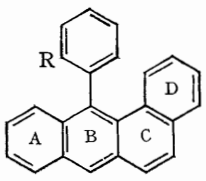
An Unequivocal Synthesis of Dibenzo[*a*,*l*]pyrene

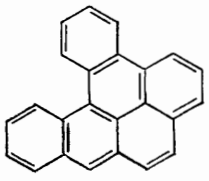
By N. P. BUU-HOÏ,* MRS. O. PÉRIN-ROUSSEL, and P. JACQUIGNON

(*Institut de Chimie des Substances Naturelles du C.N.R.S., 91-Gif-sur-Yvette, France*)

IT has been shown[1] that aluminium chloride-catalysed cyclodehydrogenation of 12-phenylbenz[*a*]anthracene (I) is accompanied by a molecular rearrangement, leading to dibenzo[*a*,*e*]fluoranthene instead of the expected dibenzo[*a*,*l*]pyrene (III); this last, elusive hydrocarbon has since been synthesised by two different methods.[2] We report here a novel synthesis of (III) which is totally unequivocal, as it does not involve the use of a metal chloride as catalyst, and is the first preparation of a purely benzenoid polycyclic system by a method applied so far only to the synthesis of non-alternant hydrocarbons such as the fluoranthenes.[1,3]



(I) R=H
(II) R=Cl



(III)

A solution of 12-(*o*-chlorophenyl)benz[*a*]anthracene (II)[4] in benzo[*h*]quinoline was heated under reflux (*ca.* 310°; 3 hr.) with potassium hydroxide, to give the pyrene (III), (25%), m.p. and mixed m.p. 164—165°. This was identified by its u.v. absorption spectrum (with the four characteristic peaks at 238, 270, 303 and 315 mμ) and its 1 : 1 complex with 1,3,5-trinitrobenzene, m.p. 204—205°. It is particularly interesting that when benzo[*h*]quinoline was replaced by quinoline (the solvent used for the synthesis of fluoranthene derivatives[1,3]) at 238°, no reaction took place even after 6 hr.

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[4] C. K. Bradsher, *J. Amer. Chem. Soc.*, 1940, **62**, 1077; F. A. Vingiello and T. J. Delia, *J. Org. Chem.*, 1964, **29**, 2180; F. A. Vingiello, L. Ojakaar, and R. Kelsey, *J. Medicin. Chem.*, 1965, **8**, 144.