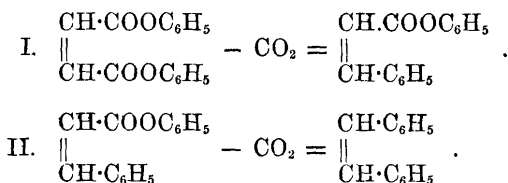


LXXXI.—A New Method of Preparing Aromatic Hydrocarbons.

By RICHARD ANSCHÜTZ.

In the course of a research on fumaric acid and maleïc acid, Wirtz and I noticed that a hydrocarbon was formed when phenylic fumarate was distilled. This hydrocarbon was found to be stilbene, and its formation may be accounted for on the supposition that the phenylic fumarate loses 2 mols. of carbon dioxide. Phenylic cinnamate must be considered to be the first product of the reaction, and this in its turn gives off carbon dioxide, becoming stilbene, as represented by the following equations:—



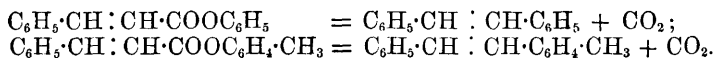
Led by this consideration, I submitted several aromatic cinnamic ethereal salts, prepared by Mr. Selden at my suggestion, to slow distillation under ordinary pressure. In each case, I noticed that there was an evolution of carbon dioxide during the distillation, and that afterwards products of decomposition distilled over.

All the cinnamic ethereal salts were prepared by heating the phenol with pure cinnamic chloride (b. p. 140° under about 16 mm.).

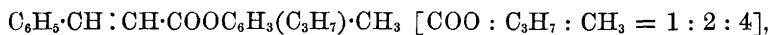
Phenylic cinnamate, $\text{C}_6\text{H}_5 \cdot \text{CH} : \text{CH} \cdot \text{COOC}_6\text{H}_5$, melts at 72.5° ; it is readily soluble in alcohol, and boils under a pressure of 15 mm. at $205\text{--}207^\circ$ without decomposition. The hydrocarbon obtained from it by slow distillation under ordinary pressure proved to be stilbene: it fused at 124° , and when treated with bromine gave stilbene bromide, sparingly soluble in alcohol and chloroform, and melting at 235° .

Paracresylic cinnamate, $\text{C}_6\text{H}_5 \cdot \text{CH} : \text{CH} \cdot \text{COOC}_6\text{H}_4 \cdot \text{CH}_3$ [$\text{COO} : \text{CH}_3 = 1 : 4$], melts at $100\text{--}101^\circ$; it is more sparingly soluble in alcohol than the phenylic salt, and under 15 mm. pressure boils at 230° without decomposition. On slow distillation under ordinary pressure, it yields methylstilbene, a substance very similar to stilbene; this crystallises from alcohol in plates which melt at 120° , and exhibit a beautiful blue fluorescence. When treated with bromine in a solution of chloroform, methylstilbene gives a bromide readily soluble in chloroform, but only very sparingly soluble even in boiling alcohol; after being recrystallised from alcohol, it melts to a brown liquid.

The decomposition of the two ethereal salts in question on slow distillation under ordinary pressure chiefly takes place, therefore, in accordance with the equations—



Thymylic cinnamate,



melts at 69—70°, and under about 15 mm. pressure distils at 239—240° without decomposition. On heating it under ordinary pressure, carbon dioxide is given off, but the liquid substances obtained from it have not yet been studied.

β-Naphthyl cinnamate, $\text{C}_6\text{H}_5\cdot\text{CH}:\text{CH}\cdot\text{COOC}_{10}\text{H}_7$, melts at 101—102°, and gives, on distillation under ordinary pressure, a large quantity of hydrocarbon, sparingly soluble in alcohol; when recrystallised from alcohol, this forms glistening plates which melt at 145°, and are readily soluble in chloroform. The bromide is readily soluble in chloroform, and can be recrystallised from boiling alcohol, in which it is very sparingly soluble; it melts at 192°, becoming black.

Phenylic succinate which, according to Weselsky, boils undecomposed at 320°, may be completely decomposed by slow heating, carbon dioxide being evolved. Amongst the products of decomposition, *di-benzyl* is only found in very small quantity; lower boiling substances smelling of phenol are chiefly produced, but these have not yet been studied. As it is evident that the reaction described may be generalised, the study of the conditions under which carbon dioxide is split off from ethereal salts of carboxylic acids has been commenced in the Bonn Laboratory.
