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J. Hart-Smith

Frontmatter

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**RECENT DISCOVERIES IN  
INORGANIC CHEMISTRY**

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INORGANIC CHEMISTRY

J. HART-SMITH, A.R.C.S., F.I.C.

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## PREFACE

**I**N the following pages an attempt has been made to give some account of the more important discoveries in Inorganic Chemistry within the last fifteen years so far as they concern the subject as usually taught in Schools. The book is in no sense intended to be a text-book but is rather to be regarded as a supplement to existing text-books. It is evident that in a book written with this object it is impossible to avoid a certain amount of disconnected matter. The book contains particulars of all work coming within its scope that has been published up to the end of last year (1917). It had been intended to add a chapter on radio-activity but pressure of war work has prevented this being included in the present edition.

For some years past the general tendency of inorganic chemistry has had a philosophic basis and more importance is to be attached to efforts to discover the principles underlying the subject than to attempts to prepare new compounds. Much research work is being done in connection with radio-activity, atomic disintegration, evolution of the elements, line spectra, active nitrogen, the intra-stellar elements and atomic-weight variation.

With regard to atomic-weight variation it is interesting to call to mind that many years ago, before radio-active phenomena were known, Sir W. Crookes put forward the suggestion that there might be more than one inhabitant of each gap in the periodic table. This suggestion, made

to explain certain facts then under discussion, was forgotten. At present lead is the only element known to have a variable atomic weight.

Perhaps the most interesting work recently published is that relating to the possible evolution of the elements from hydrogen and helium. Two predictions, based on this assumption, were made and both have proved to be correct. All this work is at present more or less disconnected, and chemists now await a new generalisation that will coordinate these discoveries just as the theories of Dalton and Avogadro coordinated the discoveries of the first part of last century.

The material for much of the work described in this book has been obtained from the publications of the Chemical Society, while the article on combustion is largely based on Professor Bone's report to the British Association, for permission to use which I have much pleasure in thanking the Council of the Chemical Society and Professor Bone.

J. H.-S.

LONDON,  
*May* 18, 1918.

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TABLE OF ABBREVIATIONS EMPLOYED  
 IN THE REFERENCES

<i>Amer. Chem. J.</i>	. . . . .	American Chemical Journal.
<i>Anal. Fis. Quim.</i>	. . . . .	Anales de la Sociedad Española de Física y Química.
<i>Analyst</i>	. . . . .	The Analyst.
<i>Annalen</i>	. . . . .	Justus Liebig's Annalen der Chemie.
<i>Ann. Chim. Phys.</i>	. . . . .	Annales de Chimie et de Physique.
<i>Ann. des Mines</i>	. . . . .	Annales des Mines.
<i>Ann. Physik</i>	. . . . .	Annalen der Physik.
<i>Ann. Report Chem. Soc.</i>	. . . . .	Annual Reports of the Chemical Society.
<i>Atti R. Accad. Lincei</i>	. . . . .	Atti della Reale Accademia dei Lincei.
<i>Ber.</i>	. . . . .	Berichte der Deutschen chemischen Gesellschaft.
<i>Bull. Soc. Chim.</i>	. . . . .	Bulletin de la Société chimique de France.
<i>Chem. Zentr.</i>	. . . . .	Chemisches Zentralblatt.
<i>Compt. rend.</i>	. . . . .	Comptes rendus hebdomadaires des Séances de l'Académie des Sciences.
<i>Gazzetta</i>	. . . . .	Gazzetta chimica italiana.
<i>J. Amer. Chem. Soc.</i>	. . . . .	Journal of the American Chemical Society.
<i>J. Chim. phys.</i>	. . . . .	Journal de Chimie physique.
<i>J. Pharm. Chim.</i>	. . . . .	Journal de Pharmacie et de Chimie.
<i>J. Physical Chem.</i>	. . . . .	Journal of Physical Chemistry.
<i>J. Physique</i>	. . . . .	Journal de Physique.
<i>J. pr. Chem.</i>	. . . . .	Journal für praktische Chemie.
<i>J. Russ. Phys. Chem. Soc.</i>	. . . . .	Journal of the Physical and Chemical Society of Russia.
<i>J. Soc. Chem. Ind.</i>	. . . . .	Journal of the Society of Chemical Industry.
<i>Monatsh.</i>	. . . . .	Monatshefte für Chemie und verwandte Theile anderer Wissenschaften.
<i>Proc. Amer. Acad.</i>	. . . . .	Proceedings of the American Academy.
<i>Proc. Chem. Soc.</i>	. . . . .	Proceedings of the Chemical Society.
<i>Phil. Mag.</i>	. . . . .	Philosophical Magazine (The London, Edinburgh and Dublin).
<i>Phil. Trans.</i>	. . . . .	Philosophical Transactions of the Royal Society of London.

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<i>Proc.K.Akad.Wetensch. Amsterdam</i>	Koninklijke Akademie van Wetenschappen te Amsterdam. Proceedings (English version).
<i>Proc. Roy. Soc.</i> . . .	Proceedings of the Royal Society.
<i>Proc. Roy. Soc. Edin.</i> . . .	Proceedings of the Royal Society of Edinburgh.
<i>Rec. trav. chim.</i> . . .	Recueil des travaux chimiques des Pays-Bas et de la Belgique.
<i>Sitzungsber. K. Akad. Wiss. Berlin</i>	Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin.
<i>Trans. Chem. Soc.</i> . . .	Transactions of the Chemical Society.
<i>Trans. Faraday Soc.</i> . . .	Transactions of the Faraday Society.
<i>Verh. Ges. deut. Natur- forsch. Ärzte</i>	Verhandlungen der Gesellschaft deutscher Naturforscher und Ärzte.
<i>Zeitsch. angew. Chem.</i> . . .	Zeitschrift für angewandte Chemie.
<i>Zeitsch. anorg. Chem.</i> . . .	Zeitschrift für anorganische und allgemeine Chemie.
<i>Zeitsch. Chem. Ind. Kol- loide</i>	Zeitschrift für Chemie und Industrie der Kolloide. (Now Kolloid-Zeitschrift.)
<i>Zeitsch. Elektrochem.</i> . . .	Zeitschrift für Elektrochemie.
<i>Zeitsch. physikal. Chem.</i>	Zeitschrift für physikalische Chemie, Stöchiometrie und Verwandtschaftslehre.