

**THE REACTIONS OF CALCIUM
CARBIDE WITH THE
VAPORS OF CERTAIN ORGANIC
COMPOUNDS, A DISSERTATION**

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The reactions of calcium carbide with the vapors of certain organic compounds, a dissertation by
A. J. McGrail

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A. J. MCGRAIL

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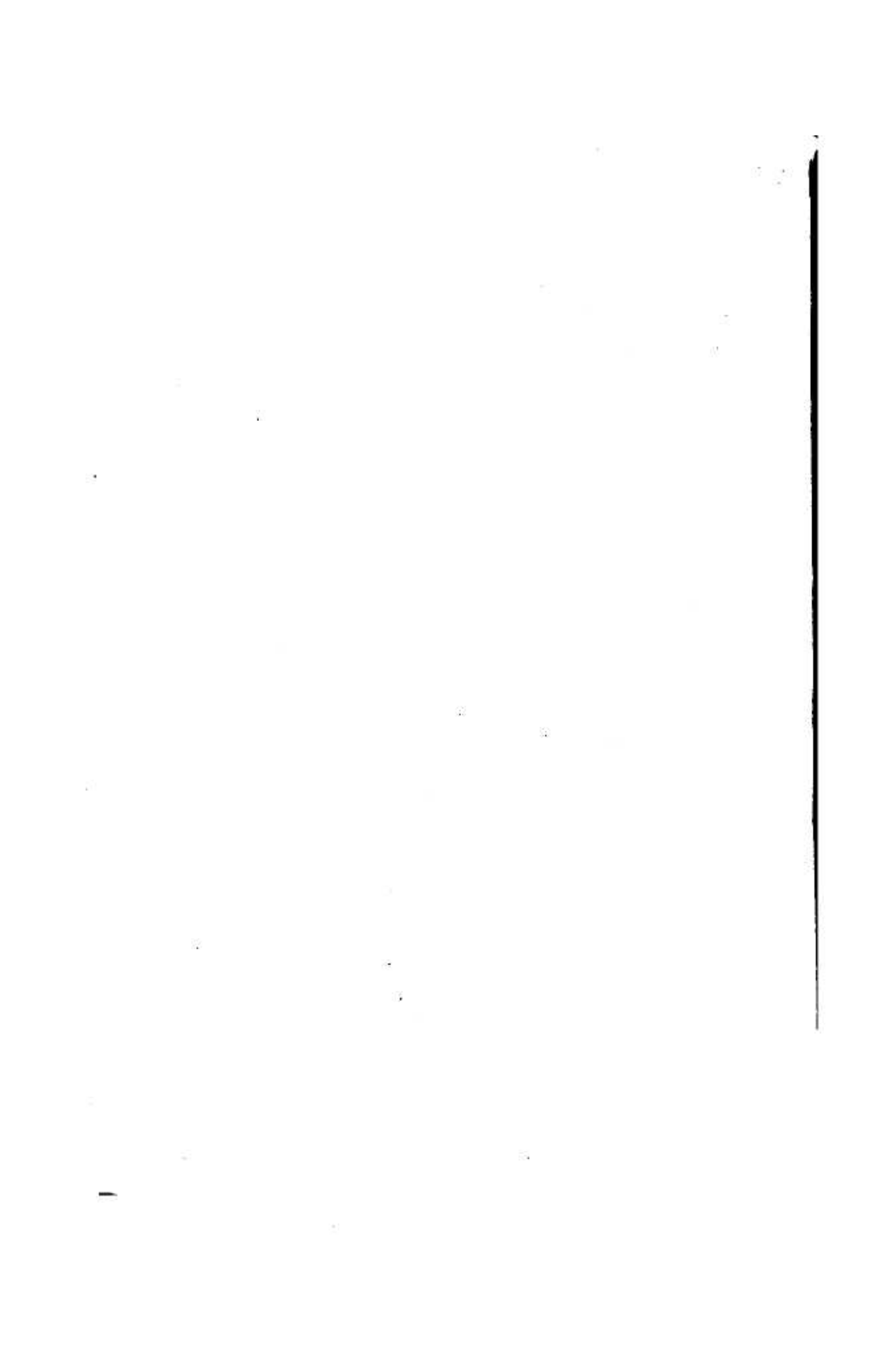
The Reactions of Calcium Carbide with the Vapors of Certain Organic Compounds

A DISSERTATION

Submitted to the Faculty of Sciences of the Catholic
University of America in partial fulfillment
of the Requirements for the Degree
of Doctor of Philosophy.

By
A. J. McGRAIL.

Washington, D. C.
1916.



Q 24 May 1865

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific requirements for record-keeping, including the need to maintain original documents and to keep copies of all records for a minimum of seven years. It also discusses the importance of ensuring that records are stored in a secure and accessible manner.

3. The third part of the document discusses the role of the auditor in verifying the accuracy of the records. It emphasizes that the auditor must exercise due diligence in reviewing the records and must report any discrepancies or irregularities to the appropriate authorities.

4. The fourth part of the document discusses the consequences of failing to maintain accurate records. It notes that failure to comply with the requirements may result in penalties, including fines and imprisonment, and may also lead to the disqualification of the individual or organization involved.

5. The fifth part of the document discusses the importance of ongoing education and training for individuals involved in record-keeping. It notes that the field is constantly evolving and that individuals must stay up-to-date on the latest developments and best practices.

6. The sixth part of the document discusses the importance of transparency and accountability in the financial system. It notes that accurate records are essential for ensuring that the system is open and transparent to all participants and that individuals are held accountable for their actions.

7. The seventh part of the document discusses the importance of collaboration and communication between all parties involved in the financial system. It notes that working together to identify and address issues is essential for maintaining the integrity of the system.

8. The eighth part of the document discusses the importance of regular audits and reviews of the financial system. It notes that these activities are essential for identifying and addressing any weaknesses or vulnerabilities in the system.

9. The ninth part of the document discusses the importance of maintaining a strong ethical culture within the financial system. It notes that individuals must act with integrity and honesty at all times and must be held accountable for their actions.

10. The tenth part of the document discusses the importance of ongoing monitoring and evaluation of the financial system. It notes that the system must be regularly reviewed and updated to ensure that it remains effective and efficient.

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SOME REACTIONS OF CALCIUM CARBIDE.

Although the reaction of Calcium Carbide with water has been known for several years, it seems strange that a search of the literature upon the subject reveals the fact that only a few attempts have been made to study the effect of this powerful reagent upon other compounds.

Calcium carbide was used by Hugo Haehn as a condensing agent for organic acids. His method of experimentation was to pass vapors of the various acids over heated carbide. He observed the formation of acetylene and the corresponding ketone. Formic acid was converted into water and carbon monoxide, acetic acid gave acetone and a small amount of methyl alcohol, propionic acid formed diethyl ketone, butyric acid formed dipropyl ketone, isovaleric acid produced valeric aldehyde and valerone, while benzoic acid was converted into benzophenone.¹

Bodrour and Taboury studied the reaction of calcium carbide on various ketones. Acetone, butanone, and acetophenone condensed to higher boiling compounds, with the elimination of water. Pentanone-3, however, would not react, and the authors concluded that the acetyl group CH_3CO - was essential for the condensation.² P. Lefebvre studied this condensation with several substances at 500° . Amyl chloride gave both gaseous and liquid products. The gases consisted of acetylene, ethylene, several other hydrocarbons, and hydrogen. The liquid was a mixture of the amylenes, including methyl-2 butene-1, and methyl-2 butene-2, and the amyl chlorides. The solid products were calcium oxide and calcium chloride.³



Lefebvre then extended his researches to the alcohols. Amyl alcohol produced acetylene, ethylene, carbon monoxide,

¹ Haehn, Ber., 39, 1703, (1906).

² Bodrour and Taboury, Bull. (4), 3, 831, (1908).

³ Lefebvre, Compt. Rend., 130, 1036, (1900).