

XVIII.—*Note on a New Bromine-derivative of Camphor.*

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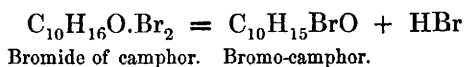
HAVING had occasion to make some experiments on Laurent's bromide of camphor  $C_{10}H_{16}O.Br_2$ , I found that when strongly heated on the sand-bath it was decomposed, with evolution of hydrobromic acid and formation of an oily body, which solidified after standing for several hours. As this fact is in direct opposition to the account of this substance as given by Gerhardt, who states that when bromide of camphor is distilled it is decomposed, yielding bromine and camphor, I thought it worth while to make a few experiments on the product of this reaction. I therefore prepared a quantity of this oily product, and for the purpose of removing hydrobromic acid, washed it with a hot dilute solution of potash; it was then separated from the alkaline solution by means of a pipette and transferred to a retort provided with a thermometer. On heat being applied, distillation commenced, with evolution of a little hydrobromic acid; the distillate was collected until the thermometer rose to about  $60^{\circ}C.$  above the boiling point of camphor. The receiver was then changed, and the portion which came over above that point collected separately. This on cooling became solid, but was evidently mixed with a small quantity of oily matter, which was removed by pressure between folds of bibulous paper, then dissolved in a small quantity of alcohol, and allowed to cool. In the course of a few hours, magnificent crystals separated, which on being recrystallized were perfectly pure. Analysis of a specimen burnt with chromate of lead gave the following numbers:—

- I. 4050 of substance gave  
 7723 of carbonic acid and  
 2412 of water.
- II. 3557 of substance gave  
 6787 of carbonic acid and  
 2140 of water.
- III. 4984 of substance gave  
 4050 of bromide of silver.

The percentages calculated from these numbers agree closely with those required by the formula  $C_{10}H_{15}BrO$ , as the following comparisons will show:—

		Theory.		Experiment.		
				I.	II.	III.
$C_{10}$	....	120	51.948	52.00	52.03	
$H_{15}$	....	15	6.493	6.61	6.68	
Br	....	80	34.632			34.57
O	... ..	16	6.927			
		231	100.000			

The change which bromide of camphor undergoes when heated may therefore be expressed by a very simple equation:—



Bromo-camphor, when pure and slowly crystallized from alcohol, appears in transparent prisms very similar to sulphate of sodium, but smaller. When impure, it sometimes forms tufts of flattened prisms of considerable size.

The crystals of bromo-camphor are very brittle, and taste more like turpentine than camphor. Bromo-camphor has a slight odour of camphor. It is very soluble in alcohol and ether. It melts at from  $76^\circ$  to  $77^\circ C.$ , and if agitated solidifies at  $74^\circ C.$ , but sometimes, if left undisturbed, remains liquid until the temperature has fallen as low as  $54^\circ C.$  It boils at  $274^\circ C.$ , with slight blackening and evolution of a little hydrobromic acid. It sublimes slowly even at the ordinary temperature.

A portion was heated to  $180^\circ C.$  in a sealed tube with alcoholic ammonia for 12 hours; slight decomposition took place, with for-

mation of bromide of ammonium, and a peculiar organic base; but the amount produced in this reaction is so small that I have not as yet attempted to investigate its nature.

Bromo-camphor, when mixed with bromine, liquefies apparently without evolution of heat, and if the bromine has not been added in too great an excess, gradually solidifies into a crystalline mass, somewhat similar to that produced by the combination of camphor with bromine. It is most probably a *bibromide of bromo-camphor*,  $C_{10}H_{15}BrO.Br_2$ , a view which has to some extent been corroborated by a quantitative experiment. The product, when heated, decomposes with evolution of hydrobromic acid, and on cooling solidifies into a crystalline mass, which probably contains a bibromo-camphor  $C_{10}H_{14}Br_2O$ .

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