

Transactions (*continued*).

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## Observations, Reports, &amp;c.

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Christiania :—Meteorologiske Institut. Norsk Meteorologisk Aarbog for 1872. 6<sup>te</sup> Aargang. 4to. *Christiania*.

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January 8, 1874.

JOSEPH DALTON HOOKER, C.B., President, in the Chair.

The following communications were read :—

- I. "On the Brom-Iodides." By Dr. MAXWELL SIMPSON, F.R.S., Professor of Chemistry, Queen's College, Cork. Received November 4, 1873.

Some years ago I ascertained that chloride of iodine combines directly with the olefines and the non-saturated haloid ethers in the same manner as free chlorine or bromine. I have since ascertained that bromide of iodine also enters into direct combination with these bodies.

In the following experiments I have invariably used a solution of bromide of iodine in water, which was prepared by adding rather more than a molecule of iodine in fine powder to a molecule of bromine previously mixed with about six times its weight of water. The bromine was repeatedly agitated during the addition of the iodine, and kept cold by being surrounded by water. An almost black liquid was thus obtained, which was separated from the excess of iodine.

*Brom-iodide of ethylene*.—This body was formed by passing a stream

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of olefant gas into the foregoing solution, which was kept cold during the absorption of the gas. An oily liquid soon made its appearance, which was the body in question; it was then subjected to distillation, having been previously washed with dilute potash, and afterwards with distilled water. Almost the entire quantity passed over without decomposition between 162° and 167° Cent. This gave on analysis the following numbers:—

	$C_3H_4BrI$ Theory.	Experiment.
C .....	10·21	10·35
H .....	1·70	1·79

At the temperature of the air this is a solid body, consisting of a mass of long white needles, which melt at 28° Cent. At 29° it has a specific gravity=2·516. It has a sweet biting taste; on exposure to light it becomes slightly coloured, from the separation of free iodine. When subjected to the action of alcoholic potash, it yields iodide of potassium and a gas burning with a green flame, which is doubtless bromide of vinyl. It is an isomer of the brom-iodide obtained by Pfaundler\*, and afterwards by Reboul†, by exposing bromide of vinyl to the action of hydriodic acid. Pfaundler's compound boils between 144° and 147° Cent.

*Brom-iodide of propylene.*—This body was formed by passing propylene gas derived from iodide of allyle into the brom-iodine solution. It was washed with dilute potash, then with water, and distilled. The greater part passed over between 160° and 168° Cent., suffering, however, at the same time slight decomposition. The distillate was then analyzed, having been previously agitated with mercury to remove free iodine. The following are the results:—

	$C_3H_6BrI$ Theory.	Experiment.
C .....	14·46	14·89
H .....	2·41	2·77

Notwithstanding the difference between the theoretical and experimental numbers, I believe this is a definite compound, and not a mixture of bromide and iodide of propylene. The discrepancy probably arises from the slight decomposition which the body suffered during distillation.

Brom-iodide of propylene is, when freshly prepared, a colourless oily liquid; it has a sweet and biting taste. Treated with alcoholic potash, it yields iodide of potassium and brom-propylene ( $C_3H_6Br$ ).

*Iodo-dibrom-vinyl.*—When the brom-iodine solution and bromide of vinyl are brought into contact, direct combination takes place, and this body is formed. In order to complete their union, it is advisable to heat them gently in a sealed tube. A portion of the oily product thus obtained was washed with potash and distilled; almost the entire quantity passed over between 170° and 180° Cent. As, however, it suffered

\* Jahresbericht, 1865, p. 483.

† Ibid. 1870, p. 439.

considerable decomposition during distillation, I analyzed, in preference, a portion of the remainder, which had *not* been distilled, having previously dried it at  $100^{\circ}$ , and agitated it with metallic mercury to remove a trace of free iodine. The following are the results of the analysis:—

	$C_2H_3Br_2I$ Theory.	Experiment.
C .....	7.64	7.67
H.....	0.96	1.11

This is a colourless oily liquid; like the others it has a sweet and biting taste. Its specific gravity at  $29^{\circ}$  Cent. is 2.86. Heated to the temperature of  $100^{\circ}$  in a sealed tube with moist oxide of silver it occasioned a violent explosion. Heated in an open retort with the same body, it evolved carbonic acid gas and bromide of vinyl.

## II. "Contributions to the History of the Orcins.—No. IV. On the Iodo-derivatives of the Orcins." By JOHN STENHOUSE, LL.D., F.R.S., &c. Received November 10, 1873.

A preliminary notice on these compounds has already appeared in the 'Chemical News,' vol. xxvi. p. 279; and the present paper contains a more detailed account of my experiments.

In 1864\* I published an account of a crystalline teriodorcin obtained by precipitating an aqueous solution of orcin with a solution of iodine monochloride, but I found I was unable to prepare any other iodine derivative of orcin by this process. It seems probable, however, that the method devised some years ago by Prof. Hlasiwetz†, and communicated by him at the meeting of the "Naturforscher und Aerzte in Innsbruck," would yield the lower substitution compounds. This was found to be the case; for on agitating an ethereal solution containing equal molecular weights of orcin and iodine with dry precipitated mercuric oxide, the colour rapidly disappears, and moniodorcin is formed; this may be obtained by distilling off the ether and crystallizing the residue from benzol, in order to separate an uncrystallizable oily compound which accompanies it. It is, however, still contaminated with a small quantity of mercuric iodide, which obstinately adheres to the substance, and can only be removed by recrystallization from a dilute aqueous solution of potassium iodide; this difficulty arises from the circumstance that mercuric iodide is more or less soluble in most of the liquids usually employed as solvents. For this reason I found it advisable to substitute plumbic oxide for the corresponding mercury compound originally proposed by Hlasiwetz.

*Monoiodorcin*,  $C_7H_7IO_2$ .—One part of pure dry orcin is dissolved in

\* Journ. Chem. Soc. vol. xvii. p. 327.

† Deut. chem. Ges. Ber. II. 551.