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Junkers Calorimeter 1909 [images 3293, 3294]

This Junkers calorimeter is a flow calorimeter to determine how much energy is released by burning a known volume of gas. In the image(s) the rotameter and manometer mounted on a white painted board are modern (1990). The actual calorimeter is the grey metallic cylinder on three legs on the right of the large image. The cylinder is hollow in the centre, with cooling water jacket around the combustion chamber. The cooling water flows in through a constant pressure weir (top right) and out through a moveable brass spout (centre right). The burner (standing front) is lit, and then clamped inside the combustion chamber. Once equilibrium is reached (inflow and outflow temperatures are constant), the cooling water is caught in a bucket for a known period of time, and measured by volume or weight. Knowing how much water was heated by so many degrees, as a result of a known volume of gas being burned, gives how many joules is released / litre of gas burned .

This apparatus continues in undergraduate use in 2014. The calibration certificate is dated Charlottenberg (now part of Berlin), 1909 06 24. There was other equipment, now not in use and some lost, that measured the pressure of the gas and the flow as it went to the burner; that has now been replaced by 1990 equipment.

This was originally a quality control instrument for synthesis gas (or town gas, $CO + H_2$), from the days when each town made its own gas for heat and light, before natural gas became widely used.

Junkers Literature [images 3295 and 3296]

This is recto and verso of a photocopy of the calibration certificate for the Junkers Calorimeter [3295]; dated 1909 06 24.