

peroxide was heated to its melting point and then re-frozen slowly to prevent the lodging of air bubbles in the interstices of the frozen mass. The bulb was then kept immersed in liquid air.

The apparatus from D to R was heated to 195°C to remove the adsorbed water from the powder and from the walls of the vessel. As previous experiments had shown that at this temperature the water in the capillary etched and cracked the glass the part RM was heated only to 150°C . The bulb P was also heated to 200°C . When, after about three hours, the system had been exhausted to a pressure of 0.02 mm, the gauge and pump were sealed off at S. The bulb P was then immersed in liquid air to produce as complete a vacuum as possible. After six hours the bulb was sealed off at V and the reservoir J. was removed from the liquid air. After allowing the apparatus to reach room temperature, about 20°C , and making certain that no nitrogen peroxide had condensed in the gas chamber, the reservoir L was sealed off at M.

In the adjustment of the apparatus to form stationary sound waves, the sounding tube, clamped at D, was rubbed between C and D with ether-moistened cotton wool. The length of the gas column in the inner tube BG was then altered by gentle tapping until well-defined heaps were formed.

After this preliminary adjustment the gas cylinder was placed in a thermostat at 22°C . For easy removal of the apparatus this consisted of a water tank, kept at $22^{\circ}\text{C} \pm 0.05$, through which a cylinder about 8 cm in diameter ran longitudinally. When the apparatus had been supported by brass clips in this cylinder the openings were closed with loosely packed cotton wool. The temperature of the air-bath so formed reached that of the water tank about an hour after the apparatus had been inserted, and remained at $22^{\circ}\text{C} \pm 0.1$ throughout an experiment.

To secure the necessary rigidity the clamp for damping the sounding tube at the point C was imbedded in a heavy concrete block. A layer of cork fastened to the glass with