Two-Fuel Ranges Mean Economical Baking

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Two - Fuel Ranges Mean Economical Baking

Fuel is precious these war days—it's real economy if you have a combination coal-gas or coal-electric stove, to preheat your oven with coal or wood and finish the baking with the second fuel.

Tests made by the Household Equipment Department at Iowa State College indicate that more gas and electricity are consumed while an oven is being preheated than during the actual baking process. The use of home-produced fuel or coal to do the preheating, therefore, would be a saving, and the use of controlled electric or gas heat for the actual baking would be an advantage.

Many homemakers have bought the combination range for another reason, of course—that of using coal or wood in winter and keeping the kitchen warm, and the other fuel in summer to produce a cool kitchen. Some combination ranges have two separate ovens—in this case the oven use presents no special difficulty or advantage, other than the effect on room temperature at the time used.

In combination ovens, however, the use of both heats for the same baking process was found to work out very satisfactorily. When coal is the source of heat, it is difficult to regulate the oven temperature. The oven control does not function and the thermometer in the door of the oven does not register accurately unless the oven has been heated an hour or more. The indicated temperature tends to lag behind the actual heat—during the heating-up period the oven is hotter than the thermometer registers; during the cooling period it is cooler.

By LOUISE J. PEET

Based on tests conducted in 1941 by Arlean Pattison, instructor in Household Equipment at Iowa State College, Ames.

In stoves that have the thermostat bulb close to the firebox, it may not operate accurately when the preheating is done with coal and the baking with the second fuel.

In using coal, the longer the oven is preheated, the more evenly the heat is distributed throughout the oven, and the more nearly it is like the controlled heat from gas or electricity.

Food baked in a coal-heated oven must be placed on the floor of the oven for baking instead of on the racks—if put on racks it will burn on top before it is browned on the bottom. It is also necessary to use a slightly lower temperature or a shorter baking time when baking with coal.

Gas ovens require more room for air circulation around pans than the coal-heated ovens, and racks should be used. Combination ovens using gas should be large enough to allow clearance of at least an inch between pans themselves and between pans and the oven wall. If both racks are used, they should be at least 4 inches apart and 4 inches from the top and bottom.

When an oven has been preheated with coal and a switch is made to the other fuel, the heat distribution in the oven is similar to that obtained with gas or electricity alone. This means that the food can be baked on racks.

The chief objection to the use of the combination oven is the necessity for frequent removal of the various parts in changing over from the use of one fuel to another. This is especially true when one fuel is used for preheating, and the stove is hot when the change must be made.

Combination ovens have a flue which is opened when coal is used and closed by a damper when gas or electricity is used. In the coal-gas range, the vent enlarges automatically when gas is the source of heat. And when the oven is heated with coal, a metal slide covers the thermostat bulb.

Heat from the firebox at the left of the oven is directed over the top of the oven and down the right side between the oven lining and the outside insulated wall and then down to the bottom of the oven. When gas is used, a removable baffle plate is placed in the oven over the gas burner to direct the heat. This plate is taken off or replaced with a burner cover to make an airtight oven when baking with coal. In electric combinations,
the expensive period in baking is the time while the oven is being preheated, this combination range oven is being started (upper left) with coal, cobs or wood, because they are cheaper than gas or electricity.

Oven construction that permits the change from one fuel to another without removal of parts is convenient. If a stove is made with removable parts, however, it should be made to include storage space for them right in the stove.

Because the expensive period in baking is the time while the oven is being preheated, this combination range oven is being started (upper left) with coal, cobs or wood, because they are cheaper than gas or electricity.

In top center, the homemaker now closes the draft to throw the heat into the flue surrounding the oven.

To use the second heat, she takes out the section of the oven bottom which covers the gas burner (above).

In photograph to right, the homemaker lifts the baffle plate or distributor to show the position of the gas flame.

Because the expensive period in baking is the time while the oven is being preheated, this combination range oven is being started (upper left) with coal, cobs or wood, because they are cheaper than gas or electricity.

Do Cleaning Powders Scratch Porcelain Enamel?

(Based on a study by Evelyn Sparks, Household Equipment Department)

Most household scouring powders and pastes scratch or dull porcelain enamel surfaces, according to tests made in the household equipment department at Iowa State College. Dirt and stains adhere readily to enamels that have been roughened by abrasives, additional scouring is necessary, and a vicious cycle of staining and scrubbing begins.

In the household equipment research laboratories, tests were made to determine the abrasive action of fourteen popular brands of cleaners on two types of porcelain enameled cast iron and three types of porcelain enameled sheet iron. Enough specimens were provided so that each cleaner was tested on a new, previously untreated enamel surface.

The scrubbing machine used to make the test consisted of a food mixer, the beaters of which were replaced by a padded 2 1/4-inch copper scrubbing disk. The enamel samples were mounted on a metal holder, and held against the pad with a constant force of five pounds by means of a pulley device. The planetary action of the beater shaft gave a motion to the scrubbing pad similar to the irregular circular motion employed by most women in scouring. Low speed was used.

At the end of 15 minutes scrubbing, nearly all of the cleaners had produced a fine-grain “etching” over the entire surface of the cast-iron enamels. As the scrubbing progressed, the central dulling was scoured off, leaving a smooth shiny surface. With the moderately active abrasives, pitting appeared next in this central area, and scratching last, if at all.

The harsher abrasives produced scratches, sometimes even during the first half hour of scrubbing, before the initial etching was greatly altered. The cleaners which caused pit-