

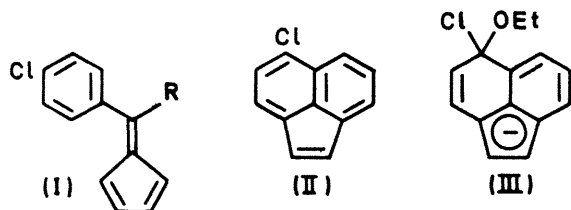
## Nucleophilic Displacement of Chlorine from 5-Chloroacenaphthylene

By M. J. PERKINS

(Department of Chemistry, King's College, London WC2R 2LS)

**Summary** 5-Chloroacenaphthylene is converted into 5-ethoxyacenaphthylene by reaction with sodium ethoxide.

THE possibility that substituents in a benzene ring might be activated towards nucleophilic displacement by potential cyclopentadienide stabilisation does not appear to have



received attention. For example, it might be expected that the halogen atom in a 6-(*p*-chlorophenyl)fulvene (**I**) or in 5-chloroacenaphthylene (**II**) would be replaceable by a nucleophile under suitable experimental conditions.

† 5-Chloroacenaphthylene, m.p. 68°,<sup>1</sup> was prepared by DDQ oxidation of 5-chloroacenaphthene.

<sup>1</sup> G. P. Petrenko and E. N. Tellnyuk, *J. Org. Chem. (U.S.S.R.)*, 1967, **3**, 174.

It is now reported that compound (**II**) reacts slowly with sodium ethoxide in refluxing ethanol to give 5-ethoxyacenaphthylene as the major product (*ca.* 60%).† Minor products have not been identified. Under comparable reaction conditions  $\alpha$ -chloronaphthalene gives no trace (< 1%) of  $\alpha$ -ethoxynaphthalene.

5-Ethoxyacenaphthylene, isolated as a yellow oil, was identified by n.m.r. and mass spectrometry. The mass spectrum showed the parent ion at *m/e* 196.0890 (calc. for C<sub>14</sub>H<sub>12</sub>O<sup>+</sup>, *m/e* 196.0888). The location of the ethoxy-group was uniquely defined as C-5 by the presence of a high-field doublet at  $\tau$  3.42 (*J* 7.5 Hz) due to the proton on C-4, and of a low-field doublet of doublets (X part of ABX pattern) at  $\tau$  2.03 due to the hindered peri-proton on C-6.

The hypothesis of activation by potential cyclopentadienide stabilisation suggests the indenyl anion (**III**) as an intermediate in this substitution reaction.

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