

Coping with Fritz Haber's Somber Literary Shadow**

Roald Hoffmann* and Pierre Laszlo*

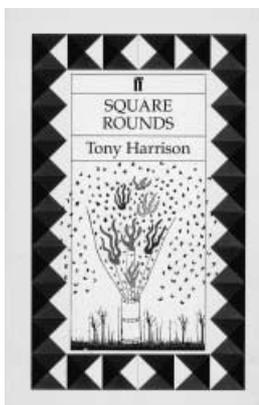
Chemists are legitimately distressed by the chemophobia of the public. One of its manifestations (hardly the only one) is the stereotyped presentation of a chemist as an amoral character, having sold his soul to the Devil. The implicit sin is more than Faustian, for the betrayal is not only personal, but that of humanity. Fritz Haber is often this scapegoat.

Is this stereotyping deserved? And might we, collectively and individually, do something about it? We approach the issue here by way of an attentive reading of a selection^[1] of the literary pieces featuring Haber, whether under his own name or in transparent disguise, and of recent biographies of Haber.

The Fictional Haber

1

The British poet and occasional playwright Tony Harrison has written a genuinely funny musical play, *Square Rounds*, in which Fritz Haber has a most prominent role.^[2] First performed at the Olivier Theatre in London in 1992, the play evokes very much a puppet show in the manner of Alfred Jarry's *Ubu Roi*. It features a nearly all-female cast of "Munitio-nettes," that is, of workers producing TNT during World War I. The women also impersonate the main characters, who include Fritz Haber and his wife Clara Immerwahr,



Sir Hiram Maxim (the inventor of the machine gun and of an anti-poison gas inhaler), his brother Hudson Maxim (of Maximite TNT charge fame), Justus von Liebig (one of the icons of our profession, entering the play as the pioneering agricultural chemist), and Sir William Crookes (who foresaw the need for nitrogen fixation).

Tony Harrison has done his homework well, his documentation is unimpeachable. Fritz Haber's way to gas warfare is perceptively evoked, making Haber say:

*"Out of the industry which gives the world its dyes
I can chemically concoct a new shock from the skies. (...)
I'm off to devise a little surprise
something that's certain to stun
all those who thought that war's only fought
with things like that vulgar gun. (...)
My gas will break the deadlock, make the war much shorter
and therefore save millions from the slaughter."*

Harrison has his characters speak in rhymed verse, a nice touch: Haber indeed versified as a hobby—Stoltzenberg's biography^[8] has some choice examples. Harrison has Haber declare:

*"After the mental struggle of nitrogen fixation
I turn to verse as an effortless relaxation."*

One of the few male characters in the play is the remarkable folksy sweeper Mawes, whom the "Hun Haber" draws into a hilarious verse competition. The fertilizer theme is the source of much scatological farce. Tony Harrison's inventive verse and talent for repartee, a match for William S. Gilbert of Gilbert and Sullivan fame, leavens and at times threatens to run away from the underlying anti-technological theme. The play has much literal magic, inventive fun with ribbons and costumes color-coded for the chemical elements, a song about N and O, and even a trinitrotoluene canon! And pathos, as in a dramatic Fritz Haber-Clara Haber confrontation.

The reader should not imagine, however, that this verse play is a paean to Haber. In fact, Harrison's wit is marshalled to paint a picture of Haber as devastatingly immoral.

2

Rolf Hochhuth, the German writer of strongly politically focused, well-documented plays, such as *Soldiers*, *The Representative* or *The Deputy* (about the silence by Pius XII during

[*] Prof. R. Hoffmann
Department of Chemistry
Baker Laboratory
Cornell University, Ithaca NY 14853-1301 (USA)
E-mail: rh34@cornell.edu
Fax: (+1)-607-255-5707

Prof. P. Laszlo^[+]
Institut de chimie
Université de Liège au Sart-Tilman
4000 Liège (Belgium)
and Département de chimie, Ecole polytechnique, F-91128 Palaiseau
(France)
E-mail: clouds-rest@wanadoo.fr
pierrelaszlo@usa.net

[+] Mailing address: POB 665, Pinehurst NC 28370 (USA)

**] We are grateful to the reviewers of this paper for their provocative comments.

persecution of Jews in Nazi Germany), also invents a dramatic dialogue between Clara and Fritz Haber in the hour preceding her death. This is one of the 13 scenes in his *Sommer 14: Ein Totentanz. (Summer 14: A Dance of Death.)*^[3] Actually (and as Hochhuth knew), the event took place in 1915, not 1914. Fritz and Clara begin the scene at the standing desks at which they used to work. Haber is aptly described in the stage directions—photographs bear this out—as looking like a toned-down Georg Grosz caricature. Clara Haber's agony, her understandable qualms about the unethical nature of her husband's war work, is quickly broached. No verse here. Haber is more human than in Harrison's play. But he just doesn't fathom Clara's concerns, nor is he able to hear her determination to kill herself. The day after her death he returned to the front, since this was what he saw as his patriotic duty. Or it was a way to escape his pain? But in that escape he left a thirteen year old son without a father as well as well as a mother.

3

Fritz Haber's figure makes an appearance in a book by André Malraux, *Les Noyers de l'Altenburg (The Walnut Trees of the Altenburg)*, originally published in 1943.^[4] Renamed Hoffmann, he sports a "clean-shaven face, which was rare at that time, all hooked and angular, like certain Aryan faces that look like Jewish faces, only sharper."^[*]^[5] His concern with the chemical weapon is exclusively technical, the direction and strength of the wind, and clinical,

"gas constitutes the most humane method of warfare. For gas, mind you, announces its presence! The opaque cornea first goes blue, the breath starts to come in hisses, the pupil—it's really very odd!—becomes all black."^[5]**]

Whether or not Malraux has handed-on to us an authentic portrait of Fritz Haber or not is of little import. The third part of *Les Noyers de l'Altenburg* (which he wrote at the zenith of his already superb talent as a novelist; it is also his very last novel) contains a description of the attack with chemical weapons that occurred on the Eastern front on June 12, 1915. Malraux follows very closely the narrative of a contemporary witness, Max Wild, a German secret agent.^[6]

Malraux's text is memorable; it ranks with the best in French literature. It is reminiscent of Victor Hugo's *Les Misérables*, in epic breath and in documentary accuracy alike. With a collage technique, Malraux inserts snippets of conversations between ordinary soldiers, which he had himself overheard and jotted down, at the beginning of the Second World War. He also makes masterly use of understatement—which brings this part of the novel to the level of Louis-Ferdinand Céline's *Voyage au bout de la nuit*, 1932 and of Erich-Maria Remarque's *Im Westen Nichts Neues (All Quiet on the Western Front)*, 1929—in conveying the horrors of

[*] "Visage rasé, ce qui était rare à l'époque, tout en angles crochus comme certains visages aryens qui semblent des visages juifs plus aigus."

**] "Les gaz constituent le moyen de combat le plus humain. Car le gaz s'annonce, notez! la cornée opaque devient d'abord bleue, la respiration commence à siffler, l'iris—c'est même très curieux!—passe presque au noir."

World War I. Interestingly, Malraux's novel was written during the beginning of World War II, in 1940–41.

Malraux prepares the pages on the use of chemical weapons with an apparently unrelated scene (moral outrage is the unstated, implicit link): an officer in the German Secret Service interrogates a woman suspected of being a Russian spy. He applies psychological torture, confronting her unexpectedly with her young son, convinced that she will break down and confess. But he is thwarted, the logical course of events does not unfold...

Neither does it in the gas attack. This is the feature in the real-life event which attracted the novelist's attention in the first place. It had a bizarre and wonderful outcome, such as only a pacifist writer (Romain Rolland) or a charismatic socialist leader (Jean Jaurès) could have dreamt. Fraternization occurred. In a manifestation of the universal brotherhood of man, in an "assault of pity," the German infantrymen carried on their shoulders back to their own lines all the gassed Russian survivors for medical treatment.

Haber in Biography

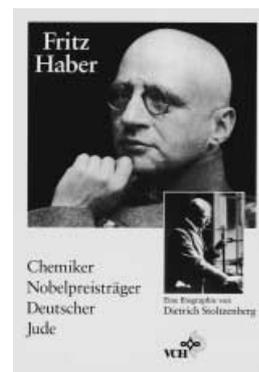
Three writers of talent and stature, three views of Haber, with some understanding, but none complimentary... "Could it be otherwise?" the cynical connoisseur of chemophobia will say.

The sweep and complexity of Fritz Haber's life is too great to be summarized here. And elements of it are familiar to our readers. Before attempting to answer the above cynic's question, let us look at some recent biographies of Haber, or of people close to him.^[7]

1

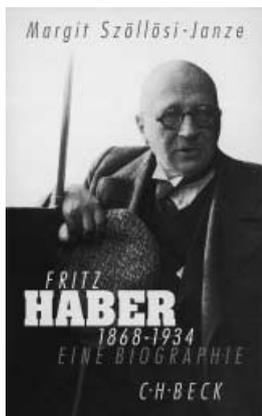
We owe the first authoritative biography of Haber published in German in 1994 (an abbreviated English version will soon appear),^[8] to Dietrich Stoltzenberg, the son of a Haber co-worker, a distinguished industrial chemist himself. Haber's chemistry is indeed authoritatively and exhaustively treated in Stoltzenberg's book, but that the author is a chemist does not mean that this is just a "scientific biography." The title of the book—*Fritz Haber: Chemist, Nobel Prize Laureate, German, Jew*—is apt, for it evokes the polarities in the physical chemist's life.

Stoltzenberg's meticulously researched biography contains some fascinating new material, for instance Haber's involvement in chemical-warfare research after World War I, carried out in secret, illegal experiments in which the German and Soviet military cooperated. In an indication of the book's success, German reviewers of very different ideological persuasion have used reviews of the book for their own purposes, while uniting in praise of Stoltzenberg's perception and moral tone.



2

Margit Szöllösi-Janze^[9] *Fritz Haber 1868–1934. Eine Biographie*, came out four years after Stoltzenberg's book, and draws first hand on many of the same sources. This excellent biography is especially assured when the author is dealing with contradictory sources, as in her account of Haber's conversion, or the death of his first wife. Both events are wrapped in legend. And even when the testimony of contemporaries is extant, that is colored by the normal human restructuring of memory. In the first case (the conversion) Szöllösi-Janze paints an authoritative canvas of varying attitudes toward acculturation, assimilation, and conversion in 19th



Century Germany. In the latter instance she insists on looking at the facts, and does not shy away from questioning unreliable accounts.

Both Szöllösi-Janze and Stoltzenberg are sensitive to the ideological climate of the times, the social responsibility of scientists, and the complexities of Haber as a person. These exemplary biographies, like Walter Moore's life of Schrödinger,^[10] or David Cassidy's life of Heisenberg,^[11] show that it is possible to write engagingly and in-depth of the science, the person, and the times.

3

There has also appeared recently an attractive account of just one episode in Haber's life, his futile search for gold in the sea in the aftermath of World War I. This is Ralf Hahn's *Gold aus dem Meer*.^[12] The complexity of Haber emerges even in the short time frame described. On the 14th of January, 1925, Fritz Haber writes to his co-worker Hans Eisner, (the father, incidentally, of a great neurobiologist and entomologist, Tom Eisner) from aboard a steamship somewhere between China and Indonesia:

"Today I have had the opportunity of crossing the equator for the second time. Which has drawn me to write to you, reviving the memory of our companionship. For you belong to the eleven people whom I've known in my 56 years with whom it is still a pleasure to think of traveling, even when the temperature is over 90° F.

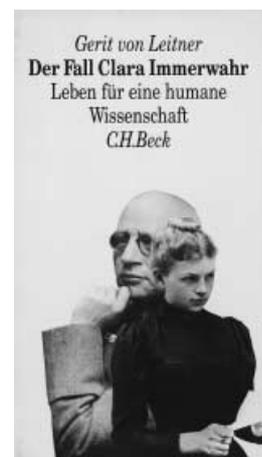
*The sky is hazy, the sea like glass
I feel but weary hate
for life and all striving.
A quick, cool, sound burial!*

In China I couldn't do anything about our gold project..."^[*]

4

Clara Haber, née Immerwahr, is the subject of a biography, *Der Fall Clara Immerwahr (The Case of Clara Immerwahr)*.^[13] vonLeitner's account evokes well the social background of

both Haber and Haber's wife, before they met, that of assimilated or converted Jewish German families (not without some analogy to the New Christians—Christian baptized Jews—in post 1492 Spain and Portugal). The author is also strong in describing the feminist work and the achievements of women's associations in Germany. She traces admiringly Clara Immerwahr's heroic struggle to carve for herself a career in chemistry. Hers was one of the first Ph.D.s granted to a woman in chemistry in Germany. This career she sacrificed for Fritz Haber. Willingly? Did he influence her to drop out?



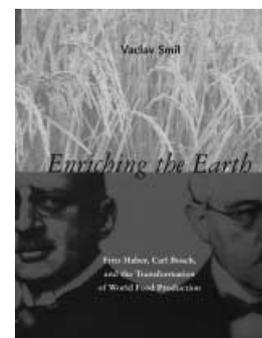
Haber himself is an evil presence in vonLeitner's book, who is indiscriminate in her rage against him. To her, ammonia is just an "environmental poison!" The biography falters as Clara Immerwahr's life moves to its tragic end, making much of what we know little. Fritz Haber concealed or even destroyed his wife's suicide note and other documents that would have shed light on a private drama. Not the only one, for Hermann Haber, Fritz and Clara's son, also committed suicide at a later time.

vonLeitner may have an obvious anti-Haber bias, but all the evidence shows Fritz Haber to have been unfeeling and unsupportive of his gifted first wife.

5

Vaclav Smil has recently published *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production*.^[14] This fascinating book, full of clear diagrams, is an encomium, detailed, reasoned and deserved, to the ammonia synthesis.

Wilhelm Ostwald carried out the initial research on the problem at the turn of the twentieth century. He applied in March 1900 for a patent for ammonia synthesis at elevated temperatures and pressures on an iron catalyst (!). But when Carl Bosch, at the time only 25 and at BASF already, checked the results, they were an artifact from hydrogenolysis of iron nitride. Henry Le Chate-



[*] *"Heute hat der Equator mir eine zweite ‚vorsichtige‘ Überschreitung gestattet und das Ereigniss drängt mich Ihnen im Gedächtnis der ersten zu schreiben, die durch die Reisegemeinschaft mit Ihnen mir in besonders angenehmer Erinnerung ist. Denn Sie gehören zu den elf Menschen die ich in 56 Jahren kennengelernt habe mit denen es oberhalb von 90° Fahrenheit noch ein Vergnügen bereitet zusammen zu reisen. Der Himmel ist dunstig, das Meer wie Glass
In meinem Gemüte ist müder Hass
Gegen das Leben und letztes Erstrebniß
Schnelles, kühles, gesundes Begräbniss!
Ich habe in China nichts in unserer Goldsache thun können;*

lier also attempted to synthesize ammonia, but an explosion destroyed his laboratory in 1901 and he dropped out of the field.

Fritz Haber got started on the problem consulting for a chemical company in Vienna. He brought to bear on it his unique, very broad training as a chemist. As Smil nicely puts it (p. 69) “*as he was not narrowly specialized, he was not easily deterred by a discouraging result.*” Nor by a prestigious senior scientist disparaging his contribution in no uncertain terms: when Walther Nernst heard of Haber’s first results at the Bunsen Society conference, held in Hamburg May 9–12, 1907, he termed them grossly inaccurate (*stark unrichtigen Zahlen*). Haber was naturally upset; he developed digestive and skin problems, and... went into overdrive. And prevailed. We will reluctantly leave the compelling story of how this was accomplished for this book, or the Stoltzenberg and Szöllösi-Janze biographies. The tale is full of superb science, the most ingenious technical skill, and personal drama. Just imagine the Reichsgericht patent claim hearing in Leipzig in 1912 in which Walther Nernst (a nice BASF honorarium could not have hurt) supports Haber patents against Ostwald’s counterclaim.

Actually, Smil’s book is really not a biography of Haber (nor Bosch). Nor does it pretend to be—Smil writes in a postscript “...*the lives of the two protagonists exited the story shortly after the commercialization of the ammonia synthesis.*” The book is a biography, not of men, but of the element nitrogen as it has, does, and will wend its way through the world.

Smil certainly knows whereof he writes—he has 15 books under his belt on global, agricultural, and environmental issues. Here he gives us an integrated account of the world’s preindustrial agriculture, and (in a broader view) of the great nitrogen cycles. Here’s a startling fact: in Europe and the US about 40% of the nitrogen atoms in our bodies have seen the inside of a Haber–Bosch process factory. In China, the figure is closer to two thirds. Need one more evidence of the enormous consequences of the ammonia synthesis for life on earth?

6

Fritz Stern, who understands the soul of Germany better, we think, than any other modern historian, has studied

Haber’s life, and written of it at least twice.^[15, 16] There is a family connection too—Stern’s father was Haber’s personal physician and friend.

Stern’s second essay is the centerpiece of his recent book, *Einstein’s German World*. It is entitled “Together and Apart: Fritz Haber and Albert Einstein.” Indeed it is a study of the two men, whose friendship was founded on great mutual respect and survived the most serious differences during World

War I. Even if Einstein and Haber remained on formal “Sie” terms in their letters, one cannot but feel the friendship of the two. Perhaps their unhappy marriages shaped part of a



bond, their mutual achievements in their respective fields another.

Stern sees Haber and Einstein as two extremes of the German Jews’ relationship with Germany. Their cultural roots and literary referents were deeply German. But in contrast to the great patriot, Haber, Einstein was always suspicious of the anti-Semitism lurking underneath. Fritz Stern’s analysis is truly thought-provoking—his writing is history at its best.

Representing a Human Being

From the biographies, we of course get a better overall picture of Haber. Not a consistent one, to be sure—what a long way between the vonLeitner caricature and Stern’s nuanced setting of Haber in the twentieth century! And biography is an art, too.^[17, 18] The secret to writing a successful biography is to find and espouse a systole–diastole rhythm, the same as friendship demands: oscillating between empathy and irony, to love and admire one’s subject but not to take him or her too seriously.

We urge our fellow chemists not to grow defensive about literary portrayals of our profession. Out there are all these fine writers, from Harrison to Stern. All are read, or not. Writers make choices, just as we do in our research. No writer of value is likely to be a carbon copy of us. Hochhuth had all the right in the world to write not of Haber’s electrochemistry but of an imagined conversation between Fritz and Clara Haber the night before her suicide. The reader and the world are in charge of striking balances, not a writer.

As individuals we make distressing emotional decisions, as part of the choices we all face. Haber’s life was full of these—from his conversion, to his struggles with Nernst, to his choice to direct gas-warfare efforts, to his difficulties with his wives, to his response to the first weeks of the Nazi regime. Haber’s life is the life of one German Jew in 20th century Germany. His drama is the stuff of life. And his life is drama.

G. Frenking, Marburg, Germany, a reviewer of our paper has written:

“...*not only in chemistry but in all other areas of science and general life such as arts, politics, and humanities, important figures of the past are portrayed as heroes, while people who did bad things are portrayed as evil. Although we know that all human beings have positive and negative sides, we tend to look at only one side when we describe people who did something outstanding. People like Haber, who excelled in two categories are often described with total blindness for one of the two sides. There seems to be a strong tendency to condemn a person, or to worship him, and it seems difficult to realize that sometimes people behave in both ways. We should learn, particularly we as scientists, to reach for understanding of the whole by considering all important aspects of a person’s actions.*”

This is well said. Portrayals (our own) of the leaders of our profession are too often unidimensional and uncritical. We would add that representation of scientists partakes of

features of representation in chemistry.^[19] The skills we draw upon in presenting molecular models, which are familiar to all of us, we ought to extend to human beings, when these sit, so-to-speak, as models for their portrait. It should not be forgotten, furthermore that what any representation produces is an image, not so much of the model, but of the very process by which it is being represented!

Representing molecules in our papers, representing human beings in our books, we indeed share a heritage with the visual arts. The portrait painter has a divided loyalty, to the person portrayed and to the public, in the widest sense. Some portrait painters held in very high regard during their lifetime (we are thinking of Philip de Laszlo (1869–1937), if their loyalty is only of the first kind, are forgotten in the shifting quicksands of time. Other portraitists, who did not shy from depicting their subjects almost as caricatures if need be—Dürer, the Holbeins, father and son, and Goya jump to mind—their work is for posterity.^[20] We feel that it is our duty, both as chain-reaction carriers for the chemical culture, and as teachers, to see and to portray the great chemical innovators, warts and all, as the complex human beings they were.

Context

Context has become one of the latest catchwords. Understandably, it is a rallying point where historians of science meet with sociologists of science. The downside is that context may become a smokescreen for relativism, and especially for moral relativism. Fritz Haber's tragic ordeal is an excellent illustration. Well-meaning people (including one of our reviewers) plead that he be assessed in context, that he not be judged from the standpoint of the post-Holocaust and post-Hiroshima present. We beg to differ. The context is sensitively set out in Fritz Stern's essay. And still Haber falls very much short, in our opinion. Though neither of us is a pacifist, we personally would find the same shortcoming in Hiram Maxim and the machine gun, Louis Fieser and napalm, and those who decided to drop the atomic bomb on both Hiroshima and Nagasaki.

Indeed, one might make a case for removing oneself from context as an excellent way to take a moral stand. Chamberlain, when he signed the Munich Agreement, was very much in context. Churchill removed himself from context.^[21] Closer to Fritz Haber, both Willstätter and Schlenk had no qualms stepping resolutely outside the context of Nazi Germany.^[22]

To step out of context is one way to enter history, true—often with terrible consequences to the individual who chooses this path. Neither Fritz Haber nor, at a later time, Werner Heisenberg had the sensitivity nor the courage to do so. Hence, it should come as no surprise if, in the judgment of history, they are seen as morally lacking—however outstanding their remarkable achievements as scientists.

What Can We Do?

How can we deal with the cruel and damning assimilation of chemistry as a whole, with Haber taken as an emblematic

figure? By refusing it as a stereotype of a science. By coming to peace, not sweeping under the carpet of "Oh, that's his personal life," with the neurotic elements very much evident in Haber's personality. As an individual. This is not an attempt to condemn Haber or to absolve him of his moral failings, but to accept him as a person.

Can we be allowed some admittedly crude psychological conjectures? Fritz Haber lost his mother when he was two days old. There had to have been an element of rejection from his father, perhaps holding the infant responsible, to some extent, in his mother's death. Such a surmise would appear to have been borne out, latter in life, by Haber's counter-rejection of his father, when he refused to take-up a position in the family business (Haber senior was a major importer into Germany of indigo dye) and when, very much against his father's wishes, Haber abjured his Jewishness and converted to Protestantism.

Young Fritz Haber was raised by a stepmother ten years older than himself, and by maids and governesses. Because he lacked the loving care of a mother during his young years, he may have made himself into a fortress, putting up what a psychiatrist might term massive defenses, and hyperintellectualizing from an early age the world and the people around him.

Not card-carrying analysts, we still reach for an understanding of a human being in his inner life. Maybe we're simplistic, but where else shall we look? And we know, that even if such an explanation were to make emotional sense, it would not excuse the instances of Haber's amoral to callous behavior, toward his wife or towards Germany's enemies...

To turn to another aspect of the story, has the issue of women in chemistry truly advanced that much since Clara Haber's time? Yes and no. There are recent eloquent stories, such as the belated recognition of Stephanie Kwolek for her invention of aramides (Kevlar) at DuPont. In the US nearly 30% of chemistry Ph.D.'s are women. But, with blatant exceptions such as Portugal, readily understood from the scant salaries of academics there, women to this day remain dramatically under-represented on chemistry faculties in Europe, Japan, and the Americas.^[23] Each one of us can make a difference, in that area as well.

Most of us are also teachers. We have to do better than the usual, traditional technical presentation of the ammonia synthesis, invoking it as a fine illustration of Le Chatelier's Principle. We have to talk also about Haber, the historical figure and the person. Fritz Stern does so beautifully; his essay should be assigned reading for that unit of introductory chemistry. If we have become beset and smothered with the stereotype of Haber as a re-enactment of Dr. Frankenstein's hubris, it is to a large extent because of our collective failure to present the great chemical innovators as fallible men and women, with their idiosyncrasies and with their full human depth.

We have in our science, in Haber, a figure worthy of Greek tragedy. Haber faced (and failed to face) questions that confront all of us. His choices and agony are a part of us.

What else can we do? Get involved. This is what Einstein did, speaking against injustice throughout the world. He did so consistently and forcefully. His involvement in all aspects of

public life was unstinting. And this in fact was Einstein's greatest achievement, when the flow of his science abated. He remains an example to all of us, even when we are not in the position where our views are solicited, as Einstein's (the mystical embodiment of wisdom in the 20th Century) were. We have an obligation as human beings to speak out.

- [1] We omit, for instance, one novel based on Haber's life: H. H. Wille, *Der Januskopf*, Buch Club 65, Berlin, 1970. A very readable account of the treatment of chemistry in the literature of the last century is "Die Chemie im Spiegel der Literatur des 20. Jahrhundert": Otto Krätz, *Chem. Unserer Zeit* 1991, 25, 44–50.
- [2] T. Harrison, *Square Rounds*, Faber and Faber, London, 1992.
- [3] R. Hochhuth, *Sommer 14: Ein Totentanz*, Rohwolt, Reinbek, 1989.
- [4] A. Malraux, *Œuvres complètes, Vol. 2*, Gallimard, Paris, 1996, pp. 617–815 (coll. La Pléiade).
- [5] Quoted in the translation by A. W. Fielding: A. Malraux, *The Walnut Trees of the Altenburg*, Howard Fertig, New York, 1989.
- [6] M. Wild, *Mes aventures dans le service secret, 1914–1918*, Payot, Lausanne, 1932.
- [7] We omit an earlier English language biography of Haber: M. Goran, *The Story of Fritz Haber*, University of Oklahoma, Norman, 1967.
- [8] D. Stoltzenberg, *Fritz Haber: Chemiker, Nobelpreisträger, Deutscher, Jude*, VCH, Weinheim, 1994.
- [9] M. Szöllösi-Janze, *Fritz Haber 1868–1934. Eine Biographie*, Beck, München, 1998.
- [10] W. J. Moore, *Schrödinger: Life and Thought*, Cambridge University Press, Cambridge, 1989.
- [11] D. C. Cassidy, *Uncertainty. The Life and Science of Werner Heisenberg*, W. H. Freeman, New York, 1992.
- [12] R. Hahn, *Gold aus dem Meer: Die Forschungen des Nobelpreisträgers Fritz Haber in den Jahren 1922–1927*, GNT-Verlag, Berlin, 1999.

- [13] G. von Leitner, *Der Fall Clara Immerwahr: Leben für eine humane Wissenschaft*, Beck, München, 1993.
- [14] V. Smil, *Enriching the Earth. Fritz Haber, Carl Bosch, and the Transformation of World Food Production*, MIT Press, Cambridge, MA, 2001.
- [15] F. Stern, *Dreams and Delusions: The Drama of German History*, Columbia University Press, New York, 1987.
- [16] F. Stern, *Einstein's German World: Essays in European History*, Princeton University Press, Princeton, pp. 60–164, 1999.
- [17] P. M. Kendall, *The Art of Biography*, George Allen and Unwin, London, 1965.
- [18] S. Schiff, *The American Scholar* 1999, 68, 51–60.
- [19] "Representation in Chemistry": R. Hoffmann, P. Laszlo. *Angew. Chem.* 1991, 103, 1–16; *Angew. Chem. Int. Ed. Engl.* 1991, 30, 1–16.
- [20] "L'acteur d'Harcourt": R. Barthes in *Mythologies*, Le Seuil, Paris, 1957 wrote a definitive indictment of hagiographic portraiture of the first kind.
- [21] "Winston Churchill" in I. Berlin, *The Proper Study of Mankind. An anthology of essays*, Farrar Straus Giroux, New York, 2000, pp. 605–627; this essay was first published in *The Atlantic Monthly*, 1949, 184, No. 3.
- [22] R. Willstätter, *Aus Meinem Leben*, Verlag Chemie, Weinheim, 1973; see also F. Litten, *Der Rücktritt Richard Willstätters 1924/25 und seine Hintergründe. Ein Münchener Universitätsskandal?*, Institut für Geschichte der Naturwissenschaften, Munich, 1999; "Wilhelm Schenk: The Man Behind the Flask": T. T. Tidwell, *Angew. Chem.* 2001, 113, 343–349; *Angew. Chem. Int. Ed. Engl.* 2001, 40, 331–337.
- [23] "A "Title IX" challenge to academic chemistry. Or, "Isn't a millennium of affirmative action for white men sufficient?": D. R. Rolison, *Women in the Chemical Workforce*, National Academy Press, Washington, DC, 2000, chap. 6, pp. 74–88; <http://cheminfo.chem.ou.edu/faculty/djn/diversity/rolison.html>.

The "Rocky" Road to Literary Fame: Marcel Proust and the Diamond Synthesis of Professor Moissan

Otto Krätz*

"Diamond: Many argue that it is nothing more than simply carbon. Someday man will even prepare it artificially! If a diamond were to be discovered in its original form one wouldn't even bother to pick it up." Gustave Flaubert, *Dictionary of Received Ideas*.^[1]

Introduction: Observations Regarding an Altogether Too Pleasant Place

It has been said about the French literary figure Charles-Augustin Sainte-Beuve that with his expression "tour d'ivoire"—ivory tower—he provided a label for the true abode of a great many intellectuals. In any event, the latter quickly adopted the new term, and with gratitude. Gustave Flaubert, in particular, never tired of extolling through vivid

images the fragility of this imaginary structure, threatened as it always is by the fierce storms within our world.^[2]

Chemists, too, have gladly sought refuge here. Far from the tumult of the evil world, behind protective ivory walls, it became fashionable to complain bitterly about the ingratitude of the masses in the face of the endless benefits conferred by chemistry. In this isolated state relatively little attention was directed to how often the reverse has applied as well. With surprising frequency chemists remained—and remain still today—unappreciative and too often utterly disinterested in the face of cultural and social consequences of their research. Admittedly, Henri Moissan's early death prevented him from reflecting deeply on cultural effects resulting from his fluorine chemistry, as well as his improvements in the recovery of the element chromium and the revolution in lighting technology attributable to acetylene. However, this still does not explain the astonishing fact that the consequences of Moissan's life's work have apparently never been examined by the chemical scientific community with respect to Art Nouveau interior design and the dramatic ascent of chromium, which has

[*] O. Krätz
Alter Berg 19
82319 Starnberg (Germany)