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A System of Theoretical and Practical Chemistry ...

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London, 1803

ETH-Bibliothek Zürich

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Persistent Link: <https://doi.org/10.3931/e-rara-16937>

Preface.

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PREFACE.

11, *Old Compton Street, Soho.*

THE following treatise has been composed for the instruction of such as are actually unacquainted with chemical science; and with that view I have followed such an arrangement of the subjects, as appeared best calculated to afford a clear and permanent knowledge of their relations and consequences.

As the proofs of chemistry are grounded upon an appeal to the senses, I have in the first place described some experiments, which are easy to be performed, and particularly adapted to exhibit the general nature of chemical action.

But mere facts do not constitute a science. The reasoning faculty must be exerted to dispose them in the order of cause and effect; first by the method called analysis, and afterwards in that of synthesis: which last may be considered as including those tentative processes of the mind called hypotheses, which in natural science are rendered legitimate by experiment.

To announce those generalities which have been deduced from the analytical labours of former philosophers, and constitute the theory of the science: to exhibit the conditions of the mutual actions of bodies; and to place the student upon an eminence whence he may contemplate the phenomena with advantage, and in many cases foretell events with certainty;...require a display of the nature of chemical attraction, or affinity, and of heat. I have distinctly stated the laws of affinity in the synthetical form, and have then proceeded to illustrate those laws, by a series of experiments sufficiently striking to interest the mind and fix the doctrine in the memory. The same method is adopted with regard to heat and light; which, together with attraction and repulsion, constitute the causes of every chemical change.

These positions and their illustrative proofs are immediately followed by the classification of the simple or undecomposed bodies, with their attributes, affections or habitudes; which latter are proved experimentally.

The gases and the theory of their formation are next considered; their characteristic properties are detailed; the processes for obtaining them described; and a variety of the most appropriate experiments explained, by applying the general doctrines to each particular fact. Among these important first lines of chemistry, the formation of water, the production of various acids; the nature of the air we breathe; eudiometry; combustion; and many phenomena of the utmost magnitude and value present themselves, and are elucidated by experiments.

The metals, alcalies, earths, &c. next succeed, and are treated in the same manner by direct reference to the facts they afford during chemical examination. The natural history of each, and their obvious physical and chemical properties are first stated; then follow the means of obtaining them; and lastly, their physico-chemical properties are shown, by a series of experiments. A similar method pervades the whole of the work.

I have endeavoured experimentally to unfold all the fundamental truths of the science. I have proceeded from first notions step by step; from generals to particulars; from premises to conclusions; deducing causes from their effects, and effects from their causes, in order to maintain a systematic connection between the several parts of the whole, and to recall to the memory, all the changes which bodies are susceptible of in their mutual actions.

I am persuaded this cannot be better done, than by determining their properties by experiments under different circumstances. Hence the same facts are exhibited under various forms and relations, in order to oblige the mind to re-consider the same phenomena in different lights.

It is perhaps needless to state, that I have availed myself of all the authors who have cultivated and enriched this science. In many instances I found perspicuity of style and precision of detail, which I could not hope to make improvements; and in such cases I have not scrupled to transcribe whatever answered my purpose. But I have faithfully quoted my authorities, and rendered honor to whom honor is due.

