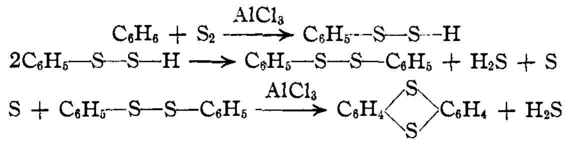
The hydrogen disulfide decomposed, however, as rapidly as it was formed

$$2NO_2—C_6H_4—S—S—H \longrightarrow NO_2—C_6H_4—S—S—C_6H_4—NO_2 + S + H_2S$$

In view of this result it seems likely that the correct explanation of the formation of thianthrene from sulfur, benzene and aluminum chloride is



$$C_6H_6 + S_2 \xrightarrow{AlCl_3} C_6H_5—S—S—H$$

$$2C_6H_5—S—S—H \longrightarrow C_6H_5—S—S—C_6H_5 + H_2S + S$$

That is, it is not necessary to assume, as was done by Dougherty and Hammond,[1] that the diphenyl disulfide was formed from diphenyl sulfide and sulfur. The reaction would undoubtedly take the easier course as outlined in the above equations.

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The Electron Diffraction Investigation of Some Higher Aliphatic Halides

BY J. A. A. KETELAAR AND K. J. PALMER

The van der Waals cohesion forces acting between different molecules is without doubt also active between different parts of the same molecule when, as in the higher aliphatic hydrocarbons, due to the rotation around the C–C bond, these parts can come close together without an appreciable increase of energy.[1] Consequently these molecules will tend to have a bent or even a more or less spherical form rather than that of a stretched chain.

In order to test this by a direct method, we have taken electron diffraction photographs of 1,10-dibromodecane, 1,5-dibromopentane, and 1,4-diiodobutane. These photographs show only a very few diffuse rings and much background; this appearance can be accounted for by the interactions between halogen and the two nearest carbon atoms and gives no indication of the halogen–halogen interaction, which would have a large effect in case the halogen–halogen distances were constant. The interpretation of these more or less negative results seems to be that the chains are indeed not in the stretched form nor in any one contracted form, but that they occupy at the temperature of the experiment a large number of configurations so that no constant large interatomic distances are present. This temperature effect will no doubt also be shown by other large molecules.

We are indebted to the Experimental Station of du Pont de Nemours, Wilmington, Delaware, to Dr. J. van Alphen, Leyden, and to Dr. H. de Vries Robles, Amsterdam, for providing us with samples of the substances used in this investigation.

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[1] Even if free rotation is not possible as indicated by the results of J. D. Kemp and K. S. Pitzer, *J. Chem. Phys.*, **4**, 749 (1936), [THIS JOURNAL, **59**, 276 (1937)], and of J. B. Howard, *Phys. Rev.*, **51**, 53 (1937), this consideration will remain true, as equilibrium positions differing by a rotation over 120° can be reached, thus leading to a large number of possible configurations.

The Isolation of Sucrose from Soybeans

BY H. R. KRAYBILL, R. L. SMITH AND E. D. WALTER

Street and Bailey[1] have reported the presence of sucrose in soybeans based on an increased reducing value of an extract of the beans following hydrolysis with invertase. Since invertase hydrolyzes other sugars in addition to sucrose, this does not give conclusive evidence of the presence of sucrose. Other workers[2,3] have reported the difficulty in crystallizing the sugars from soybean extract. Tanret[4] reported the isolation of sucrose from soybeans but he did not give supporting data characterizing the substance isolated. We have isolated a crystalline substance from soybeans and identified it as sucrose.

In experiments[5,6] on the extraction of soybeans with different solvents it was noted that a crystalline substance was deposited on the sides of the flask when acetone was used as the solvent. The impure substance collected from the sides of the flask gave negative tests for nitrogen and a positive Molisch test. The substance failed to reduce Fehling's solution.

A larger quantity of the substance was obtained by extracting the beans with petroleum ether to

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[1] J. P. Street and E. M. Bailey, *J. Ind. Eng. Chem.*, **7**, 853–858 (1915).

[2] Block, *Bull. sci. pharmacol.*, **14**, 536–551 (1907).

[3] Sadakichi and Sato, Technology Reports, **2**, No. 2 (1921), Imperial University, Sendai, Japan.

[4] Georges Tanret, *Bull. soc. chim.*, **13**, 176–182 (1913).

[5] R. L. Smith, Master of Science Thesis, Purdue University, May, 1931.

[6] Annual Report Purdue Univ. Agr. Expt. Station, 1931, p. 54.