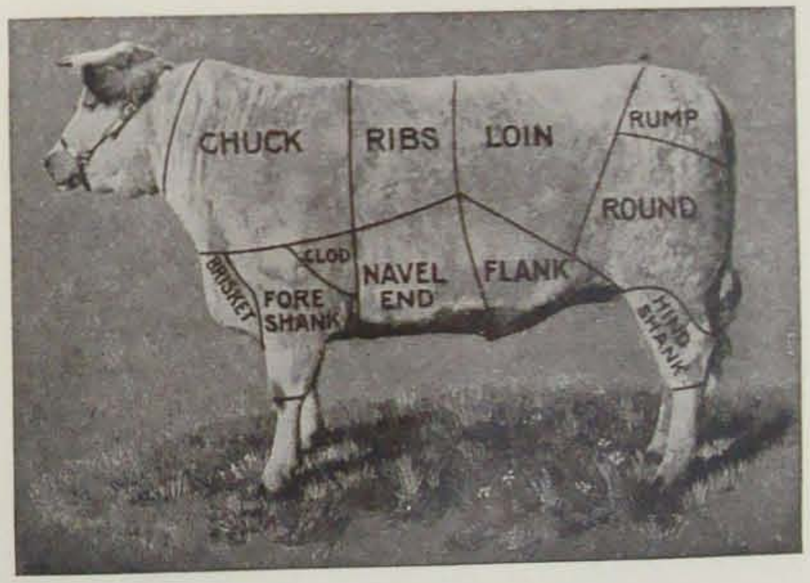

Fig. 44.—Beef on Hoof

suitable for roasting are the sirloin, rump, and rib of beef; the loin, leg and shoulder of lamb, mutton, or veal; and the shin and rib of pork.

Properly roasted beef, when done, should have the fat brown and crisp. The meat should be browned about one-fourth of an inch down; all the remainder should be a bright, even red and of a firm texture throughout.

Cleaning up:

Clean up as has been directed in previous lessons.

What has been learned:

1. Roasting is cooking by exposure to the dry heat of an oven.
2. Roasting is suitable for tender cuts of meat.
3. The principles underlying roasting are the same as those underlying broiling.
4. Properly roasted meat should be brown one-fourth inch from each surface, the interior should be of an even red color and should have a firm texture.

Fig. 45.—Beef as Hung, Showing Cuts

TABLE SHOWING THE CUTS OF BEEF AND THEIR USES

	Divisions	Ways of Cooking
1.	Shank	Stews, Soup Stock
2.	Round	Cheaper Steaks, Pot Roasts, Stews
3.	Rump	Steaks, Stews, Roasts, Braising
4.	Sirloin	Steaks and Roasts (expensive cuts)
5.	Pin Bone*	Steaks and Roasts (expensive cuts)
6.	Porterhouse	Steaks and Roasts (most expensive cuts)
7.	Prime Ribs	Roasts
8.	Chuck Ribs	Small Steaks, Roasts and Stews
9.	Shoulder Roast	Roasts and Stews
10.	Short Ribs	Stewed, Braised or Boiled
11.	Flank	Flank, Stewed, Braised or Baked Flank Steak, Rolled and Stuffed, Baked or Braised Skirt, Rolled and Stuffed, Baked or Stewed
12.	Plate†	Stews, Soups, Corning
13.	Brisket	Stews, Pot Roasts, Soups
14.	Chuck	Stews and Simmering

*The projecting part of the hip bone.
†Thin slice from the brisket.

15.	Clod	Stews and Cheaper Roasts
16.	Neck	Stews, Soups, Corning
	Tripe	Pickled, Breaded, Fried, Creole or Stewed with Onions
	Kidney	Stewed or Sauté
	Suet	Suet Puddings, Cooking Fat
	Tongue	Boiled, Corned, Smoked or Pickled
	Liver	Fried, Boiled or Baked
	Brains	Fried
	Heart	Stuffed and Boiled or Baked, Fried
	Tail	Soup and Boiled

Lesson XLII

MEAT PIE

(A Lesson on Left-overs)

Materials used:

	Class Rule	Home Rule
Crust:	¼ c flour	2 c flour
	½ tp baking powder	4 tp baking powder
	a speck of salt	½ tp salt
	¼ tb shortening	2 tb shortening
	1½ tb milk	¾ c milk
Filling:	3 tb cold beef	a quantity of cold roast beef or beefsteak
	a drop or two of onion juice	½ onion
	4 slices potato	water enough to cover
	seasonings	seasonings to taste
		1 c potatoes cut in slices

Utensils needed:

a baking dish in which to bake the pie
2 granite stew pans
utensils for measuring
utensils with which to make biscuit mixture
utensils for paring and slicing potatoes

Work to be done:

Cut the meat into ½-inch pieces; add water and onion and let it simmer for 1 hour if very tough.

2. Parboil the potatoes eight minutes.

3. While cooking, combine the crust as the baking powder biscuit mixture was combined.

4. Cool the meat and the potatoes.

5. Place the meat, potatoes, and seasonings in the dish.

6. Cover the whole with the crust.

7. Bake the pie in a hot oven until the crust is done.

Serving:

Place the baking dish upon a pretty round platter upon which are placed loose branches of celery tips or other greens. Cut it across the top just as any other pie would be cut, but use the carving knife. Remove the contents of the pie from the dish to the plate with a spoon, giving to each person a triangle of the crust and a spoonful of the gravy over the whole. A meat pie is served at dinner.

Principles:

In this lesson is given a method of warming over meat. The cook should remember that intense heat hardens its protein compounds and its tissues. Moderate heat applied for quite a long time has the opposite effect; it softens the tough tissues. Meat that has been thoroughly cooked and which is tender should not be *recooked*; it should merely be reheated. Meat that is slightly underdone should be cooked sufficiently, but care should be taken not to cook it too long. Meat that has tough tissues should be cooked a long time just below the boiling point; this is called simmering. Cooking in this way will break down the tough tissues of the meat and render it palatable and digestible.

When preparing cold meat for a made-over dish, remove the tough membranes, gristle, bones, and extra fat. Chop the meat, cut it into cubes or into slices, as desired; the method used should depend entirely upon the character of the dish it is

desired to make. For instance, very tough meat could be used to best advantage in hash or some such dish; meat that is quite tender or which is slightly underdone is best in a pie. Remnants of different kinds of meat may be used together, if their flavors are not too pronounced and different. Meat from which beef tea or soup has been made should never be thrown away, for it still contains a great deal of nutritive material and can be made into very delightful dishes. Cold cooked meat may be reheated by itself or in combination with potatoes, tomatoes, rice, macaroni, bread, or cracker crumbs. Very palatable substitutions may be made, as, for instance, bread crumbs or macaroni for potatoes, stewed tomatoes for gravy, and rice for macaroni.

Warmed over dishes are sometimes called Réchauffés, which comes from the French word *rechauffer* (rā′ shō′ fā′), to heat again. A réchauffé gives a housewife many an opportunity to use her ingenuity and to save on the monthly expenditures for food. It requires skill of the very highest kind to make use of all kinds of left-overs and to present them always in a tempting guise. Every housewife should endeavor to acquire such skill.

Cleaning up:

1. Invert the baking dish in a pan of cold water. Why?

What has been learned:

1. Simmering is cooking just below the boiling point.

2. Réchauffés are warmed-over dishes of meat.

3. On warming over meat, that which is sufficiently cooked and tender should be reheated merely, underdone meat should be cooked only until it is done; meat that is tough should simmer.

4. Pieces of left-overs of various kinds should never be discarded, but should be used in some attractive way.

Lesson XLIII

Boiled Leg of Mutton

Materials used:

Home Rule

The leg, shoulder, or a piece from the neck should be used.

Drawn Butter Sauce Made with Mutton Broth

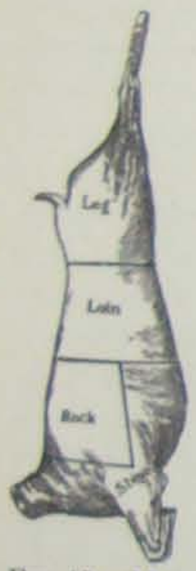

Fig. 46.—Mutton Cuts*

- ⅓ c butter
- 3 tb flour
- ¼ tp salt
- ¼ tp pepper
- 1½ c mutton broth
- ¼ c capers, if desired.

Utensils needed:

- Large kettle in which to boil the mutton
- piece of cloth with which to wipe the mutton
- sharp knife
- granite pan
- utensils for measuring
- wooden spoon

Work to be done:

1. Remove the outer membrane from the meat, as this gives a strong flavor.
2. Moisten the cloth and wipe the meat.
3. Put enough boiling water into the kettle to cover the meat.
4. Place the meat in the water and bring it to the boiling point.
5. Boil the mutton ten minutes, then bring down to about 180° F. and let it remain at this temperature until the meat is done. It takes three hours to cook a twelve-pound leg of mutton.
6. Add 1 tp salt for each quart of water when the meat begins to simmer.

*A mutton or lamb chop is a small slice of meat cut from the leg or from the ribs, often including the latter.

Sauce

1. Take half the butter and place it in the granite pan.
2. Add the flour to the butter in the pan and mix thoroughly.
3. Add the mutton broth slowly to the mixture, stirring all the time.
4. Let the sauce boil five minutes, stirring it constantly.

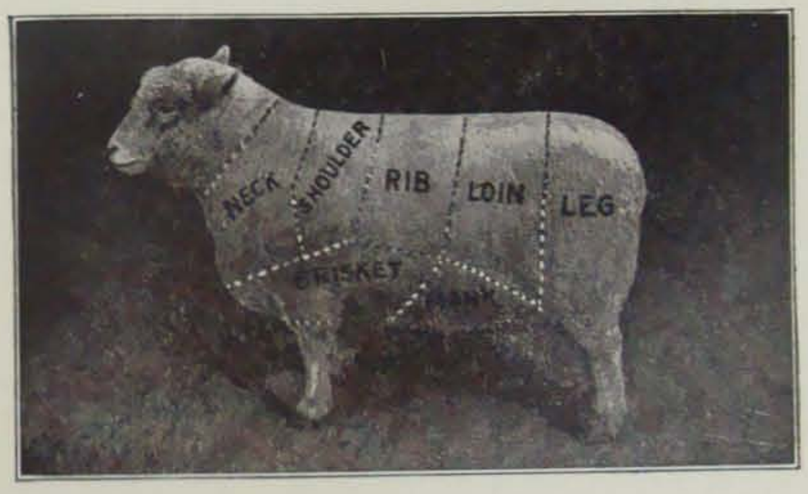

Fig. 47.—Mutton on Hoof

5. When it is ready to serve, beat in the remaining butter, a little at a time.
6. If desired, add ¼ c capers to the sauce. These are especially nice with mutton.

Serving:

Place the meat on a hot platter and brush it with drawn butter sauce. Sprinkle it with finely chopped parsley and bring it to the table. In place of the drawn butter sauce, mint sauce may be used.

The leg should be laid upon the platter in such a way that the convex side is uppermost. The platter should be placed before the carver in such a way that the small round bone is towards the left. The carving fork should be inserted into the

meat at the knuckle, which is the first joint. Beginning at the top of the central part of the roast, cut downward in slices until the bone is reached. When the large bone at the right has been reached, stop slicing, and loosen the slices from the bone by running the knife along it.

Principles:

Boiling is an intermediate step between broiling or roasting and stewing. Less choice cuts may be used for boiling than for either broiling or roasting, and better cuts than for stewing.

A leg of lamb or of mutton may just as well be roasted; the neck piece is always more satisfactory boiled. Corned beef, ham, and tongue are always very salty. These should be placed in cold water and brought to the boiling point, after which they should be treated just as was the leg of mutton. Tough fowls may be cooked in water until they are tender, after which they may be treated just as are the tender fowls.

As has been stated before, the albumin of meat is very much like that of eggs and milk. It should not be heated above the boiling point because it then coagulates and the meat becomes hard and dry. Cooking the meat in boiling water until the outer surface is covered with coagulated albumin, retains the juices just as they are retained in broiling and roasting. Then letting the meat cook a long time at about the same low temperature as was used for eggs, will soften the fibers and the meat will keep juicy.

The peculiar taste which differentiates one kind of meat from every other is due to the presence of flavoring substances in the meat. These flavoring substances are known by the general term of extractives. Not much is known concerning these extractives, but scientists have discovered that they serve no function in the nutrition of the body except that of a stimulant for the digestive organs and juices. The amount and character of the extractives present in the meat are what give to each kind its own peculiar flavor. The amount and kind present are influenced by the age of the animal, the food upon

which it feeds, and the amount of work performed in life by each muscle. That the age of the animal influences the character and amount of extractives is shown by the difference in flavor between veal and beef, lamb and mutton; that the kind of food also has considerable influence is shown by the flavor of wild rabbits as compared with the flavor of those animals which have been domesticated; that amount of work influences it is shown by the difference in flavor between the leg and the breast of a chicken. These extractives are dissolved from meat by long continued cooking in water; boiled meats have, therefore, a flatter taste than have roasted or broiled meats, and they need to be seasoned more highly. Because so much of the extractives is removed from the boiled meat into the broth, the latter makes a splendid soup stock and should always be used as such. Mutton broth makes a splendid foundation for tomato soup. If there is not enough broth out of which to make both soup and the sauce, omit the broth from the sauce and use water in its place. The broth in which salt meats are cooked cannot be used for soup; why?

Cleaning up:

1. Strain the broth into an earthen dish and set it aside to use for soup.
2. Clean up every utensil and set away each in its own place.
3. See that stove, table, and floor are all clean.

What has been learned:

1. Boiling is an intermediate step between roasting or broiling and stewing.
2. In boiling meat, the object is to retain the meat juices, but so to cook it that if tough it is made more tender.
3. Pieces of meat too good for stews, but not quite good enough for roasting, may be boiled.
4. Corned meats are usually cooked by boiling.
5. Extractives give to meat its peculiar flavor.
6. Extractives have no nutritive value besides that of stimulating the digestive organs.

7. The amount of extractives in meat is influenced by the age, the food, and the amount of exercise of the animal from which the meat comes.

8. Because of the extractives present, the broth in which fresh meat has been cooked is good for soups.

Lesson XLIV

Lamb Stew

Materials used:

Class Rule	Home Rule
A small piece of lamb	1½ lb breast of lamb
½ c boiling water	1 pt boiling water
½ potato	4 medium-sized potatoes
1 slice onion	1 onion, 1½ in. in diameter
¼ tb rice	2 tb rice
¼ c strained tomato	1 c strained tomato, or
	1 tb tomato catsup
salt and pepper	salt and pepper
¼ tb butter	2 tb butter

Utensils needed:

Utensils for measuring	paring knife
2 granite pans	omelet pan
utensils in which to wash vegetables and rice	sharp knife

Work to be done:

1. Pare the onion; cut off the top slice.
2. Cut the exposed surface into ¼ in. squares.
3. Cut the onion as though you were going to slice it, thus making ¼ in. cubes.
4. Place the butter in the omelet pan and heat it. Add the sliced onion and brown.
5. Cut the meat into pieces suitable for serving.

6. Cover with the boiling water, add the onions, salt, and pepper. Bring it to the boiling point and then let the stew simmer. It may be cooked in a double boiler or in a fireless cooker. It should cook for three hours.

Note to Teacher: In class, the meat should be cut into one-inch pieces. It will then take only one-third the time that it takes to prepare the stew by the home rule. In class, the rice should be added, therefore, with the meat.

7. Wash the rice as directed in a previous lesson and add it to the stew after the meat has simmered one hour.
8. Pare and quarter the potatoes.
9. Boil the potatoes five minutes and add them to the stew, hot, one-half hour before it is to be served.
10. When the stew is to be served, remove the bones and pieces of fat; stir in the tomato or catsup, and add more seasonings if they are needed.

Serving:

Serve this at dinner with either boiled, mashed, or baked potatoes.

Principles:

Stewing is cooking slowly, or gently, a long time in a small quantity of water.

When the boiling water was poured over the pieces of meat, what change took place in the color or appearance of the meat? This was due to the fact that the hot water seared the outside. Why are pieces of meat seared before they are cooked?

Pouring the boiling water over the meat does not sear it so effectually but that some of the meat juices escape. This is effected by the long slow cooking and by the fact that the meat is cut into small pieces. In boiling, meat is left in one big piece so that as little of the juices escapes as possible. In stews, it is desirable to extract some of the juices because the meat is to be served in the broth. The escaped meat juices add flavor and nutritive elements to the broth and because this is eaten, they are not lost.

Another method of preparing the stew is to divide the meat into two equal portions. The poorest half of the meat is placed in cold water and brought to the boiling point. The cold water quickly extracts the juices through the open tubes. The best portion of the meat is seared in a pan. It should be rolled in flour, which dries its surfaces and causes them to brown more rapidly. Some drippings, or other kind of fat, are placed in a pan and heated. The meat is added and thoroughly browned on all sides, after which it is added to the simmering kettle. The flour also serves the purpose of thickening the stew. This method is often employed in making beef stews. Browning the meat in this way gives a rich color and flavor to the stew.

What kind of meat is suitable for broiling and roasting? Why? Stewing is a method of slow cooking, hence it should be employed only for meats that have a great deal of connective tissue and tough fibers. Such meat is usually very juicy, and, when cooked in the proper way, makes very palatable and nutritious dishes. The tougher portions of beef, mutton, lamb, or veal should be used for stews. Pieces of cold meat may also be thus used. The higher-priced tender cuts should never be cooked in this way; they are better cooked by shorter methods.

The meats suitable for stews are cheaper than the others, hence stews make a very economical dish, especially if the housewife cooks them in a fireless cooker, thus saving the cost of fuel. The long slow cooking in stewing resembles the cooking of cereals. To what substance in the cereals do the tough fibers of meat compare?

The vegetables commonly used in stews are onions, carrots, turnips, potatoes, and sometimes tomatoes, beans, and green peas. What do they add to the stew? The seasonings used are salt and pepper, sweet herbs, parsley, bay leaves, and cloves. Dumplings are often added. They are made by adding a drop batter by the spoonful to the stew when it has been brought to the boiling point. The heat of the boiling water causes them to rise and cooks them. Usually they are used without shortening because there is always some fat present in the stew. The bone and fat should not be removed from the meat before cooking. Both add richness and flavor to the stew.

Cleaning up:

1. Place the pieces of bone, parings, and other waste matter in the garbage can.
2. Any vegetables not used should be put away in proper vessels.
3. Wash the dishes in hot, sudsy water and rinse in clear, warm water.
4. Remove all traces of stains from utensils by means of sapolio.

What has been learned:

1. Stewing is cooking slowly in a small quantity of water for a long time.
2. The object of stewing is to retain part of the juices and to allow a part to escape to give richness and flavor to the broth.
3. As stewing is a means of breaking down tough tissues, only tough cuts are suitable for this process.
4. Stews are economical, especially when cooked in a fireless cooker.

Lesson XLV

Pan-broiled Chops

Materials used:

Class Rule	Home Rule
1 lamb chop	desired number of chops
salt and pepper	salt and pepper

Utensils needed:

Frying pan
sharp knife
meat board

Work to be done:

1. Lay the chop on the board and trim off the fat.
2. Heat the pan very hot and rub over it a piece of the fat.

3. Place the chop in the pan, sear one side, then the other.

4. Turn it often from side to side, using a spatula, and cook from six to eight minutes.

5. If any fat gathers in the pan, pour it into a cup.

6. When done, stand the chop on edge against the side of the pan that the edge also may be browned.

7. These may be served with tomato sauce.

Tomato Sauce

Materials needed:

¼ c water
¼ c tomato juice
¼ slice onion
1 clove
⅛ tp salt
¾ lb butter
1 tb flour

Utensils needed:

Granite pan
utensils for measuring
omelet pan
sieve
bowl

Work to be done:

1. Place the first four ingredients in a granite pan and boil five minutes.

2. Place the butter in the omelet pan and melt.

3. Add the flour to the butter, mix, and let it brown.

4. Strain the liquid through the sieve into a bowl.

5. Pour the liquid slowly into the butter and flour, stirring constantly.

6. Boil for five minutes; season the sauce to taste.

Serving:

The platter upon which the chops are placed when they are done should be very warm and they should be served at once, for they are not palatable when cold. A pretty way of serving them is to arrange a mound of peas or spinach upon a large round platter, then stand the chops on end around and against this mound.

Principles:

What name is given to the method by which the chops are cooked? What else has been cooked in this way? When turning the chops, always use a spatula; never pierce a cooking piece of meat with a fork because the fork pierces the outer coating of hardened albumin, thus allowing the meat juices to escape. After both surfaces of the chops have been seared, the heat should be lowered so that the interior of the chop will cook at a lower temperature; why should this be done?

The last two lessons have dealt with lamb or mutton; all the previous lessons have been about beef. Beef is the flesh of the ox, steer, or cow, and is the most nutritious of all animal food. The flesh of a calf is called veal. It is less nutritious and less easily digested than beef. The flesh of the full grown sheep is called mutton; that of the young, not more than a year old, is called lamb. Mutton comes next after beef in nutritive value, but the fat of mutton is not so easily digested as is the fat of beef. A sheep about three years old yields the best mutton. As veal is less nutritious than beef, so lamb is less nutritious than mutton.

The flesh of beef should be of a bright red color. The fat should be yellowish in color and should be well sprinkled throughout the whole of the meat; this insures tender, juicy meat. Mutton should be a dull red color and its fat should be white. Mutton fat is brittle and does not feel oily to the touch. Veal is much lighter in color than beef and less firm. Lamb has a lighter color than mutton.

Cleaning up:

1. Observe the rules given in the previous lesson on pan-broiling.

2. Save all pieces of mutton fat; they may be tried out and used in cooking as drippings.

What has been learned:

1. While cooking, meat should never be pierced with a fork.

2. Beef is the flesh of the ox, cow, or steer; veal is meat from a calf; mutton is the flesh of sheep.

3. Beef is the most nutritious of all meats, mutton comes second. Immature beef, or veal, is less nutritious and less digestible than beef.

4. Good beef has a bright red color and yellowish fat. Prime beef has streaks of fat intermingled with the lean. Good mutton has a dull red color with fat a clear white.

Lesson XLVI

Rolled Flank of Beef or Rolled Round of Beef

Materials used:

Class Rule	Home Rule
For the stuffing:	
4 tb bread crumbs	2 c soft bread crumbs
¾ tp butter	2 tb melted butter
½ tp chopped parsley	2 tb chopped parsley
a few drops of onion juice	½ tp onion juice, if desired
a few grains of celery salt	2 tb cut celery or ⅛ tp celery salt
⅛ tp salt	½ tp salt
a few grains of pepper	⅛ tp pepper
For the meat:	
A small piece of steak	1 lb flank steak or a thinly cut round steak
a small piece of suet	2 or 3 small pieces of suet
1 slice onion	1 onion
2 tb carrot	¼ c carrot, cubed
½ c stock or water	2 c stock or water

Utensils needed:

Meat pounder — sharp knife
meat board — some clean string
bowl — small baking pan with cover
utensils for measuring — omelet pan
clean cloth with which to wipe the meat

Work to be done:

1. Mix all the dry ingredients of the stuffing together.
2. Slowly add the melted butter, stirring all the time.
3. Cube the onion and carrot.
4. Lay the steak upon the board; with the knife cut off the skin around the edges of the steak.
5. Dampen the cloth and wipe the steak.
6. Pound the steak on both sides.
7. Spread the stuffing evenly over the steak and roll.
8. Hold the roll together by means of a string.
9. Dredge the roll with flour and sear in butter or drippings in the frying pan.
10. Place the vegetables in the baking dish and lay the roll upon them.
11. Place the suet on top of the roll.
12. Sprinkle the roll with salt and pepper.
13. Pour the water or stock into the pan.
14. Cover the pan closely and cook for one-half hour in the oven.
15. Then remove the cover and cook thirty minutes longer.
16. Remove from the pan and make brown gravy from the drippings as was directed in the lesson on Hamburg steak.

Serving:

Place the rolled steak upon a warm oblong platter. Arrange around it vegetables, such as diced carrots or beets, green peas or shredded cabbage, or whatever vegetable is to be served at the dinner, in little heaps interspersed with leaves of parsley or delicate tips of celery.

Principles:

How does this method of cooking meat differ from stewing? How does it differ from roasting? What was the character of the meat used? How are the meat fibers and the connective tissues softened? How does this method differ from that used in Hamburg steak?

This method of cooking meat is called braising. Braising is a combination of stewing and roasting meat. The meat is really steamed in its own juices. Solid pieces of meat not tender enough for roasting or broiling, but too good for stewing or for soups, should be cooked in this way. Keeping the meat covered during the first half of the baking period retains the steam, which condenses as it rises and strikes the cover and falls back upon the meat, thus basting it. Removing the cover during the latter half allows the escape of the steam, thus permitting the contents of the pan to become brown. Why were the carrots and onion added to the pan?

No moisture was added to the stuffing; the juices of the meal will penetrate it while cooking, thus moistening it sufficiently. Because the meat used in this lesson was so very lean, the suet was placed on top of the meat. The heat of the oven melts the suet, which will then penetrate the meat and dressing, making it richer and more delicate. Why was the suet placed in the center of the rolled roast? Suet is often used in this way to give added delicacy and juiciness to lean meat. Sometimes a piece of suet or strips of salt pork are inserted in the meat by means of special needles, called larding needles. The strips of pork are then called lardoons.

Cleaning up:

How should the utensils used in this lesson be cleaned?

What has been learned:

1. Braising is a method of cooking meat in which stewing and roasting are combined.
2. Braising may be used with the tougher cuts of meat.
3. Lean meat may be made more juicy and palatable by the addition of suet or salt pork.

Lesson XLVII

Veal Cutlets*

Materials used:

Class Rule	Home Rule
1 small piece of veal	The desired amount of ½-inch slices from the leg of veal
2 tb egg	salt and pepper
1 tb flour	1 egg
1 tb bread crumbs	½ c flour
1 tb butter or pork drippings	½ c crumbs
½ c brown sauce	4 tb butter or pork drippings
salt and pepper to taste	1½ c brown sauce

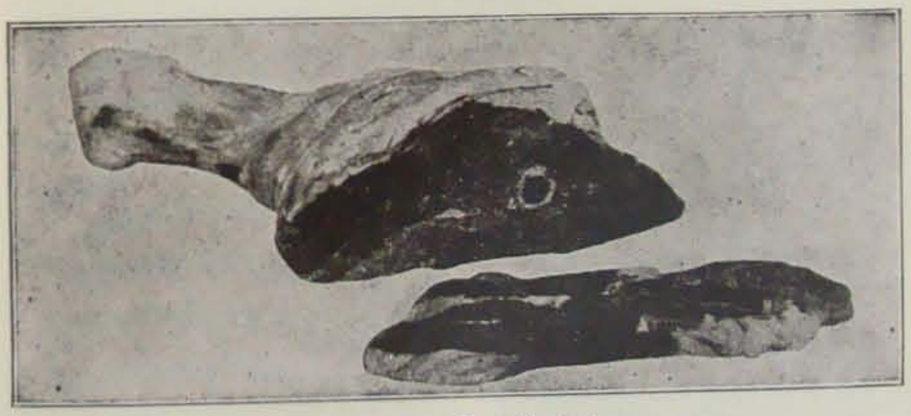

Fig. 48.—Veal Cutlets

Utensils needed:

Frying pan	fork
granite pan with cover	spatula
pie or other tin	damp cloth
utensils for measuring	3 plates

Work to be done:

1. Wipe the veal with a damp cloth, remove the bone and skin, and cut the meat into pieces suitable for serving.
2. Beat the egg slightly and dilute it with ¼ c water.

*Slices from the leg of veal are called steaks or cutlets.

3. Place the egg and water on the plate.

4. Place the flour on a flat plate and the crumbs on another.

5. Place the fat in the frying pan and let it get hot.

6. Dip both sides of a piece of veal in the flour, in the egg quickly, then in the crumbs. Use a fork throughout these operations.

7. Place the covered veal in the frying pan; continue with the other pieces of veal.

8. Let the veal brown on both sides; then sprinkle with salt and pepper.

9. Place the veal in the granite pan, using the spatula, and cover it with brown sauce.

Brown Sauce

Materials used:

Class Rule	Home Rule
½ tb butter	3 tb butter
½ tb flour	3 tb flour
2 tb water	¾ c water
2 tb tomatoes	¾ c stewed and strained tomatoes
seasonings to taste	salt and pepper to taste
lemon juice, if desired	

Utensils needed:

Pan in which the veal was browned
utensils for measuring

Work to be done:

1. Combine by the white sauce method. (See Book One, Lesson VII.)

2. Pour the sauce over the veal in the stew pan, bring it to the boiling point, and let it simmer forty minutes.

Serving:

Have a hot platter ready for the meat. Arrange the pieces of veal in the center and pour around them the brown sauce. Garnish with parsley. This makes a fine dish for the meat course at dinner.

Principles:

In this lesson the veal is cooked by a combination of methods. It was first sautéed in a small amount of fat until well browned on both sides; then it was stewed in a prepared sauce until tender. Veal is much less readily digested than is beef; for this reason it should be cooked long and carefully. It is very unwholesome if eaten rare; beef, on the other hand, is more nutritious when thus eaten. One scientist gives as a reason for this that in veal the tubes which make up the bundles have not become filled with juices, so that when the meat is chewed, they slip around instead of bursting, as happens in beef, whose tubes are full of juices and must burst when pressed as in chewing. Hence, one must accomplish in veal by cooking what is accomplished in beef by chewing.

A calf two months old furnishes the best veal. Such veal should be a pale pink or flesh color in appearance. The fat should be a clear white. It should never be tinged with yellow, as is the fat of beef. White lean veal should never be purchased; it comes from calves which are too young, and is too unwholesome to eat.

Table Showing the Cuts of Veal and Their Uses

Name of Piece	How Cut	How Used
Breast	Left whole or cut into 2-inch pieces	Stewing or roasting
Shoulder	Same as the above	Stewing or roasting
Ribs	Cut into chops or left whole	Broiling or roasting
Loin	Cut into chops or larger pieces	Broiling or roasting
Leg	Cut into slices or into larger pieces	Broiling or roasting

Cleaning up:

Clean up as in the previous lessons on meat.

What has been learned:

1. Veal is a meat which is unwholesome and difficult to digest unless well cooked.

2. This is because the tubes comprising the bundles are not filled with juices.

3. When meat needs a long and thorough cooking, it is often best to combine two methods of cooking.

4. Sautéing the veal brings out the flavor and gives it a good color; the stewing breaks down the walls of the tubes.

5. Location and uses of the cuts of veal.

Lesson XLVIII

Broiled Ham

Materials used:

Class Rule	Home Rule
Small piece of thinly sliced ham	Desired amount of sliced ham

Utensils needed:

Frying pan
fork and knife for turning the ham
cloth with which to dry the ham

Work to be done:

1. Place the ham in the pan and cover it with lukewarm water.

Fig. 49.—Ham

2. Set the pan where the water will not cool.

3. Let the ham soak for thirty minutes.

4. Place the piece of ham upon the towel and dry it thoroughly.

5. Heat the pan as hot as for broiling.

6. Place the ham in the pan and broil for three minutes or until done.

Note to the Teacher: If desired, more ham fat may be added to the pan and each pupil may be given an egg to fry.

Serving:

Place the ham in the center of a hot platter. If eggs are to be served with it, arrange them prettily along the sides of the dish. Scrambled eggs may also be served with ham.

Principles:

In this lesson a fourth kind of meat is studied. Pork is the flesh of hogs. Europeans call us a nation of pork eaters, although this is the least used of any kind of meat among the American people. This is because it is more difficult of digestion than the other kinds of meat, and because it is more likely to contain disease germs. But the curing of the hams and bacon does away

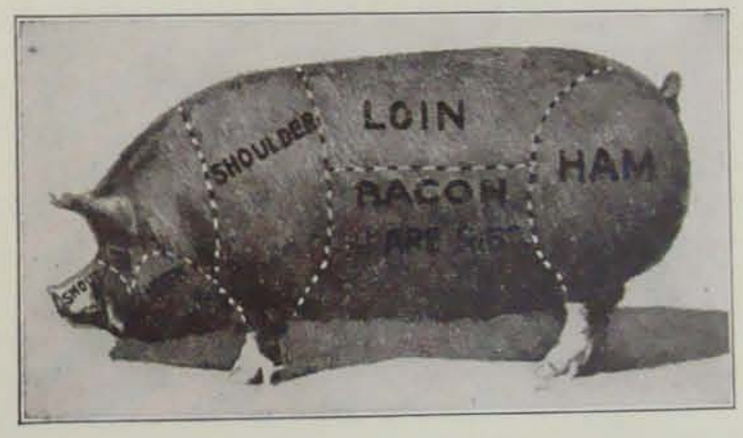

Fig. 50.—Pork on Hoof

to some extent with this danger. For this reason and because of their delicate taste, ham and bacon are more often seen upon our tables than are roasts or chops of pork.

Good, healthy, fresh pork should be a pale red color and firm. The fat should be white. The fat of pork is not hard and brittle as is that of beef and mutton; it is soft and oily to the touch. Fat salt pork of good quality is white or faintly tinged with pink. It should have a thin, fine-grained rind.

Pork is likely to be infected with two parasites which are dangerous to man. A parasite is an animal or plant which does not get or make its own food, but which lives upon another plant

or animal. The two parasites which are often found in pork are the trichina and the bladder worm. The latter becomes a tape worm if it gets into the human body alive. It is difficult to see with the naked eye whether pork is infected with trichina. These parasites get into the hog by means of filthy food. Once in the animal they find their way into its tissues, where they remain. They will not grow any more until they get into the digestive tract of a human being. In a person trichina cause a disease known as trichinosis, which is often fatal. The only method by which one can be absolutely sure of killing trichina is by thorough cooking. Smoking and curing have no effect upon them. For this reason no pork should be served upon our tables which is not thoroughly cooked.

Pork which is infected by the bladder worm may be distinguished by the naked eye. Such pork is lumpy or speckled. It is called measly pork. Such pork should never be bought. Thorough cooking will kill the bladder worm also, but it is safer to buy only healthy pork than to rely upon the cooking to kill the parasites that may be present. Even if the pork seems to be perfectly healthy, it should be cooked thoroughly to make doubly sure that no harm will result from eating it.

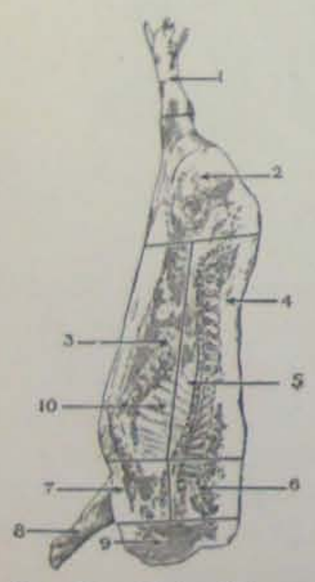

FIG. 51.—Cuts of Pork

Pork contains more fat than any other meat. It is this fat which makes it difficult for some people to digest pork. This large amount of fat makes it very valuable as a fuel food; but for this one reason it should never be abundantly used in summer. The fat of bacon, is, however, an exception to the remainder of the fat in the hog, for it is very easily digested. Some authorities place it just after butter and cream in this respect. The reason given for this is that bacon fat exists in a more granular form.

Apple sauce but slightly sweetened should be served whenever pork in any form is served. The acid which the apple contains is known to act so upon the fat globules of the pork that they are broken up and thus made more easy of digestion.

Pork for roasting should never be put into a hot oven as is done with roasts of other meats. If the surface becomes seared, it is more difficult for the heat to penetrate to the interior of the roast. Because of the danger of parasites, one should be sure that the heat does penetrate to the very center of the roast; this is assured when the meat is put into a moderately hot oven and gradually allowed to be heated through. Twenty-five or thirty minutes to the pound should be allowed for roasting pork.

TABLE OF THE CUTS OF PORK AND THEIR USES

	DIVISIONS	WAYS OF COOKING
1.	Hind foot	Stewed, pickled, boiled or fried
2.	Ham	Boiled, baked or steaks
3.	Rib belly	Used for bacon
4.	Fat back	Pickled or smoked
5.	Pork loin	Chops and roasts
6.	California ham butt	Cheaper steaks and roasts
7.	Picnic or California ham	Steaks and roasts—cheaper than ham (2)
8.	Fore foot	Stewed, pickled, boiled or fried
9.	Neck	Stewed, baked, boiled or braised
10.	Spare ribs	Baked or broiled
	Head	Jowl, for boiling or headcheese Ears, for boiling with vegetables Snout, stewed or boiled
	Kidney	Sauté, stews or boiling
	Heart	Boiled, stewed
	Tails	Boiled

Cleaning up:

Use plenty of hot water and soap.

What has been learned:

1. Pork is much in disfavor because it is hard to digest and because it is likely to be diseased.
2. Pork should always be thoroughly cooked to make sure that disease-producing organisms are killed.
3. Apple sauce is served with pork whenever possible.
4. Roasts of pork are cooked in a slow oven.
5. The cuts and uses of pork.

Lesson XLIX

Liver and Bacon

Materials used:

Class Rule	Home Rule
Small pieces of liver	10 thin slices of bacon
sliced bacon	1 lb liver cut into slices ¼ inch thick
1 tp bacon fat	2 tb bacon fat
1½ tp flour	4 tb flour
¼ c boiling water	2 c boiling water

Utensils needed:

Frying pan
piece of blotting paper on which to drain the bacon
a clean cloth
utensils for measuring
utensils with which to handle the meat

Work to be done:

1. Heat the frying pan.
2. Place the slices of bacon in the pan and sauté, turning frequently.
3. When brown on both sides, remove the slices to the draining paper. Keep the bacon warm in the warming oven.
4. Cut the liver into suitable pieces for serving.
5. Cover the liver with boiling water and let it stand five minutes. This draws out the blood.

6. Remove the liver from the water, drain, and wipe dry.
7. With a sharp knife remove the veins and skins.
8. Sprinkle it with salt and pepper and dredge with flour.
9. Heat the pan which contains the bacon fat.
10. Place the liver in the pan and sauté first on one side and then on the other.
11. When done, place the liver in the center of the platter.

Gravy.

1. Take a tb of the bacon fat, mix with it the 1 tb of flour, and brown.
2. Add 2 c boiling water, let it boil, stirring continually.

Serving:

Pour the gravy over the slices of liver; arrange the bacon around the edges of the dish and serve. This dish is used for breakfast usually, but may also be used for a family dinner.

Principles:

In this lesson one of the internal organs of the beef or calf has been utilized for food. Other edible parts of the beef creature are brains, used in stews, scalloped dishes, and croquette; tongue, boiled or braised, either fresh or corned; heart, stuffed and braised; kidneys, stewed or sautéed; the tail in soup, the thymus glands and pancreas of calves, both of which are known as sweetbreads, used the same as brains; and tripe, which is the stomach walls of the ox.

The liver and kidneys resemble each other very closely in that they are very solid and contain but little connective tissue. They consist almost entirely of protein matter, hence are a strongly concentrated food. They are hard to digest because the absence of connective tissue makes them lack in bulk; for this reason, they should always be finely chewed.

The heart resembles other meat very closely in physical structure, but is much denser than the other muscles. This makes it a little more difficult of digestion, but for healthy

people it is very nutritious, and very economical because it costs but a few cents a pound.

The thymus glands and the pancreas of calves are both sold, the former more than the latter, under the name of sweetbreads. The first-named are found in the neck of the calf; the latter is a digestive organ which lies near the stomach. Sweetbreads are regarded as a great delicacy. They are loosely held together by delicate connective tissue, the character of which makes them one of the most easily digested of protein foods.

The connective tissue of tripe is changed into gelatin when boiled. This is easily digested, being as completely absorbed by the digestive tract as beef, but as the tripe is lacking in flavor, it is not used so much as it ought to be.

Cleaning up:

1. Pour any fat which may remain in the pan into the jar for bacon drippings. It makes an excellent substitute for butter in many foods.
2. Wash all greasy utensils in warm, sudsy water, and rinse in clear, hot water.
3. Use sapolio on any discolored or rough utensil.

What has been learned:

Many of the internal organs of the beef creature furnish excellent and cheap food.

Additional Recipes

Minced Meat on Toast

Prepare the toast, place it on a platter, and keep it hot. Remove the gristle, fat, and bone from the cold cooked meat. Chop the meat very fine, measure it, and put it into a sauce pan; add ½ c gravy for each cup of meat. Season to taste with salt, pepper, and, if liked, with finely-chopped or grated onion, a few drops of onion juice, or a little Worcestershire sauce. Grated nutmeg may be added to lamb or mutton, if liked. Place the saucepan over the heat, and stir until the meat is heated. Pour it over the hot toast and serve at once.

Cottage Pie

Prepare the meat as directed for meat on toast, and put it into a baking dish. Cover the top with a thick layer of well-seasoned mashed potatoes. Use a fork to form the potatoes into a mound, with the highest point in the center. Bake on the grate of the oven until the potatoes are slightly browned on top. More gravy will be needed than for the meat on toast, as part of it will be absorbed by the mashed potatoes.

Hash

Prepare the meat as for cottage pie. Chop some cold cooked potatoes rather fine. Take equal parts of potatoes and meat, mix together and moisten with gravy, water, or milk. (Allow from a teaspoonful to a tablespoon of liquid for each cup of hash.) If the hash is very dry, use more liquid. Season to taste. Heat a teaspoonful of it in a frying pan. If a great deal of hash is being made, more fat will be needed. Spread the hash evenly on the bottom of the pan, cover, and place where the hash will heat slowly until a brown crust is formed on the bottom. Slip a knife under the hash, fold over double, and turn out on a warm platter. The hash may be formed into small cakes, rubbed over the top with melted butter, placed on a buttered baking pan, and heated on the grate of a rather hot oven until slightly browned on top. The materials used in making hash may also be heated in a saucepan with enough milk or gravy to keep them from burning. Stir until heated thoroughly and serve at once.

Beef Stew

3 lb beef	1 carrot
2 tb flour	4 potatoes
2 onions sliced	water
1 turnip	salt and pepper

Use beef from the neck, shoulder, or back part of the round. Prepare the meat as was directed in the lesson on Lamb Stew. Divide it into two portions; if the meat seems very fat, remove a part of it, try out in a frying pan and use it in place of butter in which to brown the meat and onion. Put the poorer portion of the meat in the kettle, cover with cold water, and proceed as directed in the lesson. Roll the more choice pieces in flour, place them in the smoking hot fat with the onions, and brown on all sides. When browned, put the meat and onions in the kettle, if the water is boiling. Rinse out the frying fat with a little of the water and return it to the kettle. Be sure the water boils. Then take the kettle off the heat, or lower the the flame so that the mixture will only simmer until the meat is tender.

Prepare the turnip and carrot and cut into thin slices or into one-half inch dice. Three-fourths of an hour before the stew is to be served, move the kettle where the water will boil, add the turnip and carrot, and bring down to simmering point. Wash and pare the potatoes, cut into quarters, parboil five minutes, drain, and add them to the stew; simmer twenty minutes. Season to taste with salt and pepper, and add boiling water, if necessary. The liquid should come to the top, but should not cover the vegetables. The stew may be thickened with flour, if desired. If dumplings are to be used, add them the last ten minutes, taking care that they rest on the pieces of meat. Let the stew boil gently the ten minutes in which the dumplings are cooking.

Dumplings

2 c flour
4 tp baking powder
1 tp salt
¾ c water or milk

Sift the dry ingredients together; add the liquid gradually. Drop by the spoonful upon the stew.

Beef Loaf

2 lb beef cut from the round
½ tp onion juice
1 tp salt
¼ tp pepper
1 beaten egg
1 tb chopped parsley
2-in. cube salt fat pork
1 c bread crumbs
½ c milk

Wipe the meat. Put it through a meat chopper with the salt pork. Add the seasonings and mix well. Add the crumbs, egg, and milk gradually, mixing all the time. Knead until spongy. Shape into a loaf. Place in a pan and put thin slices of fat salt pork on top of the loaf. Bake 40 minutes Baste every ten minutes or so, if the mixture seems to need it, with 1 tb butter melted in 1 c boiling water. Serve with tomato sauce.

Veal Loaf

Follow rule for Beef Loaf, but use veal instead of beef.

Veal Birds

Stuffing:	Class Rule	Home Rule
	3 tb crumbs	2 c soft bread crumbs
	½ tp butter	2 tb melted butter
	½ tp chopped parsley	2 tb chopped parsley
	a few drops of onion juice	1 tp onion juice
	a few grains of celery salt	2 tb celery cut or ⅛ tp celery salt
	⅛ tp salt	½ tp salt
	a few grains of pepper	⅛ tp pepper

Have thin slices of veal cut from the leg or the shoulder. Wipe the slices. Pound the meat on both sides, and cut into pieces two by three inches. Spread the pieces with stuffing, roll and tie, sprinkle with salt and pepper, and dredge with flour. Brown in hot butter. Put in a stew pan, cover with thin white sauce, and cook slowly until tender. Serve on small circular or square pieces of toast, cover with the sauce, and garnish with parsley.

Cecils with Tomato Sauce

1 c cold roast beef or steak
salt and pepper
yolk of egg slightly beaten
1 tb melted butter
onion juice
Worcestershire sauce
2 tb bread crumbs

Chop the meat fine. Mix with it all the seasonings. Add the remaining ingredients; shape into small pointed rolls. Roll in flour, egg, and crumbs and sauté. Serve with tomato sauce.

Casserole of Rice and Meat

Line a mold, slightly greased, with cold boiled or steamed rice. Mix two cups cold, finely-chopped cooked mutton, seasoned well with salt, pepper, celery salt, onion juice, and lemon juice, with ¼ c cracker crumbs, one egg slightly beaten, and enough hot water or stock to moisten. Cover the meat with rice, cover the mold with oiled paper to keep out the moisture while steaming and steam forty-five minutes. Serve on a platter surrounded with tomato sauce.

Creamed Sweetbreads

Sweetbreads spoil very readily and for this reason they should be removed from their wrapping paper as soon as they are brought from the market, and plunged into cold water, in which they should remain one hour. Then they should be drained and put into boiling salted water into which a few drops of vinegar have been poured. Cook slowly twenty minutes, drain, and plunge into cold water, which will keep them white and firm. Always parboil them in this way before cooking them for serving.

For creamed sweetbreads, cut the parboiled sweetbreads into one-half inch cubes. Make a cup of thin white sauce. Place the cubes of sweet breads in it and reheat. Serve on toast for breakfast.

Stuffed Hearts with Vegetables

The Stuffing:

½ c cracker crumbs
½ c stale bread crumbs
¼ c melted butter
¼ tp salt
⅛ tp pepper
a few drops of onion juice
¼ c hot water

Mix ingredients in the order given.

Clean and wash the calves' hearts, stuff, and skewer into shape. Insert lardoons, season with salt and pepper, and dredge with flour. Place some pork fat in the frying pan and heat as hot as for Hamburg steak. Place the hearts in the pan and add to the fat one stalk of celery, 1 tb chopped onion, 2 sprigs of parsley, 4 slices of carrot cut in pieces, ½ as much of turnip, a bit of bay leaf, 2 cloves and ¼ tp peppercorns. Turn hearts so they will brown on all sides, also turn the vegetables so that they do not burn. When the hearts are well browned, add 1½ c water, cover and let them simmer 1½ hours. Serve with cooked carrots and turnips cut in strips or fancy shapes.

Mint Sauce

¼ c finely chopped mint leaves
½ c vinegar
1 tb sugar

Wash the mint leaves, dry, and chop very fine. Mix the sugar and vinegar and add the mint leaves. Let the mixture stand fifteen or twenty minutes in a warm place before serving.

Lesson L

Our Meat Supply

Nutritive value of beef cuts:

By "meat supply" we are apt to mean beef supply, since we are a nation of beef-eaters, with bacon and ham and mutton holding second place in our meat diet. We may congratulate ourselves on our liking for beef, since it is meat that gives to the system the greatest vigor and energy, both of brain and body.

It is a curious fact that the cheaper cuts of beef contain the most nourishment, and another curious fact that people of

moderate means, even poor people, use the more expensive cuts. Why? Because the average American housewife does not know how to cook the cheaper cuts in such a way as to make them palatable, whereas people of wealth employ foreign cooks in their kitchens and these cooks, or chefs, know the superior value of the cheaper cuts and how to prepare them in their most palatable form. Ribs and loins are expensive, and yet it is for these cuts the average housewife asks when hurrying home from an afternoon's shopping to prepare dinner for the family.

Boiled beef is the most healthful of all and it is best when prepared from the cheaper cuts because these cuts are full of tough, juicy muscles. By boiling they are made tender and digestible, burdening the stomach but a fraction of the time required to digest beefsteak, pork, or even chicken. The United States government prescribes as an ideal ration the simple one of boiled beef, bread, and molasses.

Sources of beef supply:

Although the rising prices of all meats would seem to indicate a scarcity of the supply, the United States actually produces more than enough meat for its own use. The surplus is sent to England and other foreign countries. We export more than $50,000,000 worth each year and, in addition, many shiploads of live cattle.

To trace our meat supply from the first home of the frolicsome calf to the nine different cuts of beef which can be purchased in the best shop, is to go, in imagination at least, to the myriads of stock farms in the Mississippi Valley where fully one-half of the beeves are grown, or to the great semi-arid plains that lie east of the Rocky Mountains from the Canadian border all the way to Texas. These vast feeding grounds extend into the Rockies, particularly to those sections preserved as national forests.

There, beside a hurrying brook glinting its shallow course beneath the hot sunlight, you may see a little red calf on wobbly legs, born of range stock; he is rough of coat and hardy of

constitution. This enables him to withstand the cold of the mountain winters and their scant food, and it brings him a secondary place in the market quotations after he has grown to steerhood and taken his inevitable place in the stock car and finally the stock yards in Kansas City, Chicago, St. Paul, or some other packing city. For the farm-bred animal makes what is known as "prime beef," while the cattle from the ranges, being of coarser fibre and bearing the unmistakable flavor, bring a somewhat lower price. As the cost of raising them is much less than the cost of raising farm cattle, the owners of range cattle can sell them for less and still make a larger profit. Wherever the rainfall is too scant for farming, but sufficient in the spring to cause a sparse growth of grass, which is later dried up by the scorching rays of the sun and the hot winds which sweep over that area, there enormous herds of cattle and sheep range throughout the year.

Western cattle ranches:

A great deal of the land in these regions is owned by the state governments, and anyone who wishes to do so may pasture his herds and flocks upon it by paying a small annual fee to the state. But nowadays large ranches are appearing wherever the water supply is sufficient to warrant them, and instead of "range" cattle, the majority of the cattle shipped to the great markets are ranch cattle. Close to the mountains and in the stream-fed canyons you may still meet "bunches" of surprised-looking cattle, each group led by a masterful great bull, just as the herds of buffalo were led fifty years ago in the same canyons and on the same plains. Cattle ranching is often immensely profitable and a large ranch is likely to be equipped with every city comfort and convenience, from a telephone which forms part of the miles of wire fence, to a school and store.

Both on the ranches and the ranges, branding is still practiced, though many believe it should be abolished and some more humane system of designating cattle be substituted for it.

What is known as the "running iron" is illegal in most states, but it is none the less widely used although it is regarded as less humane than the shaped brand, which requires but an instant of application to leave a permanent mark.

From ranch to market:

Nowadays one sees almost as many cowboys in the stockyards in Kansas City, Chicago, St. Louis, and Omaha as at any one of the semi-annual round-ups on the plains. The cattle ready for shipping are cut out of the great western herds, placed in cattle cars, and transported as rapidly as possible to the packing plants, being carefully fed and watered along the way to comply with goverment regulations. On arriving at the great packing cities, they are placed in the selling pens, and shrewd buyers for the packing plants ride down the lanes between the pens to examine the latest arrivals. If their offers please the commission men in charge of the herds, the carload may be quickly sold. If not, the cattle remain in their pen one day, two days, or even more before they find a buyer. Trained buyers can tell almost the exact weight of an animal by a single keen glance. They can gauge his condition as well, assuring themselves of the quality of the meat and the proportions of fat.

By-products of meat:

A visit to the stockyards on a busy morning will teach the novice many things. He will be surprised to learn that the packers may pay more for a live steer than they are able to get out of him by the sale of the beef. The steer may have cost, say $80, while the beef from him sold for but $60. How, then, can the packer make a profit? Simply by utilizing the by-products. The bones, the horns, the hoofs, parts of the viscera, hide, blood, and other parts of the animal not available for food, provide the actual source of profit besides paying the cost of slaughtering and dressing the animal, shipping, and keeping accounts. It is to the inventor of uses for the by-products we owe the fact that the cost of meat is not still higher. Since inventors are still working on the problem of by-products, it is

possible that some time the packer will be able to sell us the meat for half of what he pays for the live animal, and still make a profit for himself.

Government inspection of meat:

Before and after the steer is killed and dressed, he is inspected by a government official, who switches him to another room for more thorough examination by other inspectors in case there is reason to suspect a diseased condition.

Kosher meats:

Near the slaughter booths are several Jewish rabbis, killing and preparing what is known as kosher meat.

Kosher means *proper*, and this meat is acceptable to orthodox Jews, because it has been killed according to certain requirements made by Jewish law. One of these requirements is that an exceedingly sharp knife shall be used. Another is that the animal shall be so securely bound that it can not possibly move and that the knife shall enter the neck at a certain point. These requirements have their origin in the desire to kill the animal in the most humane way.

Beef cuts:

After the steer is dressed and left for a few days to "ripen" in the cooler, he is divided into the different cuts, named on page 128. Of these the ribs and loins are the high-priced cuts. This is largely due to the fact that nearly every housekeeper knows how to prepare them. Many of the cheaper cuts, as has been said, are more nutritious. It is, in fact, absurd that the width of a line, which is nothing at all, can mark the difference between meat costing seventeen cents and that costing five cents. Yet those are the relative prices of cuts that have only a knife blade between them.

Cooking meats:

It will be readily seen then that methods in cookery have much to do with the prices of meats. When culinary experts prove themselves as clever at utilizing the cheaper grades of beef as

the inventors are at utilizing the by-products. the problem of cheaper and better living will be solved.

Preservation of meats:

Since not all the cattle that are slaughtered are used up immediately, there must be some method of preservation of the meat until the time comes for its consumption. Much of it is canned in a way similar to that used for canning fruit. Other large quantities are kept by pickling in brine and then smoking, as is done with ham and bacon. Some meat, such as corned beef, is kept by merely pickling. Dried beef is pickled before it is dried. But by far the greatest amount of beef is kept by refrigeration. The carcasses are sent immediately after they are dressed to the cooling room, where they are kept in a temperature near the freezing point. From there they are loaded into refrigerator cars and shipped any distance desired. If the beef is to be kept a number of months it may be frozen solid and held in that condition. If the beef is to be exported to foreign lands, it is sent to one of the large seaports where it is placed in the refrigeration chambers of the steamships which carry it to Europe. Even in the hottest weather, this can be safely done, the meat arriving at its destination as fresh and sound as it was on the day it was killed.

Ripening meat:

The "ripening" of meat is an important process and should never be omitted. Meat juices contain two important proteins —myosin and haemoglobin. Myosin clots after the animal is killed, causing a hardening of the muscle fibers, known as *rigor mortis*. Meat in this condition is tough and cannot be made tender by cooking. But in two or three days an acid is developed which dissolves the myosin clot and renders the meat tender. This acid also greatly inproves the flavor of the meat.

Care of meat:

When meat is brought into the home, it should be removed from its wrapping of paper, which, if allowed to remain around it, would absorb the meat juices. The meat should be placed

on a platter and set in the ice box—never on the ice nor in the ice chamber, but in the shelved part.

Comparison of nutritive value of meat and vegetables:

All the chief sources of protein have now been studied. What protein is obtained from the legumes? from wheat? from milk? Of all these sources of protein, the most important is meat. It is thus important because every pound of meat contains a great deal of protein, and meat is a food which is well liked by everyone and which seems to agree with all. Scientists have discovered that about 97 per cent of the protein furnished by meat is used by the body; but only about 84 per cent of the vegetable proteins are so used. Scientists have also investigated the amount of vegetable protein and animal protein which ought to be supplied in the diet, and they have reached the conclusion that about three-fourths of the protein should be supplied in a vegetable form and the remainder by the flesh of animals.

There is an economic reason for this also. Vegetables cost much less than meats, furnishing much more nutrient for the same expenditure of money. For this reason, a great many people supply their protein requirements by a wise selection of vegetable foods and in that way they reduce the cost of living to a considerable extent.

SOUPS

Lesson LI

Brown Soup Stock

Materials used:

- 3 lb raw meat from the shin or 2 lb raw meat and 1 lb cooked meat
- ½ c each of onion, carrot, and turnip cut into ½-inch cubes
- 1 stalk or root of celery
- bit of bay leaf
- a sprig of parsley
- 2 peppercorns
- 1 tb salt
- 3 qt cold water

Utensils needed:

- Frying pan
- sharp knife
- soup kettle
- 2 fine strainers
- long-handled skimmer
- a small piece of cheesecloth
- utensils for measuring
- earthen bowl or crock
- small bowl
- utensils with which to prepare vegetables
- clean cloth for wiping the meat

Work to be done:

1. Have the pieces of meat cut up into suitable pieces by the butcher.
2. With a sharp knife remove the marrow from the inside of the hollow bone.
3. Place the pan on the fire, put the marrow into the pan, and try out.
4. Place one-third of the meat in the pan and brown it on all sides. Observe the same rule as when making stews.
5. Place the remainder of the meat and all of the bone in the soup kettle and cover with the cold water. Let it soak one hour.

6. Bring the soup slowly to the boiling point and then allow it to *simmer*.

7. Add the meat in the pan to the soup as soon as it is browned.

8. Let it simmer for four or five hours.

9. Prepare the vegetables.

10. Remove any scum which rises while the soup is simmering.

FIG. 52.—Removing Fat with Absorbent Paper

11. Add the vegetables and salt to the soup about one hour before the soup is to be removed from the fire.

12. When the meat is in shreds, remove the big pieces of bone with the long-handled skimmer. Place the meat in the earthen bowl.

13. Fit the strainer over the crock and strain the soup through it into the crock.

14. Set the crock in a cool place until the next day.

15. Remove all pieces of meat from the bones with a sharp knife, place the meat in a bowl, and set it away in the ice box. What uses may be made of this meat?

NOTE TO THE TEACHER: Because of the length of time which it takes to make soup stock, it would seem best, in order that the pupils may see all the processes, to cut the lesson into halves, doing the first half of the work one day, and finishing the process the next day. This can be very easily done if the soup lesson is given in winter because there is then no danger of the soup spoiling.

16. If the soup is to be used immediately, skim off as much as possible of the fat from its surface.

17. Place the fat in a cup and save for drippings.

18. Remove the remainder of the fat from the soup by passing absorbent paper over its surface.

To clear the soup:

1. Measure the amount of stock to be cleared, either by the cupful or the quart, and put it into a sauce pan.

2. Take an egg for every four cups, or 1 quart, of stock.

3. Wash the egg with cold water.

4. Break the egg and separate the white from the yolk.

5. Beat the white slightly. Crush the egg shell.

6. Stir the white and the egg shell into the soup and bring to the boiling point.

7. Let the soup boil for two minutes, stirring all the time.

8. Fit a piece of fine cheesecloth into a fine strainer. Fit another fine strainer over the cloth. This second strainer prevents the soup from clotting the cheesecloth.

9. Strain the soup through the strainer.

Serving:

Brown soup stock is often made the foundation for other soups, as tomato soup, vegetable soup, and noodle soup. For service of soups made with stock see Lesson LII.

Table etiquette:

The soup plates or cup should never be tipped to get the last of the soup into the spoon.

Principles:

Beef is the best meat to use in soup-making because of its rich flavor and because it is less expensive than the other meats. The middle cuts of either the fore or hind shin are best because they contain just about the right proportion of meat, bone, and fat, that is, two-thirds of lean meat and one-third fat and bone. The lowest cut of shin can be used with the middle cut, as alone it is too poor in meat to make a satisfactory soup.

Bone should never be omitted when brown stock is to be made, and never added when consommé is to be made. Bone seems to be a very hard substance, yet it contains a great deal of material which is soluble in water. This material, collagen, is found in all connective tissue, tendon, cartilage, and bone. When it

comes in contact with boiling water, it is changed to gelatin, which is soluble in hot water. It is this gelatin which makes the soup stiffen when it is allowed to cool. The gelatin out of which desserts are made is the same substance. When the lowest cut of the shin is purchased for soup, the housewife gets a large quantity of bone. This will give a soup rich in gelatin, but lacking in flavor, because there is not much meat on this cut and it is the meat which yields the flavor. What substance in meat gives the flavor? For this reason the housewife should purchase a little piece of cheap lean meat to go with the cut for soup.

The shin bone is especially valuable for soup because it is hollow and all hollow bones contain marrow, or bone-fat. The marrow adds a delicate flavor to the soup, and the fat, when not removed from the soup, serves the same purpose in the body as does fat from other sources.

Soup is not allowed to boil because it is desired to obtain as much of the nutrient of the meat in solution as possible. But even so, the albumin and other proteins of the meat are coagulated by the heat of cooking and but very little of the nutrient is extracted. Soup as ordinarily made contains only about 5% solids and these are made up of gelatin, some mineral matter, fat, and extractives. This is the reason that soup meat should never be thrown away, but should be utilized by warming over in some way. Such meat must be very richly seasoned when it is warmed over because the hot water dissolves most of the extractives into the soup and consequently the remaining meat tastes flat and insipid.

Meat for soup should not be cut larger than in two-inch pieces, because the smaller the pieces the greater is the amount of surface exposed to the action of the water and, in consequence, the greater is the amount of extractives and other solids which passes into the stock. Why is a part of the meat browned before it is put into the water? Would it be necessary to brown any of the meat if part of it had been cooked before?

Since albumins and the other proteins are soluble only in cold water, the meat is soaked for an hour in cold water and then brought to the boiling point. But as albumin is hardened by heat, it rises to the surface of the water as scum, which is usually removed by skimming. Any solid particles that are held in suspension in the soup are removed if the stock is cleared with egg, and the soup is left very beautifully clear, but some nutrients are also removed from it.

It is always best to prepare the stock a day before it is to be used; having kept it in a cool place, all the fat will rise to the surface, where it will form a hard cake which can be much more easily removed than can the fat from a hot stock. If more stock has been made than can be used at once, the fat should be allowed to remain in the stock that is not used, for the fat keeps the air out of the soup and so, of course, bacteria as well. If stock is kept free from bacteria, it will keep indefinitely, especially during the cooler parts of the year.

This gives us another reason why soup bones containing a great deal of marrow should be chosen. If stock is to be kept some time during the summer, it should never have vegetables added to it, for stock in which are vegetable extractives spoils more readily than does stock made only from meat.

Cleaning up:

1. Place all vegetables and meat scraps in the garbage can.
2. Collect all usable vegetables and place them in suitable utensils in the ice box or pantry.
3. Soak the cheesecloth in hot, sudsy water, wash well, rinse in boiling water, and hang up to dry.
4. Clean all utensils according to rule.

What has been learned:

1. A combination of two-thirds lean meat and one-third fat and bone makes the best soup cut.
2. Beef is best to use in soup because it is less expensive than other meats and richer in extractives, or flavoring materials.
3. The best cut to use for soup is the middle cut of the shin.

4. Albumin and other proteins are extracted from the meat by cooking in cold water.

5. When soup is heated to the boiling point, the albumin and other proteins are coagulated and rise to the surface as scum.

6. Skimming stock and clearing it with white of egg makes the stock clear, but it also removes considerable nutritive material.

7. A layer of fat left on the stock prevents the entrance of bacteria and thus keeps the stock sweet.

Lesson LII

Tomato Soup with Stock

Note to the Teacher: For this lesson the teacher should have prepared a sufficient amount of soup stock to supply the class or use the stock prepared in the previous lesson.

Materials used:

Class Rule	Home Rule
¼ c soup stock	1 qt brown stock
¼ c tomatoes	1 qt tomatoes
⅛ tp sugar	2 tp sugar
3 drops onion juice or ¼ tp onion, diced	onion juice or ¼ c diced onion
⅛ tp celery salt or ¼ tb diced celery	celery salt or ¼ c diced celery
⅛ tb cornstarch	2 tb cornstarch
two or three pieces cooked macaroni	cold cooked macaroni
salt and pepper	salt and pepper
¼ tb butter	4 tb butter

Utensils needed:

Granite pan	sharp knife
omelet pan	bowl
utensils for measuring	sieve

Work to be done:

1. Prepare the vegetables.
2. Put the butter in the omelet pan and brown the vegetables.
3. Add the tomatoes.
4. Mix the cornstarch with enough water to make it pour.
5. Add cornstarch to the mixture and let it simmer thirty minutes. Do not let it burn.
6. Rub the whole through a sieve into the granite pan.
7. Add the stock, season with salt and pepper to taste, garnish with the macaroni, and serve with crisped crackers.

Crisped Crackers

Spread common crackers thinly with butter, put in a pan, and bake until delicately browned.

Serving:

Soups made with stock, unlike the cream soups, contain but very little nutritive material. For this reason and because of their stimulating properties, they are served at the beginning of the dinner. Croutons or crisped crackers are passed with the soup. A ladleful of the soup to each person is considered sufficient.

Fig. 53.—Soup Service

Table etiquette:

Soup is sipped from the *side* of the spoon.

Principles:

In Book One, cream soups were made. These are very nutritious because they are made with milk as a foundation and also contain a great deal of vegetable food. At what meals are such soups served?

This soup is different, for it is made with stock as a foundation. Stock consists of the soluble portions of the meat and bone and sometimes vegetables and other ingredients, all held in solution

by water. Such soups are called soups with stock. There are various kinds of soups made from stock just as there are several different soups made from milk.

Bouillon, with the exception of clam bouillon, is made from lean beef. It is delicately seasoned and served very clear.

Brown soup stock, as its name indicates, is highly colored. It is made of about two-thirds lean beef and the remainder bone and fat. Because of the color desired, cooked meat may be used. Such stock is highly seasoned with vegetables, spices, and sweet herbs.

White soup stock, as might be inferred, is made from white meats, such as chicken or veal. It should have delicate seasonings.

Consommé, like bouillon, is served clear. It is made from two or three kinds of meat, beef, veal, and fowl being most generally used. It, like brown soup stock, is always highly seasoned.

Lamb stock is made from lamb. It should be delicately seasoned.

Such soups as these contain but very little nourishment. For this reason, they are more suitable to serve as the first course at a dinner, because they will then be followed by the meat and salad courses, which will supply an abundance of nutrients. Served at the beginning of the dinner, they stimulate the appetite and prepare the stomach for its work of digestion. This effect is due to the extractives of the meat.

What is a "binding?" Of what were the bindings made in the cream soups? What was used to make the binding for the tomato soup? In a soup like this, the heavier vegetables would settle to the bottom unless all the ingredients were bound together by some starchy substance. One-third cup of flour could just as well have been used.

Other seasonings which might have been added are some finely chopped parsley, one-half teaspoon of peppercorns, a small bay leaf, a few cloves, two or three sprigs of thyme, and one-fourth cup carrot. As this soup is made from brown soup

stock, it will admit of very high seasonings, and all that the housewife will need to consider are the kinds of flavorings which will blend well together.

Cleaning up:

1. Place all vegetable refuse in the garbage can.
2. Place any vegetables which may be utilized in suitable dishes in the pantry or ice box, according to their nature.
3. Clean all utensils according to rules previously given.

What has been learned:

1. Stock consists of the soluble parts of meat, bone, and vegetable.
2. Bouillon, brown soup stock, white soup stock, consommé, and lamb stock are the stocks made from meat.
3. Such soups contain less nourishment than cream soups, hence they may be served as the first course at dinner.
4. Their chief value lies in their stimulating effect upon the digestive organs.
5. When vegetables are added to them, it is sometimes necessary to add a binding also.

Lesson LIII

Noodle Soup

Materials used:

Class Rule	Home Rule
½ egg	3 eggs
pinch of salt	½ tp salt
flour	flour
½ c stock	required amount brown soup stock

Utensils needed:

2 granite pans	rolling pin
egg beater	sharp knife
bowl	

Work to be done:

1. Beat the egg slightly. Add salt.
2. Add the flour to the egg gradually. It should make a stiff dough.
3. Knead the dough for 15 or 20 minutes or until elastic.
4. Roll it into a sheet as thin as paper.
5. Cover the dough with a cloth and let it stand for 30 minutes.
6. Roll the sheet of dough into a roll just as the jelly cake was rolled.
7. With a sharp knife cut strips one-fourth inch wide from the roll.
8. Place the soup upon the fire to heat.
9. Pour some boiling water into the second granite pan; add a teaspoonful of salt.
10. Add the noodles to the water and let them boil for 15 minutes.
11. Place the noodles in the hot soup and serve.

Serving:

For serving, see previous lesson.

Table etiquette:

Great care should be taken to make no noise of the lips in eating soup.

Principles:

What are the food elements found in wheat flour? Which are found in the eggs? How, then, does the addition of the noodles increase the food value of the soup?

Since noodles contain all the food elements in quite good proportion, they form a very valuable food and increase the nutritive value of the soup a great deal. Noodles may also be used in consommé.

Although soup stock does not in itself contain much nutritive material, yet it can be the means by which considerable nourishment may be consumed. There are many other preparations which, when added to stock, increase its nutritive value. The

most important of these are the various paste preparations, such as alphabet paste, Italian paste, macaroni, and spaghetti. These contain considerable gluten in combination with the starch, hence they are valuable adjuncts to the soup. Spaghetti and macaroni are usually broken into suitable lengths; the latter may also be cut into rings after it is cooked. In all instances these pastes should be cooked by themselves in boiling salted water and added to the soup as a garnish just before it is to be served. Tapioca is a pure starch preparation used in soup. Pearl barley and rice are cereals often used in the same way. Both should be cooked separately, the former for three hours or more, and added just as are the paste preparations.

Cleaning up:

Follow directions in the previous lesson.

What has been learned:

1. Paste preparations, cereals, vegetables, or other ingredients added to soup stock increase its nutritive value.

GELATIN

Lesson LIV

LEMON JELLY

Materials used:

Class Rule	Home Rule
1 tp gelatin (granulated)	2 tb gelatin
2 tb cold water	½ c cold water
4 tb boiling water	2½ c boiling water
2 tb sugar	1 c sugar
1 tb lemon juice	½ c lemon juice
a stick of cinnamon	cinnamon

Utensils needed:

Bowls	mold	lemon squeezer
teaspoon	sieve	piece of cheesecloth

Work to be done:

1. Soak the gelatin in cold water.

2. Add the boiling water. A stick of cinnamon and a piece of lemon peel boiled in the water will add a pleasing flavor.

3. Stir a little to dissolve the gelatin, but be careful not to stir too much, as this will result in a stringy product.

4. Add the sugar, and, when cool, the lemon juice.

5. Wring a piece of cheesecloth out of hot water, place it over a sieve and strain the liquid into a mold which has been dipped in cold water.

6. Set the jelly in a cool place. Be sure that it stands level. A white and fluffy mixture can be obtained by beating the gelatin mixture while of a jelly-like consistency with a Dover egg beater.

Serving:

Place a paper lace doily on a fancy plate. Unmold the jelly either by:

1. Putting the mold into a pan of hot water for a moment.

2. Wrapping a cloth wrung out of hot water around the mold, loosening the top with a knife and unmolding.

Be careful to place the jelly in the center of the dish as it cannot be moved after unmolding. After it has been put on the plate, it should be garnished with whipped cream.

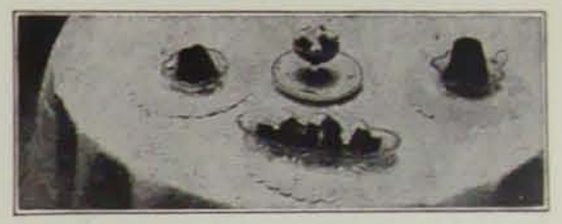

FIG. 54.—Different Ways of Serving Jelly

Another method of serving the jelly is to make it less stiff, break it up lightly, and serve in a compote dish, or glass dish with a standard. The broken particles of jelly flash and sparkle in a pleasing way.

Jelly is served with a spoon and eaten with a fork.

Principles:

There are two kinds of gelatin on the market—shredded and granulated. The granulated is more convenient because it can be more easily and quickly measured and dissolved.

Gelatin is insoluble in cold water, but when cold water is added to it, the gelatin softens and forms a hydrated, jelly-like mass. Hot water dissolves this mass.

Gelatin loses some of its power of solidifying if boiled and becomes tougher.

The larger the proportion of gelatin used, the quicker the mixture will harden. Too much, however, will give it a peculiar taste and make the mass tough and gluey. It requires more gelatin to stiffen a mixture in summer than it does in winter. A given quantity of some brands of gelatin will stiffen a smaller amount of liquid than others. The general proportion is two ounces of gelatin to two quarts of water.

Fruit juices together with sections of fruit and nut meats may be combined with gelatin to form very attractive desserts. The flavor of fruits is brought out by the addition of the juice of one lemon.

Cleaning up:

1. Soak the dishes in hot water.

What has been learned:

1. Gelatin is insoluble in cold water, but soluble in hot water.
2. Boiling gelatin takes away its stiffening property.
3. The larger the proportion of gelatin, the less time it takes to solidify.
4. Too much gelatin gives a peculiar odor and taste.
5. More gelatin is required in summer than in winter.
6. Gelatin may be combined with fruit juices, fruit, and nuts to form attractive dishes.
7. There are two kinds of gelatin—granulated and shredded, the former being more convenient to use.

Additional Recipes

Orange Jelly

½ pkg gelatin
½ c cold water
1 c sugar
juice of one lemon
1 pt orange juice
1 c boiling water

Variation of Orange Jelly

Make orange jelly. Pour a little into a mold and set it aside to harden. Keep the remainder from hardening by placing the bowl containing it within another of hot water. When the first section has stiffened, arrange the sections of orange upon it. Dip the other sections in the liquid gelatin and press them, in an upright position, against the sides of the pan. Dipping them into the gelatin and holding them against the side of the pan causes them to remain in place and they will thus serve the double purpose of yielding nutrient and serving as a garnish. If they were not thus made to remain in place, they would float around on the surface of the remaining gelatin when it is poured in. When all this has stiffened, add the rest of the gelatin and more sections. When chilled, unmold and serve.

Coffee Jelly

½ pkg of gelatin
½ c cold water
¾ c sugar
2 c clear black coffee (make fresh coffee)
1 c boiling water

Whipped Cream for Coffee Jelly

¾ c thick cream
¼ c milk
5 tb powdered sugar
30 drops of vanilla

Macedoine of Fruits and Nuts

Make jelly. Place a few spoonfuls on the bottom of the mold to set. Arrange a design of slices of bananas and nuts. Cover with jelly. Add fruit and more of the mixture. Repeat until all is added, allowing the mixture to stiffen each time. Dates, figs, and oranges may be used. Garnish with whipped cream.

Lesson LV

Snow Pudding

Materials used:

Pudding

Class Rule	Home Rule
1 tp gelatin	¼ box gelatin or 2 tb granulated gelatin
2 tb cold water	¼ c cold water
1 tb lemon juice	¼ c lemon juice
5 tb boiling water	1 c boiling water
5 tb sugar	1 c sugar
1 egg white	3 egg whites
a pinch of salt	salt

Custard

¼ c milk	2 c milk
½ tb sugar	4 tb sugar
½ egg yolk	3 egg yolks
salt	salt
vanilla	30 drops vanilla

Utensils needed:

Bowls	teaspoon	wire whip	mold
tablespoon	knife	platter	

Work to be done:

Pudding:

1. Soak the gelatin until soft in cold water.
2. Add the boiling water and stir until dissolved.
3. Add the sugar and stir until dissolved.
4. Add the lemon juice and set aside on a platter in a cool place to stiffen till about the consistency of honey, occasionally stirring the mixture.
6. Beat the egg whites until they are stiff.
7. Add the egg whites to the mixture and beat until stiff enough to hold its shape.
8. Dip the mold in cold water.
9. Turn the mixture into the mold and set aside to harden.
10. Serve cold with a boiled custard.

Custard:

Use the liquid custard made as directed in Lesson XXXVI, Book One.

Serving:

The pudding is served in the same way as is the plain lemon jelly.

Principles:

Gelatin is not a protein, but belongs to a class of foods known as gelatinoids, which are similar to proteins in composition and very easily digested. They do not, however, build tissue, but yield heat and energy. Protein foods are an expensive source of energy; yet some protein is always used in this way in the body. When gelatinoids and proteins occur side by side, the cells of the body first use the gelatin, the cheaper nutrient, for heat and energy, because it is more easily broken down. The gelatinoids are economical, serving to conserve proteins. They are sometimes called "protein sparers."

Gelatin needs the addition of some other food principle to make it a complete food. In snow pudding, what principle does the egg white supply? In soup, how were the other food principles supplied?

A gelatin dish is very easily prepared and can be served in so many attractive ways and in so many good combinations that it is a dessert dish much favored by the housewife. An added advantage is that it can be prepared early in the day and thus be out of the way.

What has been learned:

1. Gelatin is a gelatinoid.
2. It should be used in combination with other food principles to make a perfect food.
3. It is easily digested.
4. It is economical and easily prepared.
5. It can be served in various attractive forms and in various combinations.

Lesson LVI

Perfection Salad

Materials used:

1 tb gelatin
2 tp cold water
1 tb vinegar
¼ c boiling water
salt
1 tb sugar
cabbage cut fine
celery chopped
red peppers

Dressing

1 tb flour
1 tb butter
¾ c milk
2 tb vinegar
1 egg

Utensils needed:

Measuring cup
tablespoon
teaspoon
knife
double boiler
bowls
egg beater
custard cup or mold

Work to be done:

Salad

1. Soak the gelatin in cold water.
2. Cut or slice the cabbage fine. Chop the celery and a little red pepper together.

3. Add boiling water to the gelatin.
4. Turn the gelatin into the custard cup or mold, which has been dipped in cold water.
5. Add the cabbage, celery, and red pepper and set aside to harden.

Dressing

1. Put the butter into the double boiler and melt.
2. Add the flour.
3. Add the beaten egg and milk, stirring constantly, and cook till the mixture is smooth and of the desired consistency.
4. Add the vinegar.
5. When cool, pour the dressing over the salad and serve.

Serving:

This makes an attractive and tasty salad. It is especially adapted, because of its beauty and palatability, for use at formal dinners or luncheons. A square or oblong section is cut and placed on lettuce. Little square, crisp crackers may be served with it; also small balls (about $1\frac{1}{4}$ inches in diameter) of cottage cheese with which some finely chopped parsley has been mixed.

Principles:

Perfection salad contains all the food principles, but not in the right proportion to make it a perfect food. It is nutritious, however, and proves an attractive vegetable dish for the meat course at dinner, especially during the summer.

What has been learned:

1. A salad may be made with a gelatin foundation.
2. Review of salad dressing.

Lesson LVII

Gelatin (Reading)

No desserts are more decorative than those made on a gelatin basis with fruit colorings and combinations. Some think that

they are often showy and attract the eye more than they please the palate. Still they may be made very palatable if plenty of fruit, nuts, or other solids are combined with them. The gaily-tinted jellies, transparent beneath the brilliant lights of an evening dinner, are most inviting, and are all the prettier and more toothsome when topped with an opaque cream of a contrasting hue. The end of dinner should be light and toothsome rather than heavy and nutritious, for the diner is apt to be in a mellow mood, ready to exchange the pastime of eating for that of witty conversation; a dainty dessert is ideally suited to this mood of transition.

Gelatins are, first of all, for daintiness, and if too pretty to eat, then so much the better, for they are best served when no more or very little more should be eaten.

Although gelatin is closely related to glue, it is in reality a perfectly clean and pure substance. As a result of the ambition of manufacturers, together with the restraints of the pure food laws, the gelatins now on the market are free from injurious or objectionable substances, and yet they are made from bones, calves' feet, tendons, skin, connective tissues, and other inedible portions of animals. These substances are first soaked in a solution of lime water to destroy all undesirable matter. The process requires about six months, but at the end of this time the material comes out white and free from all foreign substances. The bones are dissolved chemically until only the gristle remains. All of the material is then placed in tubs, covered with water, and heated by means of steam coils. The resulting liquid, called "factory soup," is allowed to simmer, but not to boil, as boiling destroys the stiffening power of the gelatin.

This soup is drawn off into galvanized receptacles which are surrounded by cool water. This changes the liquid to a jelly.

The gelatin is cut by means of machinery into thin slices, which are spread out on wire nets and run into a room where dry air is blown over them until all the moisture is evaporated.

The final step in this process is the changing of this substance into granulated, flake, or stick form, when it is ready for the market.

Because the substances used in the manufacture of gelatin for cooking purposes are so nearly the same as those used in making glue and other commercial, non-edible gelatins, the utmost care must be taken to have the food ingredients pure. When pure, gelatin is transparent and sparkling. It has neither odor nor taste, and dissolves readily in hot water.

PUDDINGS

Lesson LVIII

Bread and Butter Apple Pudding

Materials used:

Class Rule	Home Rule
½ c apple sauce	1 pt apple sauce
½ tb butter	4 slices of bread ⅓ inch thick
1 tb sugar	2 tb butter
vanilla	¼ c sugar
¼ c cream	a few drops of vanilla
1 slice bread ⅓ inch thick	1 c cream

Utensils needed:

Granite baking dish	knife
measuring cup	spoon

Work to be done:

1. Put the oven on to heat.
2. Put the sauce into the baking dish.
3. Butter the bread, cut off the crust, and cut the bread in triangular-shaped pieces.
4. Arrange the pieces of buttered bread closely together on top of the sauce.
5. Sprinkle the sugar, to which the vanilla has been added, over the bread.
6. Put the dish into the oven and bake it at a moderate temperature till the bread is browned.
7. Serve the pudding hot with the cream.

Serving:

This pudding should be served either at luncheon or dinner from the dish in which it was baked.

Principles:

The basis of this pudding is bread crumbs. In almost every home, some bread becomes stale. Often this is thrown away as being of no use, a very wasteful procedure; stale bread is just as nutritious as fresh bread. All such bread should be dried, crushed, and saved for use in puddings, in garnishing, and in cakes.

This pudding represents the class of hot puddings made with bread combined with fruit. Why should it not be baked in a tin baking dish?

The dish when garnished with cream, unwhipped, forms a very good dish; it is too hearty to be served with a heavy meal. What ingredient does it contain that makes it hearty?

Cleaning up:

If any of the pudding has browned on the sides of the baking dish, scour it off carefully.

What has been learned:

1. Bread may be combined with fruit to make a hot pudding dessert dish.
2. Cream may be used as a liquid dressing for some puddings.

Lesson LIX

Chocolate Bread Pudding

Materials used:

Class Rule	Home Rule
¼ c stale bread crumbs	2 c stale bread crumbs
½ c scalded milk	4 c scalded milk
1⅓ tb sugar	⅔ c sugar
½ tb melted butter	¼ c melted butter
¼ egg	2 eggs
⅛ tp salt	½ tp salt
⅛ tp vanilla or	1 tp vanilla or
1/16 tp spice	¼ tp spice
¼ square chocolate	2 squares chocolate

Hard Sauce

1⅓ tb butter	⅓ c butter
¼ c powdered sugar	1 c powdered sugar
⅙ tp vanilla	⅔ tp vanilla

Utensils needed:

2 bowls	Dover egg beater
measuring cup	double boiler
saucepan	pudding dish
spoons	

Work to be done:

1. Scald the milk in the double boiler.
2. Soak the bread crumbs in the milk till they are soft.
3. Melt the chocolate by putting it in the saucepan and putting the saucepan over hot water.
4. To the melted chocolate add one-half the sugar.
5. Take from the bread enough milk to make the chocolate the right consistency to pour.
6. Beat the egg slightly and add it, with the rest of the sugar, the salt, and the flavoring, to the bread and milk.
7. Butter the baking dish as has been directed.
8. Put the pudding mixture into the buttered baking dish and bake in a moderate oven.

Hard Sauce

1. Cream the butter thoroughly.
2. Very gradually add the sugar, creaming constantly.
3. Add the flavoring and set aside to cool.

Serving:

This pudding is served the same as the bread and butter apple pudding.

Principles:

This pudding is an example of bread crumbs combined with a custard as a base. What nutritive elements are added to the bread crumbs by the milk? by the egg? by the chocolate?

Why are puddings made with a bread crumb foundation inexpensive? Why wholesome?

Hard sauce is very valuable for its heat- and energy-giving food elements. It is often served with rich puddings which are eaten hot. It may be used as a garnish for the pudding.

What has been learned:

1. Bread crumbs may be combined with a custard basis to make a nutritious pudding.
2. Hard sauce is often served with hot pudding.

Lesson LX

Indian Pudding

Material used:

Class Rule	Home Rule
1 c scalded milk	5 c scalded milk
1 tb Indian meal	$\frac{1}{3}$ c Indian meal
$1\frac{1}{2}$ tb molasses	$\frac{1}{2}$ c molasses
$\frac{1}{5}$ tp salt	1 tp salt
$\frac{1}{6}$ tp ginger	1 tp ginger
$\frac{1}{5}$ c cream	1 c cream

Utensils needed:

Double boiler, measuring cup, spoons, pudding dish, knife

Work to be done:

1. Scald the milk in the double boiler.
2. Mix the milk with the meal, then put the mixture into the double boiler and cook for fifteen or twenty minutes.
3. Add the molasses, salt, and ginger.
4. Butter the baking dish.
5. Pour the mixture into the baking dish and bake in a slow oven for one and one-half or two hours.

Serving:

This may be served with cream. It is a very hearty pudding, hence it should not be served after a hearty meal.

Principles:

This pudding represents another class of puddings, those having a cereal basis. What food elements are found in the cornmeal? Why must the cornmeal be boiled for fifteen or twenty minutes in the milk before it is mixed with the other ingredients and baked? Would this pudding be suitable to serve after a heavy dinner?

The cream served with the pudding furnishes fat and so makes the dish still more nutritious.

What has been learned:

Cereals may be made the basis of puddings.

Lesson LXI

Cottage Pudding

Materials used:

Class Rule	Home Rule
1 tb butter	$\frac{1}{4}$ c butter
$2\frac{2}{3}$ tb sugar	$\frac{2}{3}$ c sugar
$\frac{1}{4}$ egg	1 egg
$\frac{1}{4}$ c milk	1 c milk
$\frac{1}{2}$ c and 1 tb flour	$2\frac{1}{4}$ c flour
1 tp baking powder	4 tp baking powder
$\frac{1}{8}$ tp salt	$\frac{1}{2}$ tp salt

Vanilla Sauce

2 tb sugar	$\frac{1}{2}$ c sugar
$\frac{1}{4}$ c boiling water	1 c boiling water
$\frac{1}{4}$ tb cornstarch or $\frac{3}{8}$ tb flour	1 tb cornstarch or $1\frac{1}{2}$ tb flour
$\frac{1}{2}$ tb butter	2 tb butter
$\frac{1}{4}$ tb vanilla	1 tp vanilla

Utensils needed:

Dover egg beater, cake pan, 2 bowls, knife, measuring cup, saucepan, sieve, spoons

Work to be done:

1. Put the oven on to heat.
2. Cream the butter, add the sugar gradually, and cream.
3. Beat the egg well and add it to the butter and sugar.
4. Sift the dry ingredients.
5. Add the dry ingredients and milk, alternately, to the egg and sugar.
6. Butter the cake tin and pour the batter into it.
7. Bake the pudding for thirty-five minutes.

Sauce

1. Sift the sugar and cornstarch together.
2. Add boiling water gradually to the cornstarch and sugar, stirring constantly.
3. Boil the sauce for five minutes; remove from the fire.
4. Add the butter and vanilla.

Serving:

This pudding is cut into suitable pieces for serving, which are then covered with the sauce. This may be done either by the hostess or by the waiter before bringing the food into the dining room. When it is served by the hostess at the table, it should be cut with a broad silver knife.

Principles:

This lesson illustrates the use of a baked batter as the basis of a pudding. How many different types of puddings have been made? The liquid sauce has for its basis boiling water. Fruit juices may well be substituted for the liquid and so furnish a great variety in this kind of puddings.

Cornstarch is a more delicate thickening agent for pudding sauces than is flour. How does it thicken the sauce?

What has been learned:

1. Baked batters may be made the basis of puddings.
2. Water may serve as the base for liquid sauce for some puddings. Fruit juices may be substituted, giving variety.

Supplementary Recipes

Strawberry Cottage Pudding

Materials used:

$\frac{1}{3}$ c butter
1 c sugar
1 egg
$\frac{1}{2}$ c milk
$1\frac{3}{4}$ c flour
3 tp baking powder

Use butter-cake method of combining. Serve with the following sauce:

$\frac{3}{4}$ c thick cream
$\frac{1}{4}$ c milk
$\frac{1}{3}$ c powdered sugar

Strawberries crushed and sweetened or sliced peaches.

Mix the cream and milk, beat till stiff, using the Dover egg beater; add the sugar, beat, add the fruits.

Chocolate Pudding

Materials used:

$\frac{1}{4}$ c butter
1 c sugar
2 egg yolks
$\frac{1}{2}$ c milk
$1\frac{3}{4}$ c flour
3 tp baking powder
2 egg whites
$1\frac{1}{2}$ squares Baker's chocolate
$\frac{1}{8}$ tp salt
$\frac{1}{4}$ tp vanilla

Cream the butter and add one-half the sugar gradually. Beat the yolks of the eggs till they are thick and lemon-colored and add, gradually, the rest of the sugar. Combine the two mixtures and add the milk alternately with the sifted dry ingredients. Beat the egg whites stiff and then add the melted chocolate and vanilla. Bake in an angel-food cake pan, remove from the pan, cool, fill the center with whipped cream, sweetened and flavored. Pour cream around the cake also.

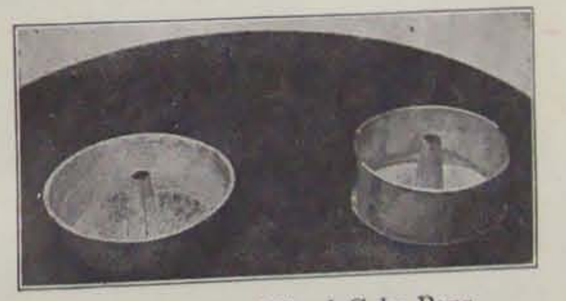

Fig. 55.—Angel Food Cake Pans

Chocolate Sauce

Boil 1 c of sugar, $\frac{1}{2}$ c water, and a few grains of cream of tartar until of the consistency of a thin syrup. Melt one and one-half squares of Baker's chocolate and pour the hot syrup on this gradually. Cool slightly and flavor with one-fourth teaspoon of vanilla. Serve with cottage pudding or any other suitable pudding.

Lesson LXII

Apple Dumplings

Materials used:

Class Rule	Home Rule
¼ c flour	2 c flour
½ tp baking powder	4 tp baking powder
1/16 tp salt	½ tp salt
¼ tb butter	2 tb butter
1½ tb milk	¾ c milk
½ apple	4 apples
½ tb sugar	¼ c sugar

Mock Cream

¼ tb flour	¼ egg white	1 tb flour	1 egg white
⅛ tp butter	¼ tb sugar	½ tp butter	1 tb sugar
¼ c milk	salt	1 c milk	salt
¼ egg yolk	vanilla	1 egg yolk	vanilla

Utensils needed:

Sieve	paring knife
steamer	saucepan
mixing bowl	Dover egg beater
measuring cup	egg whip
spoons	large plate
2 knives	cups

Work to be done:

1. Put the steamer on to heat.
2. With two knives cut the butter into the dry ingredients, which have been sifted together.
3. Add the milk gradually, cutting the mixture instead of stirring it.
4. Butter the cups.
5. Put some of the batter in the bottom of the cup.
6. Pare and slice the apple.

7. Place slices of apple on the batter in the cups and sprinkle them with sugar.
8. Place more batter in the cups, place the cups in the steamer and steam for twenty minutes.

Sauce

1. Put the flour and butter in the saucepan and cook them together till well mixed.
2. Add the milk and let it cook as slowly as possible for five minutes.
3. Beat the egg yolk.
4. Pour the liquid over the well beaten yolk, return the whole mixture to the saucepan, and cook till it coats the spoon. What kind of mixture is this?
5. Beat the whites with the egg whip.
6. Remove the liquid from the stove, cool slightly, then pour it over the egg white, to which the sugar has been added.
7. Add the salt and vanilla to the sauce.

Serving:

This is another very rich and hearty dessert; it should, therefore, not be used after a heavy meal.

Principles:

Apple dumplings are a steamed batter pudding with which fruit is combined.

Mock cream is a liquid sauce having milk for its liquid base. Sauces made with milk and egg in this way are really boiled custards and the same precautions must be observed in making them that is used in making custards. Is such a sauce as this very nutritious? Why?

What has been learned:

1. Steamed batters may be made the base of puddings.
2. Cooked liquid sauces, with a milk base, may be served with some puddings.

Supplementary Recipes

Entire Wheat Pudding

Materials used:

½ c entire wheat flour
½ tp soda
½ c molasses
½ c milk or water
1 egg beaten
2 tb butter, melted
½ tp salt
1 c raisins seeded and chopped

Mix and sift the dry ingredients. Add the molasses and milk or water, and mix thoroughly. Add the beaten egg and melted butter, then the raisins. Fill a buttered mold two-thirds full. Cover and steam 2½ hours. Chopped figs or dates may be substituted for raisins.

Suet Pudding

Materials used:

2 c flour
4 tp baking powder
½ tp salt
3 tb finely chopped suet
cold water to make drop batter

Mix and sift the dry ingredients. Have the suet very cold and remove the membrane. Cut the suet into slices as thin as possible, then chop it very fine and stir it into the dry ingredients. Add the water gradually; mix until smooth and fill a well-greased mold two-thirds full. Cover and steam from two to three hours. If cooked in small molds, one hour will be sufficient. Serve with hot sauce.

For Fruit Suet

Add to the suet pudding ingredients, ½ tp cinnamon; ¼ tp grated nutmeg; ⅛ tp ground cloves; ¼ c sugar or molasses; ½ c seeded raisins cut in quarters; ¼ c currants; 2 square inches of citron cut in strips.

BREAD

Lesson LXIII

Water Bread (Quick Process)

Suggestion to Teacher: It is best to make the first lesson in bread-making a demonstration, in order to give the students an idea of the manipulation of the ingredients.

The bread lesson necessarily takes at least 2½ hours. During the time bread-making is taught, allowance must be made for the extra time required. It is also possible sometimes to have some of the students come earlier and start the operation. If there is not enough time to bake the loaf, the pupil may be allowed to take it home in a floured bag to finish the operation.

Materials used:

Class Rule

1 c water
1 tp salt
¼ compressed yeast cake mixed with ¼ c lukewarm water
about 3 c flour

Home Rule

2 c boiling water
1½ tp salt
1 yeast cake mixed with ¼ c lukewarm water
6 c sifted flour

Utensils needed:

Sifter
saucepan
measuring cup
spoons
knife
bowl
broad-bladed knife with wooden handle or mixing spoon
earthen ware bowl with perforated cover (if possible)
molding board
bread tins

Work to be done:

1. Boil the water.
2. Sift the flour.

3. Break up the yeast into small pieces, then mix with the lukewarm water, stirring until softened.

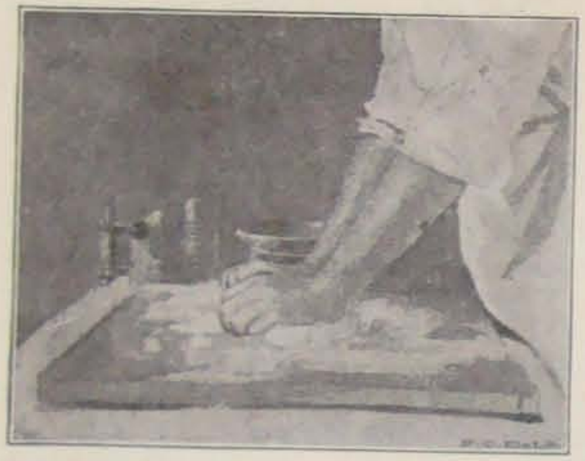

Fig. 56.—Pressing Ball of Hand in Dough

4. Add the salt to the boiled water and cool till lukewarm. (Use a thermometer if possible; the temperature should be about 88° F.)

5. Add the softened yeast to the cooled water.

6. Stir into this a cup of the flour, beating well.

7. Continue adding more flour, beating thoroughly, until about 2½ c have been added.

8. Scrape the dough from the bowl to a molding board dredged with flour.

9. Lightly flour the fingers and the dough.

10. Fold the farther edge of the dough toward the front without pressing the fingers into it.

11. Press the ball of the hand lightly into the dough, rolling it away from you.

12. With the tips of the fingers bring the farther edge again toward the front.

Fig. 57.—Bringing Farther Edge to the Front

13. Again press the dough away from you with a rolling motion of the hand.

14. Turn dough half-way around. Add a little flour if necessary.

15. Repeat the folding and rolling. Continue turning the dough, keeping it round.

16. Continue the kneading process, adding as little flour as possible, until the dough is elastic and spongy. It should not adhere to the board or the hands and should puff up when indented with the finger.

Fig. 58.—Turning the Dough Half-way Around

17. Shape the dough into a ball. Grease the bowl with a little butter, and place the dough in it.

18. Put the perforated cover in position or cover with a folded white cloth.

19. Place the dough in a warm (not hot) place. The rising process may be hastened by putting the bowl in a pan containing water at a temperature of 88° F.

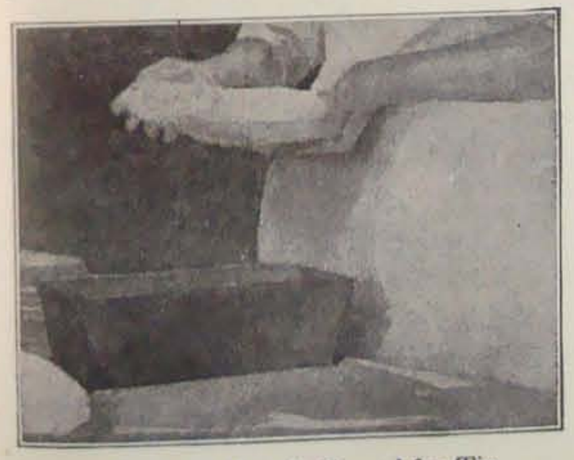

Fig. 59.—Dough Shaped for Tin

20. When the dough has doubled in size, turn it out again on the slightly floured board and knead till no large bubbles are seen. This will take only a few minutes.

21. Cut into two pieces and shape each on the board into a loaf by folding it over and patting it until no wrinkles are seen.

22. Grease the tin and dust lightly with flour.

23. Place the loaves in the tins, cover with a thick cloth, set

in a warm place, and let them stand until the volume is again doubled. They may be placed on a pan of warm water to hasten the rising process.

FIG. 60.—Dough in Tin

24. Test the oven. If a piece of paper turns dark brown in six minutes, the heat is just right for baking the bread.

25. Bake from 45 to 60 minutes, the time depending upon the size of the loaf. Keep the heat of the oven such that in 15 minutes the loaf will begin to brown. Lower the heat slightly the last 20 minutes of the baking.

26. When the loaf is brown on all sides, remove from the oven.

27. Remove the loaves from the pans, and place them uncovered in such a position that cool fresh air can circulate around them freely.

Serving:

Bread in some form is served at every meal. It should be cut in thin slices and these should be cut in half from crust to crust, thus leaving a half of the upper and under crusts on each piece.

Table etiquette:

Bread should be on the table and passed to each individual, who should place it on the bread and butter plate, if there be one, at the left of the butter cube or ball.

To spread the butter, place the bread on the side of the dinner plate, use the butter spreader or knife, and apply the butter. The bread should be broken, not cut, into pieces before spreading. The small pieces may be spread as they are eaten.

To lay the bread on the table or on the hand to spread is in very bad taste.

Principles:

What leavening agent was used in the making of bread? What substance is added to bread to make it rise?

Yeast is a mass of tiny plants which feed upon the gluten and the starch of the flour, changing the starch first into sugar, and this in turn into carbonic acid gas and alcohol. The production of the gas fills the dough full of bubbles. The tough elastic gluten of the flour enables the dough to expand and rise as the gas, which is lighter than the dough, tries to escape. The process by which the sugar is changed into carbonic acid gas and alcohol is known as fermentation. Other and more complicated changes also take place, but these need not be described here.

In order that the yeast plant shall spread through the dough, it is first softened in water; it is further distributed in the kneading process.

To help it grow and flourish, the yeast plant must have oxygen. It gets this partly from the sugar and partly from the air that is incorporated in it by beating and kneading.

In addition to this, kneading accomplishes other purposes. It thoroughly mixes all ingredients and makes the gluten more elastic, thus increasing its power to expand.

Besides oxygen, yeast must have warmth, moisture, a nitrogenous soil, and mineral matter. The liquid employed in making the dough supplies the moisture. The flour supplies nitrogen and mineral matter. Warmth is insured by using a lukewarm liquid and keeping the dough in a warm place until it is ready to bake. The most favorable temperature for the vigorous growth of yeast has been found to be from 75° to 90° F.

The dough must not be allowed to rise too long or be kept at too high a temperature, as the yeast will then become less active, and bacteria, introduced with ingredients and utensils or dropped in from the air, will also become more active and cause other

fermentations to set in, which will result in what is known as souring. This stage can be detected by the odor, by stringiness, and by a sinking down in the center of the dough.

During the entire rising process of the dough, it should be closely covered to prevent the formation of a hard crust by exposure to the air.

As soon as the dough is light and porous, it is again kneaded in order to distribute the gas bubbles uniformly through the dough.

After the second rising, during which the same precautions as to heat and length of time of rising are taken, it is placed in an oven hot enough to kill the yeast plant quickly, as well as to harden the walls of gluten, enabling the loaf to keep its shape. To what class of foods does the gluten belong? What is the effect of heat on it? Even though the heat is so great (about 400° F.), it does not immediately penetrate to the middle of the loaf, hence the loaf keeps on rising for some time after it is put into the oven. The steam and alcohol generated within it will also tend to expand it more. It is very important that the heat be high enough at this point to kill all living organisms in the dough quickly or souring will take place even after the loaf is in the oven; for if the heat is not high enough to kill it, the yeast becomes torpid and inactive while other organisms cause undesirable fermentation to set in, giving rise to souring.

During the baking, the alcohol and the gas are driven off into the oven and the intense heat causes the starch on the outside of the loaf to be changed to dextrine, a gummy substance, forming a crust. Dextrine is more easily digested than is starch.

The heat should be reduced towards the last of the baking to give it a chance to penetrate into and thoroughly cook the middle of the loaf. What effect will this have on the starch? If the center is not perfectly baked, some yeast plants are likely to survive and when the bread is eaten, indigestion may be the result.

When baked, the bread should not be wrapped in a cloth, as the steam, condensing, causes the bread to be soggy. Besides this, the cloth absorbs the moisture and gives the bread an unpleasant odor and taste.

Cleaning up:

Scrape off as much of the dough adhering to the mixing bowl and other utensils as possible before soaking in cold water. What should be done with the flour on the board? Thoroughly wash and dry the bread tins before setting them away.

What has been learned:

1. Dough is made light by the use of yeast.
2. Fermentation in bread is the formation of carbonic acid gas and alcohol from sugar through the action of yeast.
3. Yeast requires air, moisture, a nitrogenous soil, and mineral matter to make it flourish.
4. Carbonic acid gas causes the dough to rise, while the gluten of the flour enables it to expand.
5. Beating and kneading incorporate air. Kneading makes the gluten more elastic and mixes the ingredients thoroughly.
6. Souring, due to the action of bacteria, is caused by too long rising or rising at too high a temperature.
7. The dough should be covered while rising to prevent the formation of a hard crust by evaporation of moisture.
8. The dough should be kneaded the second time to distribute the gas bubbles evenly.
9. The heat of the oven should be intense enough at first to kill all living organisms and harden the walls of gluten.
10. The heat should be reduced towards the last to insure thorough cooking of the inside of the loaf.
11. The loaf should begin to brown in spots at the end of the first fifteen minutes.
12. When done, the loaf should be brown on all sides.
13. The loaf should not be immediately wrapped in cloth, as this results in sogginess and the absorption of an unpleasant odor and taste.

Lesson LXIV

Milk and Water Bread (Quick Process)

Materials used:

Class Rule	Home Rule
3 c flour	6 c flour
½ c scalded milk	1 c scalded milk
½ c boiling water	1 c boiling water
1 tp butter	1 tb butter
1 tp lard	1 tb lard
1 tp salt	1½ tp salt
1 tp sugar	1 tb sugar
¼ to 1 cake compressed yeast mixed with ¼ c lukewarm water	1 cake compressed yeast mixed with ¼ c lukewarm water

Utensils needed:

Double boiler
bowls
sifter
measuring utensils
broad-bladed knife or mixing spoon
bowl with perforated cover
bread tins

Work to be done:

1. Boil the water, scald the milk, and sift the flour.

2. Put the butter, salt, lard, and sugar into the mixing bowl and pour the boiling liquid over them. What advantage is gained by pouring the hot liquid over the ingredients?

3. Soften the yeast in the lukewarm water. Why? Why should the water be lukewarm?

4. Cool the liquid mixture until lukewarm, and add the softened yeast. Why must the liquid be cooled?

5. Add most of the flour gradually until a moderately stiff dough is formed, beating well and mixing the ingredients thoroughly.

6. Turn the dough out on the floured board and knead until it is light and elastic.

7. When the dough will not stick when left on the board a minute, place it in the greased bowl.

8. Cover closely and set in a warm place or in a pan of warm water. What temperature should the water be?

9. When the dough has doubled in size, turn it out again on the floured board and knead. Why?

10. Shape into loaves. How?

11. Place in greased and floured tins and set in a warm place till the volume doubles.

12. Test the oven. How?

13. Bake. How long? How should the heat be regulated? Why?

14. Tap the loaf. If it gives a hollow sound, it is done. Give another test.

15. Remove from the pan. How should it be cooled?

16. When cooled, store it in a covered earthen jar.

Serving:

For serving bread see Lesson LXIII.

Principles:

Salt is added to give flavor. Too much retards the growth of the yeast plant.

The addition of a very little sugar quickens the process of rising. In what way? Too much sugar should not be used, as this takes away the natural sweetness of the wheat grain.

Shortening makes the bread more tender and prevents it from drying. Bread is, however, more wholesome without too much shortening. The effect of shortening on the growth of the yeast plant is the same as that of salt.

Bread made with milk or half milk and half water is more nutritious than that made entirely with water. It is yellower, does not dry so quickly as water bread, and has a certain velvety texture lacking in the latter. Water bread has the advantage of being cheaper.

The milk used in bread-making should always be scalded, since bacteria are very likely to be introduced into the bread

through this medium. For the same reason, the water should be boiled, but should not be mixed with other ingredients when it is too hot.

Care should be taken not to add too much flour to the dough, as this gives the gas too much work to do and as a consequence the bread is not so light and porous.

Characteristics of a Perfect Loaf of Bread

1. **General appearance:**
   (a) Rounded over top, not flattened.
   (b) Not extending too far over sides of pan or cracked at sides.
   (c) Evenly baked on all sides.
2. **Proper baking:**
   Indicated by:
   (a) Color—chestnut brown on all sides of loaf.
   (b) Thickness of crust—$\frac{3}{16}$ or $\frac{1}{8}$ inch.
3. **Odor:**
   (a) Pleasing.
   (b) No rancid nor sour smell.
4. **Flavor:**
   (a) Sweet and nutty, suggesting the taste of wheat.
5. **Grain and texture:**
   (a) Cut surface silky, evenly honey-combed, with the aeration holes rather small and uniform in size.
6. **Lightness:**
   (a) Twice the size of the dough when placed in the pan.
   (b) Surface elastic when pressed with the finger.
7. **Crumb:**
   (a) Glossy.
   (b) Moist, but not gummy when pressed between the fingers.
   (c) Not dry and crumbly.
8. **Color:**
   (a) Inside of loaf creamy white, not ashy or dirty white.

What has been learned:

1. Salt adds flavor, but retards fermentation.

2. Shortening makes bread tender, but retards fermentation.
3. Sugar contributes to the food of the yeast plant.
4. Milk makes bread more nutritious, prevents drying, and gives a velvety texture.
5. Water should be boiled and milk scalded before being added to the dough.
6. Too much flour makes the bread less porous and light.
7. Characteristics of a perfect loaf of bread.

Lesson LXV

Bread (Slow Process)

Materials used:

Class Rule	Home Rule
$\frac{1}{2}$ c scalded milk	1 c scalded milk
$\frac{1}{2}$ c boiling water	1 c boiling water
$2\frac{1}{2}$ tp butter	$1\frac{1}{2}$ tb butter
$1\frac{1}{2}$ tp sugar	1 tb sugar
1 tp salt	2 tp salt
$\frac{1}{2}$ cake dry yeast mixed with $\frac{1}{4}$ c lukewarm water	1 cake dry yeast mixed with $\frac{1}{2}$ c lukewarm water
about 3 c flour	about 6 c flour

Utensils needed:

Earthenware bowl with perforated cover	measuring utensils
broad-bladed knife or mixing spoon	double boiler
	baking tins
	sifter

Work to be done:

1. Boil the water and scald the milk. Why?
2. Sift the flour.
3. Soften the yeast cake in lukewarm water.
4. Put butter, salt, and sugar in the bowl and pour the hot water and milk over them.

5. Cool the mixture till lukewarm.
6. Add the softened yeast.
7. Add about half the flour or enough to make a drop batter, beating well.
8. Set aside, closely covered, in a warm place until the batter is very light and full of bubbles (about an hour).
9. Add the remaining flour and mix thoroughly.
10. Turn out on the board and knead, proceeding in the same manner as for making bread by the quick process.
11. Let it rise, closely covered, in a warm place until the size is doubled.
12. Mold the dough into loaves.
13. Set aside to rise.
14. Bake.
15. Cool.
16. Always scald the jar in which the bread is stored twice a week, thoroughly airing and drying it before putting the fresh bread into it.

Serving:

For serving bread, see Lesson LXIII.

Principles:

Making a drop batter with part of the dough is termed setting the sponge. The slow process of bread-making is therefore often called the sponge-and-dough method. Fermentation sets in more readily and takes place more rapidly in a batter than in a dough. Hence the slow process requires less yeast or one which is slower in action. Therefore dry yeast can be employed.

When bread is made in winter by the slow process, the sponge may be set in the evening, and the second mixing be done in the morning. If this be done in the summer, the sponge is likely to sour. Therefore it is better to make the sponge early in the morning, in which case the bread can be baked by noon.

The longer the fermentation, the better the flavor of the bread will be, for during a longer process of fermentation certain by-products are formed which give a sweetness that is absent

in bread made by a quicker process. Care must be taken in this method, however, that souring does not take place. If circumstances do not allow of attending to the dough when it has risen to the required size, or volume, souring can be prevented by cutting down the dough two or three times, allowing some of the gas to escape.

PROPORTION OF INGREDIENTS FOR TWO LOAVES OF BREAD

2 c liquid
$\frac{1}{3}$ to 1 cake of yeast softened in $\frac{1}{4}$ c lukewarm water
(amount depending upon time of operation)
1 tp salt
2 tb sugar
2 to 3 pints of flour
3 tb shortening

What has been learned:

1. In the sponge-and-dough method, or the slow process, a drop batter is made with half the flour, which is allowed to rise until light before a stiff dough is made.
2. Fermentation takes place more quickly in a drop batter than in a dough.
3. The slow process requires a longer time but less yeast or one that is slower in its action.
4. The sponge-and-dough method gives a better flavored loaf than the quick process.

Lesson LXVI

Rolls and Biscuits

Materials used:

Class Rule	Home Rule
1 c scalded milk	2 c scalded milk
1 tb butter	3 tb butter
½ tp salt	1 tp salt
1 tb sugar	2 tb sugar
½ yeast cake and ¼ c lukewarm water	1 yeast cake and ¼ c lukewarm water
about 3 c flour	about 5 c flour

Utensils needed:

Earthenware bowl with perforated cover
sifter
measuring utensils
broad-bladed knife or mixing spoon
double boiler
baking tins

Work to be done:

1. Scald the milk. Cool till lukewarm.
2. Add the yeast softened in ¼ c lukewarm water.
3. Add enough flour to make a soft dough.
4. Beat well, cover closely, and set aside in a warm place until the dough is light and full of bubbles.
5. Add the sugar, salt, and melted butter.
6. Add enough flour to make a stiff dough.
7. Turn out on a floured board and knead well until very light and elastic.
8. Set aside, closely covered, in a warm place until the bulk is doubled.
9. Turn out on the floured board, knead slightly, divide and shape.

(a) For Biscuits, flatten the dough into a sheet and cut into rounds with a round cutter, placing them close together in a greased and floured pan, or break off a small piece of dough, then with the thumb and first two fingers fold the dough

towards the center, constantly moving it around and around, continuing this process until smooth and perfectly round. Biscuits should be placed close together so that they may rise and puff upward instead of flattening out. A fancy biscuit, known as "Clover Leaf" biscuit, can be made by placing three of these small biscuits in each section of a gem pan.

(b) Parker House Rolls. Roll the dough into a sheet about half an inch thick, cut with a biscuit cutter, make a crease in the middle of each with a floured handle of a wooden spoon, spread one half with butter that has been creamed, and press the halves slightly together. By making one side smaller than the other and letting the smaller side come underneath, the rolls will have a better shape when light. To let them rise very slowly insures a good shape.

(c) Finger Rolls. Shape small bits of dough in the same manner that biscuits are made, then with the palm of the hand roll them on the board until of the length and thickness of a man's middle finger.

(d) Cinnamon Rolls. Roll the dough into a sheet about one-half inch thick. Spread with butter that has been creamed. Sprinkle with cinnamon and sugar (proportion, 2 tb sugar to ⅓ tp cinnamon). Roll the dough like a jelly roll, and cut into three-fourths inch slices. Place the pieces, cut side up, side by side in a greased and floured pan. Brushing them with milk or with sugar and water just before baking improves their appearance.

(e) Swedish Rolls. Prepare the dough as for cinnamon rolls, adding currants and a little grated lemon rind to the cinnamon and sugar when sprinkling them.

10. Set aside, closely covered, in a warm place and allow them to rise until very light.
11. Bake in a hot oven from fifteen to twenty minutes.
12. Biscuits and rolls may be glazed:

(a) Brush them over with the yolk of egg beaten with 2 tb milk. Return to the oven to brown.

(b) Brush with a little softened butter when removed from the oven. The butter may be placed inside a piece of cheesecloth and the rolls rubbed with this.

(c) Brush with white of egg and water.

(d) Brush with 1 tb sugar mixed with 1 tb water.

13. Cool.

Serving:

Clover Leaf Biscuits, Parker House Rolls, and Finger Rolls are all suitable for serving at a formal dinner. When so served, one is usually laid upon the bread and butter plate or upon the dinner plate with the meat course. With the ultra fashionables, butter is no longer served with them. Cinnamon rolls are especially nice with coffee, hence they are served at breakfast or luncheon with coffee. They are also served at afternoon and evening social affairs.

Table etiquette:

Biscuit and rolls should always be broken apart, never cut.

Principles:

Rolls and biscuits may be made from bread dough, especially if milk is used, or a separate dough may be made. When the latter is done, the dough may be made richer by the addition of more shortening and sugar or even eggs. A richer dough requires a longer kneading to render it smooth and elastic.

A sponge should be made when much shortening is used to counteract its retarding action. After fermentation is well started, the shortening may be added.

When eggs are added to a dough, they should be combined with the dough when the shortening and sugar are added.

Biscuits and rolls are made small. Hence it does not take long for the heat to penetrate to the center, and from fifteen to twenty minutes is sufficient length of time to bake them, but biscuits require a greater heat than loaf bread. They should continue rising for five minutes and begin to brown in eight minutes.

What has been learned:

1. The sponge-and-dough method should be used in all doughs in which much shortening is used.
2. The richer the dough, the more time required to knead it in order to make it light and elastic.
3. On account of their small size, biscuits require less time but more heat to bake them than loaf bread requires.
4. A batch of biscuits may be made at the same time and of the same dough that bread is made.
5. Many variations in biscuits and rolls may be made from biscuit dough.
6. Glazing adds to the attractiveness of rolls.

Lesson LXVII

Entire Wheat Bread

Materials used:

Class Rule	Home Rule
1 c scalded milk	2 c scalded milk
$\frac{1}{2}$ tp salt	1 tp salt
$\frac{1}{8}$ c sugar or $\frac{1}{6}$ c molasses	$\frac{1}{4}$ c sugar or $\frac{1}{3}$ c molasses
$\frac{1}{4}$ to 1 yeast cake mixed with $\frac{1}{4}$ c lukewarm water	1 yeast cake mixed with $\frac{1}{4}$ c lukewarm water
$2\frac{1}{3}$ c entire wheat flour	$4\frac{2}{3}$ c entire wheat flour

Utensils needed:

Earthenware bowl with perforated cover
broad-bladed knife or mixing spoon
measuring utensils
sifter
double boiler
baking tins

Work to be done:

1. Scald the milk. Turn it into the bowl.
2. Soften the yeast in lukewarm water.
3. Add the salt and molasses to the hot liquid.
4. Cool till lukewarm and add the softened yeast.

5. Add the flour.
6. Beat vigorously.
7. Cover well and set aside in a warm place till the bulk is doubled.
8. Again beat well.
9. Turn the dough into well-buttered bread pans or gem pans, filling them half full.
10. Let the loaves rise till double in volume.
11. Bake in a hot oven for about forty-five minutes, or until the loaf when tapped will give a hollow sound.
12. Remove the bread from the pans and cool.

Serving:

Because bread made of entire wheat flour contains more of the wheat kernel than does ordinary flour, it is thought by some to be more healthful. It is served in the same manner as other plain bread.

Principles:

Entire wheat flour is made from the whole wheat kernel with the exception of the outer covering. There is a greater amount of gluten present than in white flour, hence the dough must be made softer than the latter—so soft that it is sticky—or the bread will be hard and close and will not rise well. It should not be allowed to rise any longer than until the bulk is doubled, as it does not bear up well. The particles of gluten are not ground so fine as they are in white flour and for this reason all the gluten is not softened at once and therefore cannot aid in holding up the dough.

The baking must be a little slower than for white bread to give the gas a chance to expand the loaf to its fullest capacity.

Bread that is mixed entirely with a spoon will always be more or less coarse-grained. What function is performed by beating?

If the entire wheat bread is tough, what can be added to remedy this? Why is the molasses added?

Proportion of yeast to liquid:

One-quarter yeast cake to 1 pt liquid, if the mixture rises over night. One-half yeast cake to 1 pt liquid, if the mixture is set in the morning. One yeast cake to 1 pt liquid for quick process.

Cleaning up:

How should the mixing bowl be treated? why? the gem pans?

What has been learned:

1. Entire wheat flour is made from the whole wheat kernel with the exception of the outer covering.
2. It has more gluten than white flour.
3. Less of it must be used than of white flour on account of the large proportion of gluten.
4. It does not bear up well, hence care must be taken that it does not rise more than just enough to double in bulk.
5. Entire wheat flour requires slower baking than white flour.

Lesson LXVIII

Graham Bread

Materials used:

Class Rule	Home Rule
½ c milk	2½ c hot liquid
½ c water	½ yeast cake mixed with ¼ c lukewarm water
¼ yeast cake mixed with ¼ c lukewarm water	1½ tp salt
1 tp salt	⅓ c molasses
2½ tb molasses	3 c white flour
1½ c white flour	3 c Graham flour
1½ c Graham flour	

Utensils needed:

Earthenware bowl with perforated cover	double boiler
sifter	mixing spoon
measuring utensils	baking tins

Work to be done:

1. Scald the milk. Boil the water.
2. Soften the yeast.
3. Add the salt and molasses to the hot liquid.
4. Cool the liquid till it is lukewarm. Add the yeast.
5. Add half the flour and beat well.
6. Cover the dough and set it aside in a warm place till light.
7. Add the remaining flour and mix well.
8. Turn out on the floured molding board and knead, handling quickly so that the dough will not stick.
9. Cover the dough and set it aside to rise till the mass has doubled in bulk.
10. Shape it into loaves.
11. Allow the loaves to rise again. How long?
12. Bake about forty-five minutes.
13. Remove from the pans and cool.

Serving:

See lesson on serving bread.

Principles:

Graham flour is made out of the entire kernel, neither sieves nor bolting cloth being used in its manufacture. Hence it contains all the outer coverings of the kernel, which are separated from other flours by means of the bolting cloths and sold as bran. This bran in Graham flour furnishes bulk, which may have a very good effect upon the digestive organs of some people.

What kind of dough must be made? Why? How should the bread be baked?

The white flour is added in order to make the dough capable of being kneaded, thus insuring a finer-grained loaf.

What has been learned:

1. Graham flour is made from the whole wheat kernel.
2. The addition of white flour to the dough makes it capable of being kneaded.

Additional Recipes

Water Bread

2 c water
1 tb butter
t tb lard
1 tb sugar
1½ tp salt
¼ yeast cake mixed with 1¼ c lukewarm water
about 6 c sifted flour

Milk Bread

2 c scalded milk
2 tb shortening
2 tb sugar
1 tp salt
⅓ to 1 yeast cake mixed with ½ c lukewarm water
about 6 c flour

Luncheon Rolls

1 c scalded milk
1 yeast cake mixed with ½ c lukewarm water
4 tb butter
4 tb sugar
1 tp salt
whites of 2 eggs or 1 whole egg
flour

Entire Wheat Bread

1 c boiling water
1 c scalded milk
2 tb butter
1 tp salt
¼ c molasses
¼ to 1 yeast cake mixed with ¼ c lukewarm water
2 c white flour
4 c entire wheat flour

Rye Bread

1 c scalded milk
1 c boiling water
1 tb lard
1 tb butter
⅓ c brown sugar
1½ tp salt
¼ yeast cake mixed with ¼ c lukewarm water
3 c flour
rye flour

Lesson LXIX

Yeast (Reading)

Yeast is a plant. It belongs to the budding fungi of the vegetable kingdom. Examined under the microscope, it is found to be made up of a mass of tiny round or oval plants.

When watched carefully the yeast plant is seen to reproduce by budding. A bulging out is seen to appear at one end, which will continue growing until a new cell is formed, which will either break off, forming a new plant, or will remain adhering to the mother plant, though in its turn putting off the same kind of bulging. The result is a curious-looking chain of cells.

In order to flourish, yeast must be kept moist and warm. The temperature most favorable to the growth of yeast is from 75° to 90° F. Cold will check its growth, but it can be made to revive by the application of heat. Intense heat will kill it.

Besides water and heat, yeast needs oxygen, nitrogenous, and starchy food as well as mineral matter. Each yeast cell is a sac filled with fluid. It gets its oxygen partly from the air and partly from the starch of the flour. Through a process known as fermentation, it breaks down the starch into sugar, which results in the formation of alcohol and carbonic acid gas.

Yeast is either wild or cultivated. Wild yeast is found floating about in the air. It is especially abundant near fruit trees. Cultivated yeast was first obtained by cultivating wild yeast. This is the kind of yeast found on the market.

Commercial yeast comes in three forms—liquid, dry, and compressed. Liquid yeast is made from potatoes, sugar, salt, hops, water, and some yeast previously made to start fermentation.

Compressed yeast is most generally used and when it can be obtained fresh it is the most satisfactory because it has the greatest number of active yeast plants. It is a by-product of the distilleries, where whiskey is made.

Compressed yeast spoils very quickly. It should be creamy in color, and crumble easily. When it shows grayish streaks and begins to get stringy, it is spoiled. It may be kept for some time by putting it in a jar and covering it with cold water, renewed every day.

Dry yeast is made by adding cornmeal or some other starchy material to liquid or compressed yeast. This is made into cakes, which are dried. Dry yeast is likely to have dead yeast plants in it, hence is not so satisfactory as compressed yeast.

Yeast, especially the compressed varieties are a valuable source of vitamines. Because this is so, many people who are suffering from lack of energy and good health eat yeast in order to obtain this vitamine. Commercial extracts of the yeast vitamines are also made and these are often prescribed by physicians to their patients.

TABLE SERVICE

Pad:

Lay the pad, or silence cloth, on the table. This should be about three inches larger than the table on all sides. It should be pulled tight over the table, folded square at the corners, and pinned underneath.

Cloth:

The tablecloth, which should be ironed and folded with great care with as few folds as practicable, should be carefully unfolded. It is much easier to keep from mussing it if two girls unfold and lay the cloth. Lay it lengthwise of the table with the long crease exactly in the center and the same length of cloth, about nine inches, hanging over each end. Carefully smooth out the creases by standing at either end and pressing the hands, palms downward, lightly over the cloth from the center to the outside, the full length of the table. Repeat the same operation standing at the middle of the sides.

Luncheon sets:

For luncheons, it is now quite customary to use individual plate, tumbler, and other small doilies instead of a tablecloth. These are not appropriate, however, unless the table is highly polished.

A complete set consists of six (or more) twleve-inch plate doilies, six (or more) 8-inch bread and butter plate doilies; six (or more) 4-inch tumbler doilies, and some odd sizes for salts and peppers and other extra things set on the table, besides a large centerpiece.

For luncheons, small hemstitched, scalloped, or fringed napkins are used.

After the cloth is laid, the linen or lace centerpiece should be placed in the center of the table and upon it should be placed-

the bouquet or other decoration. If flowers are used, they should be sufficiently low to allow those on opposite sides of the table to see each other.

If loose flowers are to be used, they should not be scattered profusely, but laid carelessly here and there or one or two small ones on each napkin.

At a formal dinner a service plate for each person, this plate of the large dinner size, is put in the middle of the space allotted to each, about twenty inches, and about an inch from the edge of the table. These plates are put on the table just before the dinner is served and not removed until just before the dessert is brought in.

Silver:

The number and position of each article of table silver depends upon the meal and what is to be served. The convenience of the guest is the one unchanging rule that determines the placing.

(a) Knives: When a knife or knives are to be used, as many as will be needed before dessert should be placed at the right of the service plate, each with the sharp edge turned toward the plate, in the order in which they are to be used, beginning at the extreme right, that is, the one farthest from the plate is the one first used.

(b) Forks: When knives are needed, as for a formal dinner or when uncut meat is served, the forks should be placed at the left of the service plate, as many as are needed before dessert, in the order they are to be used, beginning at the extreme left. All the tines should be turned up. (1) Fish; (2) entrée; (3) roast; (4) salad.

If there are not too many courses so that there is a great display of silver, the dessert fork may be placed on the table with the others at the beginning, next to the service plate.

(c) Spoons: When both knives and forks are used, as many teaspoons as are needed may be placed in front of the service plate, arranged symmetrically with handles to the right, or they

may be placed at the right of the knives. The soup spoon is always at the right of the knives.

If only forks are used, these should be placed at the right of the plates and the spoons at the right of the forks, the one to be first used being at the extreme right.

If coffee is not served until the dessert is brought in, some hostesses do not place any teaspoons on the table at the beginning, as there will be, in most cases, no use for them.

Napkins:

Napkins are folded in quarters and placed on the table parallel with the edge of the table and on a line with the service plate, the free edges being to the right and to the edge of the table.

The napkins should be at the left of the forks, if they are at the left and at the left of the plate if the forks are at the right.

If no service plate is used, the napkins should be where the plate is ordinarily placed. If the number of forks makes the table look crowded, many hostesses lay the nakpin on the service plate.

Dinner roll:

At a formal dinner, a bread stick, dinner roll, or piece of bread about $2\frac{1}{2}$ inches by $1\frac{1}{2}$ inches is placed on the napkin, which is folded over once to cover it.

Glasses:

Glasses for water should be placed at the right and a little above the service plate or near the tip of the knives. They should be filled with water just before dinner is announced.

Bonbons and relishes:

Bonbons and relishes, such as radishes, olives, celery, and salted nuts, may be placed on the table at pleasure, although it is becoming usual to set these on the sideboard or table and pass to each guest.

Seasonings:

It is not customary at a formal dinner to have butter or seasonings on the table. The condiments, sauces, and seasonings are served with each course as needed.

Informal and family dinners:

In setting the table for an informal or family dinner, the service plate should be omitted. All the knives and forks to be used may be put on the table, also salts and peppers near the corners of the table or one of each for every two persons.

Small plates and bread and butter knives for the butter ball and bread or dinner roll, which should be put on before dinner is announced, are placed at the left and above the forks.

Soup may be served by the hostess from a large tureen instead of being brought in individual plates from the kitchen, in which case the tureen should be placed in front of the hostess and the soup plates to her left.

Placing of chairs:

Chairs should be placed at the table so that the front edge of each is just below the edges of the tablecloth. The chair should not be moved nearer the table after one is seated.

Seating guests:

The guest of honor, if a lady, is placed on the right of the host; if a gentleman, on the right of the hostess.

Serving guests:

There are two ways of serving at a formal dinner, both equally in good form.

The more formal way: Arrange each course in the pantry on individual plates.

Take the tray in the left hand, put the plate containing the individual portions upon it. Take it to the right side of each guest. With the right hand place it upon the service plate until after the soup course, with which the service plate may be removed, then place it in front of each guest and close to the edge of the table.

If anything is to be served with a course, it should be placed on a tray and passed to the left side of each guest, being held low enough to enable the guest to help himself with his right hand.

The more fashionable way is to leave the service plate on the table until dessert. In this case the tray is not used in placing the course.

The more simple way (Russian style): Have the course cut in suitable pieces on a large dish or platter with the necessary serving spoon, knife, or fork.

Put on a tray or, if too large, carry in the hands with a folded napkin between the dish and the hand.

Serve at the left of each guest.

Wait until all have finished before removing a course.

Take the tray in the left hand, pass to the right of each guest and remove the plate with the right hand, placing it on the tray.

Remove but one plate at a time, or all belonging to the course at each cover.

It is allowable to dispense with the tray if pressed for time, and to take a plate in each hand, thus removing two plates at a time.

The English Style of Serving: The English mode of serving is to set the whole of each course, often containing many dishes, at once upon the table, the hostess serving the soup, salad, and dessert, and the host serving the fish and roast.

Compromise Style of Serving: By a compromise style, or plan, such dishes as the salad or dessert, which present an attractive appearance and can be served quickly and without much effort, are served by the hostess, and a fish, for instance, which is easily separated into individual portions, is served by the host on the plates set before him. The other dishes are served from the pantry.

Order of serving:

When the dinner is served from the pantry, the guests should be served in rotation alternately at the right and left of the hostess, going in opposite direction for each successive course. The host and hostess should be served last.

When guests are served by passing the courses for guests to help themselves, a style becoming very popular, it is good form

to pass the dish to the hostess first, in order that if there is any peculiarity or novelty about the dish, the guests may be saved possible embarrassment by seeing how they are expected to take the food from the dish.

Place cards:

When cards are used to seat guests, they should be placed on the napkins. Nothing but the name of the guest or the name and a simple decoration is required.

Finger bowls:

Finger bowls should be passed after any course that requires the fingers to touch the food. These should be set on a small dessert plate upon which is a dainty doily and placed in front of each guest from the right.

Table etiquette:

Spoon: A spoon is used only for food too soft to be easily handled with the fork.

Always eat or sip from the *side* of a spoon, and with *no* noise of the lips. In taking up soup with a spoon, use a backward motion, that is, a motion away from you.

Never leave a spoon standing in a cup. After using to stir the sugar or to sip, remove it from the cup, and place it in the saucer. If no saucer is used, lay the spoon on the side of the plate.

Knife and Fork: Only forks and spoons are used to carry food to the mouth. The knife or fork, when not in use, should be laid across the plate at the right side.

The knife and fork when used for cutting should be held with the handles in the hollows of the hands.

The knife and fork should not be held upright on the table.

When used to carry to the mouth meat or other food which must first be cut, the fork should be held in the left hand.

No gesticulations should be made with the knife and fork.

Napkin: The napkin should be placed upon the lap with one fold rather than spread out its full size.

The napkin should never be tucked in the collar.

Sticky fingers should be cleaned with the napkin.

Dip the tips of the fingers in the finger bowl and dry on the napkin.

When one is a guest at a single meal at a house, the napkin should not be folded again, but laid loosely at the left of the dessert dish.

Miscellaneous directions:

Put only small portions of food into the mouth at one time.

Do not open the mouth to receive food until the food reaches the mouth.

Hold the arms close to the sides while eating.

Never put the elbows on the table.

Sit close to the table and keep both feet flat on the floor.

Sit near enough to the table to maintain an easily erect position while eating.

Never reach across the table for food. Ask to have it passed to you.

Never try to talk with food in the mouth.

Toothpicks should be used only in private.

Stand at the back or side of the chair until the hostess gives the signal to be seated.

Sit in a chair at table from the right side of the chair and rise from the same side.

Speak only in low, well-modulated tones at the table.

Never leave the table before the others without asking to be excused.

Coffee, tea, and cocoa should be drunk from the cup, not from the spoon, except just at first when sipped to ascertain if the flavor or the temperature is right.

Measuring

There may be—in fact, evidence proves that there are—good cooks who seemingly never measure anything, but by "about so much of this," and "a pinch of that," bring about results so delicious that the would-be follower at once determines to throw rules to the winds and try the same way. Good cooks *always* measure—one by the cup and spoon, because she must; another by the judgment and experience long years of doing the same thing over and over again have given her; and the chances are that, unless you have the rare gift of cooking straight from the gods, you would better cling to the exact measures and weights if you wish the best result every time, instead of once in a while.

64 drops	= 1 teaspoon
4 saltspoons liquid	= 1 teaspoon
3 teaspoons	= 1 tablespoon
3 teaspoons dry material	= 1 tablespoon
4 tablespoons of liquid	= 1 wine glass = ½ gill = ¼ cup
16 tablespoons of liquid	= 1 cup
16 tablespoons dry material	= 1 cup
8 heaping tablespoons dry material	= 1 cup
4 cups liquid	= 1 quart
4 cups flour	= 1 quart
4 cups flour	= 1 pound
2 cups solid butter	= 1 pound
½ cup butter	= ¼ pound
2 cups granulated sugar	= 1 pound
2½ cups powdered sugar	= 1 pound
1 pint milk or water	= 1 pound
9 large eggs or 10 medium	= 1 pound
1 round tablespoon butter	= 1 ounce
1 heaping tablespoon butter	= 2 ounces
1 heaping tablespoon butter	= ¼ cup
1 heaping tablespoon sugar	= 1 ounce
2 round tablespoons coffee	= 1 ounce
1 tablespoon liquid	= ½ ounce
butter size of egg	= 2 ounces
butter size of egg	= ¼ cup

Because of the growing custom of selling fruits and vegetables by weight, it becomes necessary for the consumer to know the weight of a bushel of the various commodities. Not all states have laws regulating these weights, but the table below may be considered as fairly representative.

Extract from Minnesota Laws Regarding the Weighing of Commodities

In contracts for the sale of any of the following articles, the term "bushel" shall mean the number of pounds avoirdupois herein stated:

	1 Bu.	1 Qt.
Apples (green)	50 lb.	
Beans (navy)	60 lb.	1 lb. 14 oz.
Beans (lima)	56 lb.	1 lb. 12 oz.
Beets	50 lb.	
Carrots	45 lb.	
Chestnuts	50 lb.	
Cranberries	36 lb.	1 lb. 2 oz.
Cucumbers	48 lb.	
Hickory Nuts	50 lb.	
Onions	52 lb.	1 lb. 10 oz.
Parsnips	42 lb.	
Peaches (not dried)	48 lb.	
Peanuts	22 lb.	
Pears	45 lb.	
Peas (smooth)	60 lb.	1 lb. 14 oz.
Potatoes (Irish)	60 lb.	
Potatoes (sweet)	55 lb.	
Rutabagas	52 lb.	
Tomatoes	50 lb.	
Turnips	55 lb.	
Walnuts	50 lb.	1 lb. 9 oz.

GLOSSARY

Albumen, the white of an egg.
albumin, the protein of milk, muscle, and of many vegetable tissues.
alkaline, having the power of forming salts with acids.
aluminum, a bluish silver-white metal, noted for its lightness.
annatto, a vegetable dye used in coloring oleomargarine.
artichokes, aster-like plants, the flower-bracts and receptacles of which are used for food.
asbestos mat, a mat made of fireproof material.
assimilation, the process by which the nutritive material which is taken as food is changed to the substance of the body.
bacteria, a group of vegetable microörganisms, widely distributed.
baking, cooking by dry heat.
baste, to moisten with melted fat or other liquid to prevent burning and to add flavor.
batter, a mixture of a starchy, dry ingredient and a liquid.
beaten "dry," said of the whites of eggs when they are beaten so much that little flakes are thrown off.
beaten "stiff," said of the whites of eggs when beaten until they do not run when inverted.
binding, a mixture of flour and butter added to a soup to thicken it.
bisque, a thick, rich soup made of shellfish, birds, or rabbits.
bladder worm, a parasite of pork, causing tapeworm in human beings.
blanch, to make nuts white by removing the skin by scalding.
blanc mange, a dessert made of gelatin or cornstarch and milk.
blow end, the blossom end of fruit.
boiled dressing, a cooked salad dressing made of sugar, vinegar, butter, eggs, salt, pepper, and mustard.
boiling, cooking in hot water.
bolted flour, flour sifted through bolting, a silk cloth.
borax, a crystalline salt used as a cleansing agent.
bouillon (bo͞o′yôn′), a clear soup made by slow boiling of lean beef or other meat.
braising, stewing or broiling in a covered kettle or pan.
brick tea, a kind of tea made by grinding, steaming and pressing tea leaves in a mold.
Brie, a kind of soft cream cheese made in Brie, France.

brisket, the breast or lower part of the chest of animals in front of and between the fore legs.
broiling, cooking by direct exposure to heat on hot coals or over a gas flame.
brussels sprouts, a variety of cabbage, flavored like cauliflower.
butter-cake method, a method of mixing ingredients in which the butter and sugar are first creamed; then eggs are added; then flour and milk alternately.
butter hands, wooden paddles for shaping butter for table use.
by-products, a secondary product produced in the course of a manufacture in addition to the principal product.
café-noir (că′fę′nwôr), black coffee, that is, coffee without cream.
caffeine, (căf′e In), a stimulating compound found in coffee and tea.
Camembert (Că′män′bâr′), a soft, unpressed cream cheese.
capers, greenish flower buds of the caper plant, used pickled as an ingredient of sauces.
caramel, burnt sugar.
carbohydrates, compounds composed of carbon, hydrogen, and oxygen.
cassava (ca sä′va), a plant, manioc, having fleshy rootstocks, which yield a nutritious starch.
casserole, a mold of boiled rice, mashed potato or paste, baked and then filled with vegetables or meat; also applied to small round dish of stone ware with or without a handle.
caustic, burning, corroding.
caviare (căv′i ăre′), the salted roe of the sturgeon or other large fish.
Cayenne (Cā′ĕn′), red pepper.
cecils, balls of minced meat and bread crumbs.
cellulose, the paper-like substance composing the walls of animal and vegetable cells.
cereals, grains.
chocolate, a substance made from the bean of the cacao tree.
chop, a small slice of meat cut from the leg or ribs.
chowder, a dish made of fresh fish or clams, biscuit and onions stewed together.
citric acid, the acid of lemons, currants, gooseberries, and the like.
citrous fruits, fruits like the orange, lemon, and grape fruit.
coagulate, to curdle or clot.
cocoa, a substance made from the bean of the cacao tree, and differing from chocolate in that the oil has been removed.
colander, a vessel with a perforated bottom.
collagen, a material, soluble in water, found in bone, connective tissue, tendons, and cartilage.
composite, a food composed of ingredients having different food values.
compote dish (cŏm′pōt), a fancy dish for holding a mold of jelly or other relish.

compressed yeast, a by-product of distilleries where whiskey is made.
condiment, something used to season food.
consomme (côn′sō′mę′), strong broth of meat and vegetables slightly browned.
corer, a utensil used for removing the core from apples.
corned, preserved and seasoned with salt.
cottolene, a product of cottonseed used as lard.
cream, to rub or beat butter until it is creamy.
cream soup, the strained pulp of a vegetable combined with milk and a binding.
croquettes, fried balls made of minced meat, fowl, rice, or other ingredients.
crouton (crọ′tŏn′), a small cube of toasted bread.
curdle, to thicken.
curing, preserving by drying, salting, or smoking.
curried, seasoned with a condiment made of turmeric powder, curry leaves, and spices.
cut in shortening, to mix lard or butter with flour by means of a knife.
cutlet, a slice from the leg of veal.
denatured, having the nature changed; said of alcohol into which oil has been put to render it unfit for drinking.
desiccated, preserved by drying.
dessert (de ʂẽrt′), a service of fruits or sweetmeats at the close of a dinner or luncheon.
dextrin, a soluble gummy substance formed from starch by the action of heat, acids, or ferments.
diced, cut into small cubes.
dietary, pertaining to the diet.
doily, a small ornamental piece of linen or lace, usually round.
double boiler, a cooking utensil consisting of two covered basins, one inside the other.
Dover egg beater, an egg beater operated by means of a wheel and a crank.
drawn butter, butter melted and mixed with flour and hot water.
dredge, to sprinkle with flour.
drippings, the fat that is left from cooking meat.
drop batter, a batter thick enough to break from the spoon when held suspended.
dry yeast, yeast made from liquid or compressed yeast by adding corn-meal or some other starchy material.
Edam, a Dutch pressed cheese made in balls.
edible, fit to be eaten.
entire wheat flour, flour made from the whole wheat kernel except the outer covering.

entrée (än′trę), a side dish.
extension sieve, a sieve with sliding wires on either side to serve as a support.
extractives, the flavoring substances in meats.
fermentation, a chemical change similar to that made by yeast.
fibrous, consisting of fibers, or like fibers.
filtered, strained through cloth, paper, sand, or charcoal.
fission, a method of reproduction in which the organism lengthens out and divides in the middle.
fold in, to combine the beaten whites of eggs with a batter without beating.
fondant, a preparation of sugar used as a basis in making candy.
fondant dipper, a wooden utensil shaped like a spoon, with slits in the bowl.
French dressing, an uncooked salad dressing made of olive oil, vinegar, and seasonings.
fricasseeing, stewing fowls or other meat cooked in a gravy.
fudge, a kind of soft candy made of milk, sugar, and chocolate or maple sugar.
garbage, waste animal or vegetable matter.
garlic, a plant resembling the onion.
garnishing, something put on or around a dish of food for ornament.
gas plate, a simple plate attachment connected with the gas pipe and used for cooking.
glazed, covered with a coating of white of egg or melted sugar.
Graham flour, unbolted wheat flour.
Hamburg steak, beef chopped fine and broiled or fried in cakes.
hard sauce, sugar and creamed butter.
hominy, maize hulled and broken for food.
invert sugar, a mixture of grape sugar and fruit sugar.
kosher meat, the flesh of animals killed according to Jewish law.
lactic acid, the acid of milk.
lactose, a hard, crystalline sugar found in milk.
lardoon, a strip of fat pork or bacon inserted into meat.
leaf fat, layers of fat about the kidneys of the hog.
leavening agent, something added to a batter to make it light.
legume, a plant like the pea and bean.
legumin, the protein of peas, beans, etc.
lentil, a plant with flattened, lens-shaped seeds, which are cooked like peas or beans.
lime water, a water solution of slaked lime used for medicine.
liquid custard, a custard stirred constantly while cooking.
lukewarm, neither hot nor cold.
macaroni, a paste made of wheat flour and dried in long, slender tubes.

macaroon, a small cake made of white of egg, sugar, and pounded almonds or other nuts.
macedoine (mȧ′sā′dwȧn′), a mixed dish, as of vegetables with white sauce.
maitre d'hotel (sauce), a kind of sauce made of melted butter, lemon juice or vinegar, and seasonings.
malic acid, the acid of apples.
marinate, to soak for a time in oil or vinegar.
marjoram (mär′jo ram), a mint used for flavoring.
masticate, to chew.
mayonnaise (mā′o nāz′), a thick salad dressing made of raw yolks of eggs beaten with oil and vinegar, and seasonings.
measly pork, pork infected by the bladder worm, known by its lumpy or speckled appearance.
meringe (mē răng′), a composition of powdered sugar and beaten whites of eggs, used on puddings, pies, and fruits.
mill, to beat a mixture with the egg beater.
Neufchatel (Nû′ça tĕl′), a kind of soft white cheese made from sweet milk.
neutral (lard), a high grade of lard made in the packing plants of leaf fat only.
noodle, a mixture of flour and egg used in making soup.
oleomargarine (ō′le o mär′ga rēn), a substitute for butter made of beef suet, lard, and cottonseed oil.
omelet, a dish consisting of eggs beaten up with milk or water and cooked in a frying pan.
omelet pan, a light-weight oval or round frying pan.
pan broiling, broiling meat in a pan over the fire.
pancreas, one of the digestive organs lying near the stomach.
paprika (pä′pri ka), the dried ripened fruit of the pepper plant.
paraffin, a waxy substance, used in making candles, preserving food, and so forth.
parasite, a plant or animal living upon another plant or animal.
parboil, to boil until partly cooked.
pasteurize, to check or prevent fermentation in fluids.
pastry, food having a crust made of paste.
pastry bags, bags fitted with tubes for putting on meringue or whipped cream.
peanut butter, a paste made of ground peanuts and water.
pectin, the substance in fruits which causes the juice to jell.
pilaf (pi läf′), rice boiled with meat, fowl, or fish.
pimento, allspice.

pinoche (pi nō′che), a kind of soft candy made of brown sugar, usually with nuts.
pinon (pē nyōn′), an edible seed of a certain pine.
pistachio (pis tā′çhi o), a tree of Southern Europe having a greenish seed.
poach, to cook (an egg) by breaking (it) into boiling water.
pork, the flesh of the hog.
porterhouse, steak or roast cut from beef just forward of the sirloin.
pour batter, a batter thin enough to pour.
process butter, butter that has been made over, or renovated.
proteid, a food containing carbon, hydrogen, oxygen, nitrogen, and sulphur, and often phosphorus and other elements.
purée (pū′rę′), a thick cream soup.
ramekin, an earthen dish for baking various foods prepared with bread crumbs.
rancid, having a rank taste.
réchauffé (rā′shō′fā′), a warmed-over dish.
refining, freeing from impurities.
relish, something taken with food to render it more palatable.
rennet, the lining of the stomach of a calf, used for curdling milk.
rennin, the active constituent of rennet.
renovated butter, poor or rancid butter made fresher and sweeter by melting and washing in cold water and a solution of caustic soda.
ricer, a utensil for preparing mashed potatoes for the table.
ripening of cream, the souring of cream by the right kind of bacteria through the use of a starter.
Roquefort (Rōk′fôr′), a highly flavored, blue-molded cheese, made from the milk of ewes and cured in caves.
rolled cookies, cookies made by rolling the dough thin and then cutting.
round steak, beef cut from the round of the hind quarter.
saccharine, a coal-tar product remarkable for its sweetness.
salsify (săl′sĭ fў), a plant the root of which tastes like oysters; vegetable oyster.
samovar, a metal urn used for making tea.
saute (sō tę′), to cook in a little fat.
scalloped, baked with cracker or bread crumbs.
score, to make shallow cuts across a surface.
scrambled (eggs), eggs cooked with milk.
searing, heating the surface of meat so intensely hot that a coat of hardened albumin is formed.
service plate, the plate upon which the plates of the course of a dinner (except the last course) are placed.
shortening agents, materials added to a batter to make it tender.

shredded, cut into fine strips.
sieve, a utensil with a fine mesh wire, used for sifting.
silence cloth, a thick pad or cloth laid under a table cloth.
simmer, to boil gently.
sirup (sĭr′up), a thick, sticky liquid.
skewer, a wooden or metal pin for keeping meat in form while roasting.
skimmer, a utensil to clear scum from a liquid.
soggy, heavy and wet.
soluble, that may be dissolved in liquid.
soufflé, a spongy dish made of eggs, milk, and flour, beaten till very light, and mixed with cheese, fruit, or other flavoring.
spaghetti (spa gĕt′ĭ), a kind of macaroni made into smaller tubes.
spatula, a flexible, thin-bladed knife.
spinach (spĭn′āj), an herb cultivated for its leaves, which are eaten boiled.
sponge-cake method, a method of making batter for cakes without beating.
spores, the round body inside of the parent organism by the formation of which bacteria multiply.
stale, not freshly made.
starter, some soured skimmed milk containing only lactic acid bacteria.
stew, to cook slowly a long time in a small quantity of water.
stock, a liquid containing the soluble parts of meat extracted by cooking.
sweetbreads, the thymus glands and pancreas of calves.
tannin, a strong acid found in tea.
tapioca, a coarse-grained preparation of cassava starch obtained by heating it while moist.
tenderloin, a strip of flesh, either beef or pork, on either side of the backbone under the short ribs.
theine (thē′ĭn), the same as caffeine.
theobromine, a substance, found in cocoa and chocolate, similar to the caffeine of coffee.
thymus glands, the glands in young lambs or calves eaten for foods, called sweetbreads.
trichina, a parasite of pork causing a fatal disease in human beings when infected pork is eaten.
tripe, a part of the stomach of the cud-chewing animals, especially of the ox kind.
tuber, a fleshy underground stem.
tureen, a large, deep dish to hold soup for the table.
utensil, an instrument used in the kitchen.
veal, the flesh of calves.
vegetable brush, a brush used for cleaning vegetables.
vegetarian, one who does not eat animal food.

vermicello, (vĕr′me sĕl′ĭ), a paste of a small grained wheat forced through small pipes till it takes a slender, worm-like form.

whey, the water part of coagulated milk.

wire whisk, a utensil for beating eggs.

Worcestershire (sauce) (Wŏŏs′ter shĕr), a highly seasoned relish used with meats.

yeast, a substance consisting of the cells of certain fungi, used as a leavening agent.

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