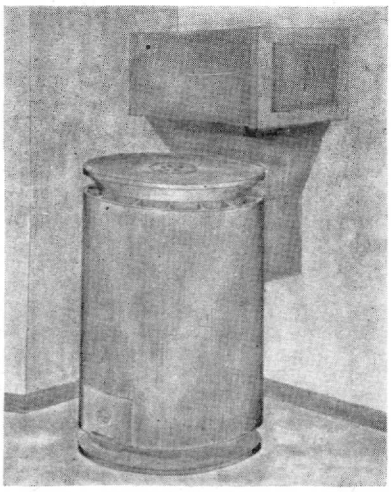
Another Substitute Makes Good

By YVONNE LAMOREAUX, ENGR. I

OHIO State University is playing a major part in the developing of a ceramic space heater to take the place of the war-scarce metal stove. In cooperation with the Office of Production Research and Development of the War Production Board, Dr. G. A. Bole and DeWitt H. Wyatt are designing a stove which may well create a new ceramic industry after the war because of its distinctive superiority over the old metal burner.

The idea of using ceramic material for heating purposes is not new. Travelers in various parts of Europe have admired the huge but efficient ceramic heaters there, many of which were made as far back as the last of the 15th century. They are works of art, very highly decorated, and an ornamental part of the house. Today in America we are adopting them in a more modern and practical form.

The operation which makes the stove so much more efficient is in itself surprisingly simple when explained. The coal is put into the heater through the firing door on top of the stove, thus providing a continuous firing operation. As the coal is formed into coke, the coal gases mix with the secondary magazine. This burning of the coal gases produces far less smoke. The cycle of firing consists of two inches of coke below the fresh coal, two inches of live coal, and two inches of ashes. The crowned grate gives a larger grate area and a greater refractory value. Through these operations useful heat is produced both in the burning of coal gases and in the live coke.



Model of Proposed Ceramic Space Heater

—Courtesy Engineering Experiment Station News.

Those working on the designing of the stove were confronted with several problems. There is no ceramic material which approaches the metals in strength or in conductivity. A greater radiation surface was therefore required to produce the necessary amount of heat. Another desirable factor was a glaze that would not craze in severe and repeated heat shock. Since the stove was being designed because of the lack of metal for metal burners, it was essential that the amount of metal to go into the stove be kept at a minimum. The efficiency was to be 35% to 45% and the stove was to deliver 30,000 to 40,000 B.T.U. per hour. Other requirements stated that it should cost from $50 to $100 to build, be a shipable unit, and appeal to the eye.

So far in its progress toward completion the stove has met many of these needs and most of the problems have been overcome. One of the several models made, the Jeffersonian, has firing tubes built up the side which carry the products of combustion more circuitously. An answer to the glaze problem may be a cracked glaze, attractive to the eye and resistant to the consistent high temperatures produced. The metal in the stove has been reduced to 14½ lb. and is of very low grade. The efficiency of the stove is 25% higher than that of its iron cousin. The models are to be tested at Sears, Roebuck and Co., the Anthracite Industries, Inc., and at the Bureau of Standards.

A great improvement over pre-war heaters, the Ceramic Stove is coming into common use. It will use much less coal and require less firing because of the magazine which holds enough coal for 12 hours. Because it burns the coal gases, it has almost smokeless burning. True, its weight would prevent its being moved out of the living room for the summer months, but moving it won't be necessary. The artistic designs will make it an attractive addition to the decorative scheme of the home during the summer, and its superiority over the metal burner will make it highly desirable and valuable for use in the winter. In short, the designing of this new ceramic heater represents a remarkable feat in engineering, and much credit should go to its originators.