

**THEORIES OF CHEMISTRY;  
BEING LECTURES DELIVERED  
AT THE UNIVERSITY OF  
CALIFORNIA, IN BERKELEY**

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Theories of chemistry; being lectures delivered at the University of California, in Berkeley by Svante Arrhenius & T. Slater Price

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THEORIES OF  
CHEMISTRY

BEING

*LECTURES DELIVERED AT THE  
UNIVERSITY OF CALIFORNIA, IN BERKELEY*

BY

SVANTE ARRHENIUS

DIRECTOR OF THE NOBEL INSTITUTE, STOCKHOLM.

EDITED BY

T. SLATER PRICE, D.Sc., Ph.D., F.I.C.



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GENERAL :

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## P R E F A C E

THE present lectures were delivered at the University of California, in Berkeley, during the summer of 1904.

I have for a long time wished to give a coherent account of the development of theories in general chemistry. This seemed to me the more desirable because the latest extensions of this science are often, both by its followers and by its opponents, regarded as something wholly new and quite independent of the progress in the past.

Many seem to hold the opinion that the new developments are the more to be admired, the less dependent they are on the older chemical theories. In my opinion, nothing could be less correct. It is just the circumstance that the new theoretical discoveries have developed organically from the old generally accepted ideas, that is to me their most promising feature. I hope to make clear in these lectures that the new chapters in theoretical chemistry are a consequent and necessary continuation of the old science, according to the method which has ruled the development of chemistry as an exact branch of knowledge in the last century. If the scientists, who believe that it is possible to undermine the more modern parts of this scientific edifice, had thoroughly considered the matter, they would find that their efforts, if successful, would simultaneously demolish the neighbouring older parts, which, however, they consider to be so firmly established that they cannot be overthrown even by the most vigorous attacks. These opponents would, therefore, be better advised to confine themselves to the replacement of some of the building-stones by new ones, or to

the elaboration of some of the external features, or perhaps, also, to the strengthening of the foundations. But they should not necessarily try to alter the style of the newly built parts, for this style is a consequence of the modern method of working and of the nature of the scientific material of the building. The working method, as well as the materials, is, on the whole, of nearly the same kind now as when Boyle, Lavoisier, Richter, and Dalton laid the foundations of modern chemistry.

If we consider the historical development of our science, we find that very often—in fact, nearly always—the new builders, when they carried out their work, did not know, or at least did not take into consideration, the plans of the older parts. Nevertheless, we observe that similar styles have been used both now and in the past. This fact is due to the circumstance that we have learnt to work by the aid of the experience collected during generations. It is scarcely of use to examine whether the construction would have proceeded more rapidly if the scientists of to-day had always kept the building plans of the old masters in view. I can only express my personal opinion, which is, that the present mode of working is the most fruitful one. In reality, the working method changes slowly as better working instruments are introduced, and at the same time, without ourselves observing it, we also modernize the older parts of the building, bringing them into perfect agreement with the newer ones, by many small alterations which are hardly noticeable.

It is the extreme ease with which this adaptation of the older parts to the newer ones can be effected that gives the best proof of the soundness and validity of our theoretical ideas. I venture to hope that all who read these lectures will find that the recent developments in theoretical chemistry can be submitted to this test with confidence.

To the lectures held in Berkeley I have added some remarks in reference to recent publications bearing on theoretical questions. I am indebted to my friends Prof. W. Tate (of Calcutta)



and Dr. T. Slater Price for revision of the manuscript, and for many friendly hints and criticisms. By the publication of these lectures I also wish to recall many pleasant memories to my Californian friends and colleagues, who gave me such a cordial and unforgettable reception in their beautiful country.

THE AUTHOR.

STOCKHOLM,

*February, 1907.*



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