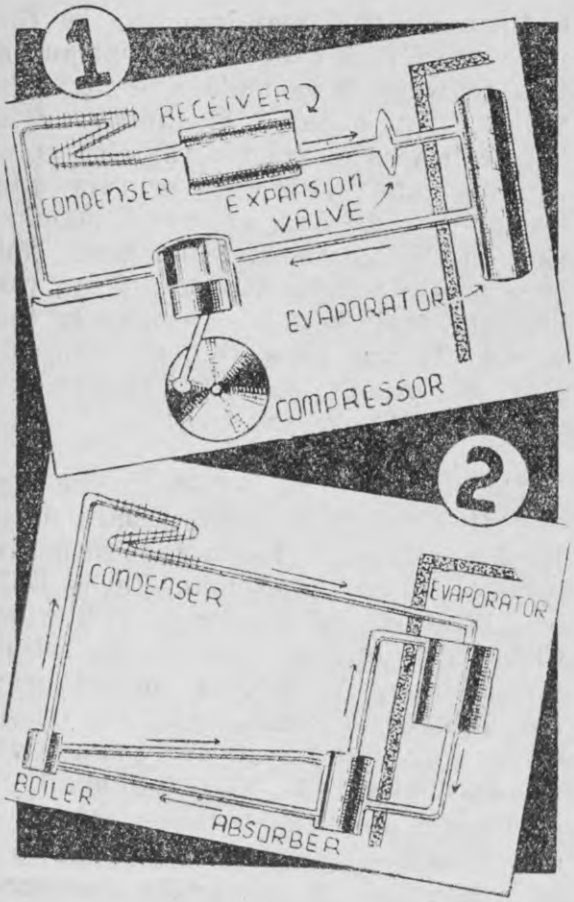
best if erected in a draughty place.

Most electrically-operated refrigerators are of the compression type. To put it technically, they operate by the alternate compression and expansion of a "refrigerant"—a "refrigerant" is a substance which exists as a gas at ordinary atmospheric temperatures and pressures, but which, when compressed, becomes a liquid. Exposed to lower temperatures the liquid will immediately evaporate, thus becoming a gas again. This evaporation is the crucial point of the whole process, because, as in the case of the perspiring soldier exposing his humid brow to the breeze, evaporation absorbs heat from the surrounding surfaces.

The whole process may be followed in Figure 1. When the electric motor is started it works the pump which compresses the refrigerant to a pressure of about four or five atmospheres.



The compressed gas, which is warm, now passes in the direction of the arrow until it reaches the condenser, a series of pipes with fins over which air can circulate. The gas now cools and becomes a liquid which is pushed along to a receiver and then to the expansion valve. This is a small hole on the outlet side of which is a large container—the evaporator. The pressure in the evaporator is much lower because the pump is sucking from it, so that as soon as the liquid passes the expansion valve it evaporates in the evaporator. The evaporator is the only working part inside the cabinet, and constitutes the cooling unit.

The evaporating liquid, being very cold, absorbs heat from the air surrounding the cooling unit. The gas in the evaporator is sucked into the compressor and recompressed, and the whole process continues automatically as long as the motor is running. The motor is switched on and off by a thermostatic switch, which keeps the temperature inside the cabinet around 50 degrees Fahrenheit.

The absorption-type refrigerator, the principle of which is depicted in Figure 2, makes use of the application of heat instead of a compressor. Gas or oil may be used to produce a flame which, by boiling water in which the refrigerant (ammonia) is dissolved, drives off the refrigerant under pressure. After cooling in the condenser the gas, because of its high pressure of about eight atmospheres, becomes liquid. The liquid ammonia, without passing through an expansion valve, now flows into the evaporator inside the cabinet. The ammonia in the evaporator is able to evaporate because of the presence of hydrogen and so absorb heat from the cabinet. A mixture of ammonia vapour and hydrogen flows into the absorber where it is separated. The liberated hydrogen returns to the evaporator and the cycle is repeated.