P. 597 This procedure was repeated twice before each experiment, after which we assumed that the apparatus was filled with the studied methane-oxygen mixture (containing 4% oxygen) without any impurities.

P. 597 Fig. 1. Temperature of methane as a function of the compression pressure.

1) Pressure

P. 597 Then the detonation was made, after which the barrel contents were displaced by a piston into an evacuated vessel, and an analysis was made of the gas mixture and of the products absorbed from it in distilled water.

The pressure in the apparatus was measured with a crusher gauge manometer /4/, while the temperature of the compressed gas mixture was calculated on the premise that under the experimental conditions the methane-oxygen mixture behaves as an ideal gas, the temperature of which is related to the pressure by the isentropy rule.

Knowing the $C_p/C_v$ ratio for methane under conditions corresponding to the ideal gas state /6/, we calculated the temperature of the compressed gas as a function of pressure (Fig. 1).

The performed experiments (Table 1) disclosed that under adiabatic compression conditions the reaction begins only at temperatures above 1200° K, which was established by the formation

P. 598 of carbon monoxide in the gas phase, and also by the presence of formaldehyde, which was qualitatively determined using Schiff's reagent /7/.