9 / *Last Days—Sweden, Great Britain, Norway: 1942–1947*

AFTER GOLDSCHMIDT ARRIVED in Stockholm on December 19, 1942 he was joined by the "distinguished lady" mentioned as his hostess by Hans Suess. She was Mrs. Sigrid Elena Grüner–Hegge (née Feinsilber), and had separated from her husband, who was Director of the Filharmonisk Selskaps (Philharmonic Society) orchestra in Oslo. I recall her as a very attractive and vivacious woman, about 30 years old. Goldschmidt introduced her as his fiancée, and proudly announced "Now I am going to get married and have a lot of Jewish children—that will make Hitler mad!" Goldschmidt's base while he was in Stockholm was the Mineralogical Institute of the university, so we saw quite a lot of him and his lady; my fellow students and I were naturally quite intrigued with the situation, since this appeared to be his first romantic association.

It was clearly a great relief to Goldschmidt to be in a neutral country and to enjoy the hospitality of his many friends. The university offered him a position as guest lecturer, and he planned a series of ten lectures describing his geochemical researches, to be given during the month of February, 1943. Only three were actually given; after the first lecture on February 3 he suffered an internal bleeding and was hospitalized in the Ersta Hospital for three weeks. He gave the second lecture on February 26 and the third on March 1. The series was terminated when he was flown from Sweden by the British authorities on March 3.

Goldschmidt could have remained in Sweden. The current holder of the chair of mineralogy at Uppsala University, Dr. Helge Backlund[1] had reached retirement age and the position was offered to him. However, he felt strongly that his duty lay with the Norwegian state, and that his knowledge of technical developments in Norway and the German interest therein would be of great value to the Allied cause.

Goldschmidt landed at a military airfield at Dyce, near Aberdeen (where I was to arrive the following August), at about 10:30 p.m. on

March 3. The next evening he was taken by train to London, thence to a school in south London, where he spent several days being debriefed; he commented that the school was very cold and drafty. After he was released, the Norwegian authorities arranged accomodation for him at the South Kensington Hotel, where he lived until he left for Aberdeen in August.

Goldschmidt's romance with Mrs. Grüner–Hegge eventually expired. She followed him to England and settled in London, where her brother, Dr. Johann Feinsilber, had a dental practice. They evidently saw rather little of each other after he moved to Aberdeen in August 1943. On November 5, 1943, he wrote to Percy Quensel, Professor of Mineralogy at the University of Stockholm:

> . . . . "Sis [her familiar name, BM] has got some work in London, I saw her only for some few days in August. Her application for a divorce cannot be granted before next summer, according to present Norwegian regulations. My family plans thus have to be postponed, a very great disappointment indeed. I have to thank you and other friends very much for all your kindness towards her" (translated from Norwegian).

When he received the Wollaston Medal from the Geological Society in 1944 he asked that she be invited to the ceremony, and wrote to Professor E. B. Bailey (March 3, 1944):

> . . . . "I have to thank you also very much for your great kindness to arrange the invitation of Sigrid Elena Grüner–Hegge to the lunch on March 15. I owe my escape and my life to her courage and determination."

Dr. Kathleen Lonsdale wrote to Goldschmidt on April 11, 1944:

> "Mrs. Grüner–Hegge had lunch with me at the Royal Institution today and I was glad to know that she hopes to go and stay with Mrs. Born later on. I am sure that she needs friendship very much. I was able to convince her that the Duke of Bedford's concern about the morality of regulation 18B,[2] a concern which is shared by all Friends [Quaker], does not mean that he—or any Friend—has any sympathy with the views of Mosley or the Fascists. If it can be arranged, I think she will now be willing to go and stay at his home after she has spent a little while with Mrs. Born. The friendliness of a large country house will be very refreshing to her, I think, but I do feel at the same time that she may, in the long run, be happier with her own people in Sweden than she is here."

Goldschmidt replied on April 15:

> "I have to thank you very much for your kind letter of April 11 and for all your kindness and helpfulness towards Mrs. Grüner–Hegge. I quite agree with you that she needs friendship and some

time of quiet and rest in a friendly atmosphere and I am very glad to learn that she is considering such an idea. Please let me know, if any financial assistance from my side could be helpful, for instance to cover the costs of her travelling. I am very much indebted to her for her most active help in making possible my escape from Norway, when she risked her own life to save a comparative stranger, as I then was. For that same reason I am not very inclined to recommend her return to Sweden during the war. In case Sweden is overrun by the Germans, Mrs. Grüner–Hegge may risk severe reprisals from the Germans for her assistance to me in 1942, when I left Norway."

By 1945 the romance was evidently over. In a letter to Dr. Felix Pincus, Monroe, Michigan, on February 2, 1945, he wrote:

"I have, for the moment, given up the idea of marrying. Or rather the lady inferred did it, as we did disagree in nearly all vital points and interests, which really again may have been one of the close shaves, presented to me by a friendly fate."

Mrs. Hedwig Born (wife of Professor Max Born, friends of Goldschmidt since the Göttingen days) may have expressed the appropriate epitaph when she wrote to him on July 18, 1946:

"I wonder whether you ever hear what role Sis is playing now. Perhaps she is back with her husband after all. I'm sure you can hear of her now without any stir of your heart! You had a happy escape, but on the other hand you owe her that you are now back in Oslo and not buried in Poland. In Sis I have a novelist's interest, she was the first of her species I came to know. Of course she has splendid qualities, nobody can deny that."

In 1953 Mrs. Grüner–Hegge married Aake Anker Ording, a Norwegian civil servant who also worked for the United Nations. She died in 1977.

Goldschmidt's months in London were extremely busy ones; in a memorandum dated July 26, 1943, he lists some 150 conferences in which he took part. Many of these were with Norwegian and British authorities on conditions in Norway, especially in regard to the German exploitation of raw materials and the production of heavy water; the latter was of particular interest because of its possible use in the fabrication of an atomic bomb. He attended conferences at the University of Cambridge, in Manchester, Sheffield, Edinburgh, and Aberdeen. On May 8, he lectured at the British Coal Utilization Research Association on the occurrence of rare elements in coal ashes. He was also concerned with his own business affairs, especially the utilization of his many patents on ceramics and refractories. His United States patents, from which he had received considerable royalties from the Harbison–Walker Refractories Company of Pittsburgh during the past ten years, had been sequestered by the Alien Property Cus-

todian, and he tried (without success until 1945) to have them returned to him.

There were some problems *vis–à–vis* his official position with the Norwegian government. He maintained he was still a university professor and should be paid accordingly. However, the Prime Minister of the government–in–exile, Johan Nygaardsvold, maintained that he had come to England at the request of the British authorities, not of the Norwegian government. The situation was resolved by the good offices of the British Agricultural Research Council; a letter dated August 7, 1943, from the secretary of the council reads as follows:

> "I am directed by the Agricultural Research Council to refer to informal consultations with Professor V. M. Goldschmidt, F.R.S., and Lieut. Fürst, and to seek the consent of the Royal Norwegian High Command to an arrangement whereby, for a period of six months in the first instance, Professor Goldschmidt would be permitted to devote about three–quarters of his time to soil investigations on behalf of the Agricultural Research Council at the Macaulay Soil Research Institute, Aberdeen, and at other centres. For their part the A.R.C. would be prepared to refund to the Royal Norwegian High Command three–quarters of Professor Goldschmidt's salary, which, it is understood, is approximately at the rate of £112 per month, and to meet his travelling or other special expenses in connection with the researches on which he would be engaged for them."

There is some evidence that this arrangement was devised to remove him from London and rusticate him in far–away Aberdeen. He apparently caused some concern by talking too freely about atomic energy developments. The possibility of making an atomic bomb, highly classified in the Allied countries, was freely discussed in scientific circles in Sweden, and articles on the subject had appeared in Swedish journals. When I mentioned this to scientific friends in England after my arrival there in 1943 I was told on no account to share my knowledge, little though it was, with anybody—the penalty might well have been internment.

Goldschmidt arrived at the Macaulay Institute on August 26. He was suffering from a recurrence of his medical problems, and spent six weeks in treatment at the Royal Infirmary. After his release, he worked intensively at the Macaulay Institute, partly on soil problems, but at the urging of the Director, Dr. W. G. Ogg, he devoted much of his time to writing his *magnum opus*, a comprehensive treatise on geochemistry. He also continued to travel extensively, giving invited lectures.

During this time he also received numerous honors. In May 1943 he was elected a Foreign Member of the Royal Society, and in January 1944 he was awarded the Wollaston Medal, the highest honor of the Geological Society of London. He particularly prized these awards,

since they had also been given to his teacher and friend, Professor Brøgger. At the presentation of the Wollaston Medal on March 15, 1944, the President of the Geological Society, Professor W. G. Fearnsides, spoke as follows:[3]

> Professor GOLDSCHMIDT: The Council of the Geological Society have this year awarded to you the Wollaston Medal, the highest token of appreciation it is within their power to bestow. The fields of your accomplishment are wide; they are concerned as much with crystal chemistry and geochemistry as with field petrology, and in each of them you have made outstanding contributions. Born in Zürich, you went as a boy to Kristiania, and through your University course and afterwards had the good fortune to work with that greatest of all Norwegian geologists, Professor W. C. Brøgger. By your 1911 monograph on contact metamorphism in the Kristiania region, you laid the foundations of systematic study of the mineral transformations which proceed under changing conditions of earth temperature and pressure. Your descriptions of the aureoles around the intrusive igneous complexes of that region are the first successful essays towards a systematic classification of rock–mineral associations in the light of the phase rule. Your investigations of the zonal metamorphism of igneous complexes among the crystalline schists of the Palaeozoic mountains of South Norway, completed during the following ten years, are not less important. What you discovered in the course of those genetic studies of rocks which had been foliated and recrystallized at high temperatures during the folding has inspired much recent work in the Scottish Highlands.
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> In 1917 you organized for the Norwegian Government a research committee to promote the use of the country's minerals as industrial raw materials, a service with which you maintained connexion during the following twenty–five years.
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> Since 1919 you have laboured unceasingly in laboratories, first at Oslo University, and then in geochemical research schools of your own founding, at Göttingen from 1929 to 1935, and then again at Oslo. As methods of analysis you have developed and applied quantitative optical and X–ray spectroscopy, and through a series of elaborate investigations of the chemical composition of rocks and minerals have revolutionized our knowledge of the distribution of the minor constituents of the crust of the earth.
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> The importance of your classic researches in measuring the ionic radii of most of the elements, and determining the crystal structure of long series of ionic compounds, was recognized by W. H. and W. L. Bragg, two of the most distinguished of British physicists, in the phrase, "the crystal chemistry of inorganic compounds has been built on the foundations which he laid". To us geologists also, your story of ionic structure as primarily determined

by the geometric packing of ions of those sizes which will fit, is fascinating. We have been thrilled by your demonstration that ionic charge and size can determine the partition of the rarer elements among the common elements at each successive stage of the geological cycle. You have made it clear to us that, as in igneous rocks, the rare earths and others of the less abundant elements entering the growing crystals have sieve-sorted themselves according to ionic size and bonding force, so in weathering and through all the processes of sedimentation the distribution of trace elements was ordered according to ionic potential, the ratio of ionic charge to ionic radius leaving the balance of the most soluble ionic compounds in the waters of the sea. Your attribution of the unexpected concentrations of such elements as boron and germanium, arsenic and bismuth in coal and humus, to biochemical processes is of much interest. Your comparative studies of the distribution of elements in furnace slags and meteorites and crustal rocks have brought us an entirely new conception of the earth's interior, and we have appreciated that in formulating principles of geochemical evolution of terrestrial matter you have made contributions of outstanding merit to the understanding of the mineral structure of the earth.

As a protest against the racial policy of the rulers of Germany you resigned the Professorship at Göttingen and, in August 1935, returned to Oslo where also you incurred the wrath of the Nazi invader. After a term of imprisonment and the concentration camp, and the confiscation of all your property, you were sentenced to immediate deportation to Poland.

You had been elected a Foreign Correspondent of the Society in 1923, and a Foreign Fellow in 1931, and we rejoiced to have you here in March last year. You have suffered to uphold the cause of knowledge and of freedom, and have well served the science of the earth. We salute you as a petrologist and geochemist and also as a distinguished representative of an allied nation.

Professor GOLDSCHMIDT replied:—

Mr. PRESIDENT: First of all, I wish to give expression to my feelings of appreciation for the highest award in the science of geology. In awarding me the Wollaston Medal, the Council of the Geological Society has placed me near my old teacher, colleague and friend, Waldemar Christopher Brøgger, who was not only the greatest geologist of Norway, but also one of the most righteous men I have met.

I consider the award to be an honour also to the five teachers to whom I owe my education in science—besides Brøgger, they were my father Heinrich Jacob Goldschmidt, the physico-chemist, Hans Henrik Reusch, the geologist, Thorstein Hallager Hiortdahl, who taught me crystallography and mineral analysis, and Friedrich Becke, at whose Institute in Vienna I studied petrographic optics

one autumn and winter. Both Brøgger and Becke were Wollaston Medallists, and, looking through the list of the awards of the Wollaston Medal, I find also my old friends Paul von Groth, Gerard de Geer, Albert Heim, and Alexander Evgenovich Fersman, the foremost organizer of geochemistry in the Soviet Union. In that great country, through the work of my friends Fersman, Vernadsky and other great scientists, the practical importance of geochemistry was recognized so early by the authorities that the Soviet Union could develop her industrial strength with the full weight of her powerful resources.

From my father and from my other teachers, and from many of my friends, I have not only received much scientific information and advice, invaluable as that has been to me, but they set me examples of still greater importance—never to consent, not even tacitly, to activities contrary to their fundamental ideas of the importance and dignity of science. Several times in my life—as I hope in faithful obedience to such principles—I found it my duty to resign my academic position as an ultimate protest against detrimental developments which I was unable to prevent; three times in my life, therefore, I had to organize and equip new laboratories, for a great part at my own expense, and to train new staffs for research in geochemistry. Speaking of the laboratories, I wish to express my gratitude and friendship to my assistants, research workers and students from a score of different nations, throughout thirty-three years.

Work on chemical geology and mineral chemistry is not a novel science in Norway. Besides the great Brøgger, we appreciate early work by his predecessor Theodor Kjerulf, by the mineral chemist Teodor Scheerer, as well as in more recent times by Johan Herman Lie Vogt, professor of metallurgy, whose application of physical chemistry to igneous rocks earned him the Wollaston Medal. Even in the first half of the nineteenth century, Kjerulf's predecessor, Balthazar Mathias Keilhau, the author of admirable geological maps, wondered about problems of metamorphosis and granitization, but paid little attention to chemical evidence, as do even some modern representatives of that line. Among the younger and youngest generations of Norwegian geologists, too, many lines of chemical geology are represented.

In the award of the Wollaston Medal to me, at an age decidedly below the average age of the previous medallists, I see encouragement for continuing my activities in that branch of science which I have tried to develop during the last quarter of a century, namely, modern geochemistry, based upon atomic physics and atomic chemistry.

It is a branch of science needing careful organization and, for experimental work, considerable means—means, much of which I have hitherto been able to earn through my own work in applied

science. The means for that work, however, were for a great part lost when, in 1942, Hitler and Quisling confiscated all my property in Germany and Norway, with such careful efficiency that not even the watch in my pocket or the wedding rings of my late parents were left to me. However, I feel fully confident that for a fourth time I shall be able to reorganize my research work on geochemistry.

One may wonder whether the new geochemistry is still a branch of geology or if it belongs rather to chemistry or even physics. I think it serves no useful purpose to construct strict lines of division, cutting through the unity of modern science. This prominent audience of geologists will agree with me that geology always has been, and still is, in a central position in the general development of pure and applied science. A few great and most important problems are the ultimate objects of modern scientific research. One of these great problems, the evolution of organisms, has been, and is, most intimately connected with geology through the work of your great Charles Darwin, who, in 1859, added new splendour to the Wollaston Medal.

Another fundamental problem, the composition, structure and distribution of matter, an object for modern geochemistry, is as closely connected with geology, even if it demands a kind of "combined operations" of geology with chemistry, physics and other branches of science. Already, too, we can visualize the work of geochemistry as being closely connected with astrophysics and nuclear physics, leading up to the final problem of the origin and evolution of matter itself.

After my experiences of the past years, and my escape from Norway, the generous hospitality of Swedish and British friends and British authorities has made it possible for me to recover my health, and such an award as the Wollaston Medal gives new strength and courage to my intention to continue a line of work which opens new aims and activities for pure and applied geology, as it has done for chemistry and physics.

Most sincere thanks I owe to Norway, where I had the privilege to live part of my boyhood, my student days and nearly all of my later life, in a free country. I wish especially to thank the Royal Norwegian Ministry of Commerce, which always, through a quarter of a century, has had understanding and generosity for my work, and which in 1935, on my return from Göttingen, anew gave me hospitality.

And, most respectfully, I bow my head for the fighting and suffering men and women of the Norwegian people.

In February 1944 the University of Aberdeen awarded him the honorary degree of Doctor of Laws, which was conferred on him at the annual graduation ceremony on June 29 (Plate 41). In 1945 he was elected an honorary member of the Chemical Society (of London).

In 1944 Dr. Ogg was appointed director of the Rothamsted Experimental Station at Harpenden, some 30 miles north of London, and he invited Goldschmidt to join him there at the expiration of his year's appointment at the Macaulay Institute. In July Goldschmidt was in Edinburgh conferring with his old friend Professor Max Born on the structure of water when he suffered a minor relapse and spent some time in a nursing home. Dr. Ogg wrote urging him to postpone his departure to Harpenden. Goldschmidt replied on July 21:

> . . . . "I have to thank you very much for your kind letter, suggesting a postponement of my journey. Please, allow me to disobey your most friendly urge. I have recovered excellently and I am now in a much better condition than for months. . . . I have not come to Britain for the purpose of resting in a nice nursing home, but, if possible, to do some useful work. And I hate the idea to be discouraged by any considerations to my health, which anyhow, now is quite satisfactory and up to any requirements."

So Goldschmidt proceeded to Harpenden and became a guest in the Ogg home. On the night of December 14, as Dr. Ogg was going to bed, he heard groans from Goldschmidt's room and found that he had suffered a severe heart attack while peacefully reading in bed. A doctor was rushed in and kept him alive with oxygen and injections. He then spent several weeks in hospital before moving to Miss Debenham's Nursing Home, which was to be his residence for his remaining time in England. He recovered sufficiently to be able to work on his book and manuscripts, and even to travel to London occasionally, but his doctor insisted on his living in the nursing home, where emergency treatment was available in case of another heart attack.

With the end of the war in Europe and the liberation of Norway in May 1945, Goldschmidt anxiously awaited news from Oslo. He wrote to Lester Strock in the United States on July 11:

> "I have the pleasant news, that all my instruments, scientific library, and notes have been rescued to the museum, but most of my other belongings, with some few exceptions have been looted irretrievably in the great pogrom, with the exception of some things which Miss Brendingen managed to get aside. I had the very good news indeed, that all my assistants at the Raw Materials Laboratory are alive and tolerably well. Some few, who have been imprisoned in Germany, are still ill, but recovering. My assistants at that laboratory have behaved most courageously, and are doing excellent work the whole time. Also from the Ministry of Commerce I received most friendly and encouraging letters. From the University authorities and from the University people at the museum I have not received a single word yet, nor any reply to my letters. Mr. Kvalheim, in my absence was made deputy director of the Raw Materials Laboratory, by the

> Ministry of Commerce, the most excellent choice, I think. From Stenvik and Kvalheim I had some very nice letters, and from some few other friends in Norway" (original English).

Among the letters he received was one from his old friend George de Hevesy, who escaped with his family from Denmark to Sweden in 1943 and was working at the Research Institute for Organic Chemistry and Biochemistry of the University of Stockholm (dated May 19, 1945):

> "Dear Friend Goldschmidt, what a pleasure to hear from you! I was much worried to hear recently that you were in indifferent health and it is with greatest pleasure I am reading that you are in full vigour again and engaged in writing your Geochemistry to which I—and many others—are looking forward with so much pleasure to read. I was deeply touched that you sent me and my wife your congratulations at the occasion of the liberation of Denmark. . . . I fully understand that Ogg wishes you to stay at Rothamsted after the war, but I very seriously hope, in the interest of Norway and of Scandinavia, that you will return to Oslo. How could Norway be without you!" (original English).

Hevesy's hopes for Goldschmidt were evidently not shared by a considerable faction within the University of Oslo, among them Professor Barth. When Goldschmidt did hear from the University authorities, it was an evasive letter that failed to answer whether or not he retained his professorship. He was given leave from the university until March 31, 1946, to complete his scientific and technical commitments in Great Britain.

Worse was to come. On February 26, 1946, he met with Professors Halvor Solberg[4] and Egil Hylleraas[5] from the University of Oslo at his club, the Society of Visiting Scientists, in London. To his surprise, Professor Solberg (Dean of the science faculty), in the presence of Norwegian and British scientists, upbraided him as a deserter, in that he had left Norway in December, 1942, without informing him and Rector Hoel, thereby endangering their lives as possible hostages. In March, he received an official document from the university with the following accusations:

1. He left Norway to save his own life, and thereby endangered the lives of his colleagues.
2. He had reported Professor Barth's relationship with the German Nazi, Dr. Noack, to the Allied authorities in London, thereby injuring his reputation as a loyal Norwegian.
3. In a private letter to a Swedish colleague he had compared Barth unfavorably to Gulbrand Lunde, the Quisling Minister of Propaganda.

Since no action was taken against either Solberg or Hoel after Goldschmidt's escape to Sweden, the first accusation can perhaps be

dismissed. The second accusation was probably directed at the wrong person. The relationship between Barth and Noack was reported to the British authorities by Dr. Felix Singer, who acted as Goldschmidt's patent agent in England and was staying with him in Oslo in May 1939, at the time of the proposed sub–letting of Barth's apartment to Dr. Noack. The third accusation concerns a letter Goldschmidt wrote to Professor Hans Ahlmann of the University of Stockholm on September 16, 1945, in which he compared Barth to Lunde unfavorably "both as a man and a scientist." It is not clear how this letter reached the university authorities, whether it was forwarded by Ahlmann or in some other way. In his reply to this accusation Goldschmidt withdrew his comparison of Barth and Lunde claiming, naively, that the comparison was not intended to relate to their politics.

When Goldschmidt returned to Norway he considered taking legal action against his accusers for defamation of character, but was dissuaded by his lawyer, Mr. Gunnar Mellbye.

Goldschmidt was determined to return to Norway, despite attractive offers of positions in Britain, an invitation to return to his professorship in Göttingen, and a request from the Chinese government for him to organize raw materials research in that country. Continued ill health delayed his return. On February 1, 1946 he was able to regain his apartment at Holmendammenterrasse 25; Miss Brendingen moved in and was able to recover much of his furniture. He had booked a flight to Oslo at the beginning of April, but was not fit enough to travel. He finally flew back on June 26. Kvalheim described his return:

> "He came by air to Gardermoen, direct from his sick bed in England. Friends who had come to meet him hardly recognised him. They remembered him as a robust and hearty person, but now he was only a shadow of his former self. He was stooped, hollow–cheeked, and had dark circles under deeply sunken eyes. His friends saw clearly that he was a very sick man. But he retained his old–time "gallows humour." He greeted his friends by saying "Dont be upset if I become dark blue or black in the face, just give me one of these pills" (translated from Norwegian).

Immediately after his return to Oslo he was hospitalized for three weeks, but then returned to his positions as Director of the Geological Museum and of the Raw Materials Laboratory. Professor Barth had accepted a professorship at the University of Chicago and left for the United States in August; he remained there until 1949, when he returned to Norway to assume the directorship of the museum. Goldschmidt was warmly welcomed back by the staff of the Raw Materials Laboratory and some (but not all) of the museum staff.

During the summer his health improved somewhat, probably due in part to the ministrations of Miss Brendingen, who was an excellent cook and provided him with what he regarded as a gourmet dish,

grilled whale steak! Among his visitors was his distinguished research student and old friend Professor Zachariasen. When the university year began in the autumn he lectured regularly to his students. However, the improvement in his health was only temporary. In October he noted a black spot on his leg; it proved to be malignant and required surgery. The carcinoma could not be completely removed, and further operations were performed. Nevertheless, he continued working on his book, directing scientific and industrial research, and corresponding with friends, especially Paul Rosbaud, who had moved to England from Germany after the war. In February 1947, he was invited to be a guest of the Chemical Society at an International Chemical Conference to be held in London July 17–24, 1947, and to be Chairman of Section 1 (Inorganic and Geochemistry). He accepted, and proposed to give two lectures, "The Principles of Modern Geochemistry" to Section 1, and "Forsterite and Olivine as Refractories" to Section 11.

It was not to be. On March 15 he wrote what may have been his last letter, appropriately enough to his long–time friend Paul Rosbaud:

> "I have to thank you very much for your kind letter of March 7th, just with a few lines, as I am in some hurry because of an impending operation again. Many thanks for having sent me the excellent photostat copy of Jensens new publication in *Naturwissenschaften.* I am hard at work on the *Geochemistry.* My heart has been very much improved by the euphillin treatment, which now can be effectuated by os instead by anus or by intravenous injection. But my Nr 1 cancer leg has been disimproving recently. I shall have my sixth operation this winter, to cauterize the affected region under narcosis. Well, I think the heart will stand up to it, I have found it really shock proof this winter, as compared to its resistivity just a year ago, which was not quite sufficient. Anyhow, the wise principles of M.K. [Morris Katz] are guiding and protecting me. So I am going to the Radium Hospital on Monday, after having given my weekly Mineralogy lectures Monday morning. I hope you and your family are quite well. Please note your expenses for me on scientific literature, so that I can regulate matters.
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> Best greetings from Miss Brendingen and also from Miss Jenny, whom I occasionally see.
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> Here we have had a very frosty winter, the cold being nearly continually about 20 centidegrees below [−20°C]. And nearly no snow. Recently the ice along the South Coast has been broken by a Northerly gale so that supplies again reach Oslo by sea. The fauna has been much enriched by wolfs which are considered to be Russian ones, even if nobody has spoken with them nor examined their passports, if they had any. One of them proceeded to Denmark on the Kattegat ice. I'm wondering whether we can expect wolf cutlets at Messrs. Jensens or Lorentzens.[6] Bear anyhow is not too bad (if it isn't an old and hoary individual), but silver

foxes (which I have eaten in Sweden) can not be much recommended.

Well, I am glad to get operated now, because the present condition of the number one leg is rather unpleasant and the pain keeps me awake at night. The number two leg behaves very nicely, indeed'' (original English).

The operation was a minor one and he returned home on March 20. Later that day he complained of a sudden intense pain in his head and died almost immediately of a cerebral hemorrhage.

As he had arranged, his body was cremated; his ashes were placed in a sealed metal envelope and deposited in the green olivine urn he had provided. The urn with the ashes was placed in the columbarium of the Western Crematorium in Oslo, but owing to space restrictions, his ashes, together with those of his father and mother, were buried in May 1986 in the graveyard on which the crematorium is located. The urn is preserved at the Geological Museum, together with those of his parents (Plate 43).