

A Company in  
History  
*Solvay, 1863–2013*

KENNETH BERTRAMS

*Fonds National de la Recherche Scientifique, Belgium*

*Université Libre de Bruxelles*



CAMBRIDGE UNIVERSITY PRESS  
Cambridge, New York, Melbourne, Madrid, Cape Town,  
Singapore, São Paulo, Delhi, Mexico City

Cambridge University Press  
32 Avenue of the Americas, New York, NY 10013-2473, USA

www.cambridge.org  
Information on this title: www.cambridge.org/9781107607576

© Kenneth Bertrams 2013

This publication is in copyright. Subject to statutory exception  
and to the provisions of relevant collective licensing agreements,  
no reproduction of any part may take place without the written  
permission of Cambridge University Press.

First published 2013

Printed in the United Kingdom at CPI

*A catalog record for this publication is available from the British Library.*

*Library of Congress Cataloging in Publication Data*

Bertrams, Kenneth.

A company in history : Solvay, 1863–2013 / Kenneth Bertrams, F.R.S. – Fonds  
National de la Recherche Scientifique, Belgium, Université Libre de Bruxelles.  
pages cm

Includes bibliographical references.

ISBN 978-1-107-60757-6 (pbk.)

1. Solvay Chemicals – History. 2. Chemical industry – Belgium – History  
3. International business enterprises – Belgium – History. 4. Solvay, Ernest,  
1838–1922. I. Title.

HD9656.B44S652 2013

338.8'8766009493–dc23 2012040595

ISBN 978-1-107-60757-6 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy of  
URLs for external or third-party Internet Web sites referred to in this publication  
and does not guarantee that any content on such Web sites is, or will remain,  
accurate or appropriate.

Parts of this book are based on the scholarly study published simultaneously:  
Kenneth Bertrams, Nicolas Coupain, and Ernst Homburg, *Solvay: History of a  
Multinational Family Firm*, Cambridge: Cambridge University Press, 2013,  
630 pages, ISBN 978-1-107-02480-9.

Not for resale or exchange

# CONTENTS

<i>List of Figures</i>	<i>page</i>	ix
<i>Foreword by Daniel Janssen</i>		xiii
INTRODUCTION		I
I THE GOLDEN AGE OF PROGRESS		5
Opening: Doctor Ferguson, Mister Solvay		5
Setting the Stage: The Triumph of Industrial Capitalism		7
The Burning Sun of Knowledge and the Art of Not Knowing		10
Merry Inventors, Reluctant Entrepreneurs		13
Self-Made Men Do Work in a Collective Environment		17
Soda Ash and the Ghost of Nicolas Leblanc		21
2 OUTLINE OF A FAMILY BUSINESS		25
Criteria and Commonplaces		25
The First and Closest Circle – The Solvay Clan		28
The Second and Third Circles: Relatives and Friends		33
Life in a Partnership Company		37
Outsiders Needed (or How to Avoid King Lear Syndrome)		40

3	BUILDING AN INDUSTRIAL EMPIRE	45
	“Faster, Higher, Stronger”: Picturing the First Globalization	45
	How to Become French (in France) and German (in Germany)	50
	Stretching over the Channel	55
	Europe Is Not Enough	58
	A Multilayered Hegemony	61
4	WORLD WAR I AND THE COLLAPSE OF THE INTERNATIONAL ORDER	65
	A Dive into the Dark	65
	“Never Was So Much Owed by So Many to So Few”	67
	Organizing the Economic Mobilization	71
	Into the War Economy	72
	The Grim Postwar (or the Pursuit of War by Other Means)	75
	Recasting Nations, Resuming Industrial Relations	77
	The Twilight of an Era	81
5	THE RATIONALIZATION OF THE WORLD CHEMICAL INDUSTRY	85
	Bigger Businesses, More Products: A View from the United States	85
	Allied Chemical or the Mysterious Mister Weber	88
	The Synthetic Ammonia Years (1919–1924)	93
	The “Magic Square” Venture That Never Came Through (1925–1926)	96
	ICI, the British Empire of Chemistry	99
	Speaking of Crisis: Solvay & Cie at the End of the 1920s	101
6	FROM CRISIS TO WAR	107
	Witnessing the Agony of Capitalism	107
	Recasting Industrial Stability	110
	Italy and Germany: Laboratories of Fascism	112
	1936: The Spanish Prelude	117
	Hitler’s Greater Germany	120

	The Economics of Occupation	123
	Meanwhile, across the Ocean . . .	126
7	RECONSTRUCTION THROUGH DIVERSIFICATION	129
	The Resettlement of Postwar Germany	129
	The Division of Europe and Its Harsh Consequences	134
	Western Europe: Recovery, Reconstruction, Integration	137
	The American Leadership between Constraints and Seduction	139
	Embarking on the Plastic Drive	144
	Diversifying the Diversification	146
8	RECESSION AND THE BIOCHEMICAL IMPULSE	151
	The End of the “Golden Age”	151
	First Strategy, Then Structure: Solvay & Cie Becomes a Public Company (1967)	154
	An American Comeback	158
	Caught Up by the Crisis	162
	Biochemical Innovation	165
9	GLOBALIZATION AND CONSOLIDATION	171
	The Cold War Is Over	171
	“ <i>The Wind of Change</i> ”: Back to Central Eastern Europe	173
	Tigers and Dragons: Solvay in Asia	176
	After 1993, Focusing on the Core Business	180
	Looking Forward in the Twenty-First Century	184

# LIST OF FIGURES

1.1	Machinery in Motion court, International Exhibition, London, 1862.	<i>page</i> 4
1.2	Louis-Philippe Acheroy in his workshop at Couillet.	12
1.3	Chemical works at Floreffe (Belgium) in about 1850.	15
1.4	Thomas Edison in his lab in Menlo Park, New Jersey.	19
1.5	Semi-industrial laboratory at Saint-Gilles (Brussels), around 1900.	22
2.1	Four generations of Solvay leaders.	24
2.2	Four Solvay presidents.	29
2.3	Porphyry quarries of Quenast.	30
2.4	Solvay managers visiting Wyhlen soda ash plant in Germany, around 1890.	36
2.5	Dinner hosted by Carl Wessel (Deutsche Solvay Werke manager).	42
3.1	Pumping engine at Solvayhall plant, Germany.	44
3.2	Bags of sodium carbonate (soda ash) at Rosignano plant, Italy.	48
3.3	Workers at the Bernburg plant, 1903.	54
3.4	Managers of Solvay & Cie and Brunner, Mond & Co visiting Syracuse plant, New York, around 1897.	60
3.5	Map of Solvay plants in 1913 (including subsidiaries and associated companies).	62

4.1	British soldiers digging a trench while wearing respirators to guard against fumes from bursting shells.	64
4.2	General meeting of the Comité National de Secours et d'Alimentation.	69
4.3	Results of the bombing of Château-Salins soda ash plant on 24 July 1917.	73
4.4	Solvay executives visiting Wieliczka salt mine, near Krakow, Poland (1921).	80
4.5	First Solvay Conference on Physics in Brussels, 1911.	82
5.1	Solvay Mercury cells at Jemeppe electrolytic plant, 1910.	84
5.2	The Allied Chemical building in New York, 1963.	90
5.3	Orlando Weber, the "mystery man" of Wall Street.	92
5.4	Advertisement for Imperial Chemical Industries.	100
5.5	Aerial view of Tavaux plant, soon after its construction in 1932.	103
6.1	Unemployed workers from the English town of Jarrow during their "Hunger march" to London in October 1936.	106
6.2	Map of Solvay plants in 1938.	113
6.3	A folk float decorated with fascist symbols, during the Festa dell'Uva in the village of Rosignano Solvay (1933).	116
6.4	Workers digging potash in the Suria mine in Barcelona's hinterland.	119
6.5	Vienna under Nazi rule after the Anschluss.	122
6.6	Ernest-John Solvay and René Boël.	125
7.1	Plastic bottles produced by Solvay.	128
7.2	The Potsdam Conference in Germany (July 1945).	132
7.3	The "Solvay Trial" at Bernburg, 14 December 1950.	136
7.4	Marshall Plan Funds provided \$1,390,600 to the Federal Republic of Germany.	140
7.5	Vinyl records made of PVC symbolize entrance into the culture of mass consumption and the plastics era.	143
8.1	Drug manufacturing at Kali-Chemie (early 1990s).	150
8.2	Threats of shortages after the oil crisis of 1973.	153

- |     |  |     |
|-----|--|-----|
| 8.3 | An engineer working on an analogue calculator at the research and development center in Neder-over-Heembeek, 1969. | 159 |
| 8.4 | Claude Loutrel, Jacques Solvay, and Whitson Sadler at Deer Park plant, Texas.                                      | 161 |
| 8.5 | Karol Wojtyła – Pope John Paul II – visits Rosignano plant in 1982.  | 168 |
| 9.1 | Solar Impulse.   | 170 |
| 9.2 | Solvay recovers Bernburg plant in 1991.  | 175 |
| 9.3 | Ten-leva Bulgarian banknotes featuring Devnya soda ash plant acquired by Solvay in 1996.                           | 177 |
| 9.4 | CEO Daniel Janssen meeting King Bhumibol of Thailand, together with Belgian Ambassador Patrick Nothomb (1998).     | 179 |
| 9.5 | The negotiators of the Solvay-BP deal in 2001.   | 185 |
| 9.6 | Jean-Pierre Clamadieu, successor of Christian Jourquin as the head of Solvay (2012).                               | 189 |
| 9.7 | Nicolas Boël, Chairman of the Board of Solvay since 2012.  | 190 |

# FOREWORD

Solvay is a company in which Science is highly respected. Therefore I suggested to Solvay S.A. that professional historians should write a book at the time of the company's 150th anniversary.

The present volume, as well as the scholarly book *Solvay: History of a Multinational Family Firm*, published at the same time,<sup>1</sup> are the result of an exciting research project that took place over five years. The challenge was taken up by a remarkable team of international historians (Kenneth Bertrams, Nicolas Coupain, and Ernst Homburg, acting under the outstanding and discreet leadership of Ginette Kurgan-van Hentenryk). These historians benefited from the insights provided by an "Industrial Committee" (Aloïis Michielsens, Jean-Marie Solvay, Jacques Lévy-Morelle, and me), as well as by many present and past Solvay managers. We thank them wholeheartedly.

Besides our respect for historical science, we were interested to show the determining influence of History on the life of Solvay between 1863 and 2013.

May Solvay employees and shareholders, as well as any interested readers worldwide, enjoy this lively and scientific historical book.

Daniel Janssen  
Honorary Chairman Solvay S.A.

<sup>1</sup> Kenneth Bertrams, Nicolas Coupain, and Ernst Homburg. *Solvay: History of a Multinational Family Firm*. Cambridge: Cambridge University Press, 2013.

# Introduction

*A Company in History: Solvay, 1863–2013* deals with the history of the Solvay company from a broad perspective. It intends to show how, and to what extent, the history of a multinational family company was rooted in and a product of 150 years of world history.

If students were asked to write an assignment on “Solvay” in 2012, they would immediately start their research on Wikipedia, the most popular online encyclopedia of the time. Redirected to the “disambiguation page,” which lists different articles with the same title, the students would have to choose between seven headings:

- Solvay (company): an international chemicals and plastics company
- the Solvay process
- Ernest Solvay, its inventor
- Solvay Conference
- The Solvay Business School
- Solvay, New York
- Solvay Hut, on the Matterhorn in the Alps

Yet this list would be valid for English-speaking researchers only. In German, several headings would be missing, but two new items would appear: “Solvay GmbH,” as the German chemical company part of the Solvay group and, surprisingly, “Solvay (7537)” – an asteroid discovered by the Belgian astronomer Eric W. Elst at the La Silla Observatory in Chile in 1996. Italian (and Slovene) students would also be aware of the asteroid, but they could also learn that

the town “Rosignano Solvay” owes its name to the soda plant set up by Solvay & Cie in the vicinity of Rosignano Marittimo in 1913 (although contributors failed to mention that the name “Solvay” was added by local authorities in the 1920s). A well-illustrated article explains the history and style of the factory’s model village – “Villaggio Solvay” – described as a fine and rare example of a garden city in Italy. Finally, French-speaking students would not be able to find out about the Solvay refuge in the Alps, nor about the asteroid. Instead, their artistic curiosity might expand from learning about the Hôtel Solvay designed by architect Victor Horta and a hallmark of the Art Nouveau style on the Avenue Louise of Brussels. A further heading could also lead them to an article on the Solvay Library at the Parc Léopold in Brussels, originally built as Ernest Solvay’s Institute of Sociology in 1902.

One name thus refers to many people, places, and things. Nevertheless, before being a village, an asteroid, or even a chain of mountains of the Antarctic Peninsula, a setting that Wikipedia failed to mention, Solvay was the name of a family, a family whose legacy derives from one of its outstanding members – Ernest Solvay. Following his early experiments in manufacturing soda with ammonia, the chemical company he founded in 1863 with his brother Alfred and with the help of several partners became a remarkable achievement in the world chemical industry. The reader interested in understanding the unfolding of the company’s successive “lives,” from its origins through the celebration of its 150th anniversary, will find thorough information in another book published at the same time as the current volume.<sup>1</sup> As already noted, this book’s ambition consists in recasting the company’s history in broader terms. Of course, this utopian goal would be unrealistic unless the author made some major choices in what to include; that is, much had to be left out. Therefore, special emphasis is placed on adopting a general comparative stance as a means to single out Solvay’s peculiarities but also its common tendencies in a global environment. Last but not least, it should be stressed that these pages, which address

<sup>1</sup> Kenneth Bertrams, Nicolas Coupain, and Ernst Homburg, *Solvay: History of a Multinational Family Firm*, Cambridge: Cambridge University Press, 2013. Hereinafter, *Solvay*.

many issues already familiar to scholars and students of history, have been written for a general readership curious about what is currently associated with the word *Solvay*, be it a world-famous scientific conference, a multinational company, or that company's founder. To some extent, this essay will have achieved its task if it succeeds in bringing out the common meaning of all things bearing the name Solvay, assuming a part of the answer lies in their convergence in modern history. And this also applies to the asteroid #7537.

This book owes its very existence to the research carried out by my colleagues Nicolas Coupain and Ernst Homburg. They not only have improved previous versions of the manuscript, but they also allowed me to literally plunder their findings. Words fail to express my gratitude and friendship. I am sincerely grateful to my estimate colleague Ginette Kurgan-van Hentenryk, as well as to the members of the Industrial Committee – Daniel Janssen, Aloïs Michielsen, Jean-Marie Solvay, and Jacques Lévy-Morelle – for their tireless efforts in making this book accessible to a wider audience. Speaking of form improvement, I thank Shana Meyer and her team for their expert polishing of my English in the final draft of the book. I am particularly indebted to Nicolas Coupain for the selection of figures and the writing of captions. Finally, my last and special thanks go to Flavia and Mathias – *al tempo che abbiamo perso e a quello che recupereremo*. This book is dedicated to the past and present workers of the Solvay company.

K. B.

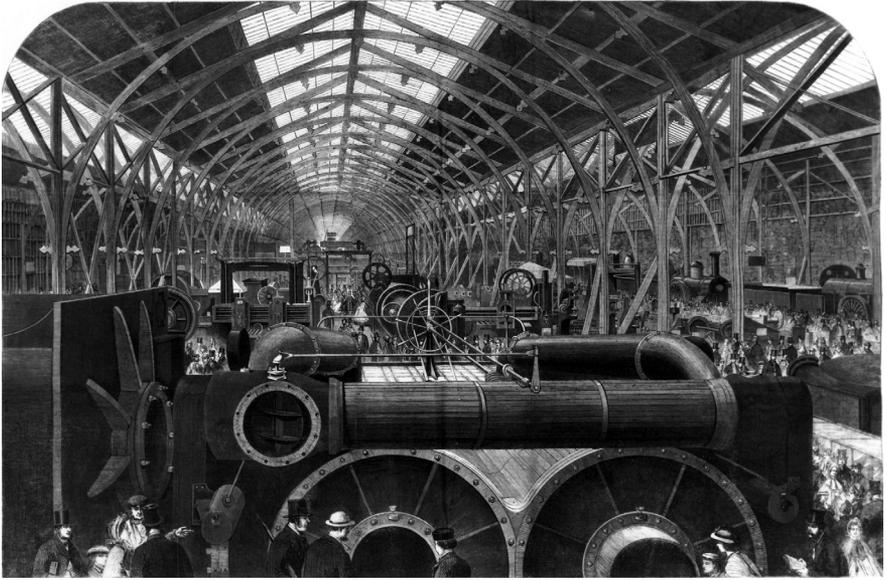


Figure 1.1. Machinery in Motion court, International Exhibition, London, 1862. Millions of visitors could discover there the latest industrial progress coming from participating Nations. (Science Museum/Science & Society Picture Library.)

# I

---

## The Golden Age of Progress

– *My dear Sir, that's the whole question. There is the only difficulty that science need now seek to overcome. The problem is not how to guide the balloon, but how to take it up and down without expending the gas which is its strength, its life-blood, its soul, if I may use the expression.*

– *You are right, my dear doctor; but this problem is not yet solved; this means has not yet been discovered.*

– *I beg your pardon, it has been discovered.*

– *By whom?*

– *By me!*

– *By you?*

Jules Verne

*Five Weeks in a Balloon*, 1863

### OPENING: DOCTOR FERGUSON, MISTER SOLVAY

Jules Verne's novel *Five Weeks in a Balloon* tells the story of an ingenious English scholar, Dr. Samuel Ferguson, intending to travel across the still mysterious continent of Africa in a hot air balloon. A device of his invention, a mechanism of five receptacles allowing for the combustion of hydrogen gas at different temperatures, enables him to stay in the air for a long time without the need to release gas or drop ballast to control the balloon's altitude. Traveling westward from Zanzibar to Senegal, Ferguson and his two companions fly over unfamiliar regions of Africa and face many dangers. After an epic odyssey, they ultimately manage to return

to England where they establish, “in the most precise manner, the facts and geographical surveys” reported by previous explorers.

The account, filled with suspense, exoticism, and a dash of technology, is typical of the adventure novels that would bring international fame to their author. More than (science) fiction, however, Verne’s story is an invaluable testimony of his time and of his contemporaries – at least a small fraction of them. In 1863, the world was in expansion; Verne’s readers admired the industrial development, technological improvements, and scientific advances of the day, as well as the conquest of civilization over “uncivilized” peoples. The lay prophets of this religion called progress were scientists, inventors, and explorers – no wonder the main character of Verne’s novel combined all these highly esteemed vocations. Members of society’s upper strata would rush to public lectures to learn of these innovators’ research and findings, presented at prestigious scholarly societies (such as the famous Royal Geographic Society, founded in 1830). Examples of the achievements of these visionaries were revealed at international exhibitions, which attracted tens of thousands of spectators from London (in 1851 and 1862) to Paris (1855 and 1867) up to the huge Philadelphia Centennial of 1876. Despite their differences, these scientists, inventors, and explorers shared the belief that existing knowledge could be challenged and, it was hoped, improved (or even proven wrong). In this sense, they performed an act of rebellion. “In every town, nay almost every village, there are learned persons running to and fro with electrical machines, galvanic through-holes, retorts, crucibles, and geologist hammers,” observed an Englishman as early as 1828.<sup>1</sup> For many candidates, however – perhaps for the bulk of them – the attempt to challenge what existed would eventually lead to failure and renunciation. Success was scarce and therefore extremely appealing to creative spirits.

Ernest Solvay was one of these creative spirits. He certainly belonged to the category of “enthusiasts, [who were] realists and dreamers at the same time” (to use his own words).<sup>2</sup> Had he not been so restrictive in the use of his spare time, he might have been

<sup>1</sup> Ian Inkster, *Science and Technology in History: An Approach to Industrial Development*, New Brunswick, NJ, Rutgers University Press, 1991, 287.

<sup>2</sup> Ernest Solvay, “Industrie et science (Biogénie et sociologie),” *Revue scientifique*, XLVIII (2nd semestre), 1910, 705–11 (at p. 705).

reading *Five Weeks in a Balloon* when it came out in 1863. However, for some time, Ernest Solvay had decided to devote the rare hours of his time off at his uncle Florimond Semet's factory to undertake chemical experiments. Supervising production at a gas works was not the most pleasant activity available on the job market (nor was it the worst, to be frank), but it had unsuspected advantages for an amateur chemist: It was a place where a product like ammonia was easily obtainable, even wasted as by-product, in coal distillation. As a result, Semet's factory, located in the vicinity of Brussels, became Ernest Solvay's research laboratory as much as it was his playground – the setting of his experiments as a gifted and inspired tinkerer.

The rest of the story could unfold as a traditional, fairy tale-like success story: Solvay would have discovered the ammonia-soda process, set up the thriving company to exploit and commercialize the product that resulted from it, and become a wealthy tycoon reigning at the top of his industrial empire. History, however, is far from being a continuous flow of successes, let alone fairy tales. Solvay's is a true story full of failures, nuance, and blind spots. What is striking in the early stages of Solvay's enterprise is that the story evolves like Jules Verne's account of the balloon flying above Africa: upward with cheerful enthusiasm, then downward nearing total collapse, and then up into the sky again.

The company Ernest Solvay and his partners built (for Ernest was not alone in this endeavor) was finally established after many failed attempts. For years, Solvay & Cie, where *Cie* stands for *Compagnie* (Company), was a small-scale start-up on the brink of bankruptcy. Capital was lacking, industrial output was dragging, and business partners were nagging. More important, Solvay did not discover the soda-ammonia process; he *rediscovered* it yet thought for long that he was the first to make it happen. Besides, although he eventually became rich, Ernest Solvay was much more than a mere businessman; he devoted his time and energy to countless initiatives, many of which lay beyond the sphere of industry.

#### SETTING THE STAGE: THE TRIUMPH OF INDUSTRIAL CAPITALISM

What kind of world, what kind of society, unfolded before Ernest Solvay's eyes as he started his professional life at his uncle's