

rivatives were prepared. Diphenyl- β -naphthylmethyl chloride was obtained by the action of hydrogen chloride on the carbinol. When the chloride was treated with molecular silver, the free radical, diphenyl- β -naphthylmethyl, resulted.

2. The radical was isolated in the crystalline state. A careful study was made of its reactions with oxygen, iodine and acids, and of the effect of light. The conductivity of the free radical, diphenyl- β -naphthylmethyl, was determined in sulfur dioxide. The conductivities of the chlorides and bromides of triphenylmethyl, diphenyl- α -naphthylmethyl and diphenyl- β -naphthylmethyl were determined in both sulfur dioxide and hydrogen cyanide. These compounds, especially the bromides, were found to be good conductors. The molecular weight of diphenyl- β -naphthylmethyl was determined in 8 solvents whose freezing points covered the range from -22° to $+80^{\circ}$. It was found that the hexa-arylethane was dissociated from 15% to 50%.

3. Experiments were carried out to find what effect changes in concentration of the free radical would have upon the dissociation and upon the color of the solutions. It has been found that the resulting changes in color intensity are independent of the changes in dissociation. It has also been found that the changes in color intensity which result from variations in temperature are, again, not parallel to the changes in dissociation which are thus produced. These facts point to the conclusion that color formation in solutions of free radicals is not due wholly to dissociation of the hexa-aryl ethane into the tri-aryl methyl. The most satisfactory explanation of the facts is the hypothesis that in addition to dissociation we have tautomerization of the benzenoid tri-arylmethyl into the quinonoid form. The equilibrium between the dimolecular and monomolecular forms on the one hand and the equilibrium between the two monomolecular tautomers on the other hand, are not equally influenced by changes either in concentration or in temperature.

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ANN ARBOR, MICHIGAN

NOTES

Addendum to "The Electron Theory of Valence as Applied to Organic Compounds."¹ In order to avoid any misunderstanding the following considerations on the rupture of carbon valences by oxidation, as emphasized by the author in lectures on the subject, should be included in the discussion of oxidation and reduction of organic compounds in the above named article. The discussion was not intended to be exhaustive but simply emphasized certain facts bearing on the subject.

¹ THIS JOURNAL, 46, 1293 (1922).

