

secondary heptyl bromide. The excess of bromine, then, considerably diminishes the amount of unchanged heptane; increases the secondary bromide by 18 per cent. but causes a much greater increase in the bromides of higher boiling-points. A further consideration of the table shows that 22 grams less of heptane are recovered, but as a compensation there is a gain of 10 grams of the secondary bromide. Now if 22 grams of the heptane were treated with the theoretical amount of bromine only 6.6 grams of this bromide would be obtained. Hence there is actually a net gain in the yield of the secondary bromide as well as a reasonably good gain in time. The process is a very long one and these gains are worth consideration.

ALVIN S. WHEELER.

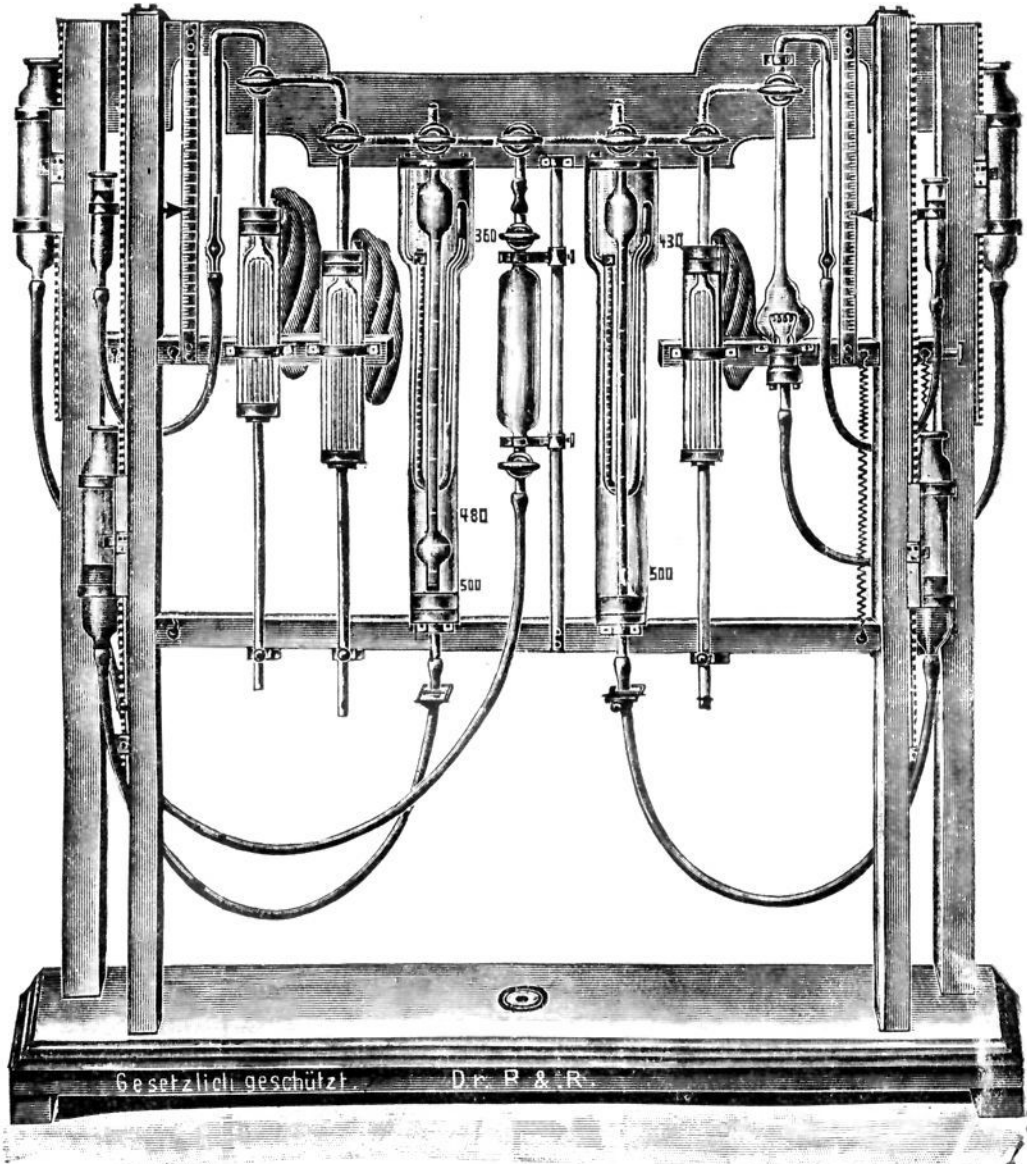
UNIVERSITY OF NORTH CAROLINA,  
CHAPEL HILL, N. C.

---

*New Apparatus for the Examination of Choke-damp and Nitrogenous Mine Inflammatory Gases.*—The apparatus is composed of two burettes which are connected with a 3-way stop-cock capillary, and this with the gas-bottle for filling the burettes. Both burettes are filled at the same time with the gas which is to be examined, and this makes it possible for the apparatus to give an exact determination of oxygen, methane, and carbon dioxide. On the right side, at first, carbon dioxide is absorbed in the caustic potash receiver and then methane is burned in the pear-shaped receiver by a platinum spiral which is glowing from an accumulator.

During the absorption of the carbon dioxide and the cooling of the pear, the oxygen is determined on the left side, so that a complete choke-damp examination of methane, carbon dioxide and oxygen is finished in about twenty-five minutes.

The fluctuation of the temperature which has occurred during the examination of the gas is found on a special thermometer, divided in  $1/10^{\circ}$  C., and arranged in the cooling-receiver; the variation of the volume of the gas brought about by the fluctuation of the temperature is equalized by the lifting and sinking of the manometer-receivers on each side. The gas is put into the burettes by means of mercury and can be read from the mercury. The apparatus is very sensitive and works exactly to 0.05 per cent. The apparatus solves the problem of the examination of choke-damp in



the simplest, quickest and most exact manner according to Sections 71 and 72 of the general mining police order, January 18, 1900, of the Royal Head Mining Office, Breslau. The apparatus serves further for the determination of methane in the high nitrogenous gases which are found in mine inflammatory gases. It is also quick and accurate for determining their content of carbon monoxide.

F. SCHREIBER.

*A Burette and Standard Solutions Convenient for the Determination of Nitrogen by the Kjeldahl Method.*—By using the burette described below together with the standard solutions of the strength recommended, all calculations and use of tables can be