

**A** FIRELESS COOKER is a device for keeping food so hot after it has been taken from the stove that the process of cooking will be continued and completed. It makes cooking easier and lessens the amount of fuel needed. It is usually more economical when used as a supplement to a gas, oil, or electric stove than to a coal or wood range in which a fire is kept all day for purposes other than cooking.

This bulletin explains the principles on which a fireless cooker works and the kinds of food with which it can be most advantageously used, and gives simple directions by means of which an efficient one can be made at home from easily obtained and inexpensive materials. It includes general cooking directions for appetizing, inexpensive dishes of different types.

Suggestions are also given for using the fireless cooker to keep things cool.

# HOMEMADE FIRELESS COOKERS AND THEIR USE.<sup>1</sup>

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## THE PRINCIPLE OF THE FIRELESS COOKER.

**I**N USING A FIRELESS COOKER the food is first heated on the stove until the cooking has begun and then it is placed in the fireless cooker, a tight receptacle in which the food is completely surrounded by some insulating substance, which prevents the rapid escape of the heat so that it is retained in the food in sufficient quantity to complete the cooking. Sometimes an additional source of heat, such as a hot soapstone or brick, is put into the cooker with the food where a higher cooking temperature is desired. The same principle is also employed in other ways in cookery. For example, in camps beans are often baked by burying the pots overnight with hot stones and ashes, the whole being covered with earth, and in the "clam bakes" on the Atlantic coast the damp seaweed spread over the embers and the clams prevents the escape of the heat during cooking. The peasants in some parts of Europe are said to start their dinner cooking and then put it into hay boxes or between feather beds so that the cooking may be completed while the family is absent in the fields.

## ADVANTAGES AND LIMITATIONS OF THE FIRELESS COOKER.

One of the chief advantages of the fireless cooker is that it accomplishes a saving in fuel, especially where gas, kerosene, or electric stoves are used. Where coal or wood is the fuel, and the fire in the range is kept up most of the day, the saving in fuel is less. In summer or when the kitchen fire is not needed for heating purposes, the dinner can be started on the stove early in the morning and then placed in the fireless cooker, the fire in the range being allowed to go out. During hot weather the use of a kerosene or other liquid-fuel stove and a fireless cooker is a great convenience, since it not only accomplishes a saving in fuel but helps to keep the kitchen cooler.

The fireless cooker is not equally well adapted to all kinds of cooking, particularly not to frying, boiling, roasting, and baking, which require higher temperatures than can usually be obtained in cookers, even when hot soapstones or other devices for extra heat are used. It is sometimes recommended that the meat cooked in a fireless cooker be put into a hot oven for a few minutes before serving to give it the "browned" flavor which most persons enjoy; but of course this lessens the economy in fuel and increases the work of cooking, while it does not often develop as fine a flavor as ordinary hot, quick cooking. It is for cereals, dried beans, certain vegetables and fruit dishes, and the

<sup>1</sup> Prepared under the direction of C. F. Langworthy, chief, Office of Home Economics.

tougher cuts of meat that the fireless cooker is most satisfactory, because these materials need long, slow cooking to bring out their best flavor and texture, and because the saving of fuel is then greater. In fact, some of these materials need such long cooking that it is often not economical to use them if one has only a gas, oil, or electric stove. When put to proper use, the fireless cooker is a

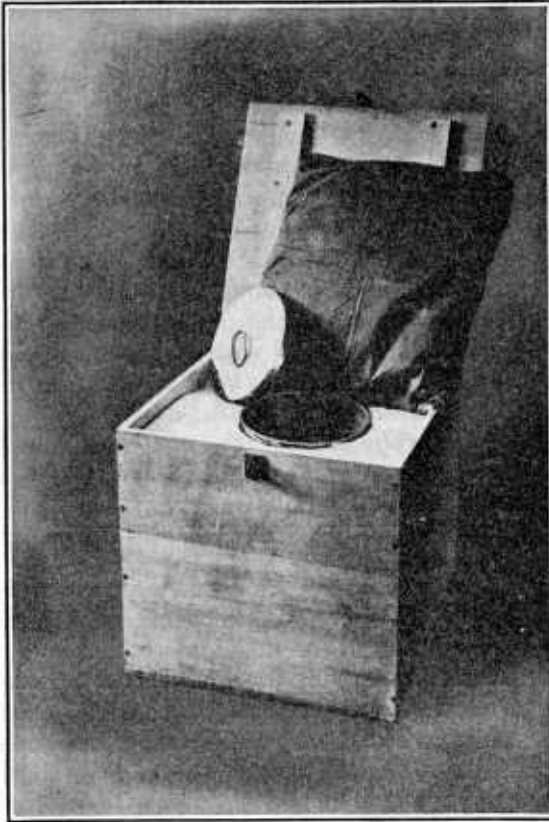


FIG. 1.—Homemade fireless cooker, showing outside container and cushion for filling space above the cooking vessel.

great convenience, because it saves time as well as fuel. Foods cooking in it may be left to themselves while the cook is occupied with other duties, or the family is away from home, without danger from fires or overcooking the food.

#### HOW TO MAKE A HOMEMADE FIRELESS COOKER.

It is possible to construct a homemade cooker which, if properly built, will give very satisfactory results and which will be cheaper than one purchased. If it is planned to use hot stones for extra heat, every precaution must be taken not to let these come in contact with anything

inflammable; otherwise the fire risk is too great to make the cookers safe. The materials needed are a box or some other outside container, some good insulating or packing material, a kettle with a tightly fitting lid for holding the food, a container for the kettle or a lining for the nest in which the kettle is to be placed, and a cushion or pad of insulating material to cover the top of the kettle.

For the outside container a tightly built wooden box, such as that shown in figure 1, is probably the most satisfactory. An old trunk, a small barrel, or a large butter or lard firkin or tin may be used. Another possibility is a galvanized-iron bucket with a closely fitting cover; this latter has the advantage of being fireproof. A shoe box 15 by 15 by 28 inches, is convenient in size, since it may be divided

into two compartments. The box should have a hinged cover, and at the front side a hook and staple or some other device to hold the cover down; an ordinary clamp window fastener answers the latter purpose very well. The container should be large enough to allow for at least 4 inches of packing material all around the nest in which the kettle is placed.

The kettles used for cooking should be durable and free from seams or crevices, which are hard to clean. They should have perpendicular sides and the covers should be as flat as possible and provided with a deep rim shutting well down into the kettle to retain the steam. (See fig. 2.) It is possible to buy kettles made especially for use in fireless cookers; these are provided with covers which can be clamped on tightly. The size of the kettle should be determined by the quantity of the food to be cooked. Small amounts of food can not be cooked satisfactorily in large kettles, and it is therefore an advantage to have a cooker with compartments of two or more differ-

entsizes. Kettles holding about 6 quarts are of convenient size for general use. Tinned iron kettles should not be used in a fireless cooker, for, although cheap, they are very apt to rust from the confined moisture.

Enameled ware kettles are satisfactory, es-

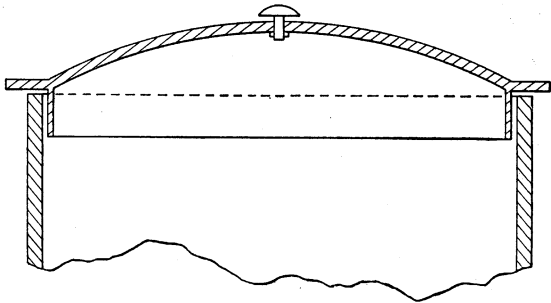


FIG. 2.—Cover provided with deep rim shutting down into the kettle to retain the steam.

pecially if the covers are of the same material. Aluminum vessels may be purchased in shapes which make them especially well adapted for use in fireless cookers and, like enameled ware, they do not rust.

Fireless cookers are adapted to a much wider range of cooking if they are provided with an extra source of heat, since a higher cooking temperature may thus be obtained than if hot water is depended upon as the sole source of heat. Obviously this introduces a possible danger from fire in case the hot stone or other substance should come into direct contact with inflammable packing material like excelsior or paper. To avoid this danger a metal lining must be provided for the nest in which the cooking vessel and stone are to be put. As an extra source of heat a piece of soapstone, brick, or an iron plate, such as a stove lid, may be used. This is heated and placed in the nest under the cooking vessel; sometimes an additional stone is put over the cooking vessel.

The container for the cooking vessel, or the lining for the nest in which it is to be put, should be cylindrical in shape; should be deep

enough to hold the cooking kettle and stone, if one is used; and should fit as snugly as possible to the cooking vessel, but at the same time should allow the latter to be moved in and out freely. If the cylinder is too large the air space between it and the kettle will tend to cool the food. For the lining a galvanized iron or other metal bucket may be used or, better still, a tinsmith can make a lining of galvanized iron or zinc which can be provided with a rim to cover the packing material (as shown in fig. 3). In case no hot stone or plate is to be used in the cooker, the lining can be made of strong cardboard.

For the packing and insulating material a variety of substances may be used. Asbestos and mineral wool are undoubtedly the best, and have the additional advantage that they do not burn. Ground cork (such as is used in packing Malaga grapes), hay, excelsior, Spanish moss, wool, and crumpled paper may also be used satisfactorily. Of the inexpensive materials that can be obtained easily,

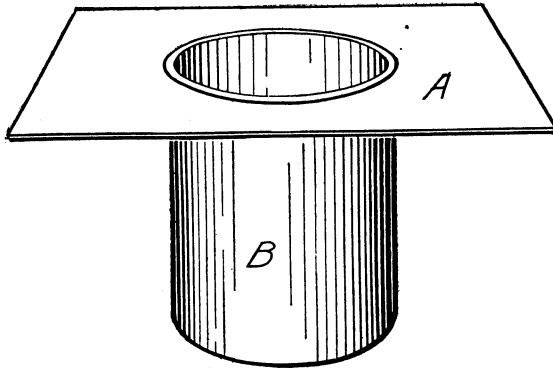


FIG. 3.—Metal lining for nest of fireless cooker: *A*, Rim to cover packing material. *B*, Metal container for cooking kettle and hot stone.

crumpled paper is probably the most satisfactory, since it is clean and odorless and, if properly packed, will hold the heat better than some of the others. To pack the container with paper, crush single sheets of newspaper between the hands. Pack a layer at least 4 inches deep over the bottom of

the outside container, tramping it in or pounding it in with a heavy stick of wood. Stand the container for the cooking vessel, or the lining for the nest, in the center of this layer and pack more crushed papers about it as solidly as possible. The method of packing with paper is illustrated in figure 4. If other packing, such as excelsior, hay, or cork dust, is used, it should be packed in a similar way. Where an extra source of heat is to be used, it is much safer to pack the fireless cooker with some non-inflammable material, such as asbestos or mineral wool. A cheap and easily obtained substitute are the small cinders sifted from coal ashes, preferably those from soft coal, which may be obtained at the boiler house of any mill. The cinders from hard coal burned in the kitchen range will do, however. Experiments with this material made in this office showed that it is very nearly as satisfactory as crumpled paper as a packing material. If a fireproof packing material is not used, a heavy pad of asbestos paper should be put at the bottom of

the metal nest and a sheet or two of asbestos paper should be placed between the lining of the nest and the packing material. Whatever packing material is used, it should come to the top of the container for the kettle, and the box should lack about 4 inches of being full. A cushion or pad must be provided to fill completely the space between the top of the packing and the cover of the box after the hot kettles are put in place. (See fig. 1, p. 4.) This should be made of some heavy goods, such as denim, and stuffed with cotton, crumpled paper, or excelsior. Hay may be used, but will be found more or less odorous. Figure 5 shows the vertical cross section of a homemade fireless cooker.

In the home-demonstration work in the South a tightly built box, an old trunk, a galvanized-iron ash can, a candy bucket, a tinlard can, a lard tub, and a butter firkin are among the containers that have been successfully used in the construction of fireless cookers. The essential parts of one such cooker are shown in figure 6. In this



FIG. 4.—Homemade fireless cooker with part of outside container removed to show packing of crumpled paper and the cooking vessel, with its container.

cooker the inside container or nest which holds the vessel of hot food may be a bucket of agate, galvanized iron, or tin. This nest must be deep enough to hold the hot stone or brick and the vessel of food but not large enough to leave much space. The inside container must have a tight fitting cover and straight sides are desirable. The packing or insulation must be some material which is a poor conductor of heat, such as lint cotton, cottonseed hulls, wool, shredded newspaper, Spanish moss, ground cork, hay, straw, and excelsior. Sheet asbestos one-eighth of an inch thick or heavy cardboard has proved

to be the best lining for the outer container and the wrapping for the nest. Heavy wrapping paper or several sheets of newspaper may be used for lining the outer container, but the nest should be wrapped with asbestos or heavy cardboard to prevent the hot stone scorching or burning the packing.

1. It is well to have the outside container large enough to permit 4 inches of packing below and around the sides of the nest. If a cooker is being made with two nests, 6 inches of packing should be allowed between the nests. Pack into the bottom of the lined outer

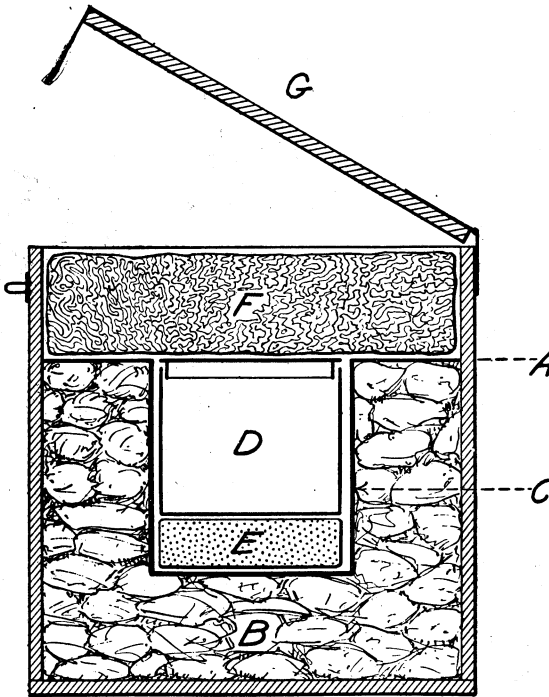


FIG. 5.—Longitudinal section through fireless cooker, showing details of the construction: *A*, Outside container (wooden box, old trunk, etc.) *B*, Packing or insulating material (crumpled paper, cinders, etc.). *C*, Metal lining of nest. *D*, Cooking kettle. *E*, Soapstone plate, or other source of heat. *F*, Pad of excelsior for covering top. *G*, Hinged cover of outside container.

container 4 inches of the packing. Place the nest or inside container wrapped with asbestos or heavy cardboard and hold steady while the packing is put around tightly and firmly until it reaches the top of the nest.

2. Make a collar, as shown in the illustration, of cardboard, sheet asbestos, or wood to cover the exposed surface of the insulated material. This collar should fit tightly.

3. Make a cushion which when filled with the packing will be at least 4 inches thick and will fill completely the space between the top of the nest and the lid of the outside container. It should fit

against the top tightly enough to cause pressure when the lid is closed.

4. The outside of the fireless cooker can be made more attractive by staining or painting it. The lid may be held in place by a screen-door hook and eyes. The cooker may be placed on casters so that it can be easily moved.

**HOW TO USE THE FIRELESS COOKER.**

As already indicated, the fireless cooker has its limitations and must be used with judgment to obtain the best results. It is best suited to those foods which require boiling, steaming, or long, slow cooking in a moist heat. Foods can not be fried in it, pies can not be baked successfully in the ordinary fireless cooker, nor can any cooking be done which requires a high, dry heat for browning. Meats, however, may be partially roasted in the oven and finished in the cooker, or may be begun in the cooker and finished in the oven with much the same results as if they were roasted in the oven entirely. The classes of food best adapted to the

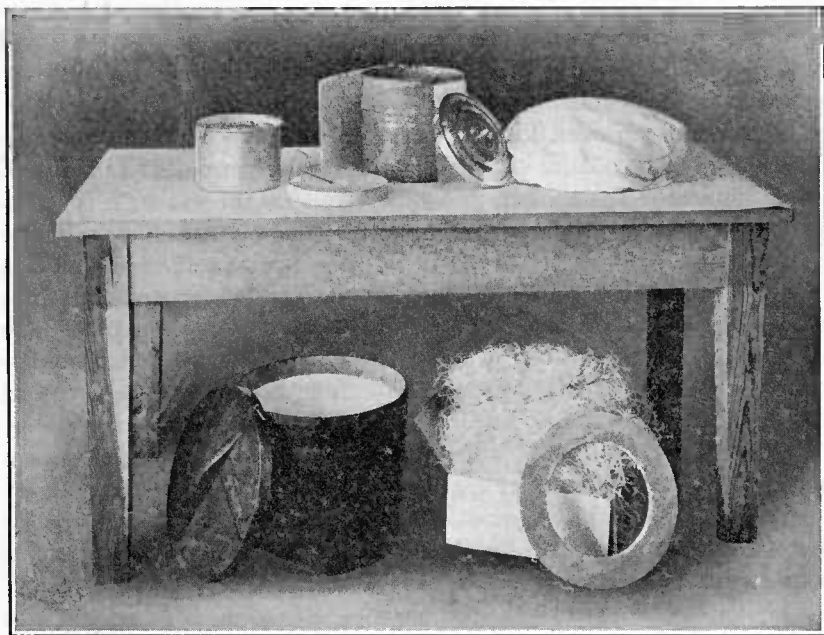


FIG 6.—Material necessary for constructing a homemade fireless cooker.

cooker are cereals, soups, meats, vegetables, dried fruits, steamed breads, and puddings.

When different foods are cooked together in the fireless cooker, they must be such as require the same amount of cooking, since the cooker can not be opened to take out food without allowing the escape of a large amount of heat and making it necessary to reheat the contents. It would not do to put foods which require one and one-half hours into the cooker with a piece of meat which would stay several hours.

The size of the container used should be governed according to the amount of food to be cooked. Small quantities of food can not be handled satisfactorily in a large kettle in the fireless cooker. If a



large kettle must be used better results will be obtained if some other material which holds heat fairly well is used to fill up the empty space. This may be accomplished in several ways. One is to put the small quantity of food to be cooked into a smaller, tightly closed kettle, fill the large kettle with boiling water and put the small kettle into it, standing it on an inverted bowl or some other suitable support. This boiling water will take up and hold the heat better than air would. Several smaller dishes (if tightly covered) may be placed in the kettle surrounded by boiling water. Baking powder or other tins often are found useful for this purpose. Another way is to place one food in a basin which just fits into the top of a large kettle and to let some other material, some vegetable perhaps, cook in the water in the bottom of the kettle. Two or more flat, shallow kettles placed one on top of the other so as to fill the cooker enable one to cook small amounts of different foods successfully. Such kettles, made especially for use in fireless cookers, may be purchased.

The time which each kind of food should stay in the cooker depends both on the nature of the food and on the temperature at which it remains inside the cooker, and before recipes for use with the fireless cooker can be prepared one must have some means of knowing how temperatures are preserved in it. In experiments made in this office a 6-quart kettle was filled with boiling water and put into the cooker, the packing of which happened to be newspaper. The temperature of the water, which was 212° F. when put into the cooker, was found to be 172° F. after four hours had elapsed and 155° F. after eight hours had elapsed. This shows the advisability of the common custom of allowing food to remain undisturbed in the cooker for at least six or eight hours, or in some cases overnight. If a soapstone, hot brick, or other extra source of heat is used, less time will be required. Materials which are denser than water (sugar sirup as used in cooking dried fruit), and therefore can be heated to a higher degree, will keep up the temperature longer when put into the cooker. Thus the density of the food material, as well as the amount and the length of time that the apparatus retains the heat, must be taken into consideration in determining how long different materials must remain in the cooker.

The recipes for dishes to be prepared in the fireless cooker differ somewhat from those for foods cooked in the ordinary way, chiefly in the amount of water or other liquids called for. Less liquid should be put into the food to be prepared in an ordinary fireless cooker, since there is no chance for water to evaporate. The cook must be guided largely by experience in deciding how long the food should be heated before being put into the cooker and how long it should be allowed to remain there. Fortunately there are several good fire-

less cookbooks on the market whose directions can be relied upon, and at the end of this publication several selected recipes are given.

### RECIPES FOR USE WITH THE FIRELESS COOKER.

The following recipes<sup>1</sup> have been used in extension work in the Southern States:

#### CREOLE CHICKEN.

1 medium-sized fowl.	½ cup rice.
2 cups tomato.	1 teaspoon salt.
1 cup okra.	1 cup boiling water.
1 cup chopped sweet peppers.	1 tablespoon fat.
¼ cup chopped onion.	

Dress the fowl and cut into joints. Melt the fat, add onion and pepper. Cook for a few minutes to develop flavor. Then add salt, tomato, and okra and simmer for 10 minutes. Place layers of the chicken, vegetable mixture, and rice in cooking vessel until all is used. Pour over this 1 cup boiling water. Simmer for one-half hour and put in fireless cooker for three hours without the hot disk or two hours with it. Additional seasoning of ham or bacon, parsley, and bay leaf may be used.

A ham bone may be substituted for the ham or bacon. If this is done, boil it for one-half hour in enough water to cover. Then add 1 cup of the ham broth to the tomato before cooking it with the bay leaf. This recipe is a good way to use chicken too old to fry or broil. A similar dish can be made by using a quart of canning club soup mixture. When necessary, thicken the broth with a little browned flour before putting the chicken into the cooker.

#### CEREALS.

*Hominy grits.*—Five cups water, 2 teaspoons salt, 1 cup hominy grits. Pick over and wash hominy grits. Have the salted water boiling and add the hominy slowly, so as not to stop the boiling. Continue to boil rapidly for 10 minutes over the fire, then put the vessel into the cooker as quickly as possible and allow to remain (overnight) for about 12 hours. The vessel of hominy may be placed in another vessel of boiling water before being placed in the cooker.

*Samp (coarse hominy).*—One-half cup samp soaked in 1 cup cold water 6 hours. Add 1½ teaspoons salt and 3 cups boiling water. Boil rapidly 45 minutes. Put into cooker for 8 to 12 hours.

*Oatmeal.*—Three cups water, 1 teaspoon salt, 1 cup oatmeal. Carefully look over the oatmeal and remove any husks or foreign substance. Add gradually to the boiling salted water and boil rapidly for 10 minutes, stirring constantly. Now it may be put into the cooker. After 2 or 3 hours it is soft, but a better flavor will be developed by longer cooking. It may remain in the cooker overnight in the same manner the hominy grits are cooked (about 12 hours). Next morning it may have to be reheated. To do this, set the cooker pan in a vessel of water over the fire. When the water boils up well, the oatmeal may be served.

*Plain rice.*—One cup rice, 3 cups water, 1½ teaspoons salt. Look over and wash the rice through several waters, until cloudiness is removed. Bring the salted water to a boil. One-half teaspoon lard may be added. Then add rice gradually to the boiling water in the cooker vessel so as not to stop the boiling. The grains should be kept moving in the boiling water and be allowed to boil 5 minutes before putting it into the cooker for 45 minutes or an hour.

<sup>1</sup> Prepared by Miss Ola Powell and Miss Mary E. Creswell.

There is a considerable difference in rice. Old rice absorbs more water than new rice, and the time for cooking it will vary. An hour will be sufficient usually for this small amount. Rice is injured by overcooking. When rice is tender, drain in colander and place in warm oven for about 5 minutes. Serve at once. Sometimes it is well after draining rice in colander to pour cold water over it. This will wash away the starchy substance between the grains and keep them from adhering or sticking together. Then place the colander in a hot oven to heat and dry out the rice. If desired, the lard may be omitted. It lends a brilliancy to the rice grains when cooked.

*Rice in pilaf* (an oriental mixture).—Two cups stock, 1 cup rice, 2 tablespoons butter, 1 teaspoon sugar, 2 slices onion, 6 ripe tomatoes or 1 cup canned tomato juice, 1 teaspoon salt,  $\frac{1}{8}$  teaspoon pepper, 1 tablespoon chopped green sweet pepper may be added.

Look over and wash the rice. Chop the onion very finely and fry in 1 tablespoon of the butter until yellow. Add to it the boiling juice of the tomatoes and the boiling broth and allow all to boil before adding the rice gradually so as not to stop the boiling. Boil mixture about 5 minutes and place in cooker 1 hour. When ready to serve, add 1 tablespoon butter. Stir with a fork to mix evenly. Pilaf is injured by overcooking.

#### SOUPS.

*Vegetable soup* (made without stock).—One half cup carrots,  $\frac{1}{2}$  cup turnips, 1 cup potatoes,  $\frac{1}{2}$  cup onions,  $\frac{1}{2}$  cup cabbage, 3 cups tomato juice or 1 No. 3 can tomatoes, 1 tablespoon flour, 2 teaspoons salt, 1 tablespoon celery seed (crushed), 1 quart water, 4 tablespoons butter,  $\frac{1}{2}$  tablespoon parsley,  $\frac{1}{4}$  teaspoon pepper.

Cut all vegetables (except potatoes and onions and parsley) into small pieces. Cook them for 10 minutes in 3 tablespoons butter. Add potatoes and cook 3 minutes longer. Mix all ingredients (except parsley) in the cooker utensil and boil 5 minutes. Mix 1 tablespoon butter and 1 tablespoon flour; add enough of the liquor to make it smooth and pour it into the mixture. Cook 5 minutes more and put into the cooker for 4 to 6 hours.

*Creole soup* (made with stock).—Stock: Two pounds shin beef (meat and bone),  $1\frac{1}{2}$  quarts water. Cut the meat from the bone into small pieces. Crack the bone and soak 1 hour in cold water. Bring to a boil slowly and when boiling place in the cooker for 5 to 7 hours. When cooked, strain and set away to cool. The cake of fat which forms on top when stock is cold seals the stock and keeps out air and germs and should not be removed until soup is to be made. Then fat is removed and stock heated and any seasonings or additions desired are put in.

To 1 quart of this stock or 1 quart water in which chicken has been cooked, add 1 quart of canned soup mixture and 2 tablespoons rice or barley, bring to a boil and cook in cooker 2 to 3 hours.

*Meat and vegetable combinations*.—With the less tender cuts of beef and mutton which require long, slow cooking, delicious dishes may be prepared by adding vegetables and cooking in the fireless cooker.

Cut the meat into cubes, dredge with flour, and brown it in meat drippings or lard and butter. Then brown the onions in the same fat. For every 3 or 4 cups of meat use one of the following vegetable combinations or 1 quart of canning club soup mixture. Put into the fireless cooker vessel and add 1 cup boiling water with the first combination or 2 cups water with the second one. Boil for 5 minutes and put into cooker for 3 or 4 hours.

#### FIRST.

2 cups okra.  
2 cups tomatoes.  
2 onions.  
 $1\frac{1}{2}$  teaspoons salt.  
 $\frac{1}{8}$  teaspoon pepper.

#### SECOND.

2 cups potatoes.  
1 cup turnips.  
1 cup carrots.  
2 onions.  
 $\frac{1}{2}$  cup celery or 1 tablespoon celery seed, crushed.

The following recipes <sup>1</sup> have been used in demonstrations in connection with the extension work in the Northern and Western States:

#### CEREAL BREAKFAST FOODS.

Cereal breakfast foods should be prepared at night while the fire for supper is hot. Measure the required quantity of boiling water into the cooker kettle; add salt and cereal; let boil 10 minutes and place in box overnight. Reheating in the morning will probably be necessary. In winter enough for two or three breakfasts may be cooked at once and reheated as wanted. The food in the inner kettle should be cooked about five minutes before placing in the outer kettle. Then the whole should stand over the flame until the water boils in the outer kettle. Any other kind of breakfast cereal may be cooked by adopting these general directions.

The raw cereal breakfast foods, such as plain oatmeal, hominy, cracked wheat, etc., cost less than those which are partly cooked by steam at the factory, but frequently housekeepers prefer not to use them because they require so many hours of cooking. A cooking box, however, is especially well adapted for cooking just this sort of material. Even the cereal preparations which are partly cooked at the factory and are supposed to need only a few minutes cooking to make them ready for the table are much improved by long, slow cooking, such as they get in the cooking box. The flavor and texture of cereal breakfast foods are influenced by the length of time they are cooked, and with the cooking box it is easily possible to secure the texture and flavor dependent upon long, slow cooking.

#### SOUPS.

The cheap cuts of meats are rich in the food materials that make palatable dishes, and the bones and scraps are good for making wholesome soup. If care is taken to use material which might otherwise be wasted, the real expense for most meat soups is in the long cooking required. The long-continued, slow cooking which a tough piece of meat obtains in the cooking box and the thorough extraction to which bones and soup meat are subjected mean that the cooking box makes stews, ragouts, and similar dishes and soups cheap foods for the table. American families do not, as a rule, use as much soup as do foreigners, and thus they miss a useful and pleasant addition to the daily bill of fare, and one which may be served without much extra work or expense, if rightly prepared.

For making soup stock or broth with the cooking box, the soup bones should be well split up, or the soup meat should be cut into small pieces. Wash the meat, place it in the kettle, and cover with cold water. Bring to a boil on the stove and boil 15 minutes. Do this at night if the soup is to be used at noon the next day. Place in the cooker overnight. In the morning remove meat and bones from soup. Strain and remove fat. Return soup and meat to kettle, adding whatever seasoning is desired. Bring to a boiling point again and return it to the box and let remain until noon. This stock may be used as a foundation for several soups, such as vegetable soup, clear soup, or noodle soup.

Beef soup may be varied almost infinitely by the different seasonings which may be added. There is scarcely a vegetable grown which is not good in beef soup. In winter many of the dried vegetables, such as beans, peas, lentils, etc., are excellent for this purpose.

Dried Lima beans, peas, and lentils make excellent soup without meat. Since they require long-continued cooking, they are well adapted to fireless-cooker methods. These dried vegetables, cooked with less water and no meat, rubbed through a coarse sieve and made into the proper consistency with milk or thin cream, and seasoned to taste, make so-called "cream" soups. Soups made by thinning the cooked legumes with water and seasoning with onion (fried until pale brown), with celery tops, and other vegetables are very palatable also.

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<sup>1</sup> Prepared by Mrs. K. C. Davis and Miss Angeline Wood.

## MEATS.

Some cuts of meats which are not so readily prepared for the table by the usual methods may be made especially palatable. The experimenter will soon learn that in cooking meats the amount of boiling over the flame and the time in the box will depend upon the size of the pieces of meat being cooked. Meat cut into pieces for stew will heat through more readily and cook in a shorter time than will a large ham, for example. Most recipes for stews, pot roasts, boiled meats, and similar dishes can be readily adapted to the fireless cooker and save time and fuel. The following recipes are all well adapted to the cooking box, as all of them are dishes which require considerable time for their preparation by the usual methods:

*Pot roast.*—Use any preferred cut. Sear in hot fat in a skillet. Place the meat in the cooker kettle and cover with boiling water. Boil gently for 30 minutes (20 minutes will suffice if the roast is 3 pounds or less). Place in the cooker overnight. Reheat in the morning, season, and return to the cooking box until noon. Thicken some of the liquor for gravy. If it is desired to slice cold for next dinner, return meat to liquor and let stand until wanted.

*Brown fricassee of chicken.*—Joint the chicken and brown in fat after rolling in flour. As pieces brown pack them in the kettle. When all are browned make gravy in the skillet where the browning was done. Add this to the chicken with enough boiling water to cover. Salt and pepper. Boil 20 minutes. Place in box overnight. Reheat and return to box until noon. This length of time in the box will reduce the toughest old fowl on the farm to a state where the meat will fall from the bones.

*Roast meat.*—Prepare a 4-pound rib roast as for oven roasting. It can be tied more compactly if the ribs are removed. Place in pan in very hot oven for half an hour, or sear the roast until brown in a frying pan and then place it in the oven for 20 minutes. Have ready a small pail into which the roast will fit as closely as possible. Place the seared and heated roast in this and set it into the large kettle used in the box, with enough boiling water to come well up around the small pail. Place in the box for three hours.

*Roasting tough poultry.*—Many housewives make a practice of stewing chicken or turkey which they think is likely to be tough, and the practice is a good one. It is, however, much easier to boil for 15 or 20 minutes and then put the fowl, boiling hot, into the cooker and let it remain 10 hours. It should then be drained, wiped dry, and stuffed, if stuffing is desired, and roasted long enough to brown it well.

*Boiled dinner.*—Cook a piece of corned beef and a piece of salt pork in the cooker overnight. In the morning prepare all the vegetables it is desired to use and place in the kettle with meat. The greater the variety the better the dinner. Boil 10 or 15 minutes and return to the cooker. It is best to leave potatoes until an hour and a quarter before serving, as they are the only vegetables likely to suffer from too long a time in the cooker. When they are added bring the contents of the kettle to the boiling point again. The liquid from the boiled dinner makes a good soup if the corned beef and salt pork have been parboiled to remove some of the salt.

## FRESH VEGETABLES.

Carrots, peas, string beans, onions, beets, turnips, parsnips, salsify, and in fact all vegetables may be cooked in the cooking box. They must be given time according to their age. A safe rule for all green vegetables is two and a half times as long in the cooker as if boiled on the stove. This method is particularly good for such vegetables as onions, cabbage, and cauliflower, as there is no escape of odor from the cooker. A further advantage with cabbage, cauliflower, and other green vegetables is that overcooking is avoided. When green vegetables are cooked too long in boiling water they turn yellow and lose their fine flavor. This they do not do so readily at the same temperature of the cooking box.

*Boston beans and other dried vegetables.*—In cooking dry beans, the time required either in the oven or the cooking box will vary with the length of time the beans have been kept; the older the beans the more cooking required. Soak 1 quart of beans over night; in the morning drain them and cover with cold water and heat to boiling. Let boil until the skins will burst when touched very lightly, adding one-fourth teaspoon of soda a few minutes before taking from the fire. Drain through a colander. Return to the kettle and add 1 teaspoon of salt, 1 teaspoon of mustard, 3 tablespoonfuls molasses, and one-half pound of salt pork, washed and scraped, and cover with boiling water. Let boil 20 or 30 minutes, then place in the cooking box. If the beans are new, six hours in the box will be long enough. Old beans require longer cooking and should be left in the box overnight, then reheated in the morning, and returned to the box. They will be ready to serve for the midday meal.

Dried vegetables, such as peas, beans, Lima beans, lentils, or corn may be soaked in cold water several hours, and then after the preliminary boiling of a few minutes kept from 6 to 12 hours in the cooker. They may be cooked with salt pork, and thus prepared they are liked by many, or they may be cooked with vegetable oil, as olive oil, or they may be cooked plain and seasoned with salt, pepper, and butter or cream. The longer, then, dry vegetables are cooked in the box the more palatable and the more digestible they will be

#### DRIED FRUITS.

In the case of dried fruits as well as dried vegetables long continued, slow cooking is desirable. A common method is as follows: Wash the fruit well and let it soak in cold water until it has regained its natural size, and then place on the back of the range and allow it to remain there for 20 hours, but do not permit it to boil. When fruit is prepared in the cooking box, it should be washed and soaked in the way described, heated in the water in which it has been soaked, not quite to the boiling point, and then placed in the cooker for five or six hours. Because less water evaporates than when cooking on the stove, a smaller proportion of water will be needed for good results. If too much is used the sirup will not be quite so rich as usual. Fruit should always be cooked in an enamelware or an earthenware dish, as tin or iron may impart an unpleasant flavor to acid fruit, and also give it an undesirable color.

#### PUDDINGS AND STEAMED BREADS.

Steamed or boiled puddings, or such as require long, slow cooking, and steamed bread, like Boston brown bread, are the kinds best adapted to the cooking box. Every family has its favorite recipes and these may be used, as the method of procedure is the same for cooking all such foods.

The steamed or boiled puddings or breads should be placed in molds well buttered. For this purpose pound baking-powder cans are excellent. Coffee cans or other tin boxes of suitable size with covers will do. After filling about two-thirds full to allow for the expansion or rising of the batter or dough, the cans are placed in the cooker kettle and should have the covers put on before the boiling begins. If any covers are missing, paper may be tied tightly over the tops. If there are not enough cans to fill the kettle so that they will not tip over when the boiling water is poured around them, an empty can or two may be wedged in, to hold the others in place. Fill the kettle as full as possible of boiling water, as the more water the longer the heat will be retained. Place the kettle on the stove and boil for a full half hour and then keep the kettle and contents in the cooking box three to six hours, or longer if the cans are large ones. This applies particularly to breads or puddings made with wheat flour. If they contain cornmeal or graham flour they should be cooked for a longer time in the cooker.

On removing from the cooker it is a good plan to set the loaves of bread in a hot oven for 10 minutes to dry them a little.

**THE COOKING BOX USED AS A REFRIGERATOR.**

The fireless cooker can be used to keep things cold as well as hot, because heat can not pass in from the outside to warm the contents any more than it can pass out to cool them. In this respect it works very much like a refrigerator. In fact, both the cooking box and the ice box are constructed on the same principle, namely that of supplying a constant-temperature chamber with nonconducting walls. Well-constructed ice boxes are made with some insulating material or dead-air space between the inner and outer walls, and the covers and doors close in such a way as to prevent heat escaping in or out through them. Of course, the more often the doors are opened, the more heat passes in and the more quickly the ice melts and the temperature rises throughout all parts of the box. Fortunately this is less serious than the loss of heat when a fireless cooker is opened.

When the cooker is used to keep things cool, they must be chilled to the desired temperature before they are put in. The more nearly heat proof the walls, the longer the material keeps its original temperature. Ice cream put in a well-made fireless cooker ought to remain firm as long as packed in salt and ice in an ordinary freezer. Many cooks prefer to pack such half-frozen desserts as mousse or parfait in the receptacle of a fireless cooker rather than in a freezer because there is less danger of their getting too cold and hard. It is often convenient to make cold drinks, like lemonade or fruit punch, some hours before they are used. By chilling them and then putting them into the cooker they can be kept cool without ice. In the same way milk, delivered before it can be taken into the house in the morning, can be kept as cool as it was in the delivery wagon if a box like a fireless cooker is provided to set the bottles into. This may make many hours difference in the time the milk keeps sweet.

Sometimes a little ice is put into the box with the food to make it cooler, just as hot soapstones or bricks are put in to make it hotter. Because there is less space to keep cool, much less ice is needed than in the chamber of an ice box. The ice in the cooker melts very slowly and so keeps the temperature down much longer than if it were used in an open pitcher. This is an excellent way to keep a bottle of milk when ice is scarce. If it is shut in the cooker pail with a little cracked ice (5 cents' worth is ample for a quart of milk) the milk will keep its temperature for 24 hours, even in hot weather.

What receptacles it is best to use for things to be kept cool in the cooker depends on their kind. The material can often be put directly into the pail, just as if it were to be cooked. For liquids it is sometimes more convenient to use a low bottle or a fruit jar which will set into the nest. If ice is to be used, it is usually cracked and packed around the bottle or dish.