

"FIRELESS COOKING."

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Fireless Cooking.

Military life being one of exposure and activity the soldiers food must be aduated to repair the ordinary wear and tear, as well as to supply energy and animal heat. The problem then is to procure the proper kind of food properly prepared, since a military diet must not only be nutritious but palatable.

Food may be divided into two great classes:-

1st. Inorganic:- as water, salt, etc.

2nd. Organic:- which is sub-divided into three groups.

a. Nitrogenous:- meats, eggs, etc.

b. Carbohydrates:- starches, sugars, etc.

c. Fats and Oils.

On the principle that food is to supply energy and animal heat as well as replace the wasted tissues of the body it is considered by authorities on foods that the nitrates and carbohydrates are the most essential in quantity, the others, water excepted, being necessary only in such small quantities that they may be termed condiments. The meats, eggs, and legumes furnish the greatest amount of nitrates, the legumes also being very rich in carbohydrates. The preparation of these foods is accomplished by what is termed cooking, which consists in some forms of applying heat to food. The cooking temperature of different kinds of food to preserve their most nutritious qualities varies. It is found by experience that foods containing the most ^{nitrates} nutritates preserve their most nutritive qualities when cooked at a temperature of 180° F. By what process of cooking can we best do this, and at the same time make them easy for assimilation, attractive, and palatable?

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Many kinds of apparatus have been invented in the last century for cooking at this temperature, by the retention of heat. The principle of cooking by the retention of heat is an old one, and has been used for many years in a primitive form by the people of Norway and Germany, and also by the Indians of New Mexico. About 30 years ago it was tried in the British Army but soon dropped into disuse. It has been left to the genius and preserverence of the Yankee, to ^{or} perfect the method of what is known as fireless cooking.

This is no magic, as it is not exactly cooking without a fire but with very little. Everyone knows two things about cooking:-

1st. That heat is required.

2nd. That water will not boil under ordinary circumstances until it has reached a temperature of ^{212°} 120 F.

But there are two other facts that seem to be forgotten.

1st. No matter how long a raging fire is kept the temperature of boiling water cannot in ordinary cooking vessels be raised above 212° F.

2nd. It is not necessary to maintain this ^{degree of heat in} cooking, but on the contrary, in order to retain the most nutritive qualities of many foods the cooking must be at a much lower temperature. The fireless cooker meets this condition.

The War Department of the United States upon the receipt of a report by G. H. Murphy, of Frankfort, on fireless stoves as used in Germany instructed the Post Commissary at Fort Riley, Kansas, to make experiments in the School of Bakers and Cooks at that post to ascertain the practical use of this method for military purposes. The first fireless cooker used by Capt. Murray was called the hay box, being simply a large box with a tight fitting lid, and filled with hay

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for insulation. Capt. Murray's first experiments with the hay-box were so promising that the War Department ordered him to New York for the purpose of designing more practical apparatus. His demonstrations of fireless cooking then ^{was} witnessed by a number of Army officers was so satisfactory that the War Department gave an order for a fireless cooker patented by F. Kahn, and manufactured and sold by J. S. Maclooy, of New York, which by them was deemed practicable for army use, in order that Capt. Murray might make further experiments and tests.

This cooker arrived at Fort Riley the first of January, 1906. It is a wooden box, iron bound, and, when closed, has a chest or trunk like appearance, being four feet square by three feet deep. It is lined on the inside with about 1 1/2 inch felt and specially prepared paper. The box contains six separate compartments for as many different vessels of food, each being insulated from the other by about 1 1/2 inch of felt and paper so that when the cooker is closed each compartment is surrounded by 1 1/2 inch of insulating material. An enameled vessel for food, with a close lid, fits snugly into each compartment. This cooker has been thoroughly tested by Capt. Murray and found to give entire satisfaction, the food being not only more nutritious and palatable but more economically and conveniently prepared than by the old method.

In a report of the test by Capt. Murray to the Commissary General of the U. S. Army, designed to show the utility of the fireless cooker for military purposes in field operation he says:- "Fire was started at 5 A. M. in an open trench and after preliminary preparation of food all articles were placed in the utensils of the Fireless Cooker. At 6:15 everything was over the fire, and at 7:18 the Cooker was packed.

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The following articles, sufficient for 85 men, were prepared:- roast beef, macaroni and cheese, creamed potatoes, pork and beans, suet pudding, and coffee. The breakfast for the detachment of bakers was prepared over the same fire and during the same time that the articles for the Fireless Cooker were prepared. The breakfast consisted of fried potatoes, beef steak, fried onions, and coffee. By the time breakfast was over the cooker was ready to be placed on wagon and ready to move with a ^{the} command. No extra utensils had to be gathered, but everything intact. Eleven sticks of cord wood, all small pieces, were used in the preparation of both the breakfast and articles for the cooker. At 5 P. M. the Cooker was opened and the following temperatures were taken:- roast beef, 166 degrees; macaroni and cheese, 187; creamed potatoes, 174; pork and beans, 165; and coffee, 172. Everything perfectly done."

Capt. Murray's report shows that the necessary fuel for military cooking would be greatly reduced.

When by previous arrangement I visited Fort Riley this spring to study the Fireless Cooker in actual use, I had the pleasure of meeting Mr. L. R. Boudreaux, who is a clerk in the Subsistence Department at large and now on duty in the office of the Commissary at Fort Riley. Being very much interested in fireless cooking from the first and having experimented in this method of cooking with Capt. Murray for over a year, Mr. Boudreaux has become an expert in Fireless Cooking and in using the various fireless cookers. He not only made two demonstrations of fireless cooking for my benefit but kindly gave me the privilege of asking him as many questions as I might desire on this subject. In making his demonstrations he used a small patented Fireless Cooker, manufactured by J. S. MacCoy, of New York, which will boil, steam or dry cook.

The accompanying illustration will explain the different parts.

The first demonstration was of cooking a cereal:-

He put one cup of oatmeal in the pan, adding 2 1/2 pints of cold water and one teaspoonful of salt, then put enough cold water in the kettle to cover the top of rest, placed the pan on the rest, placed the kettle thus prepared over the fire and left it for 10 minutes after it had reached the boiling point. The kettle was then placed in the cooker at 10 P. M. and left until breakfast the next morning at 7 A. M. when it was opened. It was perfectly cooked, was very inviting to the eye as the flakes remained whole, and the flavor was superior to any I have ever eaten.

His second illustration was in cooking Brazilian Beef a la Tholan:-

First he took a choice piece of rump that weighed 5#, then he mixed together one teaspoonful each of pepper, mustard, and ginger, to this he added one tablespoonful of salt, and 1/4 teaspoonful each of cloves, allspice, and nutmeg. He then cut 1/2# larding pork into finger thick strips, rolled them in this spice mixture, made incisions in the beef with a knife, put in each incision a strip of the spiced pork, tied the beef firmly with a cord, rubbed the remaining seasoning over the beef, then put it in the pan. He then put 1/2 cupful of olive oil in a saucepan, added to this two large sliced onions and cooked three minutes, added to this one 3# can of tomatoes, two large red peppers cut fine, 3/4 cupful vinegar, and one tablespoonful sugar. This mixture he boiled five minutes, then poured it over the beef. The pan was set on the rest and water poured in the kettle until it came to the top of rest, the kettle was placed on the stove and was allowed to boil for 25 minutes, when it was placed in the

cooker at 10:30 A. M. At dinner, 6 P. M., it was opened and I had the pleasure of eating a portion. It was thoroughly cooked, of delicious flavor and a dish fit for the gods.

According to Mr. Boudreaux's previous experience with Brazilian Beef a la Tholan, 5 hours would have been sufficient to cook it, but wanting to spend the day at the Fort studying fireless cooking there, he packed the cooker earlier on that account, which demonstrated another superior quality of fireless cooking. Although it was in the cooker longer time than required, it was not over cooked, nor ^{any} not its flavors and juices in any way impaired.

From my own observations during the day and from information gained from Mr. Boudreaux, I learned many things in regard to Fireless Cooking.

It takes about twice as long to cook in the Fireless Cooker as over an ordinary fire.

If cooking is prolonged the quality or flavor of the food is not injured, but rather improved.

The process of cooking known as boiling by the retention of heat can be accomplished with very crude and primitive Cooking apparatus, by observing certain points which are positively essential to its success.

The food must be brought to the boiling point and kept at that temperature until it is thoroughly permeated by the heat.

The time required varies, beans for instance being small take less time to be heated through than a big piece of beef would need.

The lid must be put on the cooking vessel while the food is boiling, and not removed until the cooking is finished, and the vessel must be placed at once, after taking off the stove, into the recept-

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acle used as a cooker.

For insulating substances various things can be used, as wood, feathers, hair, excelsior, hay and paper.

All insulating substance must be kept perfectly dry, as the slightest amount of moisture makes the retention of heat less perfect.

The time required for cooking different kinds of food in the cooker must be learned by experience.

The proper amount of water to be used must be found in the same way, but as there is no escape of steam, it does not require as much water as cooking over the fire.

The cooker is adapted to all kinds of foods that require to be cooked for a considerable length of time, but not to foods the charm of which is their crispness, as chops, steaks, omelettes, etc.

In my own experiments I used an ordinary wooden box, for insulation I used old wool blankets, lining the compartment or nest for the cooking vessel with newspapers. For the cooking vessel I used a gallon tin can with a tight fitting lid, covered on the outside with thin paper, the paper being pasted on the outside of can and thoroughly dried before being used. With this crude apparatus I have successfully cooked beef, beans, and dried peaches.

Of the beef I took 3 pounds put it in the can, added water until the can was within an inch of being full, added a tablespoonful of salt, put this on the gasoline stove and cooked it for twenty minutes after it had reached the boiling point. I put the lid on just before I turned out the burner, put the can of meat in the box previously prepared, and put a small feather pillow on top of the vessel, then closed the lid of the box. The cooker was closed at 10 A. M. and left until dinner 6 P. M. when it was opened and the meat taken

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out. I at once cut the beef through the middle. It was steaming hot, thoroughly cooked, more juicy than any ordinary boiled meat, and of fine flavor. My next experiment was with ordinary white navy beans. Using the same apparatus I had used for the meat. I took a quart of beans, soaked them over night, and put them in the tin can, pouring over them enough cold water to fill the can within an inch of the top. To this I added about two ounces of butter, a scant level tablespoonful of salt, two level tablespoonful of sugar and 1/4 teaspoonful of pepper. The beans were boiled for 10 minutes, the lid put on while they were yet boiling, and the can packed as previously described for the meat. It was 10 A. M. when they were placed in the cooker, at dinner, 6 P. M. they ^{were} taken out and found to be thoroughly done and superior in flavor to any beans I had ever eaten, not excepting those cooked by a Boston cook. These beans were tasted by about ten different persons, and they all pronounced them fine. My next experiment was with dried peaches.

As a result of what I have seen, and my own experiments, I believe the day is not far distant when the army will be equipped with cookers, each cooker having a capacity for a company of men, so that food for a whole Battalion on a march can be cooked while hauled in an escort wagon. This being true why cannot the army canteen be made with a jacket of some heat and air insulating substance, then covered with an outer jacket, the insulating substance could be of cork or mineral wool that would not add very much to the weight of the canteen, making of it a fireless cooker so that on long hard marches in cold weather, the soldiers could have a canteen of hot coffee in place of the usual water. Think what a comfort this would be to them, and as the theory of fireless cooking is what we might call inverted refrigeration, why would not this same canteen if it kept in the heat in cold

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weather when filled with hot coffee keep out the heat in hot weather when filled with cold water. If practicable nothing could add more to the soldiers' comfort.

Such forecasts of the different ways the principle of Fireless Cooking may be used for the comfort and convenience of soldiers may to-day seem like idle dreams, but remember that the steam boat, telegraph, and telephone were once all called idle dreams, while to-day they are realities.