valent of which we have just now determined,) when submitted to distillation with an excess of lime or baryta, furnishes this substance in a state of perfect purity and with great facility.

In this decomposition, the whole of the exygen in the beazons and separates rom it combined with carbon in the form of carbonic acid, which remains in combination with the baryta. The decomposition of benzoic acid by means of baryta is represented by the following diagram :--

From . Deduct	 	C14 U2	HG	04 04	+ +	$\begin{array}{l} 2BaO\\ 2BaO \end{array} = 2 (BaO, CO_2) \end{array}$
There i en	min	s C12	IIG			Two atoms of carb. of barvta.
Benzol.						

It is evident that after deducting two equivalents of carbonic acid from benzoic acid, the carbon and hydrogen remain in the proportions of C12 Hs. i. e., in the relation of two of carbon to one of hydrogen (C2 II,) or in the atomic ratio which we have originally established for benzol. We have now the choice of assuming that I equivalent of benzoic acid, when decomposed by baryta, yields either 1 equivalent or 6 equivalents of benzol. The former of these assumptions is simpler. We prefer it, although it compels us to raise the original atomic expression by multiplying it by 6. The considerstions which I have just now explained would alone perhaps have been scarcely deemed sufficient for adopting the formula Cie 116 for benzol in preference to that of C2 II originally deduced. But the study of the derivatives of benzol, of its products of decomposition, under the influence of powerful chemical agents, is likewise in favour of the higher formula. Common nitric acid has no effect upon benzol: the concentrated acid, however, reacts upon this substance with great violence-the benzol dissolves. On mixing the clear liquid with water, a dense oil is precipitated, possessing in a remarkable manner the odour of oil of bitter almonds, to which, in order to remind us of its origin, the name of "nitrobenzol" has been given. The analysis of nitrobenzol has shown that this compound contains nitrogen and oxygen in addition to the elements of benzol. The simplest atomic expression, by which the results obtained in the analysis of this compound can be represented is the formula.

We have again here the choice of assuming, that, in the formation of nitrobenzol, the nitric acid has acted upon either 6 equivalents of the substance C₂ H, or upon 1 equivalent of the body C₁₂ H₆. We prefer the latter: and accordingly represent the change which benzol undergoes under the influence of nitric acid by the equation

C12 H6	+	N05	=	C12	Цş	N	04	+	IIO	
Benzol.	•			Nitr	obenz	ol.		•		

Moreover, nutrobenzol, when dissolved in an alcoholic solution of carmonia, and treated with sulphuretted hydrogen, undergoes a further change, with the details of which you will become acquainted by and by but the result of which is the formation of "aniline,"—the very alkaloid the equivalent of which is the formation of "aniline,"—the very alkaloid the equisalt. The equivalent of aniline contains indubitably 12 atoms of carbeai and we thus obtain additional evidences in favour of the formula Ci2 He for benzol, which, in fact, completely harmonises both with the origin of the substance, and with its products of decomposition. Indeed, on looking at the following series of formula, representing the substances which hart been submitted to your consideration,

Benzoic acid	Ha	04	
BenzolC12	Ha		
AstrobenzolC12	II s	N	01
Anilino C12	H7	N	•

we cannot doubt that the formula C12 H6, although less simple than C3 H nevertheless expresses the relation of this body with other substances neve completely than any other. You will see, moreover, that this formula " supported also by other considerations.