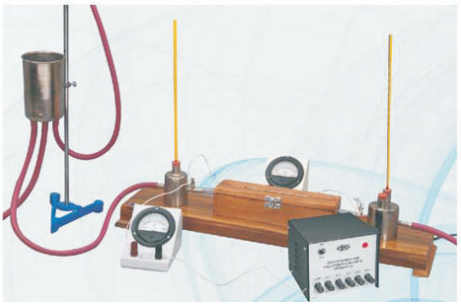
SBP 307
CALLENDER AND BARNE'S



In 1902, Callendar and Barnes developed the continuous-flow calorimeter, used for measurement of the heat capacity properties of liquids. They used their apparatus to research the comparison of electrical and thermal units, calculating a value for one calorie that compares very closely to the currently accepted value. Callendar's continuous flow calorimeter was further improved on and later used in laboratories for scientific experiments and research. Their apparatus was used widely for the determination of the heat capacity of liquids and gas, as well as study of combustion gases.

Setup Description

Callendar and Barn's apparatus consists of nichrome resistance wire in the form of the coil placed centrally along the axis of a narrow glass tube. This wire serves as heater as well as stirrer. The ends of wire are connected to metal tubes provided at the ends of glass tube. Continuous flow of water is maintained (Using a constant level bath) through the tube and

the temperatures of inlet and outlet are measured by two thermometers T1andT2.

The resistance coil is connected in series with the battery eliminator and the ammeter D.C. Voltmeter D.C. Is connected across the terminals of resistance wire. The whole arrangement is shown.

The set up consists of the following:

1. Callendar and Barne's apparatus
2. Constant level bath with stand.
3. Battery Eliminator, 2-12v D.C. in steps
4. D.C. Ammeter, 65mm round dial, mounted on bakelite stand
5. D.C. Voltmeter, 65mm round dial, mounted on bakelite stand,

OPTIONAL :

1. Digital Stop Clock
2. Physical balance with weight box.
3. Two thermometers 110 degree
4. Beaker, rubber tubing
5. Connecting wire

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