

**EXPERIMENTS UPON
MAGNESIA ALBA, QUICK-
LIME, AND OTHER ALCALINE
SUBSTANCES, PP.5-45**

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Joseph Black

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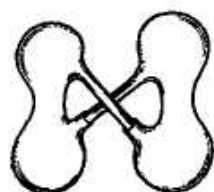
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EXPERIMENTS
UPON
MAGNESIA ALBA,
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ALCALINE SUBSTANCES.

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Professor of Chemistry in the University of Edinburgh
(1766-1797).

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PREFACE.

BLACK'S paper entitled "Experiments upon Magnesia Alba, Quick-lime, and other Alcaline Substances" was first published in 1755. Copies of the original paper and of several reprints which appeared during Black's life have become scarce and are difficult to obtain. The main objects in view in reprinting the paper now, are two in number, and are as follows:—

1. To enable students of the history of chemistry to possess themselves of a copy of this most important contribution to the foundation of chemistry as an exact science; and,

2. To place within the reach of every student of chemistry a model of clear reasoning and of inductive investigation, which is second in this respect to nothing in chemical literature that has appeared in much more recent times.

The spelling and punctuation of the original have been closely followed.

It is intended that this reprint shall be succeeded by reprints of important writings of other British chemists, &c.

L. D.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. This section outlines the various methods and tools used to collect and store data, ensuring that all information is readily accessible and up-to-date.

2. The second part of the document focuses on the analysis and interpretation of the collected data. It describes the process of identifying trends, patterns, and anomalies within the data sets. This involves the use of statistical techniques and data visualization tools to present the information in a clear and understandable manner. The goal is to provide meaningful insights that can inform decision-making and strategic planning.

3. The third part of the document addresses the challenges and limitations of the data collection and analysis process. It acknowledges that there are often gaps in data, potential biases, and technical difficulties that can affect the accuracy and reliability of the results. The document provides suggestions for how to mitigate these issues and improve the overall quality of the data and the analysis.

4. The final part of the document concludes with a summary of the key findings and recommendations. It reiterates the importance of ongoing monitoring and evaluation to ensure that the data collection and analysis process remains effective and relevant over time. The document also provides contact information for further inquiries and assistance.

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PART I.

HOFFMAN, in one of his observations, gives the history of a powder called *Magnesia Alba*, which had been long used, and esteemed as a mild and tasteless purgative; but the method of preparing it, was not generally known before he made it public.*

It was originally obtained from a liquor called the *Mother of nitre*, which is produced in the following manner:

SALT-PETRE is separated from the brine which first affords it, or from the water with which it is washed out of nitrous earths, by the process commonly used in crystallizing salts. In this process, the brine is gradually diminished, and at length reduced to a small quantity of an unctuous bitter saline liquor, affording no more salt-petre by evaporation, but, if urged with a brisk fire, drying up into a confused mass, which attracts water strongly, and becomes fluid again when exposed to the open air.

To this liquor the workmen have given the name of

* Hoff. Op. T. 4. p. 479.

the *Mother of nitre*; and Hoffman, finding it composed of the *magnesia* united to an acid, obtained a separation of these, either by exposing the compound to a strong fire, in which the acid was dissipated, and the *magnesia* remained behind, or by the addition of an alkali, which attracted the acid to itself: and this last method he recommends as the best. He likewise makes an inquiry into the nature and virtues of the powder thus prepared; and observes, that it is an absorbent earth, which joins readily with all acids, and must necessarily destroy any acidity it meets in the stomach; but that its purgative power is uncertain, for sometimes it has not the least effect of that kind. As it is a mere insipid earth, he rationally concludes it to be a purgative only when converted into a sort of neutral salt by an acid in the stomach, and that its effect is therefore proportional to the quantity of this acid.

Although *magnesia* appears from this history of it, to be a very innocent medicine; yet, having observed that some hypochondriacs, who used it frequently, were subject to flatulencies and spasms, he seems to have suspected it of some noxious quality. The circumstances, however, which gave rise to his suspicion, may very possibly have proceeded from the imprudence of his patients; who, trusting too much to *magnesia* (which is properly a palliative in that disease) and neglecting the assistance of other remedies, allowed their disorder to increase upon them. It may, indeed, be alledged that *magnesia*, as a purgative, is not the most eligible medicine for such constitutions, as they agree best with those that strengthen, stimulate, and warm; which the saline purges, commonly used, are not observed to do. But there seems at least to be no objection to its use, when children are troubled with an acid in their stomach: for, gentle purging, in this case, is very proper; and it is often more

conveniently procured by means of *magnesia*, than of any other medicine, on account of its being entirely insipid.

The above-mentioned Author, observing, some time after, that a bitter saline liquor, similar to that obtained from the brine of salt-petre, was likewise produced by the evaporation of those waters which contain common salt, had the curiosity to try if this would also yield a *magnesia*. The experiment succeeded: And he thus found out another process for obtaining this powder; and at the same time assured himself, by experiments, that the product from both was exactly the same.*

My curiosity led me, some time ago, to inquire more particularly into the nature of *magnesia*, and especially to compare its properties with those of the other absorbent earths, of which there plainly appeared to me to be very different kinds, although commonly confounded together under one name. I was indeed led to this examination of the absorbent earths, partly by the hope of discovering a new sort of lime and lime-water, which might possibly be a more powerful solvent of the stone, than that commonly used; but was disappointed in my expectations.

I have had no opportunity of seeing Hoffman's first *magnesia*, or the liquor from which it is prepared, and have therefore been obliged to make my experiments upon the second.

In order to prepare it, I at first employed the bitter saline liquor called *bittern*, which remains in the pans after the evaporation of sea-water. But as that liquor is not always easily procured, I afterwards made use of a salt called *Epsom salt*, which is separated from the bittern by crystallization, and is evidently composed of *magnesia* and the vitriolic acid.

* Hoff. Op. T. 4. p. 500.