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AN X-RAY INVESTIGATION OF SOME DERIVATIVES OF SULFONE-BIS-ACETIC ACID*

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(Abstract)

In 1934 Alden and Houston, at the University of Oklahoma, reported the preparation of ten N-substituted amides of sulfone-bis-acetic acid. The yields for two of the amides were notably lower than for the other eight. Before it could be determined if the low yields were due to a steric hindrance, as appeared possible from the structural formulas of the compounds, an investigation was required to determine the angle at which the molecules were tilted to the cleavage planes. The n-propyl and n-butyl amides were selected for this study. Previous investigations on long-chain compounds have shown that the angle of tilt remains constant within a series of compounds, and that the longest interplanar spacing increases regularly as carbon atoms are added to the chain. A new powder diffraction camera was designed and constructed for this work; its advantages over the previous camera available for this type of crystal analysis were greater dispersion, elimination of the paper covering over the film, thus decreasing absorption of the x-ray beam, and greater ease of manipulation. Contrary to the results of previous investigations on long-chain compounds, no difference in the interplanar spacings of the

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two compounds was detected. A possible explanation of this is proposed, based on the well-known concept of the zig-zag arrangement of carbon atoms along the axis of the molecule. The picture proposed requires the molecules to be tilted to the cleavage planes at an angle of approximately 40°.