

Woman's Institute Library of Cookery, Vol. 5
Volume 5: Fruit and Fruit Desserts; Canning and Drying;
Jelly Making,
Preserving and Pickling; Confections; Beverages; The
Planning of Meals

Woman's Institute of Domestic Arts and Sciences

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WOMAN'S INSTITUTE LIBRARY OF COOKERY

VOLUME FIVE

FRUIT AND FRUIT DESSERTS

CANNING AND DRYING

JELLY MAKING, PRESERVING, AND PICKLING

CONFECTIONS

BEVERAGES

THE PLANNING OF MEALS

WOMAN'S INSTITUTE OF DOMESTIC ARTS AND SCIENCES, Inc.

PREFACE

This volume, the fifth of the Woman's Institute Library of Cookery, deals with the varieties of fruits and the desserts that can be made from them, the canning and preserving of foods, the making of confections of every description, beverages and their place in the diet, and every phase of the planning of meals.

With fruits becoming less seasonal and more a daily food, an understanding of them is of great value to the housewife. In *“Fruit and Fruit Desserts”*, she first learns their place in the diet, their nature, composition, and food value. Then she proceeds with the preparation and serving of every variety of fruit. Included in this section also are fruit cocktails, those refreshing appetizers often used to introduce a special meal.

To understand how to preserve perishable foods in the seasons of plenty for the times when they are not obtainable is a valuable part of a housewife's knowledge. *“Canning and Drying”* deals with two ways of preserving foodstuffs, treating carefully the equipment needed and all the methods that can be employed and showing by means of excellent illustrations, one of them in natural colors, every part of the procedure followed. The fruits and vegetables that permit of canning, as well as certain meats and fish, are taken up in a systematic manner.

Jelly Making, Preserving, and Pickling continues a discussion of the home preservation of foods, showing how they can be kept for long periods of time not by sterilization, but with the aid of preservatives. Each one of these methods is treated as to its principles, equipment, and the procedure to be followed. After trying the numerous recipes given, the housewife will be able to show with pride the results of her efforts, for nothing adds more to the attractiveness and palatability of a meal than a choice jelly, conserve, marmalade, or jam.

Confections deals with that very delightful and fascinating part of cookery--confection making. Not only are home-made confections cheaper than commercially made ones, but they usually contain more wholesome materials, so it is to the housewife's advantage to familiarize herself with the making of this food. Recipes are given for all varieties of confections, including taffies, caramels, cream candies, and the confections related to them. Fondant making is treated in detail with illustrations showing every step and directions for making many unusual kinds.

Though beverages often receive only slight consideration, they are so necessary that the body cannot exist very long without them. In Beverages is discussed the relation of beverages to meals, the classes of beverages, and the preparation of those required by the human system, as well as the proper way to serve them. In addition to coffee, tea, cocoa, chocolate, and cereal beverages, fruit, soft, and nourishing drinks receive their share of attention.

To be a successful home maker, it is not enough for a housewife to know how to prepare food; she must also understand how to buy it, how to look after the household accounts, what constitutes correct diet for each member of her family, how to plan menus for her regular meals and for special occasions, and the essentials of good table service. All these things, and many more, she learns in The Planning of Meals, which completes this volume.

CONTENTS

FRUIT AND FRUIT DESSERTS

- Fruit in the Diet
- Composition of Fruits
- Food Value of Fruits
- Preparing and Serving Fruits
- Blackberries
- Blueberries
- Cranberries
- Raspberries
- Strawberries
- Miscellaneous Berries
- Apples
- Apricots
- Cherries
- Grapes
- Peaches
- Pears
- Plums

- Quinces
- Rhubarb
- Grapefruit
- Lemons
- Oranges
- Miscellaneous Citrus Fruits
- Bananas
- Pineapples
- Miscellaneous Tropical Fruits
- Melons
- Fruit Cocktails
- Dates
- Figs
- Prunes
- Raisins
- Dried Apples, Apricots, and Peaches

CANNING AND DRYING

- Necessity for Preserving Foods
- Principles of Canning
- General Equipment for Canning
- Open-Kettle Method
- Cold-Pack Method
- Procedure in the One-Period Cold-Pack Method
- Procedure in the Fractional-Sterilization Method
- Steam-Pressure Methods
- Canning with Tin Cans
- Oven Method
- Preparation for Canning
- Directions for Canning Vegetables
- Directions for Canning Fruits
- Sirups for Canning Fruits
- Canning Meat and Fish
- Storing and Serving Canned Foods
- Scoring Canned Foods
- Principles of Drying
- Drying Methods
- Directions for Drying Vegetables and Fruits
- Storing and Cooking Dried Foods

JELLY MAKING, PRESERVING, AND PICKLING

- Value of Jellies, Preserves, and Pickles
- Principles of Jelly Making
- Equipment for Jelly Making
- Procedure in Jelly Making
- Scoring Jelly
- Recipes for Jelly
- Principles of Preserving
- Preserves
- Conserves
- Marmalades
- Jams
- Butters
- Principles of Pickling
- Recipes for Pickles
- Recipes for Relishes

CONFECTIONS

- Nature of Confections
- Composition of Confections
- Foundation Materials in Confections
- Flavorings
- Colorings
- Acids
- Food Materials
- Equipment for Confection Making
- Cooking the Mixture
- Pouring and Cooling the Mixture
- Finishing Candies
- Taffies and Similar Candies

- Caramels
- Fudge and Related Candies
- Fondant and Related Creams
- Miscellaneous Confections
- Serving Candy

BEVERAGES

- Nature and Classes of Beverages
- Water in Beverages
- Relation of Beverages to Meals
- Alcoholic Beverages
- Stimulating Beverages
- History and Production of Coffee
- Preparation of Coffee
- Serving Coffee
- History and Production of Tea
- Preparation of Tea
- Serving Tea
- Nature and Selection of Cocoa and Chocolate
- Preparation of Cocoa and Chocolate
- Serving Cocoa and Chocolate
- Cereal Beverages
- Ingredients for Fruit Beverages
- Preparation of Fruit Beverages
- Soft Drinks
- Nourishing Beverages

THE PLANNING OF MEALS

- Necessity for Careful Meal Planning
- Successful Marketing
- Keeping Household Accounts
- Factors Influencing Cost of Foods
- Economical Buying
- Suitability of Food
- Composition of Food
- Balancing the Diet
- Diet for Infants and Children
- Diet for the Family
- Proportion of Food Substances
- General Rules for Menu Making
- Card-File System for Menu Making
- Dinner Menus

Luncheon Menus
Breakfast Menus
Menus for Special Occasions
Table Service

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FRUIT AND FRUIT DESSERTS

FRUIT IN THE DIET

1. FRUIT, as is generally understood, is the fleshy, juicy product of some plant or tree which, when ripe, is suitable for use as food. Although some fruits are seedless, they generally contain the seeds of the plants or trees that produce them. Many fruits require cooking to make them palatable, others are never cooked, and still others may be cooked or eaten raw, as desired.

Fruits, because they are wholesome, appetizing, and attractive, occupy a valuable place in the diet. In fact, it is these qualities rather than their food value that accounts for the popularity of fruits among all people. In addition to causing fruits to appeal to the esthetic sense, their attractiveness serves another important purpose. It is said that Nature made them attractive in color, odor, and flavor in order that birds might be allured to attack them for food and, by spreading the seeds, assist in their propagation.

2. Fruits are gradually growing to be less seasonal and more a daily food, and are thus constantly becoming more prevalent in the diet. This condition may be attributed to the present rapid means of transportation and the excellent methods of cold storage that exist. Through these agencies it is possible to ship more or less perishable fruits long distances from their native localities and at times of the year other than the particular season in which they are at their best in the places where they are grown. Thus, fruits that were formerly considered a luxury may now be served regularly, even on the tables of persons having only moderate means.

The fact that fruits are being more extensively used every day is as it should be, for this food is entitled to an important place in the diet of all persons. So important is fruit in the diet that it must be looked on not as one of the things that may be taken or omitted as a person wishes without making any difference either way, but as a food to include in one form or another in nearly every meal. The child who is so young that it cannot take any solid food may have fruit juices included in its diet to decided advantage; but children who are slightly older and adults may take the fruits cooked or raw instead of in the form of juices.

3. As far as the composition of fruits is concerned, it is such that most fresh fruits are not particularly high in food value. However, they are characterized by other qualities that make up for what they lack in this respect; then, too, what they contain in the way of heat-producing or tissue-building material is easily digestible. Most fruits contain considerable acid, and this food substance makes them stimulating to the appetite. Advantage of this fact is taken when fruits are served at the beginning of a breakfast or when several of them are combined in a fruit cocktail and served before luncheon or dinner. This acid produces real

stimulation in the stomach, resulting in a flow of gastric juice from the glands of the stomach walls. In addition, the delightful color, the fragrant odor, or the pleasant taste of fruit, although a mental effect, is just as real and just as valuable as the actual stimulation of the acids.

4. Many fruits are eaten raw, while others are cooked either because they require cooking to make them appetizing or because it is desired not to use them in their raw state. The cooking of fruits has a variety of effects on them, being sometimes advantageous and other times detrimental. The flavor is always changed by the application of heat, and in some cases the acid that fruit contains becomes stronger. On the other hand, the fibrous material, or cellulose, of fruits is softened by cooking and thus becomes more digestible. Then, too, the sugar that is usually added to fruits in their cooking increases their food value. Because of these facts, cooked fruits have considerable value and, like raw fruits, should have an important place in the diet. Those fruits which are dried and usually eaten raw, such as figs and dates, supply much nourishment in an easily digestible form.

5. The medicinal value of fruit has long been considered to be of importance, but this may be almost entirely disregarded, for, with the exception of the fact that most fruits are valuable as a laxative, there is nothing to consider. However, several fruits, such as blackberries and bananas, have an anti-laxative effect, and large quantities of these should for the most part be avoided, especially in the feeding of children.

6. In general, fruits are divided into two classes, namely, food fruits and flavor fruits. As their names imply, food fruits are valuable as food, whereas flavor fruits are those distinguished by a characteristic flavor. It should be remembered that the flavors, as well as the odors, of fruits, are due chiefly to what is known as their volatile, or ethereal, oils. Fruits in which these oils are very strong are often irritating to certain persons and cause distress of some sort after eating.

7. In this Section, it is the purpose to acquaint the housewife with the relative value and uses of the various kinds of fruit, to teach her the best methods of preparation, and to supply her with recipes that will encourage her to make greater use of this valuable food in her family's diet. In this discussion, however, the general classification of fruits is not followed. Instead, the various fruits are arranged alphabetically under the headings Berries, Non-Tropical Fruits, Citrus Fruits, Tropical Fruits, Melons, and Dried Fruits, in order to simplify matters. While it is hardly possible to use fruits too extensively, they must not be allowed to take the place of other more nourishing foods that are required by the body. Therefore, in order to make proper use of them, their value in the diet should not be overlooked.

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NATURE OF FRUITS

ADVANCE IN FRUIT CULTIVATION

8. It is sometimes difficult to distinguish between vegetables and fruits. For instance, the tomato is in reality a fruit, but it is commonly used as a vegetable, and rhubarb is more of a vegetable than a

fruit, but it is always used as a fruit. It can therefore be seen that the line between vegetables and fruits is not clearly drawn. It is well to remember that fruit is usually the edible pulpy mass covering the seeds of various plants and trees, and that it is generally cooked or eaten raw with sugar, whereas vegetables are seldom sweetened in cooking.

9. Great strides have been made in the cultivation of fruit. Many varieties that formerly grew wild are now commonly cultivated. Most of the cultivated fruits are superior to the same kind in the wild state, at least in size and appearance, but often there seems to be a loss of flavor. Through cultivation, some fruits that were almost inedible in their wild state on account of containing so many seeds have been made seedless. Also, through cross-cultivation, varieties of fruit different from what formerly existed have been obtained. An example of such fruit is the loganberry which is a cross between a red raspberry and a blackberry and retains many of the qualities of each. However, some small fruits, such as blueberries, or huckleberries, are still grown wild and marketed only from their wild source.

10. While fruit is usually improved by cultivation, there has been a tendency through this means to produce fruits that will stand up for long periods of time, so that they may be marketed at great distances from the place where they are grown. For instance, apples, especially those found in the market in the spring, and other fruits, which look very fine, will many times be found to have a tough skin and to be almost tasteless.

In general, fruits of delicate flavor and texture cannot be kept very long after they have ripened. To stand shipping, they must be picked in their green stage; then if they are kept in the right temperature they will ripen after picking. Bananas that are to be shipped a long distance are picked when perfectly green, but by the time the consumer buys them they are usually well ripened. In addition to bananas, a few other tropical fruits are shipped out of their native climates in small numbers and are sold at very high prices. However, many tropical fruits cannot be shipped to the Northern States because of their perishable nature.

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COMPOSITION AND FOOD VALUE OF FRUITS

COMPOSITION OF FRUITS

11. The composition of fruits is a matter of considerable importance, for on it the food value of the fruits depends. To a certain extent, the composition of all fruits is the same, but the varieties of this food differ in their food values almost as greatly as do vegetables. Many of them are extremely low in this respect, while a few of them are rather high. In order to determine the place that fruit should have in a meal, it is necessary to obtain a definite idea of the composition as well as the food value of the different varieties.

12. PROTEIN AND FAT IN FRUITS.--Such small quantities of protein and fat are contained in fruits that very little attention need be given to these substances. Exceptions are found in avocados, or alligator pears, and in ripe olives, both of which are high in fat. Then, too, there is a small amount of protein in grapes and some other fruits, but it is not

sufficient to merit consideration.

13. CARBOHYDRATE IN FRUIT.--Whatever food value fruits may have, whether it be high or low, is due to the carbohydrate they contain. Some green fruits and bananas contain a very small amount of starch, but on the whole the carbohydrate of fruits is in the form of sugar and is in solution in the fruit juices. The chief form of this carbohydrate is known as levulose, or fruit sugar. However, glucose, another form of sugar, is also found in nearly all fruits, grapes and dried fruits, such as figs, raisins, etc., containing an unusually large amount. In addition, cane sugar is contained in the majority of fruits. Pectin is also a carbohydrate that is found in large quantities in some fruits, while in other fruits it is lacking. This substance is related to the gums and to cellulose. Although it is one of the carbohydrates from which no food value is derived, it is of considerable importance, because it is responsible for the jelly-making properties of fruits.

14. In fruits that are not fully matured, or, in other words, green fruits, the sugar has not developed to so great an extent as it has in perfectly ripe fruits. Consequently, such fruits are not so high in food value as they are when they become ripe. As is well known, it is the sugar of fruits that accounts for their sweet taste, for the sweeter the fruits, the more sugar and the less acid they contain. The quantity of this substance varies from 1 per cent. in lemons to 20 per cent. in some other fresh fruits, such as plums. In dried fruits, the amount of sugar is much higher, reaching as high as 60 per cent. or even more in such fruits as figs, dates, and raisins.

15. CELLULOSE IN FRUIT.--In fruits, as in vegetables, cellulose is found in varying quantities. The larger the quantity, the lower will be the food value of the fruit, except where the water has been evaporated, as in the case of dried fruits. The digestibility of this cellulose, however, is not worth considering, for, while it is possible that small amounts of very young and tender cellulose from fruits may be digested, on the whole this characteristic may be disregarded. The skins and seeds of fruits, as well as the coarse material that helps to make up the pulp, are known as refuse and are treated as such by the human digestive tract; but it is to this waste material, or cellulose, that the laxative quality of fruit is largely due.

In cases where there are digestive or intestinal troubles, it is often necessary to remove the cellulose before the fruit is eaten. The coarse material may be removed and that which is more tender may be broken up by pressing the fruit through a sieve or a strainer of some kind. The cooking of fruits is another means of making the cellulose in them more easily digested, for it softens, or disintegrates, the various particles of the indigestible material. When fruit is taken for its laxative effect and the irritation of the cellulose needs no consideration, the skins of the fruits may be eaten instead of being rejected. However, to avoid any trouble, they should be well chewed.

16. Minerals in Fruit.--All fruits contain a certain percentage of mineral salts. The quantity varies in the different kinds of fruits, but it averages about 1 per cent. These salts have the opposite effect on the blood from those found in meats and cereals, but they act in much the same way as the minerals of vegetables. In other words, they have a tendency to render the blood more alkaline and less acid. They are therefore one of the food constituents that help to make fruit valuable in the diet and should be retained as far as possible in its

preparation. In fact, any method that results in a loss of minerals is not a good one to adopt in the preparation of fruits.

The minerals commonly found in fruits are iron, lime, sodium, magnesium, potash, and phosphorus. These are in solution in the fruit juices to a very great extent, and when the juices are extracted the minerals remain in them.

17. Acids in Fruit.--Some fruits contain only a small amount of acid, while others contain larger quantities. It is these acids, together with the sugar and the volatile oils of fruits, that constitute the entire flavor of this food. Most ripe fruits contain less acid than unripe ones, and cooked fruits are often higher in acid than the same fruits when raw.

Numerous kinds of acid are found in the different varieties of fruits. For example, lemons, oranges, grapefruit, and a few other fruits belonging to the class known as citrus fruits contain citric acid; peaches, plums, apricots, and apples, malic acid; and grapes and many other fruits, tartaric acid.

TABLE I

COMPOSITION AND FOOD VALUE OF FRUITS

Fruit	Water	Protein	Fat	Carbo- hydrate	Mineral Matter	Food Value per Pound, in Calories
Apples, fresh	84.6	.4	.5	14.2	.3	290
Apples, dried	28.1	1.6	2.2	66.1	2.0	1,350
Apricots, fresh	85.0	1.1	--	13.4	.5	270
Apricots, dried	29.4	4.7	1.0	62.5	2.4	1,290
Bananas	75.3	1.3	.6	22.0	.8	460
Blackberries	86.3	1.3	1.0	10.9	.5	270
Cherries	80.9	1.0	.8	16.7	.6	365
Cranberries	88.9	.4	.6	9.9	.2	215
Currants	85.0	1.5	--	12.8	.7	265
Dates	15.4	2.1	2.8	78.4	1.3	1,615
Figs, fresh	79.1	1.5	--	18.8	.6	380
Figs, dried	18.8	4.3	.3	74.2	2.4	1,475
Grapefruit	86.9	.8	.2	11.6	.5	240
Grapes	77.4	1.3	1.6	19.2	.5	450
Huckleberries	81.9	.6	.6	16.6	.3	345
Lemons	89.3	1.0	.7	8.5	.5	205
Muskmelons	89.5	.6	--	9.3	.6	185
Nectarines	82.9	.6	--	15.9	.6	305
Oranges	86.9	.8	.2	11.6	.5	240
Peaches	89.4	.7	.1	9.4	.4	190
Pears	84.4	.6	.5	14.1	.4	295
Persimmons	66.1	.8	.7	31.5	.9	630
Pineapple	89.3	.4	.3	9.7	.3	200
Plums	78.4	1.0	--	20.1	.5	395
Pomegranates	76.8	1.5	1.6	19.5	.6	460
Prunes, fresh	79.6	.9	--	18.9	.6	370
Prunes, dried	22.3	2.1	--	73.3	2.3	1,400
Raisins	14.6	2.6	3.3	76.1	3.4	1,605

Raspberries, red	85.8	1.0	--	12.6	.6	255
Raspberries, black	84.1	1.7	1.0	12.6	.6	310
Rhubarb	94.4	.6	.7	3.6	.7	105
Strawberries	90.4	1.0	.6	7.4	.6	180
Watermelon	92.4	.4	.2	6.7	.3	140
-----+-----+-----+-----+-----+-----+-----						

18. The juice of fruits that contain very little sugar and a large quantity of acid, such as the lemon, may be used for the seasoning of food in much the same way that vinegar is used. It may also be diluted with other liquids and used for a beverage. Then, again, various kinds of fruit juices are subjected to a process of fermentation and, through the production of another acid, are made into vinegar and wines. When apples are treated in this way, the fermentation produces acetic acid and, in addition, a certain amount of alcohol. It is on this principle that the making of wines depends.

19. WATER IN FRUIT.--The water content of fresh fruits is very high, reaching 94 per cent. in some varieties. Dried fruits, on the other hand, contain much less water, their content being in some cases as low as 15 to 20 per cent. It naturally follows that the fruits low in water are high in food value, while those containing considerable water have in their composition less of the material that adds food value. The high percentage of water in fresh fruits, together with the acids they contain, accounts for the fact that these fruits are so refreshing. Fruits of this kind, in addition to having this refreshing quality, help to provide the necessary liquid in the diet.

20. TABLE SHOWING COMPOSITION AND FOOD VALUE OF FRUITS.--Just as fruits vary in their composition, so do they vary in their food value. This fact is clearly shown in Table I, which gives the percentage of food substances contained in different fruits and the food value per pound, in calories, that these fruits contain. As in the table showing the composition and food value of vegetables given in Vegetables, Part 1, the figures in this table are taken from Atwater's Table of American Food Materials and refer to the edible part of the material. Reference to Table I, as progress is made with the study of fruits and their preparation, will be of much assistance in learning the place that fruits occupy in the dietary.

FOOD VALUE OF FRUITS

21. EFFECT OF RIPENESS ON FRUITS.--There is a very marked difference between ripe and green fruits as to their composition, flavor, texture, palatability, and digestibility. Green fruits, containing more acid than ripe ones, serve some purposes for which ripe fruits of the same variety cannot be used so well. For instance, a very much better jelly can be made from grapes that are not entirely ripe than from those which have completely ripened. Green fruits contain less sugar than do ripe ones, and so they are more sour to the taste. In some cases, the carbohydrate found in green fruits is partly in the form of starch, which in the process of development is changed to sugar. The cellulose of green fruits, especially that distributed throughout the pulp of the fruit itself, is usually tougher and harder than that which is found in the same fruit after it has ripened.

22. DIGESTIBILITY OF FRUITS.--The ripeness and freshness of fruits determine their digestibility to a great extent, but the peculiarities

of each person have much to do with this matter. Many times a particular fruit will agree with almost every one but a few exceptional persons, and, for no apparent reason except their own peculiarities of digestion, it disagrees very badly with them. Abnormal conditions of the alimentary tract, however, cannot be taken into consideration in a general discussion on the digestibility of foods, for it is a subject that cannot be treated except from a dietetic standpoint. A safe rule to follow when a fruit is found to disagree with a person is to omit it from that person's diet. This need not prove a hardship, for the wide range, or variety, of fruits makes it possible to find one or more kinds that will agree with each person.

23. As has been explained, sugar is the food material from which the nutritive value of fruits is obtained. With the exception of a few predigested foods, manufactured in such a way that they can be digested easily, this sugar is probably the most easily digested form of food that can be obtained. This substance, being held in solution in the fruit juices, which are encased in a cellulose covering, depends to some extent for its digestion on the hardness of the cellulose. When this covering is old and hard or green and tough, as the case may be, it is difficult for the digestive juices to break through and attack the sugar contained inside. As this difficulty is not encountered when fruit is fresh and ripe, its freshness and ripeness become important factors in digestibility. Cooking is also an important factor because it softens the cellulose, but there are certain other changes made by cooking that must be taken into consideration as well.

24. EFFECT OF COOKING ON FRUIT.--Cooking affects fruits in numerous ways, depending on the condition of the fruit itself, the method used, and the length of time the heat is applied. When fruits are cooked in water or in a thin sirup, the cellulose becomes softened. On the other hand, if they are cooked in a heavy sirup, as, for instance, in the making of preserves, the cellulose becomes hardened and the fruit, instead of breaking up, remains whole or nearly so and becomes tough and hard in texture. The addition of quantities of sugar, as in the latter case, besides helping to keep the fruit whole, increases its food value.

25. Another change that usually takes place when fruit is cooked is in its flavor. This change is due either to an increase in the acid contained in the fruit or to a decrease in the amount of sugar. Some authorities believe that cooking increases the amount of acid, while others hold the view that, when fruit is cooked without removing the skins and seeds, the acid contained in the seeds and skins and not noticeable when the fruit is fresh, is released during the cooking. Such is undoubtedly the case with plums. The change that is brought about in the sugar by the cooking of fruits consists in changing the cane sugar into levulose and dextrose, which are not so sweet. This change accounts for the fact that some cooked fruits are less sweet than others, in spite of the fact that the acid does not seem to be increased.

26. In addition to producing certain changes in fruit, cooking, if done thoroughly, renders fruits sterile, as it does other foods; that is, it kills any bacteria that the fruits may contain. Advantage of this fact is taken when fruits are canned for future use. Although most persons prefer raw fruit to that which is cooked, there are some who object to eating this food raw, but who are not always certain as to the reason for their objection. Like other raw foods, fruits in their fresh state contain vitamines; that is, a substance that helps to keep the body in

a healthy, normal condition. These are found to some extent in cooked fruits, but not in the same quantity as in raw ones; consequently, as much use as possible should be made of raw fruits in the diet.

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FRUITS AND THEIR PREPARATION AS FOOD

PREPARING AND SERVING

27. REQUIRED SANITARY CONDITIONS.--Since large quantities of fruits are eaten raw, it is necessary that they be handled in the most sanitary manner if disease from their use be prevented. However, they are often in an unsanitary condition when they reach the housewife. For instance, they become contaminated from the soiled hands of the persons who handle them, from the dirt deposited on them during their growth, from the fertilizer that may be used on the soil, from flies and other insects that may crawl over them, and from being stored, displayed, or sold in surroundings where they may be exposed to the dirt from streets and other contaminating sources. Because of the possibility of all these sources of contamination, it is essential that fruits that are not to be cooked be thoroughly washed before they are eaten. It is true that a certain amount of flavor or food material may be lost from the washing, but this is of little importance compared with the possibility of preventing disease.

28. WASHING FRUITS.--The manner of washing fruits depends largely on the nature of the fruit. Fruits that have a sticky surface, such as raisins, figs, and dates, usually have to be washed in several waters. Hard fruits, such as pears, apples, plums, etc., should be washed with running water. Berries and softer fruits require more careful procedure, it usually being advisable to pour them into a pan containing water and then, after stirring them around in the water until all dirt is removed, take them from the water, rather than pour the water from them. In any event, all fruits eaten raw should be properly washed.

29. SERVING FRUITS.--While the serving of fruits is a simple matter, it should be done in as dainty a way as possible, so as not to detract from their natural attractiveness. If the skins are to remain on the fruits while serving, a knife, preferably a fruit knife, should be served with them, and nothing smaller than a salad plate should be used. The carefully washed leaves of the fruit served make an attractive garnish. For instance, large, perfect strawberries with the stems on, when heaped on a plate garnished with strawberry leaves and served with a small dish of powdered sugar, are always attractive. Likewise, a bunch of grapes served on grape leaves never fails to attract.

A mixture of a number of fruits, such as peaches, pears, and plums, or, in winter, oranges, bananas, and apples, piled in a large bowl and passed after salad plates have been distributed, not only makes an excellent dessert, but permits the persons served to take their choice.

Fresh berries, sliced peaches, bananas, oranges, etc. may be served in sauce dishes, which should be placed on a service plate. They may be passed or served from a bowl by the hostess. Canned or stewed fruits may be served in the same way.

* * * * *

BERRIES

NATURE AND CARE

30. BERRIES are among the most perishable fruits and begin to come into market early in the summer season. In most localities, the berry season begins with strawberries and ends with blackberries. Because the numerous varieties are somewhat juicy and soft and therefore extremely perishable, they will not stand shipping and storage for long periods of time. The quality of berries depends much on the nature of the season, as well as on the locality in which the berries are grown. If there is a good supply of rain, the berries will be very moist, containing a large amount of pulp in proportion to seeds and skins; but if the season is very dry, the berries are likely to be less moist and consequently less palatable. A general use of berries, and to almost every one the most important, is the making of jams, jellies, and preserves.

In the preparation of berries for the table, they should be handled as little as possible in order to prevent them from breaking up and losing their shape. After being purchased, they should be kept where it is cool until they are to be used. It is advisable not to wash them until just before serving, as the extra handling usually bruises them and causes them to spoil.

The different varieties of berries are here taken up in alphabetical order so as to make the matter easy for reference. Those of which extensive use is made contain one or more recipes that may be followed without any hesitation. In a few instances, as in the case of currants, recipes are not included, as the fruits are limited to only a few uses and directions for these occur elsewhere.

BLACKBERRIES

31. BLACKBERRIES come late in the summer season. Good varieties of cultivated blackberries, which are large in size and contain comparatively few seeds, are the best for use. However, in some localities, uncultivated blackberries grow in sufficient quantities to be useful for food. Blackberries are used extensively for jam, as they make an excellent kind that appeals to most persons. Their juice may be used for jelly, but if the berries are to be utilized most successfully in this way they must be picked before they are thoroughly ripe or some fruit that will supply an additional quantity of pectin may have to be combined with them. Fresh blackberries may be served for dessert with sugar and cream. Otherwise, the use of this fruit in desserts is not very extensive, except where the canned berries are used for pastry or pie or are eaten for sauce or where the jam is used in making up various dessert dishes.

Very little preparation is necessary in getting blackberries ready to serve. They should simply be looked over carefully, so that all imperfect ones and all foreign matter may be removed, and then washed in cold water.

32. BLACKBERRY SPONGE.--One of the few desserts made from fresh blackberries is that explained in the accompanying recipe and known as blackberry sponge. This is very delicious, for the berries are combined with cake and the combination then served with whipped cream.

BLACKBERRY SPONGE (Sufficient to Serve Six)

1 qt. blackberries
3/4 c. sugar
1 c. water
4 pieces plain loaf or sponge cake
Whipped cream

Heat half of the berries with the sugar and the water until they are mushy. Then force the whole through a sieve. Cut the cake into cubes and put them into a bowl. Pour the juice and the blackberry pulp on the cake. Press the mixture down with a spoon until it is quite solid and set in the refrigerator or some other cold place to cool. Turn out of the bowl on a large plate, garnish with the remaining berries, heap with the whipped cream, and serve.

BLUEBERRIES

33. BLUEBERRIES, which are not cultivated, but grow in the wild state, are a many-seeded berry, blue or bluish-black in color. Huckleberries, although belonging to a different class, are commonly regarded as blueberries by many persons. Berries of this kind occur in many varieties. Some grow on low bushes close to the ground, others are found on taller bushes, and still others grow on very tall bushes. Again, some grow in dry ground in a mountainous region, others grow in a level, sandy soil, and other varieties succeed better on swampy soil. Berries of this class are not so perishable as most other berries, but in many localities they cannot be purchased at all, for, as a rule, they are used only in the immediate vicinity in which they grow.

Blueberries have small seeds and coarse, tough skins. They contain very little acid, but are excellent for pies and sauce. However, they will make jelly very well if there are a few partly ripe berries among them, and their flavor is improved if some fruit containing acid is added to them. To prepare them for use, whether they are to be served raw or cooked, look them over carefully in order that all green or spoiled ones are removed and then wash them well in cold water.

34. PRESSED BLUEBERRY PUDDING.--A delicious pudding can be made by combining blueberries with slices of bread. The accompanying recipe gives directions for pudding of this kind.

PRESSED BLUEBERRY PUDDING (Sufficient to Serve Eight)

1 qt. blueberries
1 c. water
1/2 c. sugar
8 slices bread
Whipped cream

Put the blueberries, water, and sugar into a saucepan and boil for a few minutes. Put four of the slices of bread, which should be cut about 1/2 inch thick, in the bottom of a square pan. Pour one-half of the blueberries and the juice over the bread, and put the four remaining slices of bread on top of the berries. Pour the rest of the blueberries and juice over the bread. Place another square pan over the top and

weight it down so as to press the pudding. Then set the pudding in the refrigerator until it is cool. Cut into squares, remove from the pan, and serve with sweetened whipped cream.

35. BLUEBERRY PUDDING.--A baking-powder-biscuit dough baked with blueberries makes a very appetizing dessert. To serve with a pudding of this kind, a cream or a hard sauce should be made.

BLUEBERRY PUDDING (Sufficient to Serve Six)

Baking-powder-biscuit dough
1 qt. blueberries
1/2 c. sugar

Make a rather thin baking-powder-biscuit mixture. Spread a layer of this in the bottom of a square pan and cover it with a layer of the blueberries. Pour 1/4 cupful of the sugar over the berries and then cover with another layer of the dough. Over this, pour the remainder of the berries and sprinkle the rest of the sugar over all. Place in the oven and bake for about 20 minutes. Remove from the oven, cut into squares, and serve with cream or hard sauce.

CRANBERRIES

36. CRANBERRIES grow wild in many localities, but most persons who use them buy them in the market as a cultivated fruit. Their season begins in the fall and lasts until early spring, and during this time they can usually be obtained in the market. They contain considerable acid and consequently require a great deal of sugar to make them sufficiently sweet to be palatable. They are more often served as an accompaniment to a dinner course, especially with turkey or other poultry, than eaten as a sauce. At times they are used in the making of muffins, pudding, and various kinds of pastry.

One of the advantages of cranberries is that they keep very well in the raw state. However, before they are cooked, they should be looked over carefully, freed of any stems, foreign material, and spoiled berries, and then washed thoroughly in cold water.

37. CRANBERRY SAUCE.--One can hardly imagine a turkey dinner without cranberry sauce as one of the accompaniments; but it may be served when meats other than turkey are used. In fact, because of its tart flavor, it forms a most appetizing addition to any meal.

CRANBERRY SAUCE (Sufficient to Serve Six)

1-1/2 c. water
2 c. sugar
4 c. cranberries

Add the water to the cranberries and place over the fire to cook in a closely covered kettle. As soon as the skins of the berries have cracked, add the sugar. Cook slowly for a few minutes or until the sugar is completely dissolved. Remove from the fire and cool before serving.

38. CRANBERRY JELLY.--If the cranberries are preferred without the

skins, cranberry jelly should be tried. When cool, this solidifies and may be served in attractive ways.

CRANBERRY JELLY (Sufficient to Serve Six)

2 c. water
1 qt. cranberries
2 c. sugar

Pour the water over the cranberries and cook them for 10 or 15 minutes. Then mash them through a sieve or a colander with a wooden potato masher. Add the sugar to the mashed cranberries. Return to the heat and cook for 5 to 8 minutes longer. Turn into a mold and cool.

RASPBERRIES

39. RASPBERRIES come in two general varieties, which are commonly known as red and black. There are many species of each kind, and all of them are much favored, as they are delicious fruit. As a raw fruit, raspberries have their most satisfactory use, but they may be made into several excellent desserts and they are also much used for canning and preserving. They are a perishable fruit and so do not keep well. Because of their softness, they have to be washed very carefully to prevent them from breaking or becoming mushy.

40. RED-RASPBERRY WHIP.--No more dainty dessert can be made than raspberry whip, which is explained in the accompanying recipe. Cake that is not very rich, such as ladyfingers or sponge cake, makes a very good accompaniment for this dessert.

RED-RASPBERRY WHIP (Sufficient to Serve Six)

1 qt. raspberries
1 c. powdered sugar
2 egg whites

Put the raspberries, sugar, and egg whites into a bowl. Mash the berries before starting to whip. Beat the mixture with an egg whip until it is reduced to a pulpy mass and is stiff and fluffy. Pile lightly into a bowl, chill, and serve with ladyfingers or sponge cake.

41. RASPBERRY SHORTCAKE.--Either black or red raspberries make a delicious shortcake when combined with a cake or a biscuit mixture. Directions for making such a shortcake are given in the accompanying recipe.

RASPBERRY SHORTCAKE (Sufficient to Serve Six)

1 qt. raspberries
1 c. sugar
Biscuit or plain-cake dough

Mash or chop the berries, as preferred, and add the sugar to them. Bake the biscuit or plain-cake dough in a single, thick layer, and when it has been removed from the pan split it into halves with a sharp knife.

Spread half the berries between the two pieces of biscuit or cake and the remaining half on top. Cut into pieces of the desired size and serve with plain or whipped cream.

STRAWBERRIES

42. STRAWBERRIES are perhaps more popular than any other kind of berry. They are reddish in color, have a somewhat acid flavor, and range in size from 1/2 inch to 2 inches in diameter. Strawberries are much used for jams and preserves; they may also be used for making a delicious jelly, but as they lack pectin this ingredient must be supplied. These berries are eaten fresh to a great extent, but are also much used for pastry making and for various kinds of dessert; in fact, there is practically no limit to the number of recipes that may be given for strawberries. Before they are used in any way, they should be washed thoroughly in cold water and then their hulls should be removed.

[Illustration: FIG. 1]

43. STRAWBERRY SHORTCAKE.--For strawberry shortcake, either a biscuit or a plain-cake mixture may be used, some persons preferring the one and other persons the other. This may be made in a large cake, as shown in Fig. 1, and then cut into pieces, or it may be made into individual cakes, as Fig. 2 shows. Whichever plan is followed, the cakes are split in the same way and the crushed berries inserted between the halves. This dish may be made more attractive in appearance if a few of the finest berries are saved and used as a garniture.

STRAWBERRY SHORTCAKE (Sufficient to Serve Six)

1 qt. strawberries
1 c. sugar
Biscuit or plain cake dough

Mash or chop the berries, add the sugar to them, and let them stand until the sugar has dissolved. Bake the biscuit or plain-cake dough in a single thick layer or, if desired, bake it in individual cakes, cutting the biscuit dough with a cookie cutter and putting the cake mixture in muffin pans. Remove from the pan, cut in two with a sharp knife, and spread half of the berries over the lower piece. Set the upper piece on the berries. In the case of the large cake, sprinkle powdered sugar over the top and then on this arrange a number of the largest and finest of the berries, as Fig. 1 shows, as a garniture. Cut in pieces of the desired size and serve with or without either plain or whipped cream. In preparing the individual cakes, spread a spoonful or two of the crushed berries over the top, as Fig. 2 shows, and serve with whipped cream.

44. STRAWBERRY WHIP.--Strawberries may be used instead of raspberries in the recipe for red-raspberry whip. When prepared in this way and served with fresh cake, strawberries make a very appetizing dessert.

45. OTHER STRAWBERRY DESSERTS.--If it is desired to serve strawberries just with sugar, they can be made attractive with very little effort. Garnish a plate with some of the strawberry leaves and on them place a few fine large strawberries that have been washed but have not had the hulls removed. Serve a small dish of powdered sugar with the strawberries, so that they may be dipped into the sugar and eaten by

holding the hull of the berry in the fingers. Strawberries crushed with sugar and served with blanc mange or custard also make a very delicious dessert.

[Illustration: FIG. 2]

MISCELLANEOUS BERRIES

46. CURRANTS come in three varieties--red, white, and black. They are not often eaten fresh, but are generally utilized for making jellies, jams, and preserves, or for pastry and pies. When they are to be used for jelly, it is not necessary to pick them from the stems, as they may be washed and cooked on their stems. Some varieties of currants are dried and these are used extensively in the making of cakes, cookies, etc. The usefulness of this fruit as a food is not so great as many others. No recipes are given for it because of its little use in the fresh form.

47. GOOSEBERRIES, like currants, are somewhat limited in their variety of uses, being seldom used except for jelly, preserves, and pies. Before gooseberries are ripe they are light green in color and rather sour in taste, but as they ripen the amount of acid they contain decreases, so that they become sweet in flavor and change to brownish-purple. Green gooseberries are often canned for pies, and when in this state or when partly ripe they are also made up into many kinds of preserves and jelly. In their preparation for these uses, both the stems and the blossom ends should be removed. As a rule, berries of this kind keep very well and stand considerable handling because their outside skin is very tough.

48. LOGANBERRIES are a fruit produced by crossing a variety of red raspberries with a species of blackberry. They are not very common, but are an excellent berry and are well liked by those who can obtain them. They may be used for any purpose for which either raspberries or blackberries are used. Therefore, in the recipes given for these two kinds of berries, loganberries may be substituted whenever they can be obtained.

* * * * *

NON-TROPICAL FRUITS

NATURE AND USE

49. Besides the berries that have just been described, there are a large number of fruits that are grown in temperate climates and are therefore regarded as NON-TROPICAL FRUITS. Extensive use is made of these fruits in the regions in which they are grown or in places that are within easy shipping distances of the source of supply. All of them have a protective covering, or skin, and consequently keep for long periods of time if they are not too ripe when picked. Those which contain the highest percentage of water are the most perishable.

APPLES

50. APPLES, of which there are at least a thousand varieties, are

probably the best known of the non-tropical fruits. Some apples mature early in the summer, while others do not ripen until late in the fall. The late apples can be kept during the entire winter if they are properly stored, but the summer varieties must generally be used immediately, as they do not have good keeping qualities. In each locality in which apples are grown, a few varieties seem to be especially popular and are used to the exclusion of others. Some apples are good for one purpose and some for another. For instance, many that are excellent if eaten raw are not good for cooking purposes, and others that cook well are not suitable for eating. It is therefore a good idea for the housewife to become familiar with the varieties of apples raised in her community and to learn the use to which each kind can be put to advantage.

Apples of all kinds may be prepared in a large variety of ways. They are much used for sauce, pie, and numerous desserts, as well as for jelly and, with various fruit mixtures, for jams and preserves. The juice of apples, which upon being extracted is known as _cider_, is used in a number of ways, but its most important use is in the manufacture of vinegar.

51. APPLE SAUCE.--When apple sauce is to be made, apples that are somewhat sour and that will cook soft easily should be selected. This is a dessert that can be made all during the winter when it is often difficult to obtain other fruits fresh. It is usually served when roast pork is the main dish of a meal, but is just as appetizing when served with other foods.

APPLE SAUCE (Sufficient to Serve Six)

10 medium-sized apples
1/2 c. water
1 c. sugar

Wash the apples, cut them in quarters, remove the cores, and, if desired, peel them. Put them into a saucepan, add the water, and allow them to cook until they are very soft. If the apples are inclined to be dry, a little more water may be necessary. When done, force them through a colander or a sieve, add the sugar to the pulp, and return to the stove. Cook until the sugar is completely dissolved and, if necessary, until the apple sauce is slightly thickened, stirring frequently to prevent scorching. Remove from the heat, and season with lemon peel cut fine, cinnamon, or nutmeg.

If there are apples in supply that do not cook well for apple sauce, they may be peeled, quartered, and cored, and cooked with the sugar and water. Then, instead of being forced through a sieve, they should be allowed to remain in pieces in the sirup.

52. PORCUPINE APPLES.--A pleasing change in the way of an apple dessert may be had by making porcupine apples.

PORCUPINE APPLES (Sufficient to Serve Six)

6 large apples
1 c. sugar
1 c. water

2 doz. almonds
Currant jelly

Wash, core, and pare the apples. Make a sirup by bringing the sugar and water to the boiling point. Put the apples into the sirup, cook on one side for several minutes, and then turn and cook on the other side. Do not allow the apples to cook completely in the sirup, but when they are still hard remove them and continue to boil the sirup down. Set the apples in a shallow pan, stick the almonds, which should be blanched, into them so that they will project like porcupine quills, sprinkle them with sugar, and bake in the oven until they are soft and the almonds slightly brown. Remove from the oven, fill the center of each with currant jelly, pour the juice over them, and serve.

53. BAKED APPLES.--Nothing is more palatable than baked apples if a juicy, sour variety can be secured.

BAKED APPLES
(Sufficient to Serve Six)

6 medium-sized sour apples
1/2 c. brown sugar
1/2 tsp. cinnamon
1 Tb. butter
1/2 c. water

Wash and core the apples, place them in a baking dish, and fill the centers with the brown sugar mixed with the cinnamon. Put a small piece of butter on top of each apple, pour the water in the bottom of the pan, set in the oven, and bake until the apples are soft. Baste frequently with the juice that collects in the bottom of the pan. Serve hot or cold, as desired.

Apples baked in this way may be improved in flavor by serving grape juice over them. Heat the grape juice, and then, if the apples are to be served hot, pour about 2 tablespoonfuls over each apple just before serving. In case the apples are to be served cold, pour the hot grape juice over them and then allow them to cool.

54. MAPLE APPLES.--Apples cooked in maple sirup have a very pleasing flavor. The sirup that remains in the pan is poured over the apples when they are served.

MAPLE APPLES
(Sufficient to Serve Six)

6 medium-sized apples
1 c. maple sirup

Wash, peel, and core the apples. Bring the maple sirup to the boiling point in a saucepan. Drop the apples into the hot sirup, cook first on one side, and then turn and cook on the other. As soon as they become soft, remove from the sirup, pour the sirup over them, and serve.

55. STEAMED APPLES.--If it is desired to retain the color in apples that have red skins, they should be steamed instead of baked, for the color is lost in baking. Prepare apples that are to be steamed by washing them and removing the cores. Place the apples in a pan with a perforated bottom, put this over a pan of boiling water, cover closely, and steam

until they are soft. Serve in any desired way. They will be found to be delicious in flavor and attractive in appearance.

APRICOTS

56. APRICOTS, in appearance, are a cross between peaches and plums. They are grown extensively in the western part of the United States, but they can be grown in any climate where peaches and plums are raised. As they contain considerable acid, they require a large quantity of sugar when they are cooked with their skins and seeds. They are used most frequently for canning, but they make excellent marmalades and jams. They are also dried in large quantities and, in this form, make delicious desserts.

57. APRICOT SOUFFLE.--No more attractive as well as delicious dessert can be prepared than apricot souffle, which is illustrated in Fig. 3. The apricots are just tart enough to give it a very pleasing flavor.

[Illustration: Fig. 3]

APRICOT SOUFFLE (Sufficient to Serve Six)

2 Tb. butter
4 Tb. flour
1/3 c. sugar
Pinch of salt
1 c. scalded milk
3 eggs
1/2 tsp. vanilla
1 can apricots

Melt the butter, add the flour, sugar, and salt, and stir in the hot milk. Bring this mixture to the boiling point. Separate the yolks and whites of the eggs. Beat the yolks until they are thick and lemon-colored, and then pour the hot mixture over them, stirring constantly to prevent the eggs from curdling. Beat the whites until they are stiff, fold them into the mixture, and add the vanilla. Place the apricots without juice in a layer on the bottom of the buttered baking dish, pour the mixture over them, and bake for 45 to 60 minutes in a hot oven, when it should be baked through and slightly brown on top and should appear as in Fig. 3. Remove from the oven and serve with the sirup from the apricots. Whipped cream may also be added if desired.

CHERRIES

58. CHERRIES come in numerous varieties, some of which are sweet and others sour. The method of using them in cookery depends largely on the kind of cherry that is to be used. Any of the varieties may be canned with varying quantities of sugar and then used for sauce. They also make excellent preserves, especially the sour varieties. However, they do not contain pectin in sufficient quantity for jelly, so that when cherry jelly is desired, other fruit or material containing pectin must be used with the cherries. When purchased in the market, cherries usually have their stems on. They should be washed before the stems are removed. The seeds may be taken out by hand or by means of cherry seeders made especially for this purpose.

59. CHERRY FRITTERS.--Something different in the way of dessert can be had by making cherry fritters according to the accompanying recipe.

CHERRY FRITTERS (Sufficient to Serve Six)

1 c. flour
2 tsp. baking powder
1/4 tsp. salt
2 Tb. sugar
1/2 c. milk
1 egg
2 Tb. butter
1/2 c. cherries cut into halves

Mix and sift the dry ingredients, add the milk and egg, and beat all together well. Add the melted butter and fold in the cherries. Drop by spoonfuls into hot fat and fry until brown. Remove from the fat, sprinkle with powdered sugar, and serve.

GRAPES

60. GRAPES are a fruit extensively cultivated both for eating and for the making of wines and raisins. Although found in many varieties, they naturally divide themselves into two general classes: those which retain their skins, such as the Malaga, Tokay, Muscat, Cornichon, Emperor, etc., and those which slip out of their skins easily, such as the Concord, Niagara, Delaware, Catawba, etc.

Grapes are much used as a fresh fruit. When they are to be used in this way, the bunches should be put into a colander and washed thoroughly by running cold water over them. Then all the imperfect ones should be removed and the grapes kept cool until they are to be served. Clean grape leaves make an attractive garnish for the individual plates or the serving dish on which the grapes are placed. Grapes are also used extensively for making jelly and grape juice, a beverage that is well liked.

61. It will be found that through proper care grapes can be kept a long time in the fall after they are removed from the vines, provided perfect bunches are obtained and they are picked before they have become too ripe. To preserve such grapes, dip the ends of the stems into melted sealing wax in order to prevent the evaporation of moisture through the stems. Then, in a cool, dry place, lay the bunches out on racks in a single layer, taking care not to crush nor bruise them.

62. UNFERMENTED GRAPE JUICE WITH WATER.--Grape juice may be made either with or without water. That in which water is used in the making usually requires no diluting when it is served as a beverage. Concord grapes are perhaps used more commonly for the making of grape juice than any other variety, but other kinds, particularly Catawbias and Niagaras, may be used as well.

UNFERMENTED GRAPE JUICE WITH WATER

12 qt. grapes
2 qt. water

4 lb. sugar

Wash the grapes and remove them from the stems. Put them with the water into a preserving kettle, and heat gradually until the skins of the grapes burst. Dip off as much juice as possible, and put it into a jelly bag. Continue to heat and dip off the juice in this way until the pulp is comparatively dry. Then add a little more water to the pulp and put it in the bag to drip. When all the juice has dripped through the bag, pour it back into the preserving kettle, add the sugar, and bring to the boiling point. Stir frequently, so that the sugar will be well dissolved. Pour into jars or bottles, seal, and sterilize by cooking for about 5 minutes in hot water that nearly covers the bottles. Any large receptacle that will hold sufficient water may be used as a sterilizer.

63. UNFERMENTED GRAPE JUICE WITHOUT WATER.--When grape juice is made without water, it is both thick and rich. Consequently, it should usually be diluted with water when it is served as a beverage.

UNFERMENTED GRAPE JUICE WITHOUT WATER

12 qt. grapes
3 lb. sugar

Wash the grapes, remove them from the stems, and put them into a preserving kettle. Heat very slowly and mash with a spoon, so that enough juice will be pressed out and thus prevent the grapes from scorching. Remove the juice as it forms and put it into a jelly bag. When all of it has been taken from the grapes and strained through the jelly bag, strain the pulp and put all the juice into a preserving kettle, add the sugar, and bring to the boiling point. Pour into bottles or jars, seal, and sterilize in a water bath for about 5 minutes.

PEACHES

64. PEACHES may be divided into two general classes: those having a yellow skin and those having a white skin. In each of these classes are found both clingstone and freestone peaches; that is, peaches whose pulp adheres tightly to the seed, or stone, and those in which the pulp can be separated easily from the stone. When peaches are purchased for canning or for any use in which it is necessary to remove the seeds, freestones should be selected. Clingstones may be used when the stones are allowed to remain in the fruit, as in pickled peaches, and for jams, preserves, or butters, in which small pieces may be used or the entire peach mashed. Whether to select yellow or white peaches, however, is merely a matter of taste, as some persons prefer one kind and some the other.

65. Peaches are not satisfactory for jelly making, because they do not contain pectin. However, the juice of peaches makes a very good sirup if it is sweetened and cooked until it is thick. Such sirup is really just as delicious as maple sirup with griddle cakes. Peaches are used to a large extent for canning and are also made into preserves, jams, and butters. In addition, they are much used without cooking, for they are favored by most persons. When they are to be served whole, they should be washed and then wiped with a damp cloth to remove the fuzz. The skins may be removed by blanching the peaches in boiling water or peeling them with a sharp knife. If they are then sliced or cut in any desirable way and served with cream and sugar, they make a delicious dessert.

66. STEWED PEACHES.--Fresh stewed peaches make a very desirable dessert to serve with simple cake or cookies. Children may very readily eat such dessert without danger of digestive disturbances. Adding a tablespoonful of butter to the hot stewed peaches and then serving them over freshly made toast makes a delightful breakfast dish. The cooked peaches may also be run through a sieve, reheated with a little flour or corn starch to thicken them slightly, and then served hot on buttered toast.

STEWED PEACHES (Sufficient to Serve Eight)

1-1/2 qt. peaches
1 lb. sugar
1 c. water

Peel the peaches, cut into halves, and remove the seeds. Put the sugar and water over the fire to cook in a saucepan and bring to a rapid boil. Add the peaches and cook until they may be easily pierced with a fork.

67. BAKED PEACHES.--When peaches are to be baked, select large firm ones. Wash them thoroughly and cut them into halves, removing the stones. Place the peaches in a shallow pan, fill the cavities with sugar, and dot the top of each half with butter. Set in the oven and bake until the peaches become soft. Serve hot or cold, either with or without cream, as desired.

PEARS

68. PEARS, like apples, come in summer and winter varieties. The summer varieties must be utilized during the summer and early fall or must be canned at this time to preserve them for future use. Winter pears, however, may be stored, for they keep like apples. A number of the small varieties of pears are much used for pickling. Pears are most valuable when they are canned and used for sauce. They cannot be used for jelly, because they do not contain sufficient acid nor pectin. The juice from canned pears, because of its mild flavor, is often found to be valuable in the feeding of invalids or persons who have gastric troubles. It is usually advisable to pick pears before they are entirely ripe, for then they may be kept for a considerable length of time and will ripen slowly.

69. BAKED PEARS.--Although pears are rather mild in flavor, they are delicious when baked if lemon is added. Wash thoroughly pears that are to be baked, cut them into halves, and remove the cores. Place them in a shallow pan, fill the holes in the center with sugar, dot with butter, and place a thin slice of lemon over each piece. Pour a few spoonfuls of water into the pan, set in the oven, and bake until the pears can be easily pierced with a fork. Remove from the oven and serve hot or cold.

PLUMS

70. PLUMS are among the very strong acid fruits. Some varieties of them seem to be more tart after they are cooked than before, but, as already explained, this condition is due to the fact that the acid contained in the skin and around the seeds is liberated during the cooking. This fruit, of which there are numerous varieties, is generally used for

canning, preserving, etc. It does not make jelly successfully in all cases unless some material containing pectin is added. Very firm plums may have the skins removed by blanching if it seems advisable to take them off.

71. STEWED PLUMS.--Because of the many varieties of plums with their varying degrees of acidity, it is difficult to make a recipe with a quantity of sugar that will suit all kinds. The recipe given here is suitable for medium sour plums, such as egg plums and the common red and yellow varieties. Damsons and green gages will probably require more sugar, while prune plums may require less.

STEWED PLUMS (Sufficient to Serve Eight)

1-1/2 qt. plums
1 lb. sugar
3/4 c. water

Wash the plums and prick each one two or three times with a fork. Bring the sugar and water to the boiling point and, when rapidly boiling, add the plums. Cook until they are tender, remove from the fire, cool, and serve.

QUINCES

72. QUINCES are one of the non-perishable fruits. They mature late in the fall and may be kept during the winter in much the same way as apples. While quinces are not used so extensively as most other fruits, there are many uses to which they may be put and much can be done with a small quantity. For instance, various kinds of preserves and marmalades may be made entirely of quinces or of a combination of quinces and some other fruit. They also make excellent jelly. As their flavor is very strong, a small quantity of quince pulp used with apples or some other fruit will give the typical flavor of quinces. When combined with sweet apples, they make a very delicious sauce.

The skin of quinces is covered with a thick fuzz, which can be removed by wiping the fruit with a damp cloth. A point that should be remembered about quinces is that they are extremely hard and require long cooking to make them tender and palatable.

73. STEWED QUINCES AND APPLES.--The combination of quinces and apples is very delicious. Sweet apples, which are difficult to use as a cooked fruit because of a lack of flavor, may be combined very satisfactorily with quinces, for the quinces impart a certain amount of their strong flavor to the bland apples and thus the flavor of both is improved.

STEWED QUINCES AND APPLES (Sufficient to Serve Six)

1 qt. sweet apples
1 pt. quinces
1 lb. sugar
1 c. water

Wash, peel, core, and quarter the fruit. Add the sugar to the water and place over the fire until it comes to a rapid boil. Then add the

quinces and cook until they are partly softened. Add the sweet apples and continue the cooking until both are tender. Remove from the fire, cool, and serve.

RHUBARB

74. RHUBARB is in reality not a fruit, but it is always considered as such because it is cooked with sugar and served as a fruit. It has the advantage of coming early in the spring before there are many fruits in the market. As it contains a large quantity of oxalic acid, it is very sour and must be cooked with considerable sugar to become palatable, the addition of which makes the food value of cooked rhubarb very high. Rhubarb is much used for pies and is frequently canned for sauce. It is also used as a cheap filler with a more expensive fruit in the making of marmalades, conserves, and jams.

The stems of some varieties of rhubarb are characterized by a great deal of red color, while others are entirely green. The red rhubarb makes a more attractive dish when it is cooked and served than the green, but it has no better flavor. The outside of the stem has a skin that may be removed by catching hold of it at one end with a knife and stripping it off the remainder of the stem. It is not necessary to remove the skin from young and tender rhubarb, but it is often an advantage to remove it from rhubarb that is old. It should be remembered that the stems of rhubarb contain considerable water and so require very little liquid in their cooking.

75. STEWED RHUBARB.--Two methods of stewing rhubarb are in practice, the one to select depending on the way it is preferred. In one method, which keeps the pieces whole, the sugar and water are brought to the boiling point before the rhubarb is added, while in the other, the rhubarb is cooked with water until it is soft and the sugar then added.

STEWED RHUBARB (Sufficient to Serve Six)

2 c. sugar
1/2 c. water
1 qt. cut rhubarb

Mix the sugar and water in a saucepan and bring to the boiling point. Wash the stems of the rhubarb and cut into inch lengths. Add the rhubarb to the sirup and cook until it is tender enough to be pierced with a fork. If desired, a flavoring of lemon peel may be added. Turn into a dish, allow to cool, and serve.

If the other method is preferred, cook the rhubarb with the water until it is soft and then add the sugar.

* * * * *

CITRUS FRUITS

CHARACTERISTICS

76. Fruits that contain citric acid are grouped together and are known as CITRUS FRUITS. All of these are similar in structure, although they differ in size, as will be observed from Fig. 4. Here the citrus fruits

most commonly used are illustrated, the large one in the center being a grapefruit; the two to the left, oranges; the two to the right, lemons; and the two in the front, tangerines.

[Illustration: FIG. 4]

All varieties of these fruits are tropical or semitropical and are shipped to the North in boxes that contain various numbers, the number that can be packed in a box depending on the size of the fruit. The south, southeastern, and western parts of the United States supply practically all of these fruits that are found in the northern markets. They stand storage well and keep for long periods of time if they are packed before they are too ripe. These characteristics, together with the fact that they are at their prime at different times in different localities, make it possible to market such fruits during the entire year, although they are much better at certain seasons than at others.

77. The majority of citrus fruits contain a fair amount of sugar and a great deal of water; consequently, they are very juicy and refreshing. A few of them, however, such as lemons and limes, contain very little sugar and considerable acid and are therefore extremely sour. In the use of such varieties, sugar must be added to make them palatable.

The greatest use made of citrus fruits is that of serving them raw. However, they are also used in the making of marmalades, conserves, and such confections as candied fruits. Then, too, the juice of a number of them, such as lemons, oranges, and limes, makes very refreshing beverages, so these varieties are much used for this purpose.

GRAPEFRUIT

78. Grapefruit, also known as _shaddock_, is a large, pale-yellow fruit belonging to the citrus group. One variety, known as the _pomelo_, is the kind that is commonly found in the market. It is slightly flattened on both the blossom and stem ends.

Grapefruit has a typical flavor and a slightly bitter taste and contains neither a great deal of sugar nor a large amount of acid. Because of its refreshing, somewhat acid pulp and juice, it is highly prized as a fruit to be eaten at breakfast or as an appetizer for a fruit cocktail. It is also much used in the making of fruit salads.

79. SELECTION OF GRAPEFRUIT.--Grapefruit should be selected with care in order that fruit of good quality may be obtained. Some persons think that to be good grapefruit should be large, but it should be remembered that size is not the factor by which to judge the quality. The fruit should be heavy for its size and the skin should be fine-grained and even. Coarse-grained skin, as a rule, is thick and indicates that the pulp is rather pithy and without juice.

[Illustration: FIG. 5]

80. PREPARATION OF GRAPEFRUIT.--Different ways of serving grapefruit are in practice, and it is well that these be understood. This is generally considered a rather difficult fruit to eat, but if care is exercised in its preparation for the table it can be eaten with comfort. For preparing grapefruit, a narrow, sharp-bladed paring knife may be used. As is well known, a grapefruit is always cut apart half way between the

stem and the blossom ends and a half served to each person.

[Illustration: FIG. 6]

81. One method of preparing grapefruit consists in cutting the skin in such a way that the seeds can be taken out and the pulp then easily removed with a spoon. To prepare it in this way, cut the grapefruit into halves, and then, with a sharp knife, cut around the pithy core in the center, cutting off the smallest possible end of each of the sections. With this done, remove the seeds, which will be found firmly lodged near the core and which can be readily pushed out with the point of the knife. Then cut down each side of the skin between the sections so as to separate the pulp from the skin. Around the edge next to the outside skin, cut the pulp in each section with a single jab of the knife, taking care not to cut the skin between the sections. The entire pulp of each section, which will be found to be loose on both sides and ends if the cutting is correctly done, can then be readily removed with a spoon.

[Illustration: FIG. 7]

82. In another method of preparing this fruit for the table, all the skin inside of the fruit is removed and nothing but the pulp is left. This method, which is illustrated in Figs. 5 to 10, inclusive, requires a little more time and care than the previous one, but the result justifies the effort. After cutting the grapefruit into halves, remove the seeds with a sharp knife, as shown in Fig. 5. Then, with the same knife, cut the grapefruit from the skin all the way around the edge, as in Fig. 6; also, cut down each side of the skin between the sections, so as to separate the pulp from the skin, as in Fig. 7. With the pulp loosened, insert a pair of scissors along the outside edge, as in Fig. 8, and make a slanting cut toward the core.

[Illustration: FIG. 8]

Then, as in Fig. 9, cut the core loose from the outside skin. Repeat this operation for each section. If the cutting has been properly done, the core and skin enclosing the sections may be lifted out of the grapefruit, and, as shown in Fig. 10, will then be in the form of a many-pointed star. As only the pulp remains in the outside skin, the grapefruit can be eaten without difficulty.

[Illustration: FIG. 9]

83. SERVING GRAPEFRUIT.--When grapefruit has been properly ripened, it is rather sweet, so that many persons prefer it without sugar; but when sugar is desired, the fruit is very much more delicious if it is prepared some time before it is to be served, the sugar added to it, and the fruit placed in a cool place. If this is done in the evening and the grapefruit is served for breakfast, a large amount of very delicious juice will have collected through the night. At any rate, grapefruit is best if it is sweetened long enough before it is served to give the sugar a chance to penetrate.

[Illustration: FIG. 10]

LEMONS

84. LEMONS are a citrus fruit raised in tropical regions. They are

shipped to other climates in cases that hold from 180 to 540, depending on the size of the lemons, 300 to the case being a medium and commonly used size. Their quality is judged like that of grapefruit; that is, by their weight, the texture of their skin, and their general color and shape.

Lemons contain very little sugar, but they are characterized by a large amount of acid. Because of this fact, their juice is used to season foods in much the same way as vinegar is used. In fact, their chief uses are in making desserts and in seasoning such foods as custards, pudding sauces, etc. However, their juice is also much used in the making of beverages, such as lemonade and fruit punch.

ORANGES

85. ORANGES belong to the group of citrus fruits, but they differ from both lemons and grapefruit in that they contain more sugar and less acid. Two kinds of oranges supply the demands for this fruit, Florida and California oranges. _Florida oranges_ have a skin more the color of lemons and grapefruit and contain seeds, but they are considered to be the finest both as to flavor and quality. _California oranges_, which have a bright-yellow or orange skin, are seedless and are known as _navel oranges_. As soon as the Florida season ends, the California season begins; consequently, the market season for this fruit is a lengthy one. The russet of oranges is caused by the bite of an insect on the skin. To be shipped, oranges are packed in cases that will contain from 48 to 400 to the case.

Probably no citrus fruit is used so extensively as oranges. Because of their refreshing subacid flavor, they are much eaten in their fresh state, both alone and in combination with other foods in numerous salads and desserts.

[Illustration: FIG. 11]

86. PREPARATION OF ORANGES.--Several attractive ways of preparing oranges for the table when they are to be eaten raw are shown in Fig. 11.

To prepare them in the way shown at the left, cut the orange into two parts, cutting half way between the stem and blossom ends, and loosen the pulp in each half in the manner explained in Art. 81 for the preparation of grapefruit. Then the pulp may be eaten from the orange with a spoon.

[Illustration: FIG. 12]

If an orange is to be eaten in sections, the skin may be cut from the stem to the blossom end about six times and then loosened from the one end and turned in toward the orange in the manner shown in the central figure of the group. It will then be easy to remove the skin.

[Illustration: FIG. 13]

Sometimes it is desired to serve sliced oranges, as shown at the right. To prepare oranges in this way, remove the skin from the orange, cut it in halves lengthwise, and then slice it in thin slices crosswise. Arrange the slices on a plate and serve as desired.

87. When oranges are to be used for salads, or for any purpose in which merely the pulp is desired, as, for instance, orange custard, all the skin between the sections must be removed, as it makes any warm mixture bitter. To secure the pulp without any of the skin, first peel the orange, as shown in Fig. 12, in the same way an apple is peeled, beginning at one end and peeling around and around deeply enough to remove with the skin all the white pithy material under it. If the knife is a sharp one and the peeling is carefully done, there will be little waste of the pulp. When the orange is entirely peeled, cut each section from the skin by passing the knife as closely as possible between the pulp and the skin, as shown in Fig. 13. The sections thus obtained may be used whole or cut into pieces of any desired size.

MISCELLANEOUS CITRUS FRUITS

88. In addition to grapefruit, lemons, and oranges, the three principal varieties of citrus fruits, this group also includes kumquats, limes, mandarins, and tangerines. These fruits are not of so much importance in the diet as the other varieties, but when they are used as foods they have a food value about equal to that of apples the same in size. They are not in such common use as the citrus fruits already discussed, but it is well for every housewife to know what they are and to what use they can be put.

89. KUMQUATS are an acid fruit resembling oranges in color but being about the size and shape of small plums. They are used principally for the making of marmalades and jams, and in this use both the skin and the pulp are included.

90. LIMES look like small lemons. They are very sour and do not contain sugar in any quantity. They are valued chiefly for their juice, which is utilized in the making of drinks, confections, etc.

91. MANDARINS and TANGERINES are really varieties of oranges and are used in much the same way. They have a very sweet flavor. Their skin does not cling so closely as the skin of oranges. For this reason they are known as glove oranges and are very easily peeled.

* * * * *

TROPICAL FRUITS

VARIETIES

92. Besides the citrus fruits, which may also be regarded as tropical fruits because they grow in tropical regions, there are a number of other fruits that may be conveniently grouped under the heading Tropical Fruits. The best known of these are bananas and pineapples, but numerous others, such as avocados, guavas, nectarines, pomegranates, tamarinds, and mangoes, are also raised in the tropical countries and should be included in this class. The majority of these fruits stand shipment well, but if they are to be shipped to far distant places they must be picked before they become too ripe and must be packed well. As bananas and pineapples are used more extensively than the other tropical fruits, they are discussed here in greater detail; however, enough information is given about the others to enable the housewife to become familiar with them.

BANANAS

93. BANANAS are a tropical fruit that have become very popular with the people in the North. As they are usually picked and shipped green and then ripened by a process of heating when they are ready to be put on the market, it is possible to obtain them in a very good condition. It should be remembered, however, that they are not ripe enough to eat until all the green color has left the skin. The stem of the bunch may be green, but the bananas themselves should be perfectly yellow. Black spots, which are sometimes found on the skins, indicate overripeness or bruises. When the spots come from overripeness, however, they do not injure the quality of the fruit, unless there are a great many of them; in fact, many persons consider that bananas are better when the skins are black than at any other time.

94. Just under the skin of the banana is some pithy material that clings to the outside of the fruit and that has a pungent, disagreeable taste. This objectionable taste may be done away with by scraping the surface of the banana slightly, as shown in Fig. 14, after the skin is removed.

The strong, typical flavor that characterizes bananas is due to the volatile oil they contain. It is this oil that causes bananas to disagree with some persons. The common yellow variety has a milder flavor than red bananas and certain other kinds and, consequently, is more popular. If the oil of bananas does not prove irritating, much use

should be made of this fruit, because its food value is high, being about double that of apples and oranges.

[Illustration: FIG. 14]

95. Bananas are eaten raw more often than in any other way, but many persons find cooked bananas very agreeable. Then, too, it is sometimes claimed that cooked bananas are more digestible than raw ones because of the starch that bananas contain. However, this argument may be discounted, for a well-ripened banana contains such a small quantity of starch that no consideration need be given to it.

[Illustration: FIG. 15]

96. BAKED BANANAS.--If bananas are to be cooked, they can be made very appetizing by baking them with a sirup made of vinegar, sugar, and butter. When prepared in this way, they should be cut in two lengthwise, and then baked in a shallow pan, as Fig. 15 shows.

BAKED BANANAS
(Sufficient to Serve Six)

6 bananas
2 Tb. butter
1/3 c. sugar
3 Tb. vinegar

Remove the skins from the bananas, scrape the surface as in Fig. 14, and cut them in half lengthwise. Arrange the halves in a shallow pan. Melt the butter and mix it with the sugar and the vinegar. Pour a spoonful of the mixture over each banana and then set the pan in the oven. Bake in a

slow oven for about 20 minutes, basting frequently with the remainder of the sirup during the baking. Remove from the oven and serve hot.

97. Banana Fritters.--Delicious fritters can be made with bananas as a foundation. The accompanying recipe, if carefully followed, will result in a dish that will be appetizing, especially to those who are fond of this fruit.

BANANA FRITTERS (Sufficient to Serve Six)

4 bananas
1 Tb. lemon juice
1/2 c. flour
2 Tb. sugar
1/4 tsp. salt
1/3 c. milk
1 egg
1 Tb. butter, melted
Powdered sugar

Remove the skins from the bananas, scrape them, and cut them once lengthwise and once crosswise. Sprinkle the pieces with the lemon juice. Make a batter by mixing and sifting the flour, sugar, and salt. Stir in the milk gradually, and add the yolk of the beaten egg and the melted butter. Lastly, fold in the beaten egg white. Sprinkle the bananas with powdered sugar, dip them into the batter, and fry in deep fat until brown. Sprinkle again with powdered sugar and serve.

PINEAPPLES

98. Pineapples are grown in the southern part of the United States, on the islands off the southeastern coast, and in Hawaii. They vary in size according to the age of the plants. It requires from 18 to 20 months for the fruit to develop, and the plants yield only four or five crops. Much of this fruit is canned where it is grown, but as it is covered with a heavy skin it will tolerate shipping long distances very well. It is shipped to the market in cases that contain from 24 to 48 pineapples to the case. Usually, for a few weeks during the summer, the price of fresh pineapples is reasonable enough to warrant canning them.

[Illustration: FIG. 16]

99. The food value of pineapples is slightly lower than that of oranges and apples. However, pineapples have a great deal of flavor, and for this reason they are very valuable in the making of desserts, preserves, marmalades, and beverages of various kinds. It is said that the combination of pineapple and lemon will flavor a greater amount of food than any other fruit combined. Another characteristic of pineapples is that they contain a ferment that acts upon protein material and therefore is sometimes thought to aid considerably in the digestion of food. The probabilities are that this ferment really produces very little action in the stomach, but its effect upon protein material can readily be observed by attempting to use raw pineapple in the making of a gelatine dessert. If the pineapple is put in raw, the gelatine will not solidify; but if the pineapple is heated sufficiently to kill this ferment, it has no effect whatsoever upon the gelatine.

[Illustration: FIG. 17]

100. SELECTING PINEAPPLES.--When pineapples are to be selected, care should be exercised to see that they are ripe. The most certain way of determining this fact is to pull out the center leaves of each pineapple that is chosen. As shown in Fig. 16, grasp the pineapple with one hand and then with the other pull out, one at a time, several of the center leaves of the tuft at the top. If the fruit is ripe a sharp jerk will usually remove each leaf readily, but the harder the leaves pull, the greener the pineapple is.

[Illustration: FIG. 18]

An overripe pineapple is just as unsatisfactory as one that is not ripe enough. When a pineapple becomes too ripe, rotten spots begin to develop around the base. Such spots can be easily detected by the discoloration of the skin and such a pineapple should not be selected.

[Illustration: FIG. 19]

101. PREPARATION OF PINEAPPLE.--Some persons consider pineapple a difficult fruit to prepare, but no trouble will be experienced if the method illustrated in Figs. 17 to 19 is followed. Place the pineapple on a hard surface, such as a wooden cutting board, and with a large sharp knife cut off the tuft of leaves at the top. Then, as shown in Fig. 17, cut the pineapple into 1/2-inch slices crosswise of the head. When the entire pineapple has been sliced, peel each slice with a sharp paring knife, as in Fig. 18. With the peeling removed, it will be observed that each slice contains a number of eyes. Remove these with the point of a knife, as Fig. 19 shows. After cutting out the core from the center of each slice, the slices may be allowed to remain whole or may be cut into pieces of any desirable size or shape. Pineapple prepared in this way is ready either for canning or for desserts in which it is used fresh.

102. PINEAPPLE PUDDING.--One of the most satisfactory desserts made from pineapple is the pudding given here. It is in reality a corn-starch pudding in which grated pineapple is used for the flavoring.

PINEAPPLE PUDDING (Sufficient to Serve Six)

2-1/2 c. scalded milk
1/3 c. corn starch
1/2 c. sugar
1/4 tsp. salt
1/4 c. cold milk
1-1/2 c. grated pineapple, canned or fresh
2 egg whites

Scald the milk by heating it over the fire in a double boiler. Mix the corn starch, sugar, and salt, and dissolve in the cold milk. Add to the scalded milk in the double boiler and cook for about 15 or 20 minutes. Remove from the fire and add the grated pineapple from which all juice has been drained. Then fold in the whites of the eggs beaten stiff. Pour into molds previously dipped in cold water, allow to cool, and serve with cream.

MISCELLANEOUS TROPICAL FRUITS

103. AVOCADOS.--The avocado, which is also known as the _alligator pear_, is a large pear-shaped, pulpy fruit raised principally in the West Indies. It has a purplish-brown skin and contains just one very large seed in the center. The flesh contains considerable fat, and so the food value of this fruit is rather high, being fully twice as great as a like quantity of apples or oranges.

This fruit, which is gaining in popularity in the Northern States, is very perishable and does not stand shipment well. As a rule, it reaches the northern market green and is ripened after its arrival. It is an expensive fruit and is used almost entirely for salads. As its flavor is somewhat peculiar, a taste for it must usually be cultivated.

104. GUAVAS.--The guava is a tropical fruit that is extensively grown in the southern part of the United States. Guavas come in two varieties: _red guava_, which resembles the apple, and _white guava_, which resembles the pear. The fruit, which has a pleasant acid pulp, is characterized by a more or less peculiar flavor for which a liking must be cultivated. It can be canned and preserved in much the same way as peaches are.

Because guavas are very perishable, they cannot be shipped to northern markets, but various products are made from them and sent to every market. Preserved and pickled guavas and confections made from what is known as guava paste are common, but guava jelly made from the pulp is probably the best known product.

105. NECTARINES.--The tropical fruit called the nectarine is really a variety of peach, but it differs from the common peach in that it has a smooth, waxy skin. Also, the flesh of the nectarine is firmer and has a stronger flavor than that of the peach. Nectarines are not shipped to the northern markets to any extent, but they are canned in exactly the same way as peaches are and can be secured in this form.

106. PERSIMMONS.--The persimmon is a semitropical plum-like fruit, globular in shape and an orange-red or yellow in color. It comes in many varieties, but few of them find their way into the northern markets. The Japanese persimmon, which resembles a tomato in color, is the variety most frequently purchased. Persimmons are characterized by a great deal of very pungent acid, which has a puckery effect until the fruit is made sweet and edible by exposure to the frost. In localities where they are plentiful, persimmons are extensively used and are preserved for use during the winter season.

107. POMEGRANATES.--The pomegranate is about as large as a full-sized apple and has a hard reddish-yellow rind. Most varieties contain many seeds and a comparatively small amount of red edible pulp. Pomegranates of various kinds are grown in the southern part of the United States and in other warm climates. They are used extensively in the localities where they are grown and are much enjoyed by persons who learn to care for their flavor. A cooling drink made from their pulp finds much favor.

108. TAMARINDS AND MANGOES.--Although tamarinds and mangoes are practically unknown outside of tropical countries, they are considered to be very delicious fruits and are used extensively in their native localities.

The tamarind consists of a brown-shelled pod that contains a brown acid

pulp and from three to ten seeds. This fruit has various uses in medicine and cookery and is found very satisfactory for a cooling beverage.

Mangoes vary greatly in size, shape, flavor, and color. Some varieties are large, fleshy, and luscious, while others are small and stringy and have a peculiar flavor.

MELONS

109. CANTALOUPE AND MUSKMELONS.--The variety of melons known as muskmelons consists of a juicy, edible fruit that is characterized by a globular shape and a ribbed surface. Cantaloupes are a variety of muskmelons, but the distinction between them is sometimes difficult to understand. For the most part, these names are used interchangeably with reference to melons.

Considerable variation occurs in this fruit. Some cantaloupes and muskmelons are large and others are small; some have pink or yellow flesh and others have white or light-green flesh. All the variations of color and size are found between these two extremes. The flesh of these fruits contains considerable water; therefore, their food value is not high, being only a little over half as much as that of apples.

110. If melons suitable for the table are desired, they should be selected with care. To be just at the right stage, the blossom end of the melon should be a trifle soft when pressed with the fingers. If it is very soft, the melon is perhaps too ripe; but if it does not give with pressure, the melon is too green.

111. Various ways of serving muskmelons and cantaloupes are in practice. When they are to be served plain as a breakfast food or a luncheon dessert, cut them crosswise into halves, or, if they are large, divide them into sections lengthwise. With the melons cut in the desired way, remove all the seeds and keep the melons on ice until they are to be served. The pulp of the melon may also be cut from the rind and then diced and used in the making of fruit salads. Again, the pulp may be partly scraped out of the melon and the rinds then filled with fruit mixtures and served with a salad dressing for a salad or with fruit juices for a cocktail. The pulp that is scraped out may be diced and used in the fruit mixture, and what is left in the rind may be eaten after the contents have been eaten.

112. CASABA MELONS.--The variety of melons known as casaba, or honeydew, melons are a cross between a cucumber and a cantaloupe. They have white flesh and a rind that is smoother than the rind of cantaloupes. Melons of this kind are raised in the western part of the United States, but as they stand shipment very well, they can usually be obtained in the market in other regions. They are much enjoyed by those who are fond of this class of fruit. Their particular advantage is that they come later in the season than cantaloupes and muskmelons, and thus can be obtained for the table long after these other fruits are out of season. Casaba melons may be served in the same ways as cantaloupes.

113. WATERMELONS.--A very well-known type of melon is the watermelon. It is grown principally in warm climates of the Southern States, as the season in the North is not sufficiently long to allow it to develop. This is a large fruit, having a smooth green skin that is often mottled

or striped, and a pinkish pulp containing many seeds and having a sweet, watery juice. The large amount of water contained in this fruit makes its food value very low, it being lower in this respect than muskmelons and cantaloupes. The volatile oil it contains, which is responsible for its flavor, proves irritating to some persons who eat it.

114. Watermelon is delicious when it is served ice cold. Therefore, before it is served, it should be kept on ice for a sufficient time to allow it to become thoroughly cold. Then it may be cut in any desirable way. If it is cut in slices, the slices should be trimmed so that only the pink pulp that is edible is served, the green rind being discarded. As an appetizer, watermelon is delicious when cut into pieces and served in a cocktail glass with fresh mint chopped fine and sprinkled over the top. Small pieces of watermelon cut with a French vegetable cutter make a very attractive garnish for fruit salads and other fruit mixtures.

FRUIT COCKTAILS

115. Cocktails made of a combination of fruits are often served as the first course of a meal, usually a luncheon or a dinner, to precede the soup course. In warm weather, they are an excellent substitute for heavy cocktails made of lobster or crab, and they may even be used to replace the soup course. The fruits used for this purpose should be the more acid ones, for the acids and flavors are intended to serve as an appetizer, or the same purpose for which the hot and highly seasoned soups are taken. Therefore, they are seldom made sweet and are not taken for their food value. Besides being refreshing appetizers, they afford a hostess an opportunity to carry out a certain color scheme in a meal. Many kinds of fruit may be combined into cocktails, but directions for the cocktails that are usually made are here given. Fruit cocktails should always be served ice cold.

116. GRAPEFRUIT COCKTAIL.--The cocktail here explained may be served in stemmed glasses or in the shells of the grapefruit. If the fruit shells are to be used, the grapefruit should be cut into two parts, half way between the blossom and the stem ends, the fruit removed, and the edges of the shell then notched. This plan of serving a cocktail should be adopted only when small grapefruits are used, for if the shells are large more fruit will have to be used than is agreeable for a cocktail.

GRAPEFRUIT COCKTAIL (Sufficient to Serve Six)

2 grapefruits
2 oranges
1 c. diced pineapple, fresh or canned
Powdered sugar

Remove the pulp from the grapefruits and oranges in the manner previously explained. However, if the grapefruit shells are to be used for serving the cocktail, the grapefruit should be cut in half and the pulp then taken out of the skin with a sharp knife. With the sections of pulp removed, cut each one into several pieces. Add the diced pineapple to the other fruits, mix together well and set on ice until thoroughly chilled. Put in cocktail glasses or grapefruit shells, pour a spoonful or two of orange juice over each serving, sprinkle with powdered sugar, garnish with a cherry, and serve ice cold.

117. SUMMER COCKTAIL.--As strawberries and pineapples can be obtained fresh at the same time during the summer, they are often used together in a cocktail. When sweetened slightly with powdered sugar and allowed to become ice cold, these fruits make a delicious combination.

SUMMER COCKTAIL
(Sufficient to Serve Six)

2 c. diced fresh pineapple
2 c. sliced strawberries
Powdered sugar

Prepare a fresh pineapple in the manner previously explained, and cut each slice into small pieces or dice. Wash and hull the strawberries and slice them into small slices. Mix the two fruits and sprinkle them with powdered sugar. Place in cocktail glasses and allow to stand on ice a short time before serving.

118. FRUIT COCKTAIL.--A fruit cocktail proper is made by combining a number of different kinds of fruit, such as bananas, pineapple, oranges, and maraschino cherries. As shown in Fig. 20, such a cocktail is served in a stemmed glass set on a small plate. Nothing more delicious than this can be prepared for the first course of a dinner or a luncheon that is to be served daintily. Its advantage is that it can be made at almost any season of the year with these particular fruits.

[Illustration: FIG. 20]

FRUIT COCKTAIL
(Sufficient to Serve Six)

2 bananas
1 c. canned pineapple
2 oranges
1 doz. maraschino cherries
Lemon juice
Powdered sugar

Peel the bananas and dice them. Dice the pineapple. Remove the pulp from the oranges in the manner previously explained, and cut each section into several pieces. Mix these three fruits. Cut the cherries in half and add to the mixture. Set on ice until thoroughly chilled. To serve, put into cocktail glasses as shown in the illustration, and add to each glass 1 tablespoonful of maraschino juice from the cherries and 1 teaspoonful of lemon juice. Sprinkle with powdered sugar and serve.

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DRIED FRUITS

VARIETIES OF DRIED FRUITS

119. The fruits that have been discussed up to this point are fresh fruits; that is, they are placed on the markets, and consequently can be obtained, in their fresh state. However, there are a number of fruits that are dried before they are put on the market, and as they can be obtained during all seasons they may be used when fresh fruits are out of season or as a substitute for canned fruits when the household supply is low. The chief varieties of dried fruits are dates, figs, prunes,

which are dried plums, and raisins, which are dried grapes. Apples, apricots, and peaches are also dried in large quantities and are much used in place of these fruits when they cannot be obtained in their fresh form. Discussions of the different varieties of dried fruits are here given, together with recipes showing how some of them may be used.

DATES

120. DATES, which are the fruit of the date palm, are not only very nutritious but well liked by most persons. They are oblong in shape and have a single hard seed that is grooved on one side. As dates contain very little water and a great deal of sugar, their food value is high, being more than five times that of apples and oranges. They are also valuable in the diet because of their slightly laxative effect. When added to other food, such as cakes, hot breads, etc., they provide a great deal of nutriment.

121. The finest dates on the market come from Turkey and the Eastern countries. They are prepared for sale at the places where they grow, being put up in packages that weigh from 1/2 to 1 pound, as well as in large boxes from which they can be sold in bulk. It is very important that all dates, whether bought in packages or in bulk, be thoroughly washed before they are eaten. While those contained in packages do not collect dirt after they are packed, they are contaminated to a certain extent by the hands of the persons who pack them. To be most satisfactory, dates should first be washed in hot water and then have cold water run over them. If they are to be stuffed, they should be thoroughly dried between towels or placed in a single layer on pans to allow the water to evaporate. While the washing of dates undoubtedly causes the loss of a small amount of food material, it is, nevertheless, a wise procedure.

122. Dates can be put to many valuable uses in the diet. They are much used in cakes, muffins, and hot breads and in fillings for cakes and cookies. Several kinds of delicious pastry, as well as salads and sandwiches, are also made with dates. Their use as a confection is probably the most important one, as they are very appetizing when stuffed with nuts, candy, and such foods.

FIGS

123. FIGS are a small pear-shaped fruit grown extensively in Eastern countries and to some extent in the western part of the United States. The varieties grown in this country are not especially valuable when they are dried, but they can be canned fresh in the localities where they are grown. Fresh figs cannot be shipped, as they are too perishable, but when dried they can be kept an indefinite length of time and they are highly nutritious, too. In fact, dried figs are nearly as high in food value as dates, and they are even more laxative.

124. Dried figs are found on the market both as pressed and pulled figs. Pressed figs are those which are pressed tightly together when they are packed and are so crushed down in at least one place that they are more or less sugary from the juice of the fig. Pulled figs are those which are dried without being pressed and are suitable for such purposes as stewing and steaming.

125. STEWED FIGS.--If pulled figs can be secured, they may be stewed to be served as a sauce. When prepared in this way, they will be found to make a highly nutritious and delightful breakfast fruit or winter dessert.

STEWED FIGS
(Sufficient to Serve Six)

2 c. pulled figs
3 c. water

Wash the figs and remove the stems. Put them into a preserving kettle with the water and allow them to come slowly to the boiling point. Simmer gently over the fire until the figs become soft. If they are desired very sweet, sugar may be added before they are removed from the heat and the juice then cooked until it is as thick as is desirable. Serve cold.

126. STEAMED FIGS.--When figs are steamed until they are soft and then served with plain or whipped cream, they make a delightful dessert. To prepare them in this way, wash the desired number and remove the stems. Place them in a steamer over boiling water and steam them until they are soft. Remove from the stove, allow them to cool, and serve with cream.

PRUNES

127. PRUNES are the dried fruit of any one of several varieties of plum trees and are raised mostly in Southern Europe and California. In their fresh state, they are purple in color, but they become darker during their drying. They are priced and purchased according to size, being graded with a certain number to the pound, just as lemons and oranges are graded with a certain number to the case. In food value they are about equal to dates and figs. They contain very little acid, but are characterized by a large quantity of easily digested sugar. They also have a laxative quality that makes them valuable in the diet.

128. STEWED PRUNES.--A simple way in which to prepare prunes is to stew them and then add sugar to sweeten them. Stewed prunes may be served as a sauce with cake of some kind or they may be used as a breakfast fruit.

STEWED PRUNES
(Sufficient to Serve Six)

1 lb. prunes
1 c. sugar

Look the prunes over carefully, wash them thoroughly in hot water, and soak them in warm water for about 6 hours. Place them on the stove in the same water in which they were soaked and which should well cover them. Cook slowly until they can be easily pierced with a fork or until the seeds separate from the pulp upon being crushed. Add the sugar, continue to cook until it is completely dissolved, and then remove from the stove and cool. If desired, more sweetening may be used or a few slices of lemon or a small amount of lemon peel may be added to give an agreeable flavor.

129. STUFFED PRUNES.--After prunes have been stewed, they may have the seeds removed and then be filled with peanut butter. Stuffed in this way

and served with whipped cream, as shown in Fig. 21, or merely the prune juice, they make an excellent dessert.

[Illustration: FIG. 21, Stewed prunes stuffed with peanut butter.]

Select prunes of good size and stew them according to the directions just given, but remove them from the fire before they have become very soft. Cool and then cut a slit in each one and remove the seed. Fill the cavity with peanut butter and press together again. Serve with some of the prune juice or with whipped cream.

130. PRUNE WHIP.--A very dainty prune dessert can be made from stewed prunes by reducing the prunes to a pulp and then adding the whites of eggs. Directions for this dessert follow:

PRUNE WHIP
(Sufficient to Serve Six)

1 c. prune pulp
1/4 c. powdered sugar
2 egg whites
Whipped cream

Make the prune pulp by removing the seeds from stewed prunes and forcing the prunes through a sieve or a ricer. Mix the powdered sugar with the pulp. Beat the whites of the eggs until they are stiff and then carefully fold them into the prune pulp. Chill and serve with whipped cream.

RAISINS

131. RAISINS are the dried fruit of various kinds of grapes that contain considerable sugar and are cured in the sun or in an oven. They come principally from the Mediterranean region and from California. They have an extensive use in cookery, both as a confection and an ingredient in cakes, puddings, and pastry. In food value, raisins are very high and contain sugar in the form of glucose; however, their skins are coarse cellulose and for this reason are likely to be injurious to children if taken in too large quantities. They are also valuable as a laxative and in adding variety to the diet if they are well cooked before they are served.

Like other dried fruits, raisins should be washed thoroughly before they are used. They may then be soaked in warm water and stewed in exactly the same way as prunes. Sugar may or may not be added, as desired. Sultana raisins, which are the seedless variety, are especially desirable for stewing, although they may be used for any of the other purposes for which raisins are used.

DRIED APPLES, APRICOTS, AND PEACHES

132. Apples, apricots, and peaches are fruits that are used extensively in their dried form. They enable the housewife to supply her family with fruit during seasons when it is impossible to obtain fresh fruit. They may also be used to take the place of canned fruit, especially when the supply is low or has been exhausted. Besides their use as a sauce, they may be used for pies and various desserts.

133. These fruits, which may all be used in just the same way, should be soaked before stewing and should be stewed according to the directions for the preparation and cooking of prunes. Then sufficient sugar to make them sweet should be added. If they are desired for sauce, they may be used without any further preparation. However, they may be substituted for fresh fruit in recipes that call for any of them or for prunes. For instance, dried apricots, after being stewed, may be passed through a sieve to make a puree and may then be used to make apricot whip or soufflé according to the directions given for other similar desserts. The flavor of apricots is very strong and a small amount of the pulp will flavor a large quantity of ice cream, sherbet, or water ice.

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FRUIT AND FRUIT DESSERTS

EXAMINATION QUESTIONS

- (1) To what are the flavors and odors of fruits chiefly due?
- (2) What food substances are found in only very small amounts in fruits?
- (3) Mention the kinds of carbohydrate to which the food value of fruits is chiefly due.
- (4) What parts of fruits make up the cellulose they contain?
- (5) Discuss the value of minerals in fruits.
- (6) Of what value in cookery are fruits containing large quantities of acid?
- (7) What qualities of fruits are affected as they ripen?
- (8) Discuss the digestibility of fruits.
- (9) What are the effects of cooking on fruit?
- (10) What sanitary precautions concerning fruits should be observed?
- (11) (a) How do weather conditions affect the quality of berries?
(b) What is the most important use of berries in cookery?
- (12) Name some varieties of apples that can be purchased in your locality that are best for: (a) cookery; (b) eating.
- (13) How can peach juice be utilized to advantage?
- (14) Mention the citrus fruits.
- (15) Describe a method of preparing grapefruit for the table.
- (16) Describe the preparation of oranges for salads and desserts.
- (17) Describe the appearance of bananas in the best condition for serving.
- (18) (a) Give a test for the ripeness of pineapples. (b) Describe

the most convenient method of preparing pineapples.

(19) Discuss the use of fruit cocktails.

(20) Describe the general preparation of dried fruits that are to be stewed.

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CANNING AND DRYING

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NECESSITY FOR PRESERVING FOODS

1. The various methods of preserving perishable foods in the home for winter use originated because of necessity. In localities where the seasons for fruits and vegetables are short, the available supply in early times was limited to its particular season. Then foods had to be preserved in some way to provide for the season of scarcity. It was not possible, as it is now, to obtain foods in all parts of the country from localities that produce abundantly or have long seasons, because there were no means of rapid transportation, no cold storage, nor no commercial canning industries.

2. In the small towns and farming communities, the first preservation methods for meats, as well as for fruits and vegetables, were pickling, curing, drying, and preserving. Not until later was canning known. It was this preserving of foodstuffs in the home that led to the manufacture and commercial canning of many kinds of edible materials. These industries, however, are of comparatively recent origin, the first canning of foods commercially having been done in France about a hundred years ago. At that time glass jars were utilized, but it was not until tin cans came into use later in England that commercial canning met with much favor.

3. Both canning in the home and commercial canning have had many drawbacks, chief among which was spoiling. It was believed that the spoiling of canned foods was due to the presence of air in the jars or cans, and it is only within the last 50 years that the true cause of spoiling, namely, the presence of bacteria, has been understood. Since that time methods of canning that are much more successful have been originated, and the present methods are the result of the study of bacteria and their functions in nature. It is now definitely known that on this knowledge depends the success of the various canning methods.

4. Since commercial canning provides nearly every kind of foodstuff, and since cold storage and rapid transportation make it possible to supply almost every locality with foods that are out of season, it has not been deemed so necessary to preserve foods in the home. Nevertheless, the present day brings forth a new problem and a new attitude toward the home preservation of foods. There are three distinct reasons why foods should be preserved in the home. The first is to bring about economy. If fruits, vegetables, and other foods can be procured at a price that will make it possible to preserve them in the home at a lower cost than that of the same foods prepared commercially, it will pay from an economical standpoint. The second is to promote conservation; that is,

to prevent the wasting of food. When fruits and vegetables are plentiful, the supply is often greater than the demand for immediate consumption. Then, unless the surplus food is preserved in some way for later use, there will be a serious loss of food material. The third is to produce quality. If the home-canned product can be made superior to that commercially preserved, then, even at an equal or a slightly higher cost, it will pay to preserve food in the home.

5. Of the methods of preserving perishable foods, only two, namely, canning and drying, are considered in this Section. Before satisfactory methods of canning came into use, drying was a common method of preserving both fruits and vegetables, and while it has fallen into disuse to a great extent in the home, much may be said for its value. Drying consists merely in evaporating the water contained in the food, and, with the exception of keeping it dry and protected from vermin, no care need be given to the food in storage. In the preparation of dried food for the table, it is transformed into its original composition by the addition of water, in which it is usually soaked and then cooked.

The drying of food is simple, and no elaborate equipment is required for carrying out the process. Dried food requires less space and care in storage than food preserved in any other way, and both paper and cloth containers may be used in storing it. When storage space is limited, or when there is a very large quantity of some such food as apples or string beans that cannot be used or canned at once, it is advisable to dry at least a part of them. When used in combination with canning, drying offers an excellent means of preserving foods and thus adding to their variety.

6. Canning has a greater range of possibilities than drying. A larger number of foods can be preserved in this way, and, besides, the foods require very little preparation, in some cases none at all, when they are removed from the cans. Practically every food that may be desired for use at some future time may be canned and kept if the process is carried out properly. These include the perishable vegetables and fruits of the summer season, as well as any winter vegetables that are not likely to keep in the usual way or that are gathered while they are immature.

Many ready-to-serve dishes may be made up when the ingredients are the most plentiful and canned to keep them for the time when they are difficult or impossible to obtain otherwise. Such foods are very convenient in any emergency. Often, too, when something is being cooked for the table, an extra supply may be made with no greater use of fuel and very little extra labor, and if the excess is canned it will save labor and fuel for another day. In the same way, left-over foods from the table may be preserved by reheating and canning them. Many foods and combinations of foods may be made ready for pies and desserts and then canned, it being often possible to use fruits that are inferior in appearance for such purposes.

Soup may be canned. It may be made especially for canning, or it may be made in larger quantity than is required for a meal and the surplus canned. For canning, it is an excellent plan to make soup more concentrated than that which would be served immediately, as such soup will require fewer jars and will keep better. Water or milk or the liquid from cooked vegetables or cereals may be added to dilute it when it is to be served.

Meat and fish also may be canned, and many times it is advisable to do this, especially in the case of varieties that cannot be preserved to advantage by such methods as salting, pickling, or curing.

7. The preservation of foods by canning and drying should not be looked at as an old-fashioned idea; rather, it is a matter in which the housewife should be vitally interested. In fact, it is the duty of every housewife to learn all she can about the best methods to employ. Canning methods have been greatly improved within the last few years, and it is a wise plan to adopt the newer methods and follow directions closely. Especially should this be done if foods canned by the older methods have spoiled or if mold has formed on top of the food in the jars.

In order to preserve foods successfully and with ease, the housewife should realize the importance of carrying out details with precision and care. The exactness with which the ingredients are measured, the choice and care of utensils, the selection and preparation of the food to be canned—all have a direct bearing on whether her results will be successful or not.

By observing such points and exercising a little ingenuity, the economical housewife may provide both a supply and a convenient variety of practical foods for winter use. For example, one single fruit or vegetable may be preserved in a number of ways. Thus, if there is a very large supply of apples that will not keep, some may be canned in large pieces, some may be put through a sieve, seasoned differently, and canned as apple sauce, and some may be cut into small pieces and canned for use in making pies. Apple butter and various kinds of jams and marmalades may be made of all or part apples, or the apples may be spiced and used as a relish. Combining fruits of different flavor in canning also adds variety. In fact, neither quinces nor apples canned alone are so delicious as the two properly combined and canned together.

In the same way, if the housewife will watch the markets closely and make good use of materials at hand, she may provide canned foods at comparatively little cost. Of course, the woman who has a garden of her own has a decided advantage over the one who must depend on the market for foods to can. The woman with access to a garden may can foods as soon as they have been gathered, and for this reason she runs less risk of losing them after they have been canned. Nevertheless, as has been pointed out, it is really the duty of every housewife to preserve food in the home for the use of her family.

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CANNING

PRINCIPLES OF CANNING

8. CANNING consists in sealing foods in receptacles, such as cans or jars, in such a way that they will remain sterile for an indefinite period of time. Several methods of canning are in use, and the one to adopt will depend considerably on personal preference and the money that can be expended for the equipment. In any case, successful results in canning depend on the care that is given to every detail that enters into the work. This means, then, that from the selection of the food to be canned to the final operation in canning not one thing that has to do with good results should be overlooked.

9. SELECTION OF FOOD FOR CANNING.--A careful selection of the food that is to be canned is of great importance. If it is in good condition at the time of canning, it is much more likely to remain good when canned than food that is not. The flavor of the finished product also depends a great deal on the condition of the food. Fruits have the best flavor when they are ripe, but they are in the best condition for canning just before they have completely ripened. Immediately following perfect ripeness comes the spoiling stage, and if fruits, as well as vegetables,

are canned before they are completely ripe, they are, of course, farther from the conditions that tend to spoil them. This, however, does not mean that green fruits or vegetables should be canned.

Whenever possible, any food that is to be canned should be perfectly fresh. The sooner it is canned after it has been gathered, the more satisfactory will be the results. For instance, it is better to can it 12 hours after gathering than 24 hours, but to can it 2 hours after is much better. Fruits, such as berries, that are especially perishable should not be allowed to stand overnight if this can be prevented; and it is absolutely necessary to can some vegetables, such as peas, beans, and corn, within a very few hours after gathering. Unless this is done, they will develop a bad flavor because of flat sour, a condition that results from the action of certain bacteria. Imperfect fruits should not be canned, but should be used for making jam, marmalade, or jelly.

10. WHY CANNED FOODS SPOIL.--Canned foods spoil because of the action of micro-organisms that cause fermentation, putrefaction, and molding. The reasons for the spoiling of food are thoroughly discussed in Essentials of Cookery, Part 2, and in that discussion canning is mentioned as one of the means of preserving food or preventing it from spoiling. However, when canning does not prove effective, it is because undesirable bacteria are present in the food. Either they have not been destroyed by the canning process or they have been allowed to enter before the jar was closed, and have then developed to such an extent as to cause the food to spoil. Odors, flavors, and gases result from the putrefaction, fermentation, or molding caused by these bacteria, and these make the foods offensive or harmful, or perhaps both.

11. PREVENTING CANNED FOODS FROM SPOILING.--From what has just been said, it will be seen that the success of canning depends entirely on destroying harmful micro-organisms that are present in the food and preventing those present in the air from entering the jars in which the food is placed.

Some foods are more difficult to keep than others, because bacteria act on them more readily and the foods themselves contain nothing that prevents their growth. Among such foods are meat, fish, peas, corn, beans, and meat soups. On the other hand, some foods contain acids that prevent the growth of bacteria, and these keep easily. Among these are rhubarb, cranberries, and green gooseberries. However, foods that keep easily are few, and in most cases extreme care in the process of canning must be exercised.

12. While warmth is necessary for bacterial growth, very high temperatures will destroy or retard it. In canning, a temperature as high as 212 degrees Fahrenheit, or boiling point, retards the growth of active bacteria, but retarding their growth is not sufficient. They must be rendered inactive. To do this requires either a higher temperature than boiling point or long continued cooking at 212 degrees. Spores

are a protective form that many kinds of bacteria assume under unfavorable conditions. They are very difficult to kill, and unless they are completely destroyed in the canning process, they will develop into active bacteria when conditions again become favorable. The result of the spore development is the spoiling of the food.

13. Other things besides the application of heat assist in the keeping of canned food, as, for example, the acids of the fruits and vegetables themselves, as has been mentioned. The use of sugar also assists; the greater the quantity of sugar in solution the easier it will be to keep the food. This is proved in the case of jams and jellies, which will keep without being sealed tight or put into jars immediately after cooking. Salt helps to keep vegetables that are canned, and, in making butters, conserves, and pickles, the spices and vinegars used help to protect the foods from bacterial action. However, none of these things are essential to the keeping of any sterile food, by which is meant food in which all bacteria or sources of bacteria have been rendered inactive by the application of sufficient heat.

14. CANNING PRESERVATIVES.--Numerous compounds, usually in the form of powders, are advertised as being useful for keeping canned foods from spoiling. None of them should be used, however, because they are unnecessary. If the work of canning is carefully and effectively done, good foods will keep perfectly without the addition of a preservative. The pure-food laws of the United States and of many of the states themselves forbid the use of some preservatives because of their harmful effect on the human system. For this reason, to say nothing of the extra expense that would be incurred in their use, such preservatives may well be left alone.

GENERAL EQUIPMENT FOR CANNING

15. The equipment required for canning depends on two things: the quantity of food to be canned at one time and, since there are several canning methods in use, the canning method that is to be employed.

Various kinds of elaborate equipment have been devised to make the work of canning easy as well as effective. However, it is possible to do excellent work with simple equipment, and if the matter of expense must be considered there should be no hesitation about choosing the simplest and least expensive and doing the work in the best possible way with it. It is important also that utensils already included in the household equipment be improvised to meet the needs of the canning season as far as possible.

16. Whatever the canning method that is to be followed may be, there are a number of utensils and containers that go to make up the general equipment that is required. Familiarity with such an equipment is extremely necessary for correct results in canning, and for this reason the general equipment is discussed here in detail. The special equipment needed for each of the canning methods, however, is not taken up until the method is considered. In giving this general equipment, mention is made of some utensils that are convenient but not absolutely necessary. Any unnecessary, but convenient, part of a canning equipment should therefore be chosen with a view to its labor-saving qualities and its expense. A device that will make the keeping of canned foods more certain and prevent loss may be a valuable purchase; still, that which makes for greater convenience, but not absolute saving, need not be

considered a necessity.

17. VESSELS FOR CANNING.--The pots, kettles, and pans in ordinary use in the kitchen for cooking purposes are usually satisfactory for the canning of foods. Those made of tin or iron, however, are not so good as enameled ones or those made of other metals, such as aluminum. Especially is this true of utensils used for the canning of acid fruits or vegetables, because, if such food remains in contact with tin or iron for more than a few minutes, the acid will corrode the surface sufficiently to give the food a bad or metallic taste. In addition, such utensils often give the food a dark color. If enameled kettles are used for the cooking of foods that are to be canned, it is important that the surface be perfectly smooth and unbroken. Otherwise, it will be difficult to prevent burning; besides, chips of the enamel are liable to get into the food. Kettles for the cooking of fruits with sirup should be flat and have a broad surface. Fruit is not so likely to crush in such kettles as in kettles that are deep and have a small surface.

18. KNIVES, SPOONS AND OTHER SMALL UTENSILS.--Many of the small utensils in a kitchen equipment are practically indispensable for canning purposes. Thus, for paring fruits and vegetables and cutting out cores, blossoms, and stem ends or any defective spots, nothing is more satisfactory than a sharp paring knife with a good point. For paring acid fruits, though, a plated knife is not so likely to cause discoloring as a common steel knife. There are, however, other useful implements for special work, such as the *_strawberry huller_*, Fig. 1, for removing the stems of strawberries, and the *_peach pitter_*, Fig. 2, for removing the stones from clingstone peaches. For placing the food to be canned into jars, both forks and large spoons are necessities. A large spoon with holes or slits in the bowl is convenient for picking fruits and vegetables out of a kettle when no liquid is desired, as well as for skimming a kettle of fruit. For packing foods into jars, a long-handled spoon with a small bowl is convenient. Still another useful small utensil is a short, wide funnel that may be inserted into the mouth of a jar and thus permit the food to be dipped or poured into it without being spilled.

[Illustration: FIG. 1]

19. DEVICES FOR MEASURING.--Accurate measures are necessary in canning; in fact, some of the work cannot be done satisfactorily without them. A half-pint measuring cup and a quart measure with the cups marked on it are very satisfactory for making all measures.

Scales are often convenient, too. For measuring dry materials, they are always more accurate than measures. Many canning proportions and recipes call for the measurement of the ingredients by weight rather than by measure. When this is the case and a pair of scales is not convenient, it is almost impossible to be certain that the proportions are correct. For instance, if a recipe calls for a pound of sugar and an equal amount of fruit, a measuring cup will in no way indicate the correct quantity.

20. COLANDER AND WIRE STRAINER.--For the cleansing of fruits and vegetables that are to be canned, a colander is of great assistance; also, if a large wire strainer is purchased, it may be used as a sieve and for scalding and blanching, steps in canning that are explained later.

[Illustration: FIG. 2]

21. GLASS JARS.--For household canning, the most acceptable containers for food are glass jars that may be closed air-tight with jar rubbers and tops. Use is sometimes made of bottles, jars, and cans of various kinds that happen to be at hand, but never should they be employed unless they can be fitted with covers and made positively air-tight. Like utensils, the glass jars that are a part of the household supply should be used from year to year, if possible, but not at the loss of material. Such loss, however, will depend on the proper sealing of the jars, provided everything up to that point has been correctly done. All jars should be carefully inspected before they are used, because imperfect or broken edges are often responsible for the spoiling of food.

In purchasing glass jars, only what are known as first quality should be selected. Cheap jars are likely to be seconds and will not prove so satisfactory. Glass jars may be purchased in sizes that hold from 1/2 pint to 2 quarts. If possible, food should be canned in the size of jar that best suits the number of persons to be served.

If the family consists of two, pint jars will hold even more than may be used at one time, while if the family is large the contents of a quart jar may not be sufficient.

[Illustration: FIG. 3]

22. Numerous types of glass jars are to be had. Some of them are more convenient than others and may be made air-tight more easily. These two features are the most important to consider in making a selection. Jars that close with difficulty, especially if the tops screw on, are not likely to keep food successfully because the bacteria in the air will have a chance to enter and thus cause the food to spoil.

Glass jars used for canning foods have improved with canning methods. The old-style jars had a groove into which the cover fit, and melted sealing wax or rosin was poured into the space surrounding the cover. Later came the screw-top jar shown in Fig. 3. This type of jar has been extensively used with excellent results. Both the mouth of this jar and the jar top, which is made of metal, usually zinc, lined with glass or porcelain, have threads that match, and the jar is sealed by placing the jar rubber over the top, or ridge, of the jar and then screwing the jar top firmly in place. Such jars, however, are more difficult to make air-tight than some of the newer types. One of these jars is illustrated in Fig. 4. It is provided with a glass cover that fits on the ridge of the jar and a metal clasp that serves to hold the cover in place and to make the jar air-tight after a rubber is placed in position. Another convenient and simple type of glass jar, known as the automatic seal top, has a metal cover with a rubber attached.

Another improvement in jars is that the opening has been enlarged so that large fruits and vegetables, such as peaches, tomatoes, etc., can be packed into them whole. With such wide-mouthed jars, it is easier to pack the contents in an orderly manner and thus improve the appearance of the product. Besides, it is a simpler matter to clean such a jar than one that has a small opening.

[Illustration: FIG. 4]

23. JAR TOPS AND COVERS.--While the tops, or covers, for glass jars are

made of both metal and glass, as has been stated, the glass tops meet with most favor. Of course, they are breakable, but they are even more durable than metal tops, which are usually rendered less effective by the bending they undergo when they are removed from the jar. Covers made of zinc are being rapidly abandoned, and it has been proved that the fewer the grooves and the simpler the cover, the more carefully and successfully can it be cleaned. For safety, glass tops that have become chipped or nicked on the edges that fit the jar should be replaced by perfect ones. The covers for automatic-seal jars must be pierced before they can be removed, and this necessitates a new supply for each canning. If there is any question about the first-class condition of jar covers, whether of metal or glass, tops that are perfect should be provided.

24. JAR RUBBERS.--Jar rubbers are required with jar tops to seal jars air-tight. Before they are used, they should be tested in the manner shown in Fig. 5. Good jar rubbers will return to their original shape after being stretched. Such rubbers should be rather soft and elastic, and they should fit the jars perfectly and lie down flat when adjusted. A new supply of rubbers should be purchased each canning season, because rubber deteriorates as it grows old. Rubbers of good quality will stand boiling for 5 hours without being affected, but when they have become stiff and hard from age it is sometimes impossible to make jars air-tight. Occasionally, two old rubbers that are comparatively soft may be used in place of a new one, and sometimes old rubbers are dipped in paraffin and then used. However, if there is any difficulty in sealing jars properly with rubbers so treated, they should be discarded and good ones used.

25. TIN CANS.--For household canning, tin cans are not so convenient as glass jars, but in spite of this they are coming into extensive use. The kind that may be used without any special equipment has a tin lid that fits into a groove and is fastened in place with rosin or sealing wax. Some cans, however, require that the lids be soldered in place. While soldering requires special equipment, this method of making the cans air-tight is the best, and it is employed where considerable canning is done, as by canning clubs or commercial canners.

[Illustration: FIG. 5]

In the purchase of tin cans, the size of the opening should receive consideration. If large fruits and vegetables, such as peaches, pears, and tomatoes, are to be canned, the opening must be a large one; whereas, if peas, beans, corn, and other small vegetables or fruits are to be canned, cans having a smaller opening may be chosen. When acid fruits or vegetables are to be canned, use should be made of cans that are coated with shellac, as this covering on the inside of the cans prevents any action of the acid on the tin.

* * * * *

CANNING METHODS

GENERAL DISCUSSION

26. The methods employed for the canning of foods include the _open-kettle method_, the _cold-pack method_, the _steam-pressure method_, and the _oven method_. Of these, the open-kettle method is perhaps the oldest household method of canning, and it is still used by

many housewives. The other methods, which are newer, seem troublesome to the housewife who is familiar with the open-kettle method, yet it will only be fair to give the new methods a trial before deciding which to use. The one-period cold-pack method has much to recommend it. Foods canned in this way undergo less change in form and flavor than those canned by the open-kettle method; besides, there is less danger of spoiling. In fact, many foods, such as vegetables and meats, that cannot be canned satisfactorily by the open-kettle method will keep perfectly if they are carefully preserved by the one-period cold-pack method. The steam-pressure method requires the use of special equipment, as is explained later. While it is a very acceptable canning method, it is not accessible in many homes. The oven method is liked by many housewives, but it offers almost the same chance for contamination as does the open-kettle method.

OPEN-KETTLE METHOD

27. The OPEN-KETTLE METHOD of canning is very simple and requires no equipment other than that to be found in every kitchen. It consists in thoroughly cooking the food that is to be canned, transferring it to containers, and sealing them immediately.

28. UTENSILS REQUIRED.--Not many utensils are required for the open-kettle canning method. For cooking the food, a large enamel or metal vessel other than tin or iron should be provided. It should be broad and shallow, rather than deep, especially for fruit, as this food retains its shape better if it is cooked in a layer that is not deep. The other utensils for canning fruits and vegetables by this method are practically the same as those already discussed--measuring utensils, a knife, large spoons, pans for sterilizing jars or cans, covers, rubbers, and jars or cans into which to put the food.

29. PROCEDURE.--The first step in the open-kettle canning method consists in sterilizing the containers. To do this, first clean the jars, covers, and rubbers by washing them and then boiling them in clear water for 15 to 20 minutes.

Next, attention should be given to the food that is to be canned. Look it over carefully, cut out any decayed portions, and wash it thoroughly. Sometimes roots, leaves, stems, or seeds are removed before washing, and sometimes this is not done until after washing. At any rate, all dirt or foreign material must be washed from foods before they are ready for canning.

After preparing the food, it must be cooked. If fruit is being canned, put it into the required sirup, the making of which is explained later, and cook it until it is well softened, as if preparing it for immediate table use. If vegetables are being canned, cook them in the same way, but use salt and water instead of sirup. When the food is cooked, transfer it to the sterile jars and seal at once with the sterile rubbers and covers. Then invert each jar to permit the food to cool and to test for leaks.

30. The danger of not securing good results with the open-kettle method lies in the possibility of contaminating the contents before the jar is closed and sealed. In addition to having the jars, rubbers, and covers sterile, therefore, all spoons and other utensils used to handle the cooked food must be sterile. Likewise, the jars must be filled to the

top and the covers put on and made as firm and tight as possible at once, so that as few bacteria as possible will enter. If screw-top cans are used, the tops should not be twisted or turned after cooling, as this may affect the sealing. If jars leak upon being turned upside down, the contents must be removed and reheated and the jar must be fitted with another cover. Then both jar and cover must be sterilized and the contents returned and sealed immediately.

COLD-PACK METHOD

31. The COLD-PACK METHOD of canning differs from the open-kettle method in that the food to be canned is not cooked in a kettle before placing it in the jars and sealing them. In this method, the food to be canned is prepared by washing, peeling, scraping, hulling, stemming, seeding, or cutting, depending on the kind. Then it is scalded or blanched and plunged into cold water quickly and taken out immediately, the latter operation being called cold-dipping. After this it is placed into hot jars, covered with boiling liquid--boiling water and salt for vegetables, meats, fish, or soups, and boiling sirup for fruits. Then the filled jars are covered loosely and placed in a water bath and processed; that is, cooked and sterilized. When food that is being canned is subjected to processing only once, the method is referred to as the one-period cold-pack method; but when the food in the jars has not been blanched and cold-dipped and is processed, allowed to stand 24 hours and then processed again, and this operation repeated, it is called the fractional-sterilization method. The equipment required for the cold-pack canning method and the procedure in performing the work are taken up in detail, so that every point concerning the work may be thoroughly understood.

[Illustration: FIG. 6]

32. UTENSILS REQUIRED.--The utensils required for canning by the cold-pack method are shown assembled in Fig. 6. Chief among them is a sterilizer, or boiler, which consists of a large fiat-bottomed vessel fitted with a rack and a tight-fitting cover. A number of such devices are manufactured for canning by the cold-pack method, but it is possible to improvise one in the home. A wash boiler, a large pail, a large lard can, or, in fact, any large vessel with a flat bottom into which is fitted a rack of some kind to keep the jars 3/4 inch above the bottom can be used. Several layers of wire netting cut to correct size and fastened at each end to a 3/4-inch strip of wood will do very well for a rack. In any event, the vessel must be deep enough to allow the water to cover the jars completely and must have a tight-fitting cover. Besides a sterilizer, there are needed three large vessels, one for scalding the food that is to be canned, one for cold-dipping, and one for keeping the jars hot. To hold the food that is to be dipped, a sieve, a wire basket, also shown in Fig. 6, or a large square of cheesecloth must also be provided, and for placing jars in the water bath, a can lifter, a type of which is shown on the table in Fig. 6, may be needed. The remainder of the equipment is practically the same as that described under the heading General Equipment for Canning.

PROCEDURE IN THE ONE-PERIOD COLD-PACK METHOD

33. PREPARING THE CONTAINERS.--The first step in the cold-pack method consists in preparing the containers for the food. The jars, rubbers,

and covers, however, do not have to be sterilized as in the open-kettle method. But it is necessary first to test and cleanse the jars and then to keep them hot, so that later, when they are filled and ready to be placed in the water bath, they will not crack by coming in contact with boiling water. The best way in which to keep the jars hot is to let them stand in hot water.

[Illustration: FIG. 7]

34. PREPARATION OF THE FOOD.--Attention should next be directed to the preparation of the food to be canned; that is, clean it and have it ready for the processes that follow. The fruits or vegetables may be canned whole or in pieces of any desirable size. What to do with them is explained later, when the directions for canning the different kinds are discussed. While the food is undergoing preparation, fill the sterilizer with hot water and allow it to come to the boiling point.

35. SCALDING AND BLANCHING.--When the food is made ready, the next step is to scald or blanch it. Scalding is done to loosen the skin of such food as peaches, plums, and tomatoes, so that they may be peeled easily. To scald such fruits or vegetables, dip them quickly into boiling water and allow them to remain there just long enough to loosen the skin. If they are ripe, the scalding must be done quickly; otherwise they will become soft. They should never be allowed to remain in the water after the skin begins to loosen. For scalding fruits and vegetables a wire basket or a square of cheesecloth may be used in the manner shown in Figs. 7 and 8.

Blanching is done to reduce the bulk of such foods as spinach and other greens, to render them partly sterilized, and to improve their flavor. It consists in dipping the food into boiling water or suspending it over live steam and allowing it to remain there for a longer period of time than is necessary for scalding. To blanch food, place it in a wire basket, a sieve, or a piece of clean cheesecloth and lower it into boiling water or suspend it above the water in a closely covered vessel. Allow it to remain there long enough to accomplish the purpose intended.

[Illustration: FIG. 8]

36. COLD DIPPING.--After the food to be canned is scalded or blanched, it is ready for cold-dipping. Cold-dipping is done partly to improve the color of the food. It stops the softening process at once, makes the food more firm and thus easier to handle, and helps to loosen the skin of foods that have been scalded. It also assists in destroying bacteria by suddenly shocking the spores after the application of heat. Cold-dipping, in conjunction with blanching or scalding, replaces the long process of fractional sterilization, and is what makes the one-period cold-pack method superior to this other process. To cold-dip food, simply plunge that which has just been scalded or blanched into cold water, as in Fig. 9, and then take it out at once.

37. PACKING THE JARS.--Packing the jars immediately follows cold-dipping, and it is work that should be done as rapidly as possible. Remove the jars from the hot water as they are needed and fill each with the cold-dipped fruit or vegetable. Pack the jars in an orderly manner and as solidly as possible with the aid of a spoon, as in Fig. 10. Just this little attention to detail not only will help to improve the appearance of the canned fruit, but will make it possible to put more food in the jars.

[Illustration: FIG. 9]

When a jar is filled, pour into it whatever liquid is to be used, as in Fig. 11. As has been stated, hot sirup is added for fruits and boiling water and salt for vegetables. However, when fruit is to be canned without sugar, only water is added. With tomatoes and some greens, no liquid need be used, because they contain a sufficient amount in themselves.

[Illustration: FIG. 10]

38. PREPARATION FOR THE WATER BATH.--As the jars are filled, they must be prepared for the water bath. Therefore, proceed to place the rubber and cover on the jar. Adjust the rubber, as shown in Fig. 12, so that it will be flat in place. Then put the cover, or lid, on as in Fig. 13, but do not tighten it. The cover must be loose enough to allow steam to escape during the boiling in the water bath and thus prevent the jar from bursting. If the cover screws on, as in the jar at the left, do not screw it down tight; merely turn it lightly until it stops without pressure being put upon it. If glass covers that fasten in place with the aid of a clamp are to be used, as in the jar at the right, simply push the wire over the cover and allow the clamp at the side to remain up. Jars of food so prepared are ready for processing.

[Illustration: FIG 11]

[Illustration: FIG. 12]

39. PROCESSING.--The purpose of the water bath is to process the food contained in the jars before they are thoroughly sealed. Therefore, when the jars are filled, proceed to place them in the water bath. The water, which was placed in the sterilizer during the preparation of the food, should be boiling, and there should be enough to come 2 inches over the tops of the jars when they are placed in this large vessel. In putting the jars of food into the sterilizer, place them upright and allow them to rest on the rack in the bottom. If the filled jars have cooled, they should be warmed before placing them in the sterilizer by putting them in hot water. On account of the boiling water, the jars should be handled with a jar lifter, as in Fig. 14. However, if the sterilizer is provided with a perforated part like that in Fig. 15, all the jars may be placed in it and then lowered in place.

[Illustration: FIG. 13]

When the jars are in place, put the tight-fitting cover on the sterilizer and allow the water to boil and thus cook and sterilize the food in the jars. The length of time for boiling varies with the kind of food and is given later with the directions for canning different foods. The boiling time should be counted from the instant the water in the sterilizer begins to bubble violently. A good plan to follow, provided an alarm clock is at hand, is to set it at this time, so that it will go off when the jars are to be removed from the sterilizer.

[Illustration: FIG. 14]

[Illustration: FIG. 15]

40. SEALING THE JARS.--After processing the food in this manner, the

jars must be completely sealed. Therefore, after the boiling has continued for the required length of time, remove the jars from the water with the aid of the jar lifter or the tray and seal them at once by clamping or screwing the covers, or lids, in place, as in Fig. 16. Sometimes, the food inside the jars shrinks so much in this process that the jars are not full when they are ready to be sealed. This is illustrated in Fig. 17. Such shrinkage is usually the result of insufficient blanching, or poor packing or both. However, it will not prevent the food from keeping perfectly. Therefore, the covers of such jars of food must not be removed and the jars refilled; rather, seal the jars tight immediately, just as if the food entirely filled them. If, in sealing jars removed from the water bath, it is found that a rubber has worked loose, shove it back carefully with the point of a clean knife, but do not remove the cover.

[Illustration: FIG. 15]

As the jars are sealed, place them on their sides or stand them upside down, as in Fig. 18, to test for leaks, in a place where a draft will not strike them and cause them to break. If a leak is found in any jar, a new rubber and cover must be provided and the food then reprocessed for a few minutes. This may seem to be a great inconvenience, but it is the only way in which to be certain that the food will not be wasted by spoiling.

[Illustration: FIG. 17]

[Illustration: FIG. 18]

[Illustration: FIG. 19]

41. WRAPPING AND LABELING.--When the jars of food have stood long enough to cool, usually overnight, they are ready for wrapping and labeling. Wrapping is advisable for practically all foods that are canned, so as to prevent bleaching, and, of course, labeling is necessary when canned food is wrapped, so as to enable it to be distinguished readily when it is in storage. To wrap canned foods, proceed as in Fig. 19. Use ordinary wrapping paper cut to a size that will be suitable for the jar, and secure it in place with a rubber band, as shown, or by pasting the label over the free edge.

PROCEDURE IN THE FRACTIONAL-STERILIZATION METHOD

42. In canning food by the FRACTIONAL-STERILIZATION CANNING METHOD, the procedure is much the same as in the one-period cold-pack method. In fact, the only difference between the two is that blanching and cold-dipping are omitted, and in their stead the food in the jars is subjected to three periods of cooking. When the jars of food are made ready for processing in the sterilizer, they are put in the water bath, boiled for a short time, and then allowed to cool. After 24 hours, they are again boiled for the same length of time and allowed to cool. After another 24 hours, they are subjected to boiling for a third time. Then the jars of food are removed and sealed as in the one-period cold-pack method. By the fractional-sterilization method, the spores of bacteria contained in the food packed in the jars are given a chance to develop during the 24-hour periods after the first and second cookings, those which become active being destroyed by cooking the second and third times. Although some canners prefer this method to those already

mentioned, the majority look on it with disfavor, owing to the length of time it requires.

STEAM-PRESSURE METHODS

43. For canning foods by steam pressure, special equipment is necessary. In one of the steam-pressure methods, what is known as a _water-seal outfit_ is required, and in the other a device called a _pressure cooker_ is employed. The work of getting the containers ready, preparing the food for canning, packing it into the jars, and sealing and testing the jars is practically the same in the steam pressure methods as in the cold-pack methods. The difference lies in the cooking and sterilization of the foods after they are in the jars and partly sealed and in the rapidity with which it may be done.

44. CANNING WITH A WATER-SEAL OUTFIT.--A water-seal outfit, which may be purchased in stores that sell canning supplies, consists of a large metal vessel into which fits a perforated metal basket designed to hold jars of food. This vessel is also provided with a tight-fitting cover having an edge that passes down through the water, which is placed in the bottom of the vessel. When heat is applied to the bottom of the vessel, the water inside of it is changed into steam. The cover prevents the steam from passing out, and it collects in and around the metal basket supporting the jars of food. Enough steam is generated in this outfit to raise the temperature about 4 to 6 degrees above the boiling point. Thus, the water-seal outfit will cook the food in the cans in about one-fourth less time than will the water bath of the one-period cold-pack canning method.

[Illustration: FIG. 20]

45. CANNING WITH A PRESSURE COOKER.--For canning by steam pressure, a number of different kinds of pressure cookers are to be had, but in principle they are all alike and they are always made of heavy material, so as to withstand the severe steam pressure generated in them. In Fig. 20 is shown one type of pressure cooker. It is provided with a bail, or handle, for carrying it and with clamps that hold the cover firmly in place. Attached to the cover is a steam gauge, which indicates the steam pressure inside the cooker, and a pet-cock, which is used to regulate the pressure. On some cookers, a thermometer is also attached to the cover. Also, inside of some, resting on the bottom, is an elevated rack for supporting the jars of food that are to be sterilized and cooked. In operating a pressure cooker, water for generating steam is poured in until it reaches the top of this rack, but it should not be allowed to cover any part of the jars of food. Steam is generated by applying heat to the bottom of the cooker, and the longer the heat is applied the higher the steam pressure will go.

It is possible to secure a steam pressure of 5 to 25 pounds per square inch in a cooker of this kind. This means that the temperature reached will vary from a few degrees above boiling to about 275 degrees Fahrenheit. At a pressure of 20 pounds, the temperature will be about 260 degrees. The heavier the material used for a cooker and the more solid the construction, the higher may go the steam pressure, and, of course, the temperature. Some cookers of light construction will not permit of a pressure greater than 5 pounds, but even such cookers are very satisfactory. It is the high temperature that may be developed in a pressure cooker that greatly shortens the time required for cooking jars

of food and making them sterile.

CANNING WITH TIN CANS

46. For canning food in some tin cans, it is necessary to have a soldering outfit for properly closing them. This consists of a capping steel, a tipping iron, solder in small strips and in powder form, a small can of sal ammoniac, and a bottle of flux, which is a fluid that makes solder stick to tin.

47. Prepare the food that is to be canned in tin cans in the same way as for canning in jars by the cold-pack method; likewise, pack the cans in the same way, but allow the liquid and fruit or vegetables to come to within only 1/4 inch of the top. Then proceed to close the cans. Apply

the flux to the groove in the top of each can where the solder is to be melted, using for this purpose a small brush or a small stick having a piece of cloth wrapped around one end. Heat the capping steel, which should be thoroughly clean, until it is almost red hot, dip it quickly into a little of the flux, and then put it into a mixture consisting of equal parts of sal ammoniac and powdered solder until it is covered with bright solder. Put the cap on the can and apply the hot capping steel covered with the solder. Hold this device firmly, press it downwards, and turn it slowly as the solder melts and thus joins the cap to the can.

48. After the caps are soldered in place, the air inside the cans must be driven out through the small vent, or opening, usually in the center of the cap, and the cans made air-tight. Therefore, place the cans into boiling water to within 1/2 inch of the top and let them remain there for a few minutes. Usually, 3 minutes in boiling water is sufficient. Immediately after exhausting, as this process is called, apply a little of the flux as in capping, and, with the tipping iron well heated and a strip of solder, seal the hole in the caps. After this is done, test each can for leaks by submerging it in water. If bubbles arise, it is an indication that the cover is not tight and must be resoldered.

49. The next step consists in processing the cans of food. This may be done either in a water bath or in a pressure cooker. If the cans are to be processed in a water bath, keep them in the boiling water just as long as glass jars of food would be kept there. If a pressure cooker is to be used, keep the cans in it for 6 to 40 minutes, depending on the steam pressure employed, the ripeness of the food or the necessity for cooking it, and the size of the cans employed. For canning meat or fish, processing in a pressure cooker is the most successful, as the high temperature reached in it kills bacteria, which are difficult to destroy at the boiling point.

As soon as the cans of food are removed from the water bath or the pressure cooker, plunge them into cold water to stop the cooking and prevent the food from getting soft and mushy. Then label the cans, so that no mistake will be made as to their contents.

50. In another method, the tin cans may be closed without soldering the caps on. The caps used in this case are different from those which must be soldered. They are forced in place by a hand-pressure machine that may be attached to a table. Otherwise the procedure is the same as that just given.

OVEN METHOD

51. The OVEN METHOD oven method of canning is thought to be very satisfactory by many housewives, but, as it is necessary to remove the covers after cooking the contents of the jars, food canned in this way is subjected to contamination, just as in the open-kettle method. In addition, the jars are difficult to handle in the oven, owing to the extreme heat that is required to cook the food in the jars.

52. In canning by the oven method, proceed by preparing the food as for the cold-pack canning method; also, fill the jars with fruit or vegetables and with liquid or sirup as in this method. Put the covers on the jars loosely, omitting the jar rubbers. Place the jars in a shallow pan of water, as in Fig. 21, and set the pan containing the jars into a stove oven, which should be only slightly warm. At the same time place the jar rubbers in a pan of boiling water, so that they may be sterilized as the food cooks. When the jars are in the oven, increase the heat gradually until the food in them boils. Then keep up a temperature that will allow the food to boil quietly for a period long enough to cook it soft and sterilize it. Usually, 30 to 45 minutes after boiling has begun will be sufficient. During the cooking some of the liquid in the jars evaporates. Therefore, when the jars of food are ready to be removed from the oven, have boiling water or sirup ready, remove the cover of each jar in turn, and fill the jar brimful with the liquid. Then place a sterilized rubber in place and fasten the cover down tight. The procedure from this point on is the same as in the other canning methods.

[Illustration: FIG. 21]

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CANNING VEGETABLES AND FRUITS

PREPARATION FOR CANNING

53. In canning, as in all other tasks related to cookery, the housewife's aim should be to do the greatest amount of work, and do it well, with the least effort on her part. The results she gets in canning, then, will depend considerably on the orderly arrangement of the utensils and materials with which she is to do the work. But of greater importance is the preparation she makes to eliminate as much as she can the possibilities of contamination, for, as has been repeatedly pointed out, success in canning depends on the absence of dangerous bacteria.

54. From what has just been mentioned, it is essential that everything about the person who is to do the work and the place in which the work is to be done should be clean. Clean dresses and aprons should be worn, and the hands and finger nails should be scrupulously clean. The kitchen floor should be scrubbed and the furniture dusted with a damp cloth. Any unnecessary utensils and kitchen equipment should be put out of the way and those required for canning assembled and made ready for the work. The jars should be washed and the covers tested by fitting them on without the rubbers. If a glass cover rocks, it does not fit correctly; and if a screw cover will not screw down tight, it should be discarded. Without the rubber, there should be just enough space between the cover

and the jar to permit the thumb nail to be inserted as is shown in Fig. 3. The edge of each jar and each glass cover should be carefully examined every time it is used, so that none with pieces chipped off will be used, as these will admit air. This examination is made by running the finger over the edge of the jar and the cover, as is shown in Fig. 4. The jars, covers, and rubbers should be put into pans of cold water, and the water should be brought to the boiling point and allowed to boil for 15 minutes or more while the fruit or vegetables are being prepared for canning. They should be kept in the hot water until the food is ready to be placed in them. In the one-period cold-pack method, it is not necessary to boil the jars, rubbers, and covers, but this may be done if desired.

To produce good-looking jars of food, the fruit or vegetables to be canned should be graded to some extent; that is, the finest of the fruits or vegetables should be separated and used by themselves, as should also those of medium quality. Often it is wise to use the poorest foods for purposes other than canning. The food may then be canned according to the chosen method, but by no means should methods be mixed. In handling the product after it has been cooked by the open-kettle method, any spoon, funnel, or other utensil must be thoroughly sterilized in the same way as the jars and their covers and rubbers; indeed, no unsterile utensil should ever be allowed to touch the food when a jar is being filled.

[Illustration: FIG. 22]

55. It is by the observance of such precautions as these, some of them seemingly unimportant, that the housewife will be repaid for her efforts in canning and be able to produce canned fruits and vegetables like those shown in color in Fig. 22. This illustration shows, with a few exceptions, such foods canned by the one-period cold-pack method, and merits close inspection. As will be observed, the jars are full and well packed and the color of each food is retained. Each can of food indicates careful work and serves to show the housewife what she may expect if she performs her work under the right conditions and in the right way. This illustration likewise serves to demonstrate that any food may be successfully canned by the one-period cold-pack method, a claim that cannot be made for the other canning methods. In fact, some of the foods illustrated, as, for instance, peas and corn, cannot be canned successfully by any other method.

DIRECTIONS FOR CANNING VEGETABLES

56. CLASSIFICATION OF VEGETABLES.--To simplify the directions here given for the canning of vegetables, this food is divided into four groups, as follows:

1. Greens, which include all wild and cultivated edible greens, such as beet greens, collards, cress, dandelion, endive, horseradish greens, kale, mustard greens, spinach, New Zealand spinach, and Swiss chard.
2. Pod and related vegetables, which include asparagus, beans, both string and wax, Brussels sprouts, cabbage, cauliflower, eggplant, okra, peppers, both green and ripe, summer squash, and vegetable marrow.
3. Root and tuber vegetables, which include beets, carrots, kohlrabi, parsnips, rutabagas, salsify, sweet potatoes, and turnips.

4. Special vegetables, which include beans, both Lima and shell, corn, mushrooms, peas, pumpkin, sauerkraut, squash, succotash and other vegetable combinations, and tomatoes.

The convenience of this plan will be readily seen when it is understood that, with the exception of the special vegetables, the same method of preparation and the time given for the various steps in the canning process apply to all vegetables of the same class. Thus, if directions for a vegetable belonging to a certain class are not definitely stated in the text, it may be taken for granted that this vegetable may be canned in the manner given for another vegetable of the same class.

57. GENERAL DIRECTIONS.--The canning of vegetables may be most successfully done by the one-period cold-pack method. Tomatoes, however, because of the large quantity of acid they contain, may be canned and kept with little difficulty by the open-kettle method, but they will be found to keep their shape better if the cold-pack method is employed.

The time required for cooking any vegetable after it is packed in jars depends on the kind and the age. Therefore, if a vegetable is hard or likely to be tough, it may be necessary to increase the time given in the directions; whereas, if it is young and tender or very ripe, as in the case of tomatoes, the time for cooking may perhaps have to be decreased. Because, in altitudes higher than sea level, the boiling point of water is lower than 212 degrees Fahrenheit, the length of time for boiling foods in the water bath must be increased after an altitude of 500 feet is reached. Therefore, for every additional 500 feet over the first 500 feet, 10 per cent. should be added to the time given for the boiling in water. In case a pressure cooker is used, however, this is not necessary.

The canning directions here given are for 1-quart jars. If pint jars are to be used, decrease the salt proportionately; also, decrease the time for cooking in each case one-fifth of the time, or 20 per cent. If 2-quart jars are to be used, double the amount of salt and add to the length of time for cooking one-fifth, or 20 per cent. For instance, if a 1-quart jar of food requires 90 minutes, a pint jar of the same food would require 72 minutes and a 2-quart jar, 108 minutes.

GROUP 1--GREENS

58. In canning greens, or vegetables belonging to the first group, select those which are fresh and tender. Greens that are old and inclined to be strong and tough may require longer blanching and cooking. Look the greens over carefully, rejecting all leaves that are wilted or otherwise spoiled. Cut off the roots and drop the leaves into a pan of cold water. Wash these thoroughly a number of times, using fresh water each time, in order to remove all sand and dirt that may be clinging to them. Then proceed to blanch them for 10 to 15 minutes in steam, suspending the greens over boiling water in a piece of cheesecloth, a colander, or the top of a steamer. After blanching, dip them quickly into cold water. Then pack the greens tightly into jars and add 1 teaspoonful of salt to each jarful. No water has to be added to greens, because the leaves themselves contain sufficient water. When the jars are thus packed, adjust the covers and proceed to sterilize and cook the greens according to the directions previously given. If the

water bath is to be used, boil them in it for 1-1/2 to 2 hours; but if the pressure cooker is to be employed for this purpose, cook them at a 5-pound pressure for 60 minutes or at a 10-pound pressure for 40 minutes.

GROUP 2--POD AND RELATED VEGETABLES

59. The best results in canning vegetables belonging to the second group will be derived when those which are fresh and tender are selected. As has been mentioned, the sooner vegetables are canned after they are taken from the garden, the better will be the canned product. Directions for practically all vegetables included in this group are here given.

60. ASPARAGUS.--Select tender asparagus, and proceed with the canning no later than 5 hours after it has been taken from the garden. Remove the hard portions at the ends of the stems, and cut the trimmed stems into pieces the length of the jars into which they are to be placed. If preferred, however, the asparagus may be cut into small pieces. Wash the cut asparagus thoroughly in cold water, and then sort out the uneven pieces that were cut off in making the stems even in length. These may be canned separately for soup. Lay the stems of asparagus in an orderly pile in a colander or a wire basket, cover it, and place it into a large vessel where it may be kept completely covered with boiling water for 5 minutes. Then cold-dip the asparagus quickly, and pack it neatly into the jars, keeping the tip ends up. Add 1 teaspoonful of salt to each jarful and pour boiling water into each jar until it is completely full. Adjust the covers and proceed to sterilize and cook the jars of food. Cook for 1-1/2 to 2 hours in the water bath, or, in the pressure cooker, cook for 60 minutes at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds.

61. BRUSSELS SPROUTS, CABBAGE, AND CAULIFLOWER.--In canning Brussels sprouts, cabbage, or cauliflower, first prepare each vegetable as if it were to be cooked for the table. When thus made ready, blanch it with the aid of a square of cheesecloth or a colander in live steam, over boiling water, for 10 to 15 minutes. Then cold-dip it and pack it tightly into the jars. Add 1 teaspoonful of salt to each jarful and fill each jar with boiling water. Proceed next to sterilize and cook it according to the method selected. Boil for 90 minutes in the water bath; in the pressure cooker, cook for 60 minutes at a 5-pound pressure or for 40 minutes at a 10-pound pressure.

62. EGGPLANT AND SUMMER SQUASH.--Both eggplant and summer squash are canned in the same way, because the consistency of these vegetables is much alike. Select firm vegetables with no decayed spots. Blanch for 3 to 8 minutes in boiling water; cold-dip quickly; remove the skins; cut into pieces of a size that will fit into the jars; pack into the jars; and add 1 teaspoonful of salt to each jarful. Next, adjust the jar lids and proceed according to the directions given for the method selected. In the water bath, boil for 1-1/2 hours; in the pressure cooker, cook for 60 minutes at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds. Eggplant or summer squash so canned may be rolled in egg and crumbs and sauted or fried, the same as fresh vegetables of this kind.

63. OKRA AND GREEN PEPPERS.--Both okra and green peppers may also be canned in the same way. Prepare these vegetables for canning by washing fresh, tender pods of either vegetable thoroughly. Blanch for 5 to 15

minutes in boiling water and cold-dip quickly. Pack the pods into the jars, add a teaspoonful of salt to each jarful, and fill the jars with boiling water. Adjust the lids and proceed according to directions for the method selected. In the water bath, boil for 1-1/2 to 2 hours; in the pressure cooker, cook for 60 minutes at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds.

64. STRING BEANS.--String beans of any variety should be canned as soon as they are gathered. If the beans to be canned are not of the stringless variety, prepare them by stringing them, following the directions given in Vegetables, Part 1. Stringless beans should be selected if possible, to avoid this part of the work. Cut out any rusted portions, cut each end from the beans, and, if preferred, cut the beans into inch lengths. When thus prepared, blanch them for 10 to 15 minutes in live steam, cold-dip quickly, and pack tightly into the jars. Add a teaspoonful of salt to each jarful, fill the jars with boiling water, adjust the lids, and cook according to the method preferred. In the water bath, boil for 1-1/2 to 2 hours; in the pressure cooker, cook for 60 minutes at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds.

GROUP 3--ROOT AND TUBER VEGETABLES

65. Only the small, young, and tender vegetables included in the third group lend themselves readily to canning. As a rule, such vegetables are allowed to mature, when they can be stored for winter use without canning them. However, many housewives like to can some of them for the variety they offer in the preparation and planning of meals.

66. BEETS.--For canning, select small, young beets. Prepare them by cutting off the tops, which may be cooked as greens or canned separately, and all but about an inch of the stems and an inch of the roots. Scrub the trimmed beets well, and then blanch them in boiling water for 5 to 15 minutes or until the skins may be easily scraped off with a knife. Plunge them quickly into cold water and draw them out again. Then scrape off the skins and remove the roots and stems. The roots and stems are left on during the blanching and cold-dipping to prevent them from bleeding, or losing color. When thus prepared, pack the beets into jars, add 1 teaspoonful of salt to each jarful, and fill the jars with boiling water. Then adjust the jar tops and proceed to sterilize and cook the jars of beets according to the directions for any preferred method. In the water bath, cook them for 1-1/2 hours; in the pressure cooker, cook them for 1 hour at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds.

67. CARROTS, PARSNIPS, AND TURNIPS.--Young parsnips and turnips are canned in exactly the same way as young carrots. Therefore, directions for the canning of carrots will suffice for all three of these vegetables. Prepare the carrots for canning by cutting off the tops and the roots and scrubbing them well. Blanch them for 10 to 15 minutes in boiling water, so that the skins may be easily removed, and cold-dip them. Then remove the skins by scraping, pack the carrots into the jars, add 1 teaspoonful of salt to each jarful, and fill the jars with boiling water. Adjust the jar tops next, and proceed to sterilize and cook the jars of carrots according to the method selected. In the water bath, cook for 1-1/2 hours; in the pressure cooker, cook for 1 hour at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds.

GROUP 4--SPECIAL VEGETABLES

68. Vegetables of the fourth group, which include those which cannot well be classified in the other groups, lend themselves readily to combinations, such as succotash, that make for variety in food. As is true of the other vegetables, special vegetables must be fresh and sound if good results in canning are expected.

69. LIMA AND OTHER SHELLED BEANS.--For canning, only tender beans, whether Lima or some other variety, should be chosen. Prepare them for immediate canning by shelling them--that is, taking them from the pods--blanching them for 5 to 10 minutes in boiling water, and then cold-dipping them quickly. Pack the jars to within 1/2 inch of the top, add 1 teaspoonful of salt to each jar, and fill the jars with boiling water. Adjust the covers and proceed to sterilize and cook them. In the water bath, boil for 2-1/2 to 3 hours; in the pressure cooker, cook for 1-1/2 hours at a pressure of 5 pounds or for 1 hour at a pressure of 10 pounds.

70. GREEN CORN.--For canning purposes, only corn that is young and milky should be selected. Get it ready for canning by husking it and removing the silk. Then blanch it for 3 to 5 minutes in boiling water and cold-dip it quickly. Cut the kernels half way down to the cob and scrape out what remains after cutting. For best results in this operation, hold the ear of corn so that the butt end is up; then cut from the tip toward the butt, but scrape from the butt toward the tip. Next, pack the jars tightly with the corn, pressing it into them with a wooden masher. Unless two persons can work together, however, cut only enough corn for one jar and fill and partly seal it before cutting more. As corn swells in the cooking, fill each jar to within 1/2 inch of the top. The milk in the corn should fill all spaces between the kernels, provided there are any, but if it does not, boiling water may be poured in. Add 1 teaspoonful of salt to each jarful of corn and adjust the jar lids. Boil for 3 hours in the water bath; but, if the pressure cooker is to be used, cook for 1-1/2 hours at a pressure of 5 pounds or for 1 hour at a pressure of 10 pounds.

Corn on the cob may be canned in the same way if desired, but as only three small ears can be put into a quart jar, this would seem to be a waste of space and labor. If corn on the cob is to be canned, 2-quart jars will prove more convenient than 1-quart jars.

71. PEAS.--Peas for canning should be well formed and tender, and they should be canned as soon as possible after coming from the garden. Proceed by washing the pods and shelling the peas. Blanch the shelled peas for 5 to 10 minutes in live steam, and cold-dip them quickly. Pack the peas into the jars, having them come to within 1/2 inch from the top, add 1 teaspoonful of salt to each jarful, and fill the jars with boiling water. Then adjust the jar lids and proceed according to directions for the method selected. In the water bath, boil for 2 or 3 hours; in the pressure cooker, cook for 1-1/2 hours at a pressure of 5 pounds or for 1 hour at a pressure of 10 pounds.

72. PUMPKIN AND SQUASH.--The canning of pumpkin and squash is advisable when there is any possibility of their not keeping until they can be used. Prepare either of these vegetables for canning by first peeling it and cutting the edible part into inch cubes. Blanch these cubes for 10 to 15 minutes in live steam and cold-dip them quickly. Pack the jars as

full as possible, and add 1 teaspoonful of salt to each jar, but no water. After adjusting the jar lids, boil the jars of food for 1-1/2 hours in the water bath, or cook them for 1 hour at a pressure of 5 pounds or for 40 minutes at a pressure of 10 pounds in the pressure cooker. When finished, the jars will be found to be only about half full, but the contents will keep perfectly.

If desired, pumpkin or squash may first be cooked as if preparing it for use and then put into the jars for processing.

73. SUCCOTASH.--Of course, succotash is not a vegetable, but the name of a food that results from combining corn and beans. These vegetables may be canned together to make for variety in the winter's food supply, or each may be canned separately and combined later. Clean the ears of corn in the manner previously directed; then blanch them for 5 minutes and cold-dip them. Also, remove green Lima beans from the pods, blanch them for 10 minutes, and cold-dip them. Then cut and scrape the corn off the cobs and mix it with an equal quantity of the beans. Pack the mixture into the jars to within 1/2 inch of the top, add a teaspoonful of salt to each jarful, and fill the jars with boiling water. Adjust the jar tops and proceed according to the directions for the process to be employed. In the water bath, boil for 2 hours; in the pressure cooker, cook for 50 minutes at a pressure of 5 pounds or for 35 minutes at a pressure of 10 pounds.

74. TOMATOES.--As has been stated, tomatoes may be canned successfully by the open-kettle method. If this method is to be employed, the first part of the preparation is exactly the same as for the cold-pack method, except that the jars, jar tops, and jar rubbers must be carefully sterilized.

For canning, firm tomatoes should be selected if possible, as they will keep their shape better than those which are very ripe. If some are soft, they should be sorted out and canned for soup making or made into catsup. After washing the tomatoes, proceed to blanch them. The length of time required for blanching depends entirely on the condition of the tomatoes. They should be blanched for 1 to 3 minutes, or just long enough to loosen the skin. After blanching, dip them quickly into cold water and remove the skins. These, it will be found, may be removed easily and quickly. Pack the tomatoes thus prepared tightly into jars and fill them with boiling water, boiling tomato juice, or stewed tomatoes. Add a teaspoonful of salt to each jar. Then adjust the jar lids and proceed according to the directions given for the method selected. Boil for 22 minutes in the water bath; in the pressure cooker, cook for 15 minutes at a pressure of 5 pounds or for 10 minutes at a pressure of 10 pounds.

75. TOMATOES FOR SOUP.--If there are soft tomatoes at hand or if tomatoes are canned by the open-kettle method, quantities of tomato juice will be available. Such material as this may be put through a sieve and boiled down for winter use in the making of soups, bisques, etc. It may be canned simply by pouring the boiling juice into sterilized jars and sealing them immediately.

76. TOMATOES AND CORN.--An excellent food combination results from combining stewed tomatoes with corn. Such a combination may be canned safely by either the open-kettle or the cold-pack method. The acid of the tomatoes helps to keep the corn, but the combination requires longer cooking than just plain tomatoes. Prepare each vegetable as for canning

separately, but, if desired, cut the tomatoes into pieces. Mix the two foods in any desirable proportion and, for the cold-pack canning method, put the food into the jars. Add 1 teaspoonful of salt to each jarful, but no water. Then adjust the jar lids, and proceed to sterilize and cook the jars of food. In the water bath, cook them 1-1/2 hours; in the pressure cooker, cook them for 50 minutes at a pressure of 5 pounds or for 35 minutes at a pressure of 10 pounds.

DIRECTIONS FOR CANNING FRUITS

77. The chief difference between the canning of fruits and the canning of vegetables is that sugar in the form of sirup, instead of salt water, is used for the liquid. Fruits may be canned without sugar if desired, but nothing is gained by so doing, for sugar will have to be added later. Because of the sugar used in canning and the acid contained in the fruit, canned fruit has better keeping qualities than canned vegetables. In fact, it is much more likely to keep well even though it does not receive such careful attention as vegetables. It is for this reason that canned fruit does not require so much time for sterilization as vegetables do. Still it should not be inferred that care is not necessary in the canning of fruits. Indeed, the more care that is taken, the better are the results likely to be.

78. SIRUPS FOR CANNING.--Before the canning of fruits can be undertaken, it is necessary to possess a knowledge of the sirups that are needed. Such sirups consist simply of sugar dissolved in boiling water. The quantity of sugar and water required for a sirup depends on the acidity of the fruit and the purpose for which it is to be used. Plain canned fruits that are to be used for sauces, etc. require less sugar proportionately than those which are preserved, and fruit canned for pie making may have less than either. Thus, fruits of the same kind may be canned with sirups of different proportions. To a great extent, the quantity of sugar to use with fruit may be regulated by the taste, but it will be readily seen that such fruits as sour cherries and plums will require more sugar to make them palatable than pears and blueberries. It will be well to note, though, that the sugar does not penetrate the fruit unless the two are cooked together.

79. In order to make sirup for canning, place the desired quantities of sugar and water in a kettle and proceed to heat them. Stir the liquid while it is heating, in order to assist in dissolving the sugar. When it has begun to boil rapidly, remove the sirup from the fire and use it at once. Do not continue boiling.

In preparing such sirups, it will be well to note that the greater the proportion of sugar to water or the longer the sugar and water are allowed to boil, the denser, or heavier, will the sirup become. It is this density of sirup that regulates its use for the different kinds of fruit and determines its nature. Thus, a sirup in which the proportion of sugar to water is so large as to make the sirup thick is known as a heavy sirup; one in which the proportion of water to sugar is so large as to make the sirup thin is called a light sirup; and one in which the proportion of sugar and water is such as to produce a sirup that is neither thick nor thin, but stands between the two extremes, is called a medium sirup.

TABLE I

SIRUPS FOR CANNING FRUITS

Sirup No.	Proportions		Degrees With	Hydro-meter	Uses
	Sugar Cups	Water Cups			
1	2	4	28		Open-kettle canning, or pie fruit canned by any method.
2	2	3	30		Open-kettle canning, or pie fruit canned by any method.
3	2	2	40		Open-kettle canning, or sweet fruits canned by cold-pack methods.
4	2	1-1/2	48		Sweet fruits canned by cold-pack methods.
5	2	1	54		Sour fruits canned by cold-pack methods.
6	2	1/2	68		Very rich fruits canned by cold-pack methods; preserves canned by open-kettle method.

80. The density of sirup is also affected by the amount and rapidity of evaporation that takes place in boiling, and these, in turn, depend on the amount of surface that is exposed. For instance, if a sirup is cooked in a large, flat kettle, the evaporation will be greater and more rapid than if it is cooked in a small, deep vessel. Atmospheric pressure affects the rapidity of evaporation, too. In a high altitude, evaporation takes place more slowly than at sea level, because the boiling point is lower. Thus, in the making of sirups for canning, the first point to be determined is whether the sirup desired should be light, medium, or heavy, and in its preparation the points mentioned must receive consideration.

81. For determining the density of sirup, a _sirup gauge_, or _hydrometer_, will be found useful. This device consists of a graduated glass tube attached to a bulb that is weighted with mercury. The graduations, or marks, on the tube, or top part, of the hydrometer serve to indicate the percentage of solid matter dissolved in a solution and register from 0 to 50 degrees. To use such a gauge, partly fill a glass cylinder--an ordinary drinking glass will do--with the sirup and place the hydrometer in it. The greater the amount of solid matter dissolved in the sirup, the higher will be hydrometer float. Then read the number of degrees registered by observing the mark that is level with the surface of the sirup.

The number of degrees that the hydrometer should register for sirups of different densities--that is, for sirups consisting of different proportions of sugar and water--are given in Table I. This table, in addition, gives the uses that should be made of such sirups, and each one is numbered so that it may be referred to readily later in the recipes for canning fruits.

82. CLASSIFICATION OF FRUITS.--For the sake of convenience in canning, fruits, too, are here divided into groups. These groups, three in number, together with the fruits included in each, are:

1. Soft Fruits, which are subdivided into three kinds, namely, sweet, sour, and very sour. The sweet soft fruits include blackberries, blueberries or huckleberries, sweet cherries, elderberries, ripe gooseberries, mulberries, and black and red raspberries; the sour soft fruits, apricots, currants, grapes, peaches, and strawberries; and the very sour soft fruits, sour cherries, cranberries, green gooseberries, plums, and rhubarb.

2. Hard Fruits, which include apples, quinces, and pears.

3. Special Fruits, which include ripe figs, kumquats, loquats, nectarines, persimmons, and pineapples.

The advantage of this classification, as in the case of the vegetable classification, is that, as a rule, all fruits belonging to a group or a subdivision of a group may be canned in the same way and with sirup of practically the same density.

83. CANNING METHODS FOR FRUITS.--The canning of fruits may be done by the several methods previously discussed, but the Cold-pack and open-kettle methods seem to meet with most favor. On account of the sirup used in canning fruit and the acid in the fruit, the open-kettle method is usually fairly successful, whereas, in the canning of vegetables, with the exception of tomatoes, it is not so reliable. The housewife, by experiment, can determine which method will suit her needs best, but by no means should methods be mixed. If a certain method is decided on, it should be adhered to in every detail and carried through without any substitution. For all methods, as has been mentioned, the fruit should be selected when it is fresh and in good condition, as such fruit has less chance to spoil than fruit that is overripe or has decayed spots. After it is graded for size and condition, the fruit should be washed, stemmed, hulled, seeded, peeled, or halved, quartered, or sliced, depending on the kind. Then the work may be proceeded with according to the canning method that is to be followed.

84. If fruits are to be canned by the open-kettle method, certain precautions must be observed in order to insure success. The sterilization of the product cannot be perfect in this method no matter how carefully the canning is done; and this means that the sugar and the fruit acids must be greatly relied on to assist in preservation. Still, the jars, jar covers, jar rubbers, and any utensils used for filling the jars must be sterilized and kept in boiling water until the fruit is ready to be canned. Another thing to guard against is the discoloring of the fruit. Any fruit that is likely to become discolored after it is prepared for canning should be kept in salt water until it is ready to be cooked. A solution consisting of 1 teaspoonful of salt to each quart of water will answer for this purpose.

After the fruit has been prepared and while the containers, etc. are being sterilized, it is necessary to prepare the sirup that is to be used. For the sweet fruits of Group 1, No. 1 or 2 sirup should be made; for the sour fruits of this group, No. 2 or 3 sirup; and for the very sour fruits, No. 4 or 5 sirup. The hard fruits may be canned by this method with No. 1, 2, or 3 sirup, while the special fruits require No. 4

or 5 sirup. If the fruit is to be canned for pie, it will be advisable to use thin sirup and then use more sweetening when pies are made.

When the sirup is made by mixing the sugar and water and bringing it to a boil, the prepared fruit should be dropped into it and cooked. The fruit should be cooked in the sirup until it may be easily pierced with a fork or until it is soft. Berries have to be cooked only a few minutes, while the hard fruits may require from 10 to 15 minutes. The jars should be placed upright in a pan of hot water while the boiling fruit from the kettle is poured into them, and as each jar is filled the rubber should be put in place and the cover adjusted and secured. It is important to close one jar before filling another, because the longer a jar remains open the more bacteria will be permitted to enter. Even by working as rapidly as possible and taking the greatest precaution, a certain number of bacteria are bound to enter in this method of canning. After the jars are filled and sealed, they should be placed upside down or on the side to cool and test for leaks.

85. If the cold-pack method is employed in canning fruit, it is possible to obtain a sterilized product that is dependent for preservation on neither the sirup used nor the acid of the fruit. In this method, the jars, jar tops, covers, and utensils for handling the fruit do not have to be sterilized beforehand. They may simply be washed clean and kept hot in clean water until they are needed. After the fruits are prepared, some are blanched or scalded and cold-dipped, while others are not. They are then packed into jars and boiling sirup is poured over them. Then the rubbers are adjusted, the covers placed on, but not made tight, and the jars are placed under water in the water bath or on the racks in the pressure cooker, which should contain a small amount of water, as has been explained. After cooking the required length of time, the jars of fruit are removed from the cooking utensil, sealed, and allowed to cool.

The sirup used in the cold-pack canning method may be heavier in each case than that mentioned for the open-kettle method, because there is no evaporation, as is the case where fruits are boiled in the sirup before they are placed in the cans, but less will be required if the packing is well done.

GROUP 1--SOFT FRUITS

86. SWEET SOFT FRUITS.--The sweet fruits included in Group 1 --blackberries, huckleberries, elderberries, ripe gooseberries, mulberries, raspberries, and sweet cherries--may be canned in exactly the same way, so that the same general directions will apply to all. Prepare the different kinds of berries, which should be as fresh as possible, by looking them over carefully and removing the poor ones, and then washing them. To wash them, pour them into a colander and dip it up and down in a large pan of clean, cold water. The less handling such fruits receive, the more perfect will they remain for canning. Prepare sweet cherries, which should be procured with the stems on if possible, by first washing them and then stemming them. They may be pitted, or seeded, or they may be left whole, depending on personal preference. Cherries that are not pitted will keep their shape and have a good appearance, but they are not so convenient for eating as those which have been pitted.

87. After the fruit has been prepared in the manner just explained, pack it closely into the hot, clean jars, using a spoon for this purpose and

turning each jar as the fruit is poured into it. Press the berries or the cherries down carefully, so that 2 quarts of them will fill a 1-quart jar. Then proceed to make the sirup. As these fruits are the sweetest, they require less sugar than any other. If such fruit after it is canned is to be used for pie making, sirup No. 1 or 2 will be suitable, but if it is to be used for sauce, No. 3 sirup may be used. When the mixed sugar and water is boiling rapidly, pour it over the fruit packed into the jars. Then place the rubbers, adjust the jar tops, and proceed to sterilize and cook the cans of fruit. Boil these in the water bath for 15 minutes, or cook them in the pressure cooker for 8 minutes at a pressure of 5 pounds or for 4 minutes at a pressure of 10 pounds.

88. SOUR SOFT FRUITS.--Of the sour fruits, STRAWBERRIES, GRAPES, and CURRANTS require about the same quantity of sugar, that contained in sirup No. 3, 4, or 5 usually being sufficient. Otherwise, the canning process, including the length of time for processing, does not differ materially from that just given for sweet soft fruits.

In the case of strawberries, those which are of medium size and rather dark in color are best for canning; in fact, very large, light-colored strawberries will shrink more than any other kind. The berries are washed in the same way as other berries, but they should not be allowed to stand in water for any length of time, because this will tend to make them soft and mushy. Strawberries must be stemmed after they are washed, and for this purpose a strawberry huller should be utilized. Such a device, which is shown in Fig. 1, permits the stems to be removed without crushing the berries and soiling the fingers.

In preparing currants for canning, the procedure is the same as for the fruits already mentioned; and the same thing is true of grapes that are not to be seeded. If the seeds are to be removed, however, the procedure up to getting the cans of fruit ready for processing is different, as is here pointed out. After washing the grapes, squeeze the pulp from the skins and then cook it in a kettle for a sufficient length of time to make it soft. Remove the seeds by forcing the pulp through a sieve. Then add as much sugar as would be used for making the required sirup, and cook until the sugar is dissolved. With this done, add the sweetened, seedless pulp to the grape skins and fill the jars with this mixture. Then continue the canning process as for the other fruits of this group.

89. The procedure in canning APRICOTS and PEACHES, the other two sour soft fruits, differs slightly from that required for strawberries, grapes, and currants. So that the skins of both of these fruits may be easily removed, they must be scalded, which is an operation that corresponds to blanching in vegetable canning.

For canning purposes, only firm, fresh apricots and peaches that are not overripe should be selected. Also, in the case of peaches, care should be taken to see that they are of the freestone variety, as such peaches may be split easily. Clingstone peaches should not be chosen unless the fruit is to be canned whole or unless an implement for removing the seeds, or stones like that shown in Fig. 2, is at hand. Proceed with the canning of either apricots or peaches by first scalding them. To do this, put the fruit in boiling water for 1 to 3 minutes, depending on its ripeness. Next, cold-dip it quickly, remove the skins, and, if desired, cut each one in half and remove the seed, or stone. When thus prepared, pack the fruit into hot jars as tightly as possible, pour sirup No. 3, 4, or 5 over them, filling each jar, adjust the rubber

and jar top, and proceed as directed for the cold-pack method. In the water bath, boil the cans of fruit for 15 minutes; in the pressure cooker, cook them for 10 minutes at a 5-pound pressure or for 6 minutes at a 10-pound pressure.

90. VERY SOUR SOFT FRUITS.--Some of the fruits of the third subdivision of Group 1, namely, SOUR CHERRIES, CRANBERRIES, and GREEN GOOSEBERRIES, may be prepared and canned in the same way as those included in the first subdivision. The cherries may be left whole or they may be seeded, as preferred, and all the fruit must, of course, be fresh. For these very sour fruits, sirups Nos. 4, 5, and 6 are required, and the processing time is 15 minutes in the water bath and 10 minutes at a 5-pound pressure or 5 minutes at a 10-pound pressure in the pressure cooker.

91. PLUMS for canning should be fresh and firm, but not overripe. This fruit may be canned with the skins on, but some varieties permit the skins to be removed after scalding, and this may be done if desired. Prepare the plums for canning by washing them, and, if the skins are to be left on, by piercing each one in several places with a fork to prevent the skins from cracking. Then scald the plums for about 1-1/2 minutes, cold-dip them quickly, and pack them closely into the hot jars. Pour sirup No. 4, 5, or 6 over the fruit in the jars, using sirup No. 6 if they are very sour, adjust the rubbers and the covers, and proceed according to the canning method selected. In the water bath, cook for 15 minutes; in the pressure cooker, cook for 10 minutes at a pressure of 5 pounds or for 6 minutes at a pressure of 10 pounds.

92. RHUBARB for canning should be selected when it is most tender. The variety having red stems is the most attractive after it is canned. Only the heavy stems, which should be cut from the leaves, may be canned. Cut these stems into inch lengths, blanch them 1 to 3 minutes in boiling water, and cold-dip them quickly. Then pack these pieces into the jars. If the rhubarb is being canned for sauce, fill each jar with sirup No. 5 or 6; if it is being canned for pie, use sirup No. 1, 2, or 3. Next, adjust the rubbers and covers and proceed with the processing. In the water bath, cook for 15 minutes; in the pressure cooker, cook for 10 minutes at a 5-pound pressure or for 6 minutes at a 10-pound pressure.

GROUP 2--HARD FRUITS

93. APPLES.--The canning of apples should be done when there is a large supply of summer apples that cannot be stored for winter use or used at once. Canning is also a good means of utilizing windfall apples. This fruit may be canned in quarters for sauce, in slices for pie, or in any other desirable shape or condition.

After apples for canning are selected, wash them, scald, or blanch, them for 1 to 5 minutes in boiling water, and cold-dip them quickly. Next, peel and core them, and cut each one into pieces of any desirable size. As these pieces are cut, drop them into salt water--1 teaspoonful of salt to each quart of water--to prevent them from discoloring. Then pack the fruit into the jars and fill the jars with boiling sirup. If the apples are intended for pie, use sirup No. 1, 2, or 3; if they are for sauce, use sirup No. 3, 4, or 5. When the jars are filled, adjust the rubbers and covers and proceed with the processing. If the pieces are large, cook them in the water bath for 20 minutes; if they are medium in size, cook them for 15 minutes; and if they are in the form of slices,

cook them for 10 minutes. If they are to be processed in the pressure cooker, cook them for 8 to 12 minutes at a pressure of 5 pounds or for 6 to 8 minutes at a pressure of 10 pounds.

If the apples to be canned are first baked or made into a sauce, simply pack them into jars and process them for a few minutes.

94. QUINCES.--Quinces may be canned alone, but they may be combined with apples to good advantage. If canned alone, they may require a heavier sirup than if apples are used with them. Prepare the quinces in the same way as apples. If apples are to be canned with them, cut the pieces of apples twice the size of the pieces of quinces. This should be done because more time is required for cooking the quinces soft. After packing the jars and pouring in the sirup, proceed with the processing. If quinces alone are in the jars, cook them in the water bath for 30 minutes; but if quinces and apples are combined, cook them for 20 minutes. In the pressure cooker, cook the jars of fruit for 12 to 15 minutes at a 5-pound pressure or for 10 to 12 minutes at a 10-pound pressure.

95. PEARS.--Pears for canning should be firm, but not hard. After sorting and washing them, blanch them for 1 to 3 minutes and cold-dip them quickly. Then pare, halve, and core them. Pack them immediately into the jars and pour sirup No. 3 or 4 over them. Next, adjust the rubbers and covers and proceed with the processing. In the water bath, cook them for 20 minutes; in the pressure cooker, cook them for 8 minutes at a 5-pound pressure or 6 minutes at a 10-pound pressure.

GROUP 3--SPECIAL FRUITS

96. FIGS.--Although figs are not a common fruit, there are parts of this country, particularly on the western coast, in which they are abundant. For canning, ripe figs should be selected. To prepare them, blanch them for 2 minutes in boiling water and cold-dip them. Then pack them into the jars and fill the jars by pouring sirup No. 4, 5, or 6 over the figs. Proceed with the remainder of the process as in canning peaches.

97. KUMQUATS AND LOQUATS.--Kumquats and loquats are small acid fruits resembling oranges in color and plums in size and shape. Such fruits are not very common, but they may be obtained in some markets. To can either of these fruits, wash them, blanch for 5 minutes, cold-dip, pack into jars, and fill the jars with sirup No. 5 or 6. In the water bath, cook them for 15 minutes. In the pressure cooker, cook them for 10 minutes at a 5-pound pressure or for 5 minutes at a 10-pound pressure.

98. NECTARINES.--Nectarines are a smooth-skinned variety of peach. Ripe nectarines may be canned in the same way as peaches, but they do not require so much sugar, sirup No. 2 or 3 usually being about right.

99. PERSIMMONS.--Persimmons are a seedy, plum-like fruit common to the southern and southwestern parts of the United States. This fruit is very astringent when unripe, but is sweet and delicious when ripe or touched by frost. Well-frosted persimmons should be selected for canning. Blanch them so that the skin may be removed easily and cold-dip them quickly. Then peel them and pack them into hot jars. Fill the jars with sirup No. 6 and process them in the same way as peaches.

100. PINEAPPLES.--Pineapples are better known than any of the other

special fruits. For canning, those ripe enough to permit the center leaves to pull out easily should be selected; also, they should be free from soft or rotten spots, which are most likely to appear first near the bottom. Pineapples are graded in size by the number that may be packed in a case. These sizes are 24, 30, 36, and 42, size 24 being the largest and size 42 the smallest. Sizes 30 and 36 are best for canning.

In canning pineapples, first place each in boiling water for 10 minutes and dip it quickly into cold water. Then prepare it for the cans. This may be done by removing the peeling with a sharp knife, digging out the eyes, and then slicing or dicing; by slicing first and then peeling and taking out the eyes; or by peeling, taking out the eyes, and then shredding it with the aid of a fork. When it is prepared, pack the fruit into the jars, fill each jar with sirup No. 4 or 5, adjust the rubbers and covers, and proceed to process it. In the water bath, cook for 30 minutes; in the pressure cooker, cook for 12 minutes at a pressure of 5 pounds or for 10 minutes at a pressure of 10 pounds.

CANNING MEAT AND FISH

101. Both fish and meat, including that from fowl and game, may be canned at times that seem convenient and then used when an emergency arises or at a time when the same food will cost more to prepare. Fowl, game, and fish may be canned to special advantage during the season when each is plentiful. The best process for canning such foods is the one-period cold-pack method.

102. MEAT.--In canning meat, whether from domestic animals, fowl, or game, first cut it into pieces of a size that would be suitable for serving at the table. The meat may be left raw or it may be prepared by any desirable cooking process, such as frying, fricasseeing, braizing, etc. Careful attention must be given to the drawing of fowl that is to be canned, because the entire alimentary tract should be removed without being broken. The giblets should not be canned with the rest of the meat, as they will not keep so well. Whether the meat is to be canned raw or cooked, pack the jars as tightly as possible. If the meat is raw, add 1 teaspoonful of salt to each quart of food and fill the jars three-fourths full with boiling water. In case the jar is filled to the top, fat will rise and injure the rubber. If the meat is cooked, add any liquid that may have resulted from the cooking, as well as boiling water, provided more liquid is needed. Then, as in canning vegetables and fruit, adjust the rubbers and covers and proceed with the processing. In the case of raw meat, sterilize for 3 hours in the water bath, or for 1-1/2 hours at a 10-pound pressure in the pressure cooker. In the case of cooked meat, sterilize for 1-1/2 hours in the water bath, or for 30 minutes at a 10-pound pressure in the pressure cooker.

103. FISH.--To prepare fish for canning, first clean it by scaling it and removing the entrails. Wrap the cleaned fish in cheesecloth and steam for 15 minutes. After steaming, remove the bones, which will come out easily, and cut the fish into pieces. Pack the pieces into the jars, and to each quart of the food add 1 teaspoonful of salt. Next, fill each jar three-fourths full with boiling water and continue with the canning in the manner directed for meat.

STORING AND SERVING CANNED FOODS

104. After jars of canned food have been cooled and tested for leaks, carefully wiped with a damp cloth, and then wrapped and labeled, they are ready to be placed in storage. Such food should be stored in an orderly manner on shelves that may be covered to keep off dust, or in a large cupboard provided with doors that may be closed. The temperature of the room in which the canned foods are kept is of no great importance, but, in homes provided with cellars, the cellar is the logical place in which to store them.

Canned foods, no matter how well the canning may have been done, undergo gradual deterioration. Therefore, those kept for more than a year, will not be so good as those used during the first year after canning. If canned foods from a previous year are at hand when new cans are ready to be stored, the old ones should be placed to the front of the shelves and the new ones to the back, so that the old ones will be used up first.

105. Canned foods take the place of raw foods, and whether they should be cooked or not depends on the kind. In the case of vegetables, most of them may be made ready to serve simply by heating them, although they may be used in the preparation of many dishes, as is evident from the recipes throughout the lessons. In the case of fruits, some may be served just as they come from the can; however, there are many ways of using canned fruits in the making of desserts, as is pointed out in Fruit and Fruit Desserts. In the case of meats and fish, the food, if cooked before canning, may be prepared for serving simply by heating it; whereas, if it is canned raw, some cookery method for meat will have to be applied.

When foods are boiled, one reason for a change in taste is that oxygen is driven off by the boiling. Therefore, to improve the taste of canned foods that are to be served without any further preparation, it is advisable, when a jar is opened, to pour the contents into an open dish and thus expose it to the air.

In opening jars of canned fruit, care must be taken not to crack or nick either the top of the jar or its cover. The cover of any kind of jar will come off easily if a little air is admitted. Insert a knife blade between the cover and jar rubber of a glass-covered jar, but do not use a knife to loosen a metal top, as it may bend the edge in places. Hot water poured over the jar will assist in opening it.

SCORING CANNED FOODS

106. In order that the housewife may judge the quality of her own canned products according to standards that have been set by canning authorities, a score card, together with an explanation of the terms and the procedure, is here given. The beginner in canning will do well to score her own foods, so that any fault that may be found can be corrected when similar foods are canned at another time. In fact, the chief purpose of scoring any product is to learn of faults that may be corrected. The scoring should be done as impartially as if a disinterested person were doing it, and if the cause of any trouble is not readily apparent, pains should be taken to find it out.

SCORE CARD

PER CENT.

General appearance

10

Method of sealing	10
Proportion of food to liquid	10
Flavor	35
Texture of food	20
Color	15

Total	100

107. As a rule, scoring, or judging, is done at the time the canned food is to be opened and used.

The general appearance is judged before the jar is opened. If a jar of food is well and symmetrically packed and has clear liquid and a good color, it should receive a perfect score of 10.

The method of sealing must also be judged before the can is opened. A properly filled jar with the rubber and cover in good condition and tightly sealed should receive a perfect score of 10.

The proportion of food to liquid should score 10. The jars should be as full of uncrushed food as possible, and the liquid that has been added should fill all crevices to the very edge of the jar.

The flavor is judged after the can is opened, and if it is perfect, it is entitled to a score of 35. The flavor of canned fruit is injured by any kind of spoiling, such as molding, fermentation, etc. Fruits canned in good condition should retain the characteristic flavor of the fresh fruits; also, they should contain sufficient sugar to be agreeably sweet, but no more. Canned vegetables should retain their characteristic flavors, with no sour, musty, nor disagreeable taste, and be slightly salty. Canned meats and fish should also possess their characteristic flavors.

The texture of food is entitled to a score of 20 if it is perfect. The canned food should be whole; that is, in the original pieces as they were put into the can. Underripe fruit or insufficiently cooked fruit or vegetables do not have the proper texture; neither do overripe or uncooked foods.

The color of canned food merits a score of 15 if it is right. Fruits and vegetables should have retained their natural color. Fading after canning may be prevented by wrapping the cans, as has been explained.

* * * * *

DRYING

PRINCIPLES OF DRYING

108. DRYING consists in removing the moisture contained in foods by evaporation and thus rendering them less susceptible to the attacks of undesirable bacteria. Dried foods, as foods so treated are called, will not replace fresh or canned foods. However, they are valuable in many cases and possess some advantages over such foods. For example, the weight of dried foods is very greatly reduced, the storage space

required by them is much less, and they are easy to keep without spoiling and easy to transport. Likewise, the containers for such foods are less costly than those required for canned foods and they are easily procured, since paper boxes or paper bags are satisfactory. In fact, the housewife, by taking care of the bags and boxes that come into the home, can easily provide all the containers she will possibly need at practically no cost.

109. The water in food that is to be dried may be evaporated by applying heat, by bringing the food in contact with moving air, or by subjecting it to a combination of both of these methods. The heat for drying may be obtained from the sun, as in the _sun-drying method_, or from the stove, as in the _stove-drying method_, while moving air for evaporating moisture may be obtained from an electric fan, as in the _electric-fan drying method_.

In the application of any of these drying methods, however, it is important to note that the more surface of food there is exposed, the more quickly will evaporation take place. Drying should therefore be done on devices constructed in such a way that air may pass up through food, as well as across its surface. In drying foods, the racks should be turned frequently, so that all parts will be exposed equally to the heat or the currents of air. Also, the food must be turned over often, in order that all parts will dry evenly.

110. Any fruit or vegetable may be dried if the method is properly applied, but there is usually more or less change in both the flavor and the color of the dried food. The more rapidly the drying can be done, the more natural will the color and flavor remain; whereas, the longer the process is continued, the greater will be this change.

Foods should be dried when they are in such quantity that they cannot be used to advantage in the raw state, when there is no market for them, when the owner cannot afford to give them away, and when home canning ceases to be practical and profitable. In other words, if it is not practical to save foods in another way, they should be dried.

DRYING METHODS

111. DEVICES FOR DRYING.--Many manufactured devices may be had for the drying of foods. Some are made so that they may be placed on top of a stove, like that shown in Fig. 23. This device is in the form of a metal box. It has a tray for holding the food to be dried, and underneath this is a space for holding water. Water is poured into this space through a funnel in one corner, and heat for drying is supplied by heating the water. Other devices are made so that they may be suspended over a stove, put into a stove oven, or used out of doors. Still others have a heating device placed inside of them. It is possible, however, to make drying devices in the home that will answer the purpose just as well as the devices that may be bought.

[Illustration: FIG. 23]

As has been stated, drying devices should be so made that the air may pass up through the food and across its surface. A pan, a platter, or a solid board, as will be readily seen, is not so good for drying as a wooden frame of convenient size that has small slats or fine, rustless-wire netting, or screening, attached to the bottom. Such a

device may be covered with cheesecloth to keep out dirt. If it is to be used in the oven or set in the sun, a nail driven part way into each corner will provide feet and thus keep it from resting on the oven floor or any other flat surface.

For suspending food that is to be dried over a stove, a rack like that shown in Fig. 24 may be easily made in the home. As will be observed, it consists of three trays fastened together. These trays are suspended by four strings tied to another string that runs over small pulleys. The pulleys are attached to a wooden brace that is secured to the kitchen wall. The pulleys and string permit the rack to be raised or lowered, so that the food may be easily put into and taken out of the trays.

[Illustration: FIG. 24]

112. SUN-DRYING METHOD.--If food is to be dried in the sun, spread it in a single layer on each tray, cover the trays so that no dirt will fall into them, and set them out of doors so that the sun's rays will strike them. Glass covers will help to increase the heat from the sun. As the sun changes, change the position of the trays or turn them. Food that is being dried outdoors should be brought into the house when the sun goes down and put out again the following morning. This procedure should be kept up until the food is so dry as to be leathery; that is, in a condition that will permit of bending without cracking.

113. STOVE-DRYING METHOD.--If food is to be dried by the stove-drying method, it may be placed in the oven, on top of the stove, or suspended above the stove.

114. If the oven is to be used, a device that fits the oven should be employed. Spread the food on the trays in single layers, and put the device into the oven. The temperature of the oven demands attention in this method. Only a very moderate heat may be applied at first, 110 degrees Fahrenheit being considered the ideal temperature for beginning. As it is difficult to hold an oven at such a low temperature if a fire is burning, the oven door should be left open to admit air. The temperature of the oven of a coal stove in which the fire is banked or is being allowed to go out is usually ideal for drying foods. If desired, the heat of an oven may be gradually increased to about 180 degrees as the food dries; but the application of greater heat is liable to scorch the food and injure its flavor. The food must be turned often to permit it to dry evenly.

115. If food is to be dried on top of the stove, the device shown in Fig. 23 will prove satisfactory. The same arrangement may be improvised by placing a metal tray over a large flat vessel of water. Place the food to be dried in a single layer on the tray over the water. Let the water boil and keep it boiling, and turn the food frequently so that the heat will be applied to all sides. Continue this process until the food is leathery, when it may be stored.

116. If food is to be dried in a rack suspended above the stove, a rack like that shown in Fig. 24 should be used. Cover the trays in the rack with a single layer of food, and dry it to the leathery stage, when it may be removed and stored. In using this device, only a coal or a wood stove is practical. When the heat coming from the stove is not great, the rack may be allowed to come close to it, and when the heat is intense the rack may be drawn up. Regulating the distance of the rack from the stove will tend to keep the food at a uniform temperature and

allow it to dry evenly, especially when the food is turned from time to time.

117. ELECTRIC-FAN DRYING METHOD.--If a house is wired for electricity, drying foods by means of the air-currents generated by a moving electric fan is a simple matter. Use devices like those required for the sun and oven-drying methods. Spread the foods to be dried on the trays in a single thin layer, and arrange them so that the air from the electric fan will blow over them. Turn the trays as the food dries, so that one part does not dry sooner than another; also, turn the food frequently so as to expose all parts alike. If the fan can be placed so as to blow across a stove and thus blow heated air on the food, it will dry more quickly. A very warm kitchen is an excellent place in which to do the work with an electric fan, as the combination of air and heat does the work more rapidly than either one used alone.

118. COMBINATION DRYING METHODS.--A combination of any of the drying methods mentioned may be used effectively. Drying may be started in the sun and completed in the oven, or it may be started with an electric fan and completed in the sun or the oven. Any means whereby the time required for drying may be shortened is advantageous.

DIRECTIONS FOR DRYING VEGETABLES AND FRUITS

119. PREPARATION OF FOODS FOR DRYING.--The correct preparation of the foods before drying is very important. The thinner and smaller the pieces to be dried are cut, the more quickly may the process be completed. Any skins or hulls that would prevent the rapid evaporation of moisture from the food must be removed or broken, and every raw food that is to be dried must first be immersed in salt water made in the proportion of 1 teaspoonful of salt to each quart of water, as this prevents discoloring to a great extent.

120. STRING BEANS.--Beans for drying should be selected while they are young and tender. Wash them and remove the strings if this is necessary. Cut them in half, lengthwise, with a sharp knife. Drop them into salt water, remove, and spread on the drying trays. Dry by any method selected.

121. CORN.--Corn that is to be dried should be at the dough stage; younger corn contains too much water for good results. Prepare the corn by husking it and removing the silk. Then blanch it in boiling water for 5 minutes, after which cut off the grains close to the cob with a sharp knife. Spread these on the drying trays and proceed according to the method desired.

122. GREENS.--Wash the greens thoroughly. Cut across the leaves several times. Drop them into salt water, remove, and spread on the drying trays. Dry by any method selected.

123. TUBER AND ROOT VEGETABLES.--Irish potatoes, sweet potatoes, carrots, parsnips, and even onions may be successfully dried. First peel or scrape them. Then slice or cut them into small pieces. Drop them into salt water, remove from the water, and spread them on the drying trays. Dry them by the method selected.

124. SMALL FRUITS.--Berries, cherries, and other small fruits may be dried, but since they contain considerable water, the drying is not

accomplished very rapidly. Ripe, firm fruit should be selected and cleaned. Cherries should have the seeds, or pits, removed. Such fruits must be dried as quickly as possible, or they will spoil in the process.

125. APPLES, QUINCES, AND PEARS.--In order to dry apples, quinces, and pears, wash, peel, core, and cut the fruit into eighths. Put the peeled fruit into the salt water and keep it there until all are peeled and cut and ready to dry. Then spread the cut pieces in a thin layer on the drying trays and proceed according to the method desired.

126. PEACHES AND APRICOTS.--Peaches and apricots are most easily dried with the skin on. Wash them thoroughly and, in the case of peaches, rub the fuzz off the skins. Cut the fruit into halves, remove the seeds, or stones, and drop the halves into salt water and keep them there until they are ready to be placed on the drying trays. Dry by any process desired.

STORING AND COOKING DRIED FOODS

127. When foods are taken from the various drying devices to be stored, they still contain a very small quantity of moisture. This moisture, however, is not distributed evenly, because some of the pieces of food are larger than others, or some have been exposed more than others to heat or air in drying. To offset this unequal drying, the containers in which the foods are to be stored should not be closed permanently as soon as the food is put into them. Rather, once a day, for about 3 days, the food should be poured from one container into another and back again several times. This will mix all the food and distribute the moisture equally.

128. The object in storing dried foods is to keep them as dry as possible; that is, not to allow them to absorb moisture from the air. The best containers in which they may be placed are those coated with paraffin. Paper bags or boxes may be prepared in the home by dipping them into paraffin, although heavy paper containers already covered with paraffin may be bought in supply stores. Heavy paper or cloth bags may be used, provided they are stored in a dry place where there is no danger from rats and mice. Containers of any kind should be securely tied before storing them permanently. Bags and boxes of dried food are preferably suspended from rafters in an attic, but if this is not possible a rack or a bin located in a place that is not damp will answer.

It is well, in storing dried foods, to use containers that will hold only a small quantity of food, so that when some is taken out to be cooked a large amount will not be exposed. It is best to store just enough for a meal or two in each container.

129. Before dried foods are cooked, as much as possible of the water evaporated in drying should be restored. In order to do this, soaking is necessary. The dried food should be put into cold salt water made in the proportion of 1 teaspoonful of salt to 1 quart of water and soaked for at least 1/2 hour. The salt water seems to help restore the original color of the food. When dried vegetables are to be cooked, they should be cooked in the salt water in which they are soaked; when dried fruits are to be cooked, the salt water should be poured off and fresh water used. Long, slow cooking at a low temperature is better for all kinds of dried foods than rapid cooking. The fireless cooker will be found

valuable for cooking dried foods.

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CANNING AND DRYING

EXAMINATION QUESTIONS

- (1) Give three reasons for canning food.
- (2) What foods may be canned?
- (3) (_a_) How may satisfactory canning equipment be provided at little or no cost? (_b_) What metals are not good for canning or preserving kettles?
- (4) (_a_) What are the requirements for satisfactory types of jars? (_b_) What are the qualities of good jar rubbers?
- (5) What kind of tin cans should be used for canning fruits or vegetables that contain acid?
- (6) (_a_) Why should care be exercised in the selection of foods to be canned? (_b_) What points must be considered in the selection of foods for canning?
- (7) Why do canned foods spoil?
- (8) How may canned foods be prevented from spoiling?
- (9) (_a_) What are spores? (_b_) What connection have spores with the spoiling of canned food?
- (10) Mention three things that assist in the keeping of canned foods.
- (11) (_a_) How should jar covers and rubbers be treated in the open-kettle canning method? (_b_) Describe the filling and closing of jars in this method.
- (12) (_a_) Describe the utensil used for processing in the one-period cold-pack canning method. (_b_) How should jars, covers, and rubbers be treated in this method?
- (13) (_a_) How are foods blanched and scalded, and why are blanching and scalding done? (_b_) How are foods cold-dipped, and why is cold-dipping done?
- (14) (_a_) How should foods be packed in jars in the cold-pack canning method? (_b_) How should the rubber and cover be adjusted before processing? (_c_) When should you begin to count the boiling time for food that is being processed in the water bath?
- (15) (_a_) How and when should jars be closed in the cold-pack method? (_b_) How should jars of food be cooled?
- (16) (_a_) How should jars of food be treated for storage? (_b_) How should they be stored?
- (17) Mention some advantages of dried foods over fresh or canned ones.

(18) What important points should be considered in the process of drying food?

(19) What are the proportions of salt and water into which foods that discolor are placed before they are canned or dried?

(20) What precautions should be observed in the storing of dried foods?

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JELLY MAKING, PRESERVING, AND PICKLING

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VALUE OF JELLIES, PRESERVES, AND PICKLES

1. Like canning and drying, JELLY MAKING, PRESERVING, and PICKLING are methods of preparing perishable foods to resist decomposition and change. When treated by any of these three processes, fruits and vegetables will keep for long periods of time and will thus be ready for use during the seasons when they cannot be obtained fresh. The preservation of food by making it into jellies, preserves, and pickles does not, as in the case of canning, depend on the sterilization of the product, but rather on the use of certain ingredients that act as preservatives. These include sugar, spices, salt, and vinegar, all of which are considered harmless preservatives in both the home and the commercial preparation of foods.

2. The making of jelly, preserves, and pickles may seem like an extravagance in the expenditure of money for materials, as well as of time and energy on the part of the housewife. Whether this is the case or not is a matter that must be decided by the housewife herself. If these foods are not of enough value to her in the preparation of meals and the feeding of her family to make it worth her while to use her time and materials in storing them for winter use, then it is not wise for her to prepare them. But foods so preserved usually have sufficient merit to warrant the expenditure of the time and the money required in their making.

3. In the first place, it will often be necessary to throw away material that would make excellent jelly or jam unless the sugar can be supplied and the time given to make this material into something that is edible and at the same time attractive. As is well known, all through the canning season, there is some material, which may have been intended for canning, but which, for some reason, cannot be used in that way. Such material should be utilized in the preparation of these foods. For instance, some of the berries and other fruits bought for canning may be found to be too ripe to make a good-looking product, but may be very satisfactory for the making of jars or jellies. Then, too, if the open-kettle method of canning is used, there is almost certain to be a superfluous amount of juice that would be wasted if it were not used in the making of jelly. Such material need not necessarily be used at the time, for it may be canned and then made up later at some more convenient time.

In addition to material of this kind, there is often a surplus of

vegetables and fruits on hand, particularly if one has access to a garden. Much of this can be canned and dried, but what is not desired for these purposes might be wasted if it were not made up into appetizing jellies, preserves, and pickles.

4. Even though it were not necessary to consider the matter of waste and the utilizing of surplus fruits and vegetables, there would still be sufficient reason for the making of jellies, preserves, and pickles, because these foods, when properly prepared, have great value in the meal. Jellies and preserves, because of the large quantity of sugar used in them, are foods high in carbohydrate. In view of this fact, they should be considered as a part of the meal in which they are served, instead of being used extravagantly or regarded as something extra in an already sufficiently large menu.

Besides their importance in food value, they should have a place in the diet because they stimulate the appetite through their attractive colors and delicious flavors. The familiar fact that a child will refuse to eat plain bread and butter, but will accept the same piece when it has been made attractive by the addition of a little jam, argues much for the use of foods of this sort in children's diet. As it is with children, so it is to a large extent with adults. During the winter months, when fruits and fresh vegetables are scarce and expensive, practically every one finds jellies and preserves appetizing, for these things, in a measure, take the place of the foods that are difficult to procure.

5. Not so much can be said of the various kinds of pickles, as they are not so valuable in the diet from the standpoint of food values. They are made from fruits and vegetables, as are jellies and preserves, but the preservatives used in their preparation are vinegar and spices. In addition to having no food value, such ingredients produce overstimulation and irritation in the alimentary tract, toughen the cellulose in the foods used, and consequently often cause indigestion and various gastric disturbances. For these reasons, pickles should not be included in the diet of children. However, because of the stimulation they produce in the stomach, foods of this kind, if taken in small quantities, are properly served as appetizers, and can be eaten by normal adults without fear of digestive disturbances. Then, too, as every one who has meals to prepare knows, they are valuable for relieving monotony in the diet, a point that should not be overlooked.

6. Because the preservation of food in jellies, preserves, and pickles is accomplished by the use of certain preservatives instead of by the sterilization of the food, as in canning, these preparations do not mold or spoil readily. Therefore, containers of a different nature from those used in canning may be used to store these foods. Jars having tightly sealed covers are not required, but such containers as wide-necked bottles, stone jars or crocks, glasses, etc. may be utilized for this purpose. In fact, containers of almost any description may be used for jellies, preserves, and pickles. They should, of course, be sealed in some way to prevent the entrance of bacteria, and various methods of accomplishing this have been devised. A very satisfactory way consists in pouring melted paraffin over the top of the food and then covering the container with a piece of heavy paper and tying this on securely with cord.

7. Since jellies, preserves, and pickles occupy a place of importance in the diet and at the same time provide an opportunity to utilize material that might otherwise be wasted, they are entitled to a certain amount of

attention from the housewife. To equip her with the knowledge she needs for this work and give her practice in jelly making, preserving, and pickling, the details of these processes are taken up, step by step, in this Section.

* * * * *

JELLY MAKING

PRINCIPLES OF JELLY MAKING

8. JELLY MAKING consists in cooking fruit juice with sugar until, upon cooling, it will solidify, or jell. While this is not a difficult nor a complicated process, there are some housewives who do not have success with it. Often the result may be very good when a certain fruit is used, whereas it may be entirely unsatisfactory at another time, even though the same fruit is used and practically the same procedure is followed. If the best results are to be assured in jelly making, the principles that are involved in this process must first be thoroughly understood and then the correct procedure must be painstakingly followed out.

9. To solidify properly and thus become a desirable jelly, the fruit juice that is used for this purpose must have the following characteristics and treatment: (1) it must contain certain jelly-making properties; (2) it must be extracted properly; (3) it must be combined with the correct proportion of sugar; and (4) it must be cooked the proper length of time. There are, of course, numerous degrees of solidity of jelly, varying from that which will barely retain its shape to that which is very tough and hard, but neither extreme is desirable. To be right, the jelly should be firm enough to stand up well, but should be tender and soft when a spoon is cut into it.

10. Fruit is the principal ingredient in the making of jelly, as it is the source from which the juice is obtained. Such imperfections in fruits as poor shape or unattractive appearance do not count in this matter, since only the juice is used; but they must contain jelly-making properties in order that jelly can be made from them.

Green or slightly unripe fruits are better for jelly making than fruits that have become ripe. In fact, when in this immature state, fruits may be used to make jelly, whereas the same fruits, when perfectly ripe, often will not make jelly at all, or, if they do, will produce a jelly that is inferior in quality.

11. The chief requirement of fruits that are to be used for jelly making is that they contain acid and pectin. Pectin is the real jelly-making property of fruits. When it is in the presence of acid and combined with the correct proportion of sugar and the combination is properly boiled, a desirable jelly is the result. Without pectin, however, it is impossible to make the juice solidify, or jell. Pectin is closely related to the carbohydrates, but as it does not yield heat energy nor build tissue, its food value is not considered. In this respect, it is like the cellulose of fruits and vegetables.

It is because green fruits contain more pectin than do ripe fruits that they are more suitable for jelly making. The lack of either acid or pectin need not, however, prevent the making of jelly from fruits, such as sweet fruits, that contain other jelly-making properties, for either or both may be supplied from some other source. In other words, jelly

may be made from any fruit that will yield juice and flavor.

EQUIPMENT FOR JELLY MAKING

[Illustration: FIG. 1]

12. NECESSARY EQUIPMENT.--In the making of jelly, as in the preparation of many other foods, numerous utensils will be found convenient and may, if desired, be supplied to make the work easier. However, the necessary ones are comparatively few in number and, for the most part, are found in almost every kitchen. In Fig. 1 are shown assembled practically all the equipment used in the making of jelly, and if a housewife is provided with these things or substitutes for them, she will be well equipped for her work.

13. KETTLES.--As will be observed, two kettles are required in jelly making. The larger one is used for cooking the fruit, and the smaller one, to cook the juice and the sugar. These should have a perfectly smooth surface, and may be made of almost any material used for such utensils, except tin or iron. These two metals are undesirable, as they are liable to lend to the jelly a disagreeable flavor and in all probability an unattractive color. The one used to cook the fruit should generally be a little larger than the other. As about 6 glassfuls of jelly may be cooked at one time, the kettle in which the juice is boiled should be of adequate size to cook this amount without danger of its boiling over. When fruit juice and sugar are boiled together, the mixture often boils up and runs over if the vessel is not large enough.

14. JELLY BAG.--The jelly bag, which is used for straining the boiled fruit and thus obtaining the juice, may be a home-made one or, as shown in the illustration, one that is purchased for the purpose. If the bag is made at home, a heavy, closely woven material, such as flannel, should be selected, so as to prevent the tiny particles of fruit from passing through with the juice. A liquid strained in this manner will be much clearer and will make better looking jelly than that which has been run through a coarse material, such as cheesecloth. The juice can be strained very conveniently if the bag is attached to a wire arrangement, like the one shown, or to an upright standard that can be fastened to a chair or a table, for then the bag is held securely over the vessel into which the juice drips. Sometimes, especially when more than one extraction of the juice is to be made, the first extraction is made by means of a strainer or a colander and the juice thus obtained is then strained through the bag.

15. ADDITIONAL UTENSILS.--As accurate measurements are absolutely essential in jelly making, a measuring cup should be included in the equipment. Then, too, a quart measure will be found very convenient, especially if large quantities of materials are to be cooked at one time. A large spoon or two for stirring, skimming, and testing should also be provided. The spoon used for skimming will produce better results if the bowl contains holes that will permit the juice to drop back into the vessel, for then none of the juice will be wasted.

16. CONTAINERS FOR JELLY.--Various types of receptacles in which to keep jelly are in use, some turning out more attractive molds than others. The shape of the mold, however, is a matter of minor importance. Almost any wide-mouthed glass receptacle with comparatively smooth sides will do very well, since the sealing of jelly is not a difficult thing to do.

Therefore, new receptacles should not be purchased if there is a supply of any suitable kind on hand, for many other containers besides purchased jelly glasses may be used for this purpose. The most convenient type, which may be bought in any store selling kitchen utensils, is that shown in Fig. 1. As will be observed, these are somewhat broad and not very tall. A mold of jelly turned from a tall, narrow glass does not stand up so well as that turned from a flat, wide one. Then, too, a tall glass is much more likely to tip and spill than a more shallow one.

17. Metal covers that fit the tops of the glasses, like the ones shown, are the most convenient kind that can be used, but they are not an absolute necessity. In their place may be used paper caps that fit the glasses, or the tops of the glasses may be covered with paper and then tied. Before a cover of any kind is put on a glass, paraffin, several cakes of which are arranged on a plate in Fig. 1, is melted and poured in a thin layer over the top of the jelly itself.

To designate the kind of jelly, it is advisable to label the glasses with neat labels, a box of which is included in the equipment here shown.

18. Paraffin-covered paper cups have been recommended to take the place of jelly glasses, and while they do very well in the case of scarcity of containers they have some disadvantages. In the first place, they can be used only once, as it is impossible to wash them. In addition, it will be necessary to wait until the jelly is partly cold before pouring it into such cups, as hot jelly will melt the paraffin on the surface of the paper.

PROCEDURE IN JELLY MAKING

19. When the necessary utensils have been conveniently placed and the desired fruit has been selected, the housewife may proceed at once to the work of making jelly. Each step is here outlined in the order in which it should be taken up in doing the actual work. The entire procedure should be properly followed out in order to insure the best results, and every part of the work should be carefully done so as to avoid any waste of material.

[Illustration: FIG. 2]

20. COOKING THE FRUIT.--Prepare the fruit in whatever way is necessary. The preparation needed will depend, of course, on the kind of fruit selected for the jelly, but usually not so much preparation is needed as in the case of canning. For instance, when crab-apple jelly is made, the stems are removed and the fruit is cut into halves or quarters, but they need not be peeled nor have the seeds taken out. Specific directions for the different varieties of fruits are given in the various recipes. The chief precaution to take in preparing the fruit, no matter what kind is used, is to see that it is thoroughly cleaned.

With the fruit prepared, put it into a large kettle and add enough water to start the cooking and prevent scorching. Some fruits will require more water than others, especially when they must be cooked a long time in order to soften them sufficiently to extract the juice. Juicy fruits, like plums, need only the minimum amount of water, while drier fruits, such as apples, require more. Place the kettle on the stove, as in Fig.

2, and allow the fruit to cook until it is soft or is reduced to a pulp. The length of time for cooking will also depend entirely on the kind of fruit that is being used.

21. EXTRACTING JUICE.--When the fruit is thoroughly cooked, pour the pulp and the juice that has formed into the jelly bag and allow it to drip into a pan placed directly under the bag, as shown in Fig. 3. Formerly, it was the custom to let the juice drip until no more remained in the bag. This method is followed to some extent at present, but it is falling into disuse, as it is not the most economical way of extracting the juice from the pulp. More juice can be obtained and more jelly made from the same amount of fruit if three extractions instead of one are made. Make the first extraction by pouring the pulp and juice into the bag and permitting the juice to drip only until it begins to run very slowly. Then return the pulp to the kettle, add a small quantity of water, and let it boil again for a few minutes. Pour it the second time into the jelly bag, and let it drip as before. Cook it the third time in the same way, and then allow it to drip until all the juice is extracted. At this point, mix the juice from the three extractions. They should not be used separately, for they are much different in quality, the third one being not so good as the second and the second, inferior to the first. On the other hand, when all three are mixed, an excellent quality is the result, provided all conditions are correct, and a larger quantity of juice is obtained for the jelly.

[Illustration: FIG. 3]

22. The quantity of juice that may be extracted depends on the quality as well as the kind of fruit. If the season is a rainy one, the fruits will be found to contain more juice than they would in a dry season. Then, too, if the fruits are picked immediately after a rain, they will contain more juice than the same fruits before the rain. The amount of juice the fruit contains determines, of course, the quantity of water that should be added in the cooking. If only one extraction is intended, 3 to 4 quarts of water may be used for 8 quarts of fruit, depending on the kind of fruit; but if three extractions are to be made, less water should be added for each extraction. In case the extracted juice contains more water than it should have, either because the fruit contains an excessive amount of water or because too much water was added to the fruit in its cooking, the superfluous water will be extracted by boiling the juice with the sugar a little longer as the jelly is being made.

It is not always necessary to have the fleshy part of fruit for jelly making, for often the skins, seeds, and cores of fruits may be cooked with water and the juice then extracted from them. Another point to remember is that the pulp from which the juice is extracted may sometimes be used for jam or marmalade. If points like these are taken into consideration, it will not be necessary to waste any part of edible fruits.

23. TESTING THE JUICE FOR PECTIN.--When the juice has been extracted from the fruit, it should be tested for pectin in order to determine whether or not it will be satisfactory for the making of jelly. A test that can be applied by the housewife is illustrated in Fig. 4. Into a tumbler, put a tablespoonful of juice and with this mix a tablespoonful of alcohol. If, upon adding the alcohol, the fruit juice turns into a gelatinous, or jelly-like, mass that may be easily gathered up on the spoon, it may be known that pectin is present. As has already been

stated, the presence of this substance in fruit juice insures the fact that jelly can be made from the juice.

[Illustration: FIG. 4]

24. USING JUICE LACKING IN PECTIN.--If, in the test for pectin, the addition of alcohol to the fruit juice does not turn the juice into a jelly-like mass, pectin is not present. Such juice, or juice that contains only a small amount of pectin, will prove unsuccessful in jelly making unless some substance or juice high in pectin is added to it. The white skin from the inside of orange, lemon, or grapefruit peelings or the juice from apples, crab apples, currants, green gooseberries, or other fruit containing a large quantity of pectin may be used for this purpose. Also, commercial pectin may be purchased and used with fruits according to the directions that accompany it.

It is always necessary to supply pectin in some way to such fruits as strawberries, peaches, raspberries, blueberries, cherries, pears, etc. To the sweet ones, like peaches and raspberries, lemon juice or other acid fruit juice also must be added if satisfactory jelly is desired.

25. DETERMINING PROPORTION OF SUGAR.--The only other ingredient used in jelly making, besides the fruit juice, is sugar. After the juice has been strained from the fruit, the next step is to determine how much sugar must be used. This is of extreme importance, as the success of the jelly depends very largely on whether or not the correct proportion is used. If too much sugar is added to the juice, a greater quantity of jelly will result, but it will not stand up as it should when it is turned out of the glass. On the other hand, if too little sugar is used, a smaller quantity of jelly than the required amount will be made and it will be tough and sour.

[Illustration: FIG. 5]

26. It is difficult to give the exact proportion of sugar to use with every kind of fruit, for some fruits require more than others. However, in general, 3/4 cupful of sugar to each cupful of juice, as shown in Fig. 5, will be sufficient. This is especially true if the season has been a dry one and the fruits are neither very sour nor very juicy. After a wet season or with very sour or very juicy fruits, it will usually be necessary to use 1 cupful of sugar to each cupful of juice.

27. Much waste of sugar and spoiling of jelly can be avoided by the use of the test for pectin, which has just been described. After the juice and the alcohol have been mixed, pour the mixture slowly from the glass, noting how the pectin is precipitated. If it is precipitated as one lump, a cupful of sugar may be used for each cupful of juice; if in several lumps, the proportion of sugar must be reduced to approximately three-fourths the amount of juice. If the pectin is not in lumps, but is merely precipitated, the sugar should be one-half or less of the amount of the juice.

[Illustration: FIG. 6]

28. To assist in determining the correct proportion of sugar to use in the making of jelly, the hydrometer, or sirup gauge, which is explained in Canning and Drying, will be found helpful. After the juice has been extracted, mix with a small amount of it the proportion of sugar that is to be used when the jelly is cooked. Allow the sugar to dissolve

completely, pour a little of the mixture into a glass or a graduate, and insert the hydrometer, as shown in Fig. 6. Regardless of the kind of juice, the hydrometer should register 25 degrees for perfect jelly. If it registers less than 25 degrees, more sugar should be added. Then if it is necessary to add either sugar or juice, the additional ingredient should be carefully measured in order that the proportions may be correct for the making of jelly. It must not be understood that a hydrometer is an actual necessity in the making of jelly, for very good jelly can be made without measuring the ingredients in this manner. However, if a hydrometer is not used, it will be necessary to apply the best judgment possible to the rules given for the proportion of ingredients used in jelly making.

29. COMBINING THE JUICE AND SUGAR.--The mixing of the juice and the sugar may seem like a trivial matter, but in reality much is involved in combining these ingredients properly. It may be done in three different ways. In the first method, which is called _long boiling_, the sugar and the juice are mixed cold and are then allowed to come to the boiling point together. The second, which is known as _mean boiling_, consists in putting the cold juice on the stove, allowing it to boil about half the required time, and then adding the sugar, which has also been heated. In the third, which is known as the _short-boiling method_, the juice is boiled without the sugar almost the full length of time required for making the jelly, and the sugar, which has been heated, is added just before the boiling is completed.

30. Experience in the use of these three methods has shown their advantages and disadvantages. The first one, or the long-boiling process, has the disadvantage of losing sugar through the skimming that is always necessary in the making of jelly. In addition, the long boiling often causes the sugar to crystallize and thus produces a jelly that would not score very high. The short boiling is not entirely satisfactory, because of the difficulty in determining just when to add the sugar to the juice. The process of mean boiling, having neither of these drawbacks and usually resulting in jelly of excellent quality, is the most satisfactory and the one that is recommended.

[Illustration: FIG. 7]

To carry out this method, place the sugar in a pan in a warm oven or other place where it will gradually become heated without either melting or scorching. Put the juice over the fire in a saucepan and let it boil for 5 to 8 minutes. Then, as shown in Fig. 7, slowly add the correct proportion of hot sugar to the boiling juice, stirring constantly so that the sugar will dissolve as quickly as possible.

31. BOILING THE JUICE AND SUGAR.--The boiling of the juice, both before and after the sugar is added, should be done rapidly. During this process, it will be found that a scum will form over the top of the juice. This should be skimmed off as it forms, for it is a detriment to the jelly. As shown in Fig. 8, draw a large spoon over the top of the boiling juice from time to time and skim off the scum that rises, placing it into any small dish that is handy. It is usually advisable to do as much skimming as possible before the sugar is added, so that only a minimum amount of sugar will be lost.

The length of time required to boil the juice after the sugar is added depends very largely on the way in which the boiling is carried on. If the mixture is boiled rapidly, less time will, of course, be needed than

if it is boiled slowly. Therefore, no definite time can be set for the cooking. However, several tests may be resorted to in order to determine whether the sugar and juice have boiled long enough to jell when the mixture is cold.

[Illustration: FIG. 8]

32. TESTING THE JELLY MIXTURE.--The testing of the mixture can be done in various ways, the one to select depending on the success the housewife has in using them. A means very often resorted to consists in dipping a spoonful or two of the mixture out of the kettle and pouring it on the flat surface of a cold dish. If it is cooked sufficiently, it will solidify when it is cold and will appear just like jelly. The disadvantage of this test lies in the fact that the jelly on the stove continues to boil while the test is being made, and as this takes several minutes, the jelly is likely to overboil to a considerable extent. Tests that can be performed more quickly are therefore more satisfactory.

33. A test that invariably proves successful consists in dipping up a spoonful of the juice and allowing it to run slowly from the spoon back into the pan. If, as shown in Fig. 9, a double row of drops forms on the spoon with the last of the jelly that remains, it may be known that the cooking is finished.

34. Another very satisfactory test is called sheeting. In the performing of this test, a spoonful of the jelly is dipped from the pan and then poured from the spoon into the pan again. If it is cooked to the proper consistency, large drops will form at the edge of the spoon and break off quickly.

[Illustration: FIG. 9]

35. FILLING THE GLASSES.--As soon as it has been determined that the jelly is sufficiently cooked, it should be removed from the stove. The glasses may then be filled at once. These, together with the covers, must be thoroughly cleansed before being used, and this can be done while the jelly is cooking. After being thoroughly washed, submerge them in a pan of hot water and allow them to remain there until they are to be used. Keeping them hot in this way will prevent them from cracking when the hot jelly is poured into them. Take out one glass at a time, place it on a small plate or any small dish, and, as shown in Fig. 10, pour the hot jelly into it from the pan to within 1/4 inch of the top. Fill the remaining glasses in the same way, and then set them somewhere out of a draft to cool. If, as the jelly cools, it seems to be a little bit thin, place it somewhere in the sunshine and the heat of the sun will help to thicken it.

[Illustration: FIG. 10]

36. CLOSING AND STORING THE JELLY GLASSES.--The jelly should be allowed to cool completely and should then be closed for storing. The best results are obtained by putting a thin layer of paraffin over the top of the jelly in each glass before applying the cover. To do this, put into a small saucepan as much paraffin as you think will be needed to cover the jelly you have made and set this on the stove to melt. When it has melted, pour a layer about 1/8 inch thick over the surface of the jelly, as shown in Fig. 11. As soon as it cools, it will harden and thus form a protective covering for the jelly. When it is hard, cover the glass in

the desired way. Covers of tin are perhaps the most satisfactory, but if these cannot be secured, heavy paper covers that fit into the glasses snugly will answer the purpose very well. In the event of not having covers of either of these kinds, cover the tops of the glasses with paper--any good wrapping paper will do--and then tie this paper securely. Just before putting the jelly away, label each glass with a neat label on which is written the name of the jelly. Then no difficulty will be experienced in selecting at once the kind of jelly desired when one is taking a glass from the place where it is stored.

[Illustration: FIG. 11]

SCORING JELLY

37. With jelly, as with canned fruit, it is a splendid idea for every housewife to score each kind she makes, so that she can determine how it measures up in its various characteristics. If it falls below the standard, this fact should be known, so that the fault can be remedied the next time. On the other hand, extreme satisfaction is felt if it is found to score high. To assist in scoring jelly, a score card is here given, and following it each one of the characteristics is discussed.

SCORE CARD FOR JELLY

	Per Cent.
Color	20
Solidity	25
Flavor	25
Sugar Content	25
Method of Sealing	5

Total	100

Color.--For jelly having the proper color, 20 per cent. is given. The fruit used in the making of jelly determines to a great extent the color of the finished product, but it is possible to have a very wide difference in the colors of jelly made from the same fruit. To be right, jelly should be clear, bright, and not too dark. If the juice is boiled too long, the jelly will be darker than it should be. If pulp has been allowed to pass through the jelly bag in straining out the juice, either through squeezing the bag or using a bag that is too thin, the jelly will be found to have a cloudy appearance.

Solidity.--When jelly is turned from the glass, it should be firm enough to stand alone. If it has not been boiled long enough, it will crush down and perhaps run like sirup. If it is boiled too long or the proportion of juice to sugar is not correct, it may be tough and leathery. Jelly whose solidity is correct scores 25 per cent. in this respect.

Flavor.--The characteristic flavor of the fruit used in making jelly should be retained as much as possible, and when this is the case 25 per cent. is given to the product. The flavor of the jelly is therefore dependent on the flavor of the fruit. In addition, the flavor depends on the amount of sugar used, the amount of acid in the fruit, and the length of time consumed by the boiling. Jellies boiled too long will be strong in flavor.

Sugar Content.--The sugar content of jelly should be determined by the

amount of acid that must be sweetened. An insufficient amount of sugar will result in tough, sour jelly, while too large a quantity will make the jelly taffy-like. The correct amount of sugar, which produces the right degree of sweetness, receives a score of 25 per cent.

Method of Sealing.--The method of sealing may seem like a matter of little importance, but if jelly is not sealed properly, it will not be in good condition when it is to be served. To score in this respect, for which 5 per cent. is given, the jelly should be covered with paraffin and then closed with a cover or with paper in order to exclude the dust and dirt.

RECIPES FOR JELLY

38. Recipes for the kinds of jelly usually made are here given. If the directions given in the procedure for jelly making are thoroughly mastered and then applied to these recipes, the housewife will experience very little difficulty in making any of these varieties. Other jellies may, without doubt, be made by combining the proper fruits. All that has to be done in order to determine whether a certain fruit juice or combination of fruit juices will make jelly is to apply the test for pectin already explained. Whatever quantity of jelly is desired may be made, but usually it can be handled best if not more than 6 glassfuls are made at one time.

39. CRAB-APPLE JELLY.--Crab apples are much used for jelly, as they make a product of good consistency and excellent flavor. Apples may be used in the same way as crab apples with equally good results.

Wash the apples thoroughly, remove the stems, and cut into quarters. Make sure that the apples contain no worms. Put them into a kettle, add about half as much water as apples, and cook slowly until the apples are soft. Strain the juice through a jelly bag. Before it stops dripping, return the pulp to the kettle, add half as much water as pulp, and allow the fruit to cook again. Make a second extraction, and in the same way make a third one. Then combine the juice, and strain all of it through a bag to make it clear. Measure 6 or 8 cupfuls of juice, and pour it into a preserving kettle. Boil for about 5 minutes, straining off the scum that rises to the top. To each cupful of juice, add $\frac{3}{4}$ to 1 cupful of sugar that has been heated. Crab apples will require 1 cupful of sugar, but apples milder in flavor will not need more than $\frac{3}{4}$ cupful. Boil until the test shows that it has boiled long enough. Pour into hot glasses, cool, and seal. Label and then store for later use.

40. CURRANT JELLY.--If jelly having a tart flavor is desired, currant jelly should be tried. This kind of jelly is especially good to serve with the heavy course of a meal.

Wash and stem the currants. Put them into a kettle and add about one-fourth as much water as currants. Boil until the currants are reduced to a pulp. Pour into a jelly bag and strain. Make at least one more extraction, and a third extraction if there is a fairly large quantity of pulp. When all the juice has been strained from the pulp, strain it again through the bag or a heavy cloth. Measure 6 or 8 cupfuls of juice into a kettle, boil for about 5 minutes, and then add from three-fourths to an equal amount of heated sugar. Remove the scum as it forms, taking off as much as possible before the sugar is added. Continue to boil until the tests show that the mixture has cooked sufficiently. Remove from the heat and pour into hot glasses. Cool,

seal, label, and store.

41. GRAPE JELLY.--Thoroughly ripe grapes may be used for jelly, but they are not so satisfactory for this purpose as grapes that are only partly ripe. This is due to the fact that green grapes contain more pectin and, upon being cooked, produce fewer of the cream-of-tartar crystals usually found in grape jelly than do ripe ones. The procedure for grape jelly is the same as that for currant jelly. If ripe grapes are used, 3/4 cupful of sugar will be needed to each cupful of juice; but if only partly ripe grapes are used, 1 cupful of sugar will be required for every cupful of juice.

42. QUINCE JELLY.--Because of its attractive color and delicate flavor, quince jelly is much favored. The quinces may be used alone, but if a still more delicate flavor is desired, apples may be added to the quinces, or the parings and cores of the quinces may be used with apples or crab apples. To make quince jelly, proceed in the same way as for apple jelly, using 3/4 cupful of sugar to 1 cupful of juice.

43. RASPBERRY JELLY.--Either black or red raspberries may be used for jelly making. To give jelly made from these fruits a better consistency, a small quantity of green grape, crab-apple, or currant juice should be added. The procedure in this case is the same as for currant jelly.

44. STRAWBERRY JELLY.--Unripe strawberries contain a small amount of pectin, but thoroughly ripe ones are almost lacking in this respect. For this reason, strawberries cannot be used alone for making jelly. They make a delicious jelly, however, if currants are combined with them. For each 5 or 6 quarts of strawberries, 1 quart of currants will be sufficient to make a jelly of good consistency. Wash and hull the strawberries and then proceed as for currant jelly.

45. PLUM JELLY.--Plums make a jelly that many persons like. If it is desired to use plums alone, those which are not thoroughly ripe should be selected. Ripe plums do not contain enough pectin for jelly; therefore, a fruit high in pectin, such as crab apples, must be added. The procedure for currant jelly should be followed for plum jelly.

46. PEACH JELLY.--Peaches contain so little pectin that it is almost impossible to make jelly of them unless some other fruit is added in rather large quantities. Currants, crab apples, or green grapes may be used with peaches, and whichever one is selected will be needed in the proportion of about 50 per cent.; that is, half as much additional fruit as peaches is needed. In the making of peach jelly, proceed as for currant jelly.

47. CANNING FRUIT JUICES FOR JELLY.--During the canning season, when a great deal of such work is being done, the housewife often feels that making jelly and preserves is an extravagant use of sugar. Still, fruit juices left over from canning a

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