

THE CONVERSION OF A REFRIGERATOR INTO A CONSTANT TEMPERATURE CHAMBER FOR TEMPERATURES RANGING FROM 1°C TO 26°C*

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A constant temperature chamber similar to that constructed and used by Quisenberry and Greer (1939) was devised for physiological studies of pollen tubes in our laboratory. A used Frigidaire, 6 cu. ft. capacity, costing \$50, was purchased for this project. Directly below the freezing unit of the refrigerator a Fenwall thermostwitch, No. 731 I. R. S.**, was installed. This instrument has a sensitivity of $\pm 0.1^\circ\text{F}$., a capacity of 10 amperes at 110 volts, and a temperature range from $- 50^\circ\text{F}$. to $+ 400^\circ\text{F}$. The thermostwitch is designed to break contact in the circuit as the temperature in the chamber decreases.

The Fenwall thermostwitch is wired in series with the compressor motor. Such hook-up maintains the desired constant temperature in the refrigerator, depending upon the particular point at which the regulator is set. It is necessary to install a fan to reduce temperature variations within the chamber; the circulation of air across the freezing unit also increases the efficiency of the thermostwitch. This fan is a 7-inch enclosed induction type fan and is located in the upper part of the chamber, near the freezing unit.

Three switches were installed to regulate the temperature in the chamber. Switch No. 1 is a three-way switch. In position A the unit operates as an ordinary refrigerator. In position B the thermostwitch controls the compressor unit, so that a constant temperature is maintained. Switch No. 2 is also a three-way switch. In position A the fan is connected in parallel with the compressor motor; consequently, the fan operates simultaneously with the compressor motor. In position B the fan is connected to the main line and runs continuously.

It has been possible to maintain a temperature within a range of $\pm 0.5^\circ\text{C}$. as indicated by a thermo-recorder installed in the box. Such range is adequate for physiological studies of pollen and pollen tubes for which purpose this chamber was designed.

LITERATURE CITED

- Quisenberry, J. H. and James E. Greer, 1939. Conversion of refrigerator into a *Drosophila* incubator. *Drosophila Information Service* 12: 63-69.

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** The Fenwall thermostwitch No. 731 I.R.S. was purchased from the Fisher Scientific Company, Pittsburgh, Pennsylvania, at a cost of \$6.50.