tion, which was as carefully closed as possible, but to its vitiation by respiration, and by the absorbent power of the pleura.

On the Action of finely divided Platinum on Gaseous Mixtures, and its Application to their Analysis. *By* William Henry, *M.D. F.R.S.* Read June 17, 1824. [*Phil. Trans.* 1824, *p.* 266.]

In the first section of this paper the author describes the action of finely divided platinum, at common temperatures, on mixtures of hydrogen and olefiant gas with oxygen; of hydrogen and carburetted hydrogen with oxygen; of hydrogen and carbonic oxide with oxygen; of hydrogen and cyanogen with oxygen; of carbonic oxide and carburetted hydrogen with oxygen; of hydrogen, carburetted hydrogen and carbonic oxide with oxygen; and of the same with the addition of olefiant gas. From the experiments detailed under these several heads, it appears that when the compound combustible gases mixed with each other, with hydrogen, and with oxygen, are exposed to balls of platinum sponge, the several gases are not acted upon with equal facility; but that next to hydrogen, carbonic oxide is most disposed to unite with oxygen, then olefiant gas, and lastly carburetted hydrogen. By due regulation of the proportion of hydrogen, the author remarks, that it is possible to change the whole of the carbonic oxide into carbonic acid, without acting on the olefiant gas or carburetted hydrogen; he observes, however, that with respect to olefiant gas this exclusion is attended with some difficulty, and it is generally more or less converted into carbonic acid and water.

The second section of this paper relates to the action of finely divided platinum upon gaseous mixtures at increased temperatures. In these experiments the gases, mixed with oxygen enough to saturate them, were severally exposed in small retorts containing a platinum sponge, and immersed in a mercurial bath, to a temperature which was gradually raised till the gases began to act on each other. It was thus found that carbonic oxide began to be converted into carbonic acid at about 300°; olefiant gas was decomposed at about 500°; carburetted hydrogen at a little above 555°; and cyanogen appeared to require a red heat.

Muriatic acid, mixed with half its volume of oxygen, began to be acted upon at 250°, and ammoniacal, with an equal volume of oxygen, at 380°.

Adverting to the property inherent in certain gases of retarding the action of the platinum, when they are added to explosive mixtures of oxygen and hydrogen, Dr. Henry observes, that it is most remarkable in those which possess the strongest attraction for oxygen; and that it is probably to the degree of this attraction, rather than any agency arising out of their relations to caloric, that we are to ascribe the various powers which the gases manifest in this respect.

From his experiments on the action of the platinum on mixed gases, at high temperatures, the author was led to the following

The Royal Society is collaborating with JSTOR to digitize, preserve, and extend access to *Abstracts of the Papers Printed in the Philosophical Transactions of the Royal Society of London.* www.jstor.org

mode of procuring pure carburetted hydrogen. The early product of the distillation of pit-coal was washed with a solution of chlorine, and afterwards with liquid potash. The residue was then mixed with one fourth its volume of oxygen, and heated to 350°, in contact with the platinum, which converted the carbonic oxide into acid, and the hydrogen into water. The carbonic acid being removed by liquid potash, there remained only the carburetted hydrogen, the redundant oxygen, and a trace of nitrogen.

Dr. Henry concludes this communication by pointing out the best method of applying the facts detailed in the preceding sections to the analysis of mixtures of the combustible gases in unknown proportions.

A Comparison of Barometrical Measurement, with the Trigonometrical Determination of a Height at Spitzbergen. By Captain Edward Sabine, *of the Royal Regiment of Artillery, F.R.S.* Read May 6, 1824. [*Phil. Trans.* 1824, *p.* 290.]

The hill selected for this comparative measurement was the highest within convenient distance, of which the ascent was practicable, on the western part of the north coast of Spitzbergen. The summit was less than two miles from the observatory, in a direction nearly due south, the observatory being upon an island rather more than a mile from the main land. In consequence of the extreme inaccuracy of the chart of Fair Haven, published in Captain Phipps's voyage, the author has annexed to this paper a sketch of the harbour and adjacent coast, to show the positions of the hill and observatory. The small bay formed by the shore of the main land, to the north-east end of the hill, being frozen over, afforded a perfectly level base, and corrections for inequality were thus rendered unnecessary. A polished copper cone was fixed upon a staff at the summit of the hill, the apex of which was proposed as the height to be measured: it stood 44 inches above the highest pinnacle of the summit. Captain Sabine then enters into the details of this trigonometrical measurement, from which the altitude of the cone is considered as equal to 1644 feet. The author next proceeds to detail the particulars of the barometrical measurement, and the precautions taken to insure accuracy in the instruments, and in their employment; and the height of the cone thus ascertained was 1640·07 feet.

Captain Sabine concludes this paper with some remarks upon the incorrectness with which the heights of the hills on this coast are set down in Captain Phipps's voyage.