

XCIX.—*Absorption Spectra of Mesityl Oxide.*

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HARRIES (*Ber.*, 1899, **32**, 1329; *Annalen*, 1904, **330**, 189) has stated that when mesityl oxide was shaken for 36 hours with a 40% solution of sodium bisulphite, 30% of the material remained unchanged. The residue obtained after shaking five times with fresh solutions of sodium bisulphite showed a refractive index and a density differing in the third decimal place from those of the original ketone. It appeared, nevertheless, to be mesityl oxide, since it yielded the same *cis*- and *trans*-oximes. Since the mesityl oxide regenerated from the bisulphite compound reacted completely with fresh sodium bisulphite, Harries concluded that the phenomena were not due to tautomeric equilibrium but to a new type of isomerism. Experiments were therefore made in order to determine whether the absorption spectrum of the inactive form differs from that of ordinary mesityl oxide.

Mesityl oxide synthesised from acetone by means of hydrogen chloride proved to be spectroscopically identical with the redistilled commercial material, b. p. 128°, which was used in an attempt to repeat the work of Harries. The results were as follow :

- (1) The whole of the mesityl oxide reacted with sodium bisulphite.
- (2) The yield of double compound was practically quantitative.
- (3) The ketone regenerated from the bisulphite compound was identical with the original product in respect of (a) boiling point, (b) absorption spectrum in the liquid state, (c) absorption spectrum in alcoholic solution.
- (4) Earlier results (Henri and Bielecki, *Compt. rend.*, 1914, **158**, 567, 866, 1022; Purvis and McClelland, *J.*, 1913, **103**, 433) were confirmed.
- (5) Four distinct absorption bands were found. Shifts due to solvent occurred, but none due to vapour-liquid, the pure liquid ketone showing the same frequency of maximum absorption as the vapour.

Summary of Data.

	Present work.		Other work.
	λ max. Å.	e max.	
Vapour	3239	low	Purvis and McClelland found λ max. = 3238.
Liquid	3240	58	—
Alcoholic solution	3130	55	Henri and Bielecki found max. = 2360.
Aqueous solution	2380	14,000	—
Hexane solution	2440	11,000	—
	3272	56	—
	2348	14,000	2335
Heptane solution	3275	50	—
	2330	14,000	—

It must be concluded that some unrecorded factor entered into the work of Harries.

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