A New Fermentation Cabinet

By L. D. Sibbitt[1]

Milling and baking quality is very important to those interested in wheat investigations as well as to the wheat producer. In wheat improvement work, the breeder must be aware of the baking quality of his material so he can make the crosses best suited to produce improved hybrids, while the agronomist, concerned with cropping practices and cultural methods, desires to learn the effects of these on wheat quality. The results are ultimately reflected in improved yields of high quality wheat on the farm. There are a number of tests which yield supplemental information on wheat properties, but the experimental baking test remains the final criterion of quality for bread wheats. The fermentation process is vital to the production of yeast-raised bread, and must operate under precise and controlled conditions; then variation in the quality of the bread can be ascribed to other causes, as differences in flour quality, rather than to incomplete control of fermentation conditions.

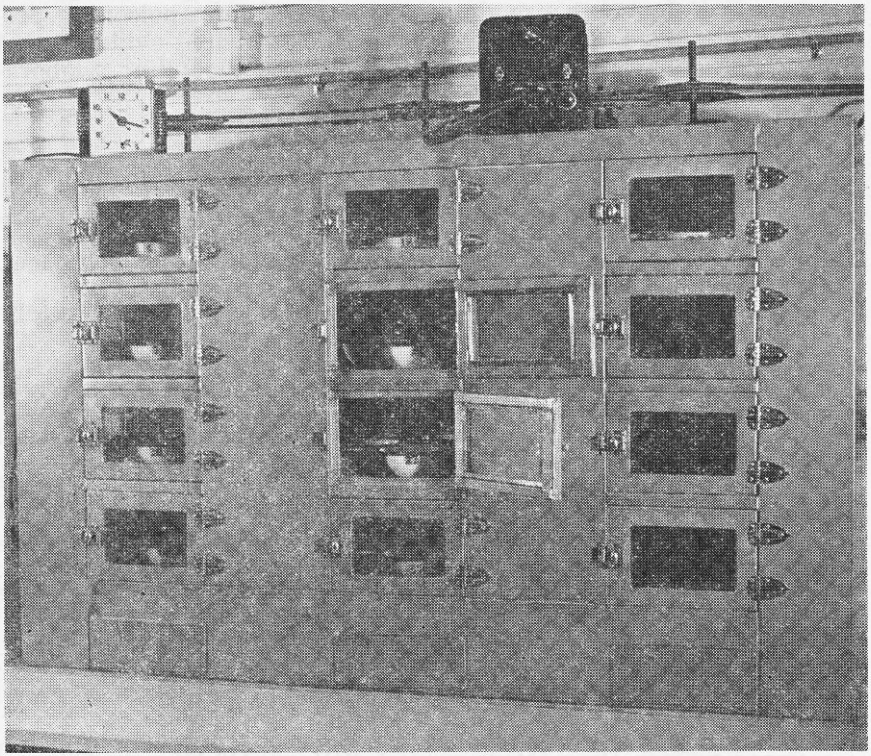

Fig 1. The fermentation cabinet recently installed in the Department of Cereal Technology at the Experiment Station showing several of the dishes employed in fermenting experimental doughs.

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An old type fermentation cabinet of wooden construction had been in use in this department for a considerable number of years, and from time to time it has been necessary to modify it to keep pace with changes in baking techniques and methods. Recently funds became available for the purchase of a new cabinet. There were several types of commercially made fermentation cabinets on the market, but the cost of these was considerably more than had been allotted for this piece of equipment. It was therefore decided that we would have one constructed according to our specifications. Accordingly, drawings were made and a list of specifications set up. A local construction firm was selected to build the cabinet, while all the wiring of the electrical circuits was done in the department of cereal technology at the Experiment Station.

As shown in Fig. 1 the cabinet consists of three compartments, each of which is equipped with four revolving shelves. The outside is constructed of stainless steel and is lined throughout with aluminum with a ½ inch insulation between the inner and outer walls. Each compartment is equipped with four doors fitted with double glass, which are large enough for bowls containing 100 gram fermented doughs to be removed and replaced with ease. A perforated shelf is fastened at the bottom level of the doors. Each of these shelves provides space for four fermentation bowls and is securely fastened to a vertical shaft, which revolves in ball bearings and is fitted with a grooved pulley at the top. These shelves revolve at the rate of 2 r.p.m.

At the bottom of each compartment is a drawer without sides, which is held flush with the cabinet by means of four metal screws. These drawers contain the heating elements and the small circulating fans, and were designed so that the heating elements can be easily replaced. Each drawer contains three heating units, which consist of various wattage lamps. The continuous heater is a 10 watt bulb, and the intermittent heater is a 25 watt show-case bulb. Another 25 watt bulb serves as an auxiliary heater. The small fans are wired in with the continuous heater. A small humidifier is located on the floor between two of the drawers. The thermoregulator is near the center of the cabinet and is of the merc-to-merc type. It is used in conjunction with the intermittent heater and is operated through a positive action merc-to-merc relay, which is located on the top of the cabinet.

The circulation of air in the cabinet is implemented by the moving shelves and the small fans. This circulation, although gentle, also provides sufficient movement of the air for proper humidity control.

This cabinet has been in operation for the past several months and has been entirely satisfactory. The temperature throughout the entire cabinet can be easily controlled within $\pm$ 0.5° Centigrade. The relative humidity is equally consistent, regardless of the laboratory atmospheric conditions.

The cabinet was designed to accommodate any number of loaves that can be baked in one day in this laboratory by either the three hour or the four hour fermentation periods. This cabinet should last indefinitely, as there are no parts to wear out other than the electrical units, which can be easily and quickly replaced at very little cost.

The construction of this unit resulted in a saving to the Experiment Station equal to approximately one half the price quoted by two manufacturers for their fermentation cabinets. An estimate was also received from one manufacturer for a fully completed fermentation cabinet made according to our plans and specifications. This quotation was 400 per cent more than the cost of construction.

ACKNOWLEDGEMENTS

The author wishes to acknowledge the assistance of George M. Scott, Experimental Miller, who helped with the installation of the electrical circuits.

FLAX IN TEXAS

Flax is grown in 18 states. Texas ranked 5th in 1949 with a production of 1,974,000 bushels and an average yield of 6 bushels per acre. Estimated plantings for 1950 harvest are placed at 230,000 acres, a reduction of about 36 per cent over 1950 plantings.

Texas has its own "Texas Flax Improvement Association" with headquarters at Kenedy, Texas. Its manager is A. C. Dillman, formerly a flax specialist in the Division of Cereal Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA. This association issues a series of publications, the latest of which are its Bulletin No. 9 "Flax—A Winter Crop for South Texas" and its mimeographed Bulletin No. 11, a general bulletin on the critical condition of the flax crop in South Texas brought on by the drought, the price outlook, warnings against the dangers of livestock in grazing flax, planting and harvesting information, etc.

Bulletin No. 9, written by A. C. Dillman, notes that "The two important varieties grown in South Texas are B5128 and Golden". Both of these varieties were introduced to the flax growers of the United States by H. L. Bolley, retired botanist and plant pathologist of the North Dakota Agricultural Experiment Station.

Flax is grown as a winter crop in South Texas. Dillman says, "It has the great advantage of growing in the cooler winter months when it makes the best use of rainfall and soil moisture." He estimates that under South Texas conditions flax will produce about one bushel of seed for each inch of rainfall during the growing season. (HLW)

HOPPED UP BRITISH COWS

The British are trying recently synthesized l-thyroxine to boost milk production in cows, using 25-milligram tablets mixed with oatmeal twice daily for 21 days with the animals in declining lactation. The dose increased milk yields considerably within two weeks. Thyroxine is said to be superior to iodocasein in avoiding the need for bioassay and the risk of iodism; the cows also eat it more readily in tablet form.