

THE INSOLUBLE CHROMICYANIDES

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The Insoluble Chromicyanides by Frederick Van Dyke Crusser

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FREDERICK VAN DYKE CRUSER

**THE INSOLUBLE
CHROMICYANIDES**

THE INSOLUBLE CHROMICYANIDES

By
FREDERICK VAN DYKE CRUSER, A. M.

DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY IN THE FACULTY OF PURE SCIENCE
OF COLUMBIA UNIVERSITY

NEW YORK CITY

1906

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. The text notes that without reliable records, it would be difficult to track the flow of funds and to identify any irregularities.

2. The second part of the document outlines the various methods used to collect and analyze data. It describes the use of statistical techniques to identify trends and patterns in the data. The text also discusses the importance of ensuring the accuracy and reliability of the data sources used in the analysis. It notes that any errors or biases in the data could lead to incorrect conclusions and recommendations.

3. The third part of the document provides a detailed description of the procedures used to conduct the study. It outlines the steps involved in the data collection process, from the selection of the sample to the final analysis. The text also discusses the various challenges encountered during the study and the steps taken to address them. It notes that the study was conducted in a systematic and rigorous manner to ensure the highest quality of results.

4. The fourth part of the document presents the results of the study. It includes a series of tables and graphs that illustrate the findings. The text discusses the implications of these findings for the financial system and for the development of policies to improve its performance. It notes that the results of the study suggest that there is a need for more robust and transparent financial reporting practices.

5. The fifth part of the document provides a summary of the key findings and conclusions of the study. It reiterates the importance of accurate record-keeping and the need for improved data collection and analysis methods. The text also offers recommendations for future research and for the implementation of the findings in practice. It concludes by stating that the study has provided valuable insights into the complexities of the financial system and the need for ongoing research and innovation in this field.

INTRODUCTION.

As comparatively little is known about the chemistry of the insoluble chromicyanides, and as the work that has been done is of an early date, a more thorough and exhaustive investigation on this subject seemed to be of importance.

F. V. D. C.

ACKNOWLEDGMENT.

This investigation was carried out under the direction of Professor Edmund H. Miller, and I take this opportunity to express my sincere thanks for his kindly interest in the work, and for his valuable assistance.

QUANTITATIVE CHEMICAL LABORATORY,
HAVEMEYER HALL, COLUMBIA UNIVERSITY,
May 1, 1906.

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent data collection procedures and the use of advanced analytical techniques to derive meaningful insights from the data.

3. The third part of the document focuses on the role of technology in data management and analysis. It discusses how modern software solutions can streamline data collection, storage, and analysis processes, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and privacy. It provides strategies to mitigate these risks and ensure that the data remains reliable and secure throughout its lifecycle.

5. The fifth part of the document concludes by summarizing the key findings and recommendations. It stresses the importance of a data-driven approach in decision-making and the need for continuous monitoring and improvement of data management practices.

THE INSOLUBLE CHROMICYANIDES.

Potassium Chromicyanide.

Böckman* prepared a salt by heating together solutions of potassium hydroxide, chromium hydroxide, with an excess of potassium cyanide. The liquid is colored reddish brown, and will deposit yellow crystals, which are subsequently purified by recrystallization, which crystals have the same form and analogous composition to the potassium salt of ferricyanide and cobalticyanide. The formula is $K_3Cr_2(CN)_{12}$, equivalent to $K_3Cr(CN)_6$ at present. Stridsberg† has worked on the preparation and analysis of potassium chromicyanide. He digests a hot solution of potassium cyanide with potassium chromium chloride for an hour, and evaporates. On cooling the red filtrate, crystals of potassium chromicyanide, $Cr_2CY_3 \cdot 3KCY$ (equivalent to $K_3Cr(CN)_6$) separate.

Kaiser* prepared the salt by adding to a fairly concentrated solution of potassium cyanide (60 gms.), heated nearly to boiling, small portions at a time of chrom alum (50 gms.). This mixture is heated for about one hour, until its weight is about 300 gms. After cooling, he adds 30 gms. of alcohol (80%), and filters. The filtrate is evaporated, and the yellow crystals which form are filtered off, and purified by recrystallization, until the crystals have a pure yellow color, the first crop of crystals, including mother liquor, have a reddish yellow color. The salt is water free, and has the formula $3KCN \cdot Cr_2(CN)_3$, equivalent to $K_3Cr(CN)_6$. The crystal form according to Kopp is the same as that of potassium ferricyanide, namely, monoclinic.

At the ordinary temperature, 100 parts of water dissolve 30.9

*Traité de Chimique Organique, J. Liebig, vol. I., p. 174; Gmelin, Handbook of Chemistry, vol. VII., p. 420; Handwörterbuch d. chem. Fehling, vol. II., p. 663; Jahresb. 1864, vol. 17, p. 302.

†Jahresb. 1864, vol. 17, p. 304; N. Arch. ph. nat. XXII., p. 151.

‡Annalen der Chemie und Pharmacie, III. suppl. p. 163; Gmelin Hand 4 aufl. 4, 335; Gmelin Handbook of Chemistry, VII., p. 420; Handwörterbuch d. chem. Fehling, p. 663; Jahresb. 1864, vol. 17, p. 302; Chem. Central. 1865, p. 259.