



## II. Notices in analytical chemistry

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## II. *Notices in Analytical Chemistry.* By Mr. T. RICHARDSON\*.

### 1. *Notice of an Analysis of the Sesquichloride of Carbon.*

THIS substance was formed in the usual way by passing a current of pure chlorine gas through the liquid of the Dutch chemists, till a sufficient quantity was obtained for analysis. The crystalline substance obtained was at first well washed with distilled water, and after repeated crystallization from different solutions in alcohol, was considered pure. In this state it had scarcely any taste, an odour similar to that of camphor, and possessed, in short, all the characters of pure sesquichloride of carbon.

Analysed in the usual way by means of Liebig's apparatus, .772 gram. of the crystals dried at 300° Fahrenheit, gave .291 grm. CO<sub>2</sub>, and .006 H<sub>2</sub>O grm. water. The small quantity of hydrogen evidently arises from hygrometric moisture, and allowing the deficiency to be chlorine, we have

Carbon.....	10.42
Chlorine .....	89.58
	<hr/>
	100.00

which is equivalent to

1 atom carbon.....	76.44	10.30
3 atoms chlorine...	663.96	89.70
	<hr/>	<hr/>
	740.40	100.00

### 2. *On the Employment of Chromate of Lead in the Analysis of Organic Substances* †.

The chromate of lead may be prepared by mixing a salt of lead with bichromate of potash, and carefully washing the precipitated salt. The pure salt, when perfectly dry, is to be heated in a clay crucible till it melts. When well melted it does not absorb so much moisture, and possesses in this respect a great advantage over the oxide of copper. Before employing the salt in analysis it should be finely pounded, and afterwards placed for a short time in a warm place to expel any hygrometric moisture. The mixture with the organic body to be analysed, is made in precisely the same way as with oxide of copper, only that it ought to be as intimate as possible, since a larger portion of substance becomes exposed to the action of the heat in the same time, than with the oxide of copper. The length of the tube necessary for combustion is about 10 inches long and 4ths of an inch in

\* Communicated by the Author.

† From the Transactions of the Nat. Hist. Society of Northumberland, Durham, and Newcastle-upon-Tyne, vol. ii. p. 412.

diameter. It is almost unnecessary to add, that the combustion must be very slowly conducted.

During the whole of the analysis, a quantity of oxygen gas is disengaged from the potash apparatus, which arises from the great predisposition of the chromate of lead to be converted into a basic salt. This fact, with the great quantity of oxygen which the salt contains, renders it very advantageous in the combustion of those bodies which contain a large quantity of carbon, and are difficult to consume. With this salt a much larger quantity of substance can be submitted to analysis than with oxide of copper, arising from its greater specific gravity. It is also an excellent means of analysing bodies containing chlorine, bromine, &c., the chloride, bromide, &c. of lead not being volatile.

For the suggestion of the employment of this body in organic analysis we are indebted to Prof. Liebig.

The following analysis was made with the view of testing its accuracy: .8166 grm. of ordinary sugar, gave 1.241 grm.  $\text{CO}_2$ , and .4725 grm.  $\text{H}_2\text{O}$ , which produces in 100 parts,

		Theory.
Carbon.....	42.02	42.403
Hydrogen.....	6.40	6.390
Oxygen.....	51.58	51.207
	<hr/> 100.00	<hr/> 100.00

III. *The Bakerian Lecture.—On the Theory of the Astronomical Refractions.* By JAMES IVORY, K.H., M.A., F.R.S. L. & E., *Instit. Reg. Sc. Paris, Corresp. et Reg. Sc. Götting. Corresp.*

[Continued from vol. xiv. p. 352.]

6. IN the paper published in the Philosophical Transactions for 1823, the refractions are deduced entirely from this very simple formula,

$$\frac{1 + \beta \tau}{1 + \beta \tau'} = 1 - f(1 - c^{-u}), \dots\dots\dots (4.)$$

in which  $\beta$  stands for the dilatation of air, or a gas, by heat;  $\tau'$  is the temperature at the earth's surface, and  $\tau$  the temperature at any height above the earth's surface; at the same height  $c^{-u}$  is the density of the air in parts of its density at the surface.

In order to understand the application of the formula, it is necessary to premise that in the remaining part of this paper we do not consider a variable atmosphere subject to continual fluctuations, as is the case of the real atmosphere: we con-