

a shorter time to oxidize the metal from the total bulk of amalgam.

Our experiments show that, when the dissolution of platinum and formation of intermetallic compounds in mercury are neglected, the interpretation of electrode processes may be erroneous.

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Isomerization to the Tropylium Ion Induced by Electron Impact and its Significance

IONIZATION by electron impact of toluene^{1,2} and some other compounds containing the benzyl group³ leads to the formation of tropylium ions, as Meyerson and Rylander have shown by isotopic labelling¹ and comparison of the energy data as well as of the mass spectra² of toluene and *cycloheptatriene*. The discovery of this rearrangement is of importance for the verification of basic conceptions on factors determining ion fragmentation (cf. ref. 4). In this connexion we should like to direct attention to the mass spectrum of *spiro*-(2,4)-*cycloheptadiene*-(1,3).

The mass spectra of toluene, *cycloheptatriene* and *spiro*-(2,4)-*cycloheptadiene*-(1,3), shown schematically in Fig. 1, are very similar to each other; this seems especially remarkable for the second and third compounds, since the third has quite different chemical and physical properties⁵ from the second. Within the limits of experimental error, the mass spectra of all three compounds are identically influenced, using the same Nier-type ion source, by changes of extracting electric field and by changes of electron focusing magnetic field. The effect of the energy of ionizing electrons upon the relative abundance of various ion species in the range 15–10 eV. studied is also very similar for all three compounds.

These results indicate that: (1) the electron impact ionization of *spiro*-(2,4)-*cycloheptadiene*-(1,3) leads also to rearrangement of the carbon skeleton to a seven-numbered ring; (2) the predominating quantity of fragment ions is formed not from direct fragmentation of ionized molecules, but from sufficiently excited ions formed by the rearrangement; and (3) the ions with seven-numbered ring from *spiro*-(2,4)-*cycloheptadiene*-(1,3) behave in this fragmentation either very similarly or even the same as the ions from *cycloheptatriene*.

Since the relative abundance of various ion species arising from the fragmentation of rearranged parent ions is in these cases nearly the same, the redistribution of energy in this parent ion is essentially accomplished before fragmentation; this supports one of the basic conceptions of the quasi-equilibrium theory of ion fragmentation⁶.

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Separation of the *Meta*- and *Para*-Isomers of the Xylenes, Cresols and Toluidines by Gas Solid Chromatography

ATTEMPTS to improve resolution in gas chromatography have developed along two lines; first by the improvement of the efficiency of the column^{1,2}, and secondly by the use of more selective stationary phases^{3,4}. These two methods are not mutually exclusive, and it is probable that the technique used in any particular case will depend upon the analysis required and the apparatus available. This note is concerned with one aspect of the second method, namely the use of solid absorbents to obtain increased separation factors⁵.

White⁵ has shown that a good separation of aliphatic from aromatic hydrocarbons could be obtained using a montmorillonite in which the naturally occurring inorganic ions had been replaced

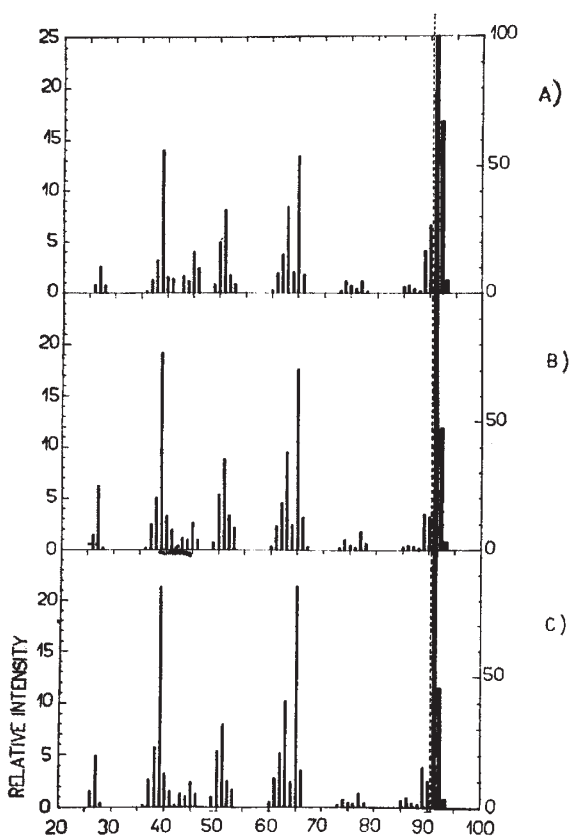


Fig. 1. Mass spectra of: (A) toluene; (B) *spiro*-(2,4)-*cycloheptadiene*-(1,3); and (C) *cycloheptatriene* (the sensitivity up to mass $m/e=90$ is fourfold); Nier type ion source