

The rise in pressure from 4000 to 13,000 kg/cm² (in experiments with hydraulic pressure created by pentane) was achieved in 11 min. The pressure was measured by a Manganin resistance manometer 2 to an accuracy of ± 30 kg/cm². The rate of pressure rise increased slightly during compression owing to the fall in the compressibility of the medium transmitting the pressure. This could cause error in measuring the thermal effects owing to the change in the conditions of heat transfer. In order to find the extent of this possible error we made some experiments on the solidification of mercury under gas pressure (nitrogen) as well as pentane. The ~~area~~ of the differential records of the thermograms for the same weight of mercury was almost the same in the two cases (discrepancy 3%). Subsequent experiments were made with the booster channel filled with pentane.

Fig. 2. Typical thermogram taken with increasing pressure and constant temperature.

In order to check the accuracy of the method we also made 15 experiments in which the same amount of mercury was poured into each of the cylinders and the rise in temperature on solidification was measured with two differential thermocouples connected to two mirror galvanometers with photorecording on the same drum. Each thermocouple was connected now to one and now to the other galvanometer. On the basis of these experiments we estimated the maximum possible error in determining the thermal effect of