

$\frac{1}{2}$ and $\frac{1}{6}$ its length. The gas chamber in this way is theoretically stationary, whereas in the Natanson type it formed part of the vibrating system. The apparatus is thus less fragile and the dust heaps are less irregular than when they are formed on a vibrating surface. The adjustment of length of the gas column is made by means of an inner tube F, supported by platinum loops sealed into its walls. It can be adjusted by tapping the end of the gas chamber. The loops fitted tightly enough to prevent the tube from sliding when the apparatus was held vertically. The powder for forming the dust heaps, precipitated silica, was placed in this inner tube.

At G a glass rod GH was sealed into the flat end of the inner tube. Its length was such that when the tube was moved back sufficiently, a capillary tube, sealed in at J, was broken. This capillary contained about 0.001 gram of water. The bulb K, of about 6 cc capacity, in which the nitrogen peroxide was to be finally condensed by liquid air, opened into the nitrogen peroxide reservoir L and the gas chamber through constrictions E and M. The side tube N opened into a glass bulb P containing coconut charcoal which was in communication with an air pump and a McLeod gauge.

The nitrogen peroxide was prepared from pulverized lead nitrate dried for an hour at about 120° C. This was mixed with dry sand to prevent caking, and was decomposed in a combustion tube through which passed a strong current of dry oxygen. The nitrogen peroxide was condensed in the reservoir L, of about 15 cc capacity, containing phosphorus pentoxide. The reservoir was then sealed off until ready for use. The nitrogen peroxide remained in contact with the phosphorus pentoxide for one week before it was used in the experiment.

The preparatory operations were as follows: The apparatus from D to K was enclosed in a heating oven. The nitrogen peroxide reservoir was immersed in liquid air, opened, and sealed to the apparatus at M. (The blowing was done through a phosphorus pentoxide tube to prevent access of moisture.) When the air-pump was started, the nitrogen