IV.—*On the Composition of Mesitilole.*

(Letter of M. A. CAHOURS to DR. A. W. HOFMANN).

In the July number of "The Quarterly Journal of the Chemical Society of London,"* you have communicated the results of some researches on mesitilole, which have induced you to assume the expression :

for this compound, whose composition Kane had originally represented by the formula :

which subsequently had been changed into

in consequence of my determination of the vapour-density of the body in question.

In concluding your memoir, you remark that all the facts hitherto observed with regard to mesitilole are in perfect accordance with the new formula, the only exception being my determination of its vapour-density; and you leave it undecided whether the specific gravity of the mesitilole vapour, is subject to variations similar to those which have been observed with acetic, butyric, and valerianic acid, or whether the molecule of mesitilole is actually represented by 6 volumes of vapour,—an unusual mode of condensation, which would explain the difference exhibited by the properties of this body and those of cumole, which, like the other hydrocarbons, contains 4 volumes of vapour.

In preparing the mesitilole for the determination of its vapour-density, made at a comparatively early period, I had followed as accurately as possible, the directions of Kane, who states that this body boils at 135°C . I have since found, as you have yourself observed, that the boiling point of mesitilole is much higher; and I have therefore repeated the determinations with a product, carefully purified by several rectifications and a final distillation from anhydrous phosphoric acid. It boiled regularly between 162° and 164° , and exhibited exactly the composition of mesitilole.

In two determinations, made respectively at 74° and 88° higher

* Vol. II. p. 104.

than the boiling point of the hydrocarbon, the following numbers were obtained :

	I.	II.
Temperature of the air	17°	20°
„ „ vapour. . . .	236°	250°
Excess of weight of balloon. . . .	0·396 grm.	0·478 grm.
Capacity of balloon	216 c.c.	275 c.c.
Barometer	0 ^m ·760	0 ^m ·763
Residual air	0	1
	D = 4·345	D = 4·282

The theoretical vapour-density of mesitolole, assuming this body to contain 4 volumes of vapour, is 4·146.

Thus the formula :

resulting from your researches on mesitolole, and confirmed by Mr. Maule's analysis of nitromesidine,* is in perfect accordance with the specific gravity of the vapour of this compound, which ceases, moreover, to form an exception to the mode of condensation as yet generally observed with carbohydrides.

I beg you to communicate these results to the Chemical Society of London.