

WHEN GOLDSCHMIDT TOGETHER with his father and Miss Brendingen, returned to Oslo on September 9, 1935, he was practically penniless. He was permitted to take his household furniture, his scientific library, and some of his instruments from Germany, but was limited to 60 Reichsmarks in cash. His bank accounts were frozen, and his house and other real property sequestered. Later, part of his money was transferred to Norway as a result of an outspoken letter from his successor at Göttingen, Dr. F. K. Drescher-Kaden, to the President of the Reichsbank, Dr. Hjalmar Schacht; his house and all his other property were confiscated without compensation. Fortunately, his work on the development of olivine refractories was bearing fruit; from 1935 the Harbison-Walker Co. of Pittsburgh paid him \$2000 a year for the rights to his United States and Canadian patents.

His longtime assistant at the Raw Materials Laboratory, Kristoffer Stenvik, had arranged temporary accomodation for Goldschmidt and his father; Miss Brendingen went to live with her brother. It was not until early 1936 that he, his father, and Miss Brendingen were able to re-establish their household in the upper floor of a large house<sup>1</sup> in the suburb of Holmenkollen, with a magnificent view of the city and fjord (Plate 31).

He received many letters from friends and colleagues welcoming his return to Norway, including one from his old student, Tom. Barth, who was working at that time in the Geophysical Laboratory of the Carnegie Institution of Washington. In a letter dated October 30, 1935, Barth wrote:

“From Zachariasen I have learned that you have now returned to Oslo, and he relayed your friendly greetings to me, which I greatly appreciate. Some days ago I also received a letter from Saeland<sup>2</sup> informing me that it is finally arranged with the Commerce Department that I shall receive 300 kr. per month in addition to my docent salary. I know of course that already a year ago you recommended me warmly to the Commerce Department, and advised

me to establish a connection with raw materials investigations in Norway; now that this has been arranged, I am aware that it is largely due to your recommendation, and believe me when I say how much I appreciate your help. I know that it is my wife's and my parents' greatest desire that I return to Norway, even though I know that conditions will be very different to those I have enjoyed in this country; however, thanks to the Commerce Department's stipend we will be reasonably placed economically, and I have good possibilities to obtain research funds. In addition, I understand that the docent position is probably transitional, and I can hope for promotion to professor in the near future.

From Saeland's letter I understand that you are now engaged in raw materials work, and that possibly I will have the opportunity of cooperating with you. This would please me greatly—it would be a great experience to work with you again" (translated from Norwegian).

Unfortunately, as will be seen, these hopes for friendly cooperation were not to be realized.

During the Göttingen years Goldschmidt had continued as an advisor to the Raw Materials Laboratory, and on his return the Commerce Department reinstated him as Director and he moved into his old quarters at the Geological Museum—much to the astonishment of the Rector of the University, who learned it first from the newspapers. Fortunately, Dr. Jakob Schetelig,<sup>3</sup> who in 1917 had succeeded W. C. Brøgger as Professor of Mineralogy and Petrology and director of the Geological Museum, died on October 17, 1935, after a long illness. The position was declared vacant, Goldschmidt applied for it, and was duly appointed in March 1936.

The previous years had been marked, in Norway as in the rest of the world, by economic depression. The university suffered, student numbers in geology dwindled almost to zero, and the upkeep of the Geological Museum had been seriously neglected. Goldschmidt attacked these problems with gusto. He obtained government funds for the rehabilitation of the museum and his laboratories. He installed the scientific equipment which he had been able to bring from Göttingen, and purchased more, some with his own funds. In particular, he arranged for his Göttingen colleague, Dr. Mannkopff, to construct new spectrographs for him, and to come to Oslo in November and December 1936 and install them. Student numbers increased in 1936 and in the following years, and research activities in the museum took a new lease on life. Besides his university work, Goldschmidt devoted much time and effort to the development of olivine refractories, for which he held patents both in European countries and North America, and from which he received considerable royalties.

The Barth family returned to Oslo from the United States in February 1936, and Goldschmidt arranged for them to rent the ground

floor of the Holmenkollen house. However, it was not long before friction arose between the two men. Barth has written the following account of his initial conflict with Goldschmidt:<sup>4</sup>

“One day at the end of October 1936, Professor Goldschmidt rang my doorbell at 7.50 a.m. and immediately asked why, without consulting him, I had applied for money for the investigation of the utilization of different rock types for road metal. I answered that I had never thought he was interested in research on road metal, that the application was urgent and left no time for such a conference, and it was a problem that had interested me for more than 15 years, so it was nothing new on my part.

Goldschmidt, however, would not accept my explanation, and accused me of going behind his back. For example, I had—also without asking him—during the past summer made geological studies in Jotunheimen, which was his old area, and he could not accept that I stole it from him. In addition, I had associated with his enemies, Saeland and Holtedahl.<sup>5</sup> Holtedahl had stolen the Alunsjø area from him while he was in Göttingen.

He further forbade me to cooperate or confer with Dr. Arne Bugge<sup>6</sup> or Dr. C. Bugge<sup>7</sup> in my office at Tøyen. If he saw any of them come he would order the watchman not to admit them.

Finally he said that I would have to choose between him and Holtedahl and Saeland.

There was thus open enmity between Goldschmidt and me for a time. To put an end to this, a week or two later I went up to him at Tøyen and said that I felt it was unfortunate that he had taken umbrage in this way, but added that he must understand that he could not control with whom I should associate. He replied that he was not interested. I then asked if he would retract what he had said about Saeland and Holtedahl. This he would not do, and said that I would soon learn the true nature of these gentlemen. I answered that he must understand that I could still be loyal to him even if I associated with Saeland and Holtedahl. Nevertheless, he insisted that I would have to choose between him and Holtedahl and Saeland” (translated from Norwegian).

Barth felt short-changed in the amount and quality of the quarters he was allotted in the museum, whereas Goldschmidt claimed that he was more than generous in meeting Barth's requests. At this time the university was developing a new campus at Blindern, on what was then a farm on the northern outskirts of Oslo. The first building, for physics and chemistry was completed in 1934. Some space in this building was made available for the geology courses. In 1937 Barth was appointed Professor of Crystallography and Petrology, and the Mineralogical Institute, which had been in limbo after Goldschmidt went to Germany in 1929, was reactivated with Barth as Director and was established on the new campus.

At Christmas 1936 the Goldschmidt household was completed by the acquisition of a cocker spaniel, "Highland Bob," to replace the dachshund Bazi which had been left behind in Göttingen. Goldschmidt presented Highland Bob to his father, as a companion for his daily walks. Highland Bob was a pedigree dog, winning prizes at Oslo Kennel Club shows and sought out for stud purposes (fee 75 kroner) (Plates 33, 36).

In January 1937 Goldschmidt was hospitalized for two weeks with nephritis. He made a good recovery, but the kidney trouble was to recur and plague him in his later years. In March, he spent a week in London at the invitation of the Chemical Society, to deliver the seventh Hugo Müller Lecture, *The Principles of Distribution of Chemical Elements in Minerals and Rocks*. The published paper<sup>8</sup> is a lucid summary of the geochemical work of Goldschmidt and his co-workers during the previous fifteen years, and the best available exposition in English prior to the publication of his book *Geochemistry* in 1954. At this time he completed the manuscript of the ninth part of the *Geochemische Verteilungsgesetze der Elemente*, entitled *Die Mengenverhältnisse der Elemente und der Atom-Arten*. It was submitted for publication in May and was published in March 1938.

Goldschmidt referred to it as his "Ninth Symphony." In it he critically reviewed all the available data on the abundances of the chemical elements, mostly from the Göttingen institute but including some from other sources. He provided three summary tables: abundances of the chemical elements in igneous rocks, in meteorites, and in the solar atmosphere. From a combination of meteoritic and solar data, he arrived at a table of cosmic abundances (Fig. 14). The significant features may be summed up as follows:

1. The abundances show a rapid exponential decrease for elements of lower atomic number (to about atomic number 30), followed by an almost constant value for the heavier elements.
2. Elements of even atomic number are more abundant than those of odd atomic number on either side (the Oddo–Harkins rule). It had been clearly recognized in the case of the rare earth elements by Goldschmidt and Thomassen in 1924.
3. Only 10 elements—H, He, C, N, O, Ne, Mg, Si, S, and Fe—all with atomic numbers less than 27—show appreciable abundance; of these, hydrogen and helium far outweigh the other eight.
4. There is a pronounced abundance peak at atomic number 26 (Fe) and smaller peaks at several other heavier atomic numbers.
5. Elements 3, 4, and 5—Li, Be, B—show remarkably low abundances; this had been noted by Goldschmidt already in 1926<sup>9</sup> and ascribed to a probable instability of their nuclei, which was later confirmed.

Goldschmidt realized that elemental abundances were linked to properties of the nuclear structure. The nucleus of an atom can be

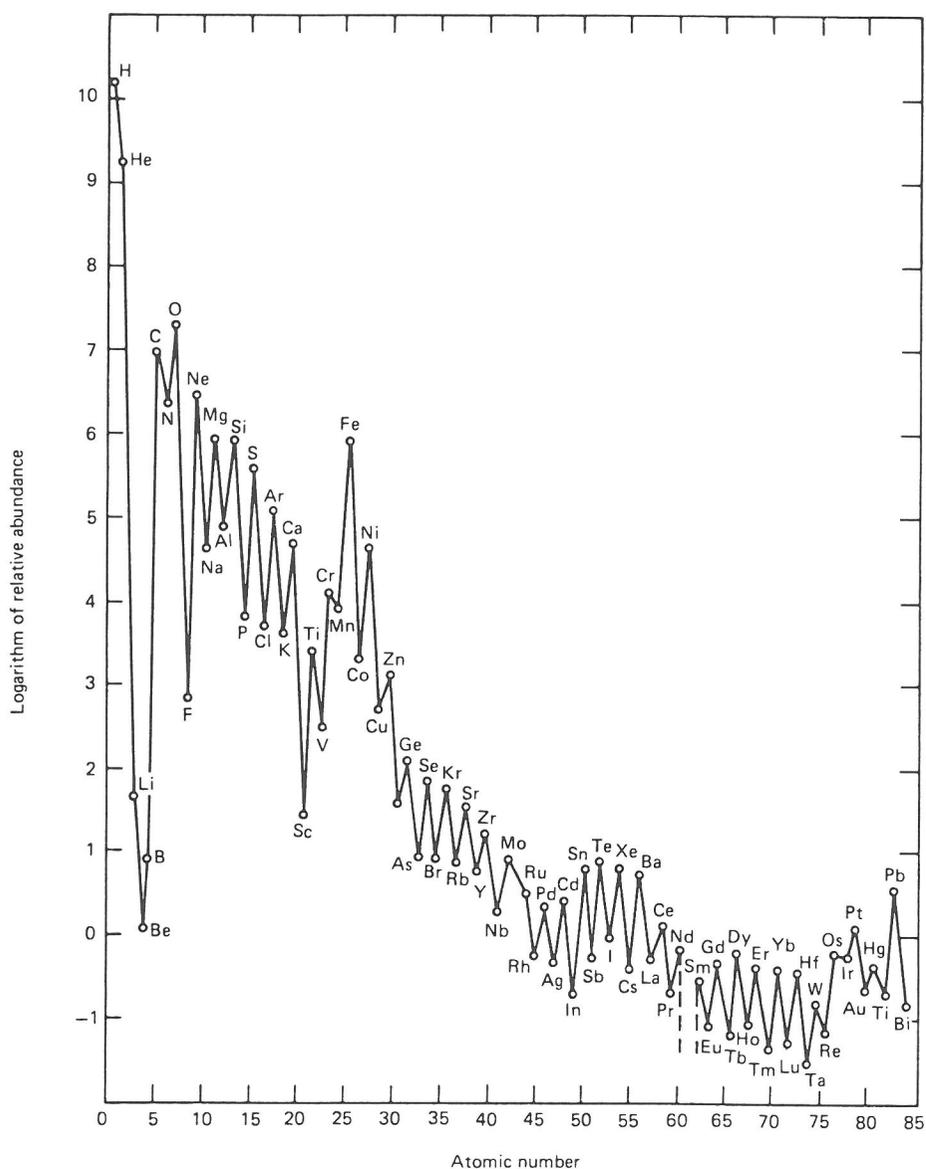


FIG. 14. Relative abundances of the elements, normalized to Si =  $10^6$  atoms, plotted against atomic number (after Goldschmidt, *Geochemische Verteilungsgesetze der Elemente IX*, p. 117, 1938).

considered as made up of positively charged protons ( $Z$ ) and uncharged neutrons ( $N$ ), each of unit mass. An element is characterized by its proton number, equal to the atomic number. Individual elements have a fixed number of protons in the nucleus, but may have a variable number of neutrons—specific nuclei with different numbers of neutrons are known as isotopes. Goldschmidt noted that certain neutron num-

bers had unusual abundances; these were 30 (the most abundant isotopes of Mn, Fe, and Ni); 50 (the most abundant isotopes of Sr, Y, and Zr); 82 (the most abundant isotopes of Ba, La, Ce, Pr, and Nd); and 108 (the most abundant isotopes of Hf and Ta). He realized that these must be nuclei of unusual stability, and this reflected the processes by which complex nuclei have been formed from primary particles, presumably in the interiors of stars and supernovas.

Goldschmidt's cosmic abundances table has been the basis of subsequent theories of atomic structure and the origin of the elements. It provided the foundation for two subsequent Nobel prizes in physics: (1) to Eugene Wigner (who coined the term "magic numbers" for these unusually abundant nuclei), Maria Goeppert Meyer, and Hans Jensen in 1963 for their theory of nuclear shell structure, in which the magic numbers are those for which specific nuclear shells are fully occupied; and (2) to William Fowler in 1983 for the theoretical and experimental studies of the nuclear reactions which determined the formation and abundance of the chemical elements in the universe.

In his "Ninth Symphony" Goldschmidt speculated briefly on the possible existence of trans-uranium elements, i.e., those with atomic numbers greater than 92. He had actually demonstrated his remarkable prescience in this regard some years earlier, in an invited paper to a Russian conference held on February 8, 1934, to commemorate the centenary of the birth of D. I. Mendeleev; the contributions to this meeting were not published until 1937.<sup>10</sup> In his paper he speculated on the chemical properties of the trans-uranium elements, and he argued from theories of atomic structure that they would belong to an analogous series to the lanthanides, which he termed the thorides, after thorium (element 90). They are now known as the *actinides*, after actinium (element 89), the first member of the series. He predicted that these elements would have a principal valency of four, and secondary valencies of three and five. He theorized that their ions would show a contraction with increasing atomic number similar to the lanthanide contraction. From his previous determinations of the ionic radii of thorium and uranium ( $\text{Th}^{4+}$  1.10Å,  $\text{U}^{4+}$  1.05Å), he estimated the radii of the quadrivalent ions of the trans-uranium elements, as follows:

AN	93	94	95	96	97	98
<i>r</i>	1.03Å	1.01Å	0.99Å	0.98Å	0.96Å	0.94Å

In a remarkable confirmation of his predictions, the values subsequently determined for these elements are:

AN	93	94	95	96	97	98
<i>r</i>	1.01	1.00	0.99	0.99	0.97	0.96Å

After the identification of neptunium (93) and plutonium (94) at the University of California in Berkeley in 1940, Goldschmidt returned to this subject and in January 1942 he published a short paper in

Norwegian pointing out how his prophesies regarding the chemistry of these elements had been confirmed.<sup>11</sup>

Goldschmidt was an omnivorous reader, or perhaps I should say scanner of the chemical and geological literature. I recall seeing him peruse the latest issue of *Chemical Abstracts*, running his finger rapidly down the columns, pausing only occasionally to mark or note an abstract for further study. And he had a unique capacity to retain and recall this information. An interesting example is his correspondence with H. F. Harwood<sup>12</sup> and Arthur Holmes<sup>13</sup> regarding their publication *The Volcanic Area of Bufumbira*, a 300-page monograph published in 1937 by the Geological Survey of Uganda (Memoir 3). Writing to Harwood on September 29, 1937, Goldschmidt commented:

“I am sorry to inform you that I consider some of the spectrographic data on page 52 to be considerably wrong. Especially I wish to draw your attention to the fact that your spectrographist reports scandium to be absent, that is said to be less than 0.0001%. From my own work on the geochemistry of scandium I can confidentially tell you that such rocks as the six rocks given in the table on page 52 *must* contain considerable amounts of scandium. The amount of scandium must certainly be at least about 5 times larger than the upper limit given in your table, probably in the pyroxenites even 50–100 times larger than your upper limit. Now, I am rather sorry that the laws of geochemistry seem to be violated by the results in your book. May I make the following proposition to you, which I think to be a fair one? I propose a wager on this matter: I am betting two guineas for each of the six rocks, that they contain appreciable amounts of scandium, at least 0.001% of  $\text{Sc}_2\text{O}_3$ . For each of these rocks, which contains not so much  $\text{Sc}_2\text{O}_3$ , I am apt to pay two guineas, if I lose. For each of the rocks, which contains as much as 0.001%  $\text{Sc}_2\text{O}_3$  or more, I propose that you or your co-workers pay the same amount per rock. The total amount collected jointly may be given to a very good cause, that is the Society for the Protection of Science and Learning (formerly Academic Assistance Council), 6 Gordon Square, London WC 1” (original English).

Harwood referred this letter to his co-author, and Holmes replied on October 11, 1937:

“I have received from Harwood a copy of your letter to him, with the suggestion that I should write to you on the point at issue. Your challenge is a beautiful illustration of the common belief that all the English are very wealthy! It also implies that we doubt the validity of what you say. Like Harwood, I am quite prepared to accept your judgement, particularly as you point out that the information on the subject was published only in 1936. Dr. Hitchen did the work for me in 1934, and could not be expected to obtain

results that required a specialized technique not then known to him. Dr. Hitchen is now in Kenya Colony and can therefore take only an academic interest in the problem for the present. Since the problem is evidently of unusual interest to you, I expect you would be glad to settle the matter for your own satisfaction by direct tests. If so, please let me know and I shall be happy to send you small samples of the rocks tested by Hitchen."

Goldschmidt replied on October 19, 1937:

"May I at first be allowed to settle a slight misunderstanding? I had never the opinion that all the Englishmen are wealthy, but I had the opinion that the excellent scientists of your country have usually a very firm belief in the correctness of the numerical data given in their own publications. As to the technique of Mr. Hitchen I wish also to set right your belief. The most convenient technique of making scandium determinations by means of spectrography has been published by me in 1931 in *Nachrichten der Gesellschaft der Wissenschaften zu Goettingen*, p. 257–279, a publication available for instance at the excellent library of the Geological Society, London. . . . Perhaps I may mention that not only the data on scandium in your memoir are entirely wrong, but several of the other spectrographic data of the same table seem to be somewhat unbelievable. Of course, one might consider that it does not matter much if incorrect data on geochemical topics are introduced in geological descriptions of remote territories, but what I fear is the danger that an accumulation of unbelievable spectrographical data may bring the excellent methods of analytical spectrography into disrepute. Therefore, I consider it necessary to have these data corrected, and I am glad to accept your offer to let me get some small samples of the six rocks involved."

Holmes sent these samples to Goldschmidt, who reported as follows:<sup>14</sup>

"These (samples) were spectrographically analysed in my laboratory in Oslo by L. W. Strock and A. Kvalheim and have the normal amount of scandium for such rocks, up to 80g/ton  $\text{Sc}_2\text{O}_3$  in the pyroxenites and up to 5g/ton in the kimberlite."

An example of Goldschmidt's capacity to take offence where none was intended is the case of Harry Berman. Berman was assistant to Professor Charles Palache (1869–1954), Director of the Harvard Mineralogical Museum. He was a visiting researcher at Göttingen from September 1932 to April 1933, working with Goldschmidt and other colleagues on the geochemistry of the alkali metals. On his departure Goldschmidt wrote to Palache, whom he knew from a visit to Norway in the summer of 1924: "(Berman) is a clever man, especially he is a very good connoisseur of minerals and mineral paragenesis." This

favorable evaluation changed abruptly after Berman published “The Constitution and Classification of the Natural Silicates” (*Am. Mineral.*, vol. 22, p. 342–408, 1937). Goldschmidt wrote to Professor Linus Pauling as follows (July 6, 1937):<sup>15</sup>

“Some time ago I have read in the May issue of the *American Mineralogist* a so-called classification of the silicates by a Mr. Berman of Harvard University. As I understand from some American colleagues that the article is probably intended to be the basis of the chapter on silicates in the forthcoming new edition of Dana’s hitherto very well renowned handbook of mineralogy, I dare to direct your attention to the matter.

I really very seldom have seen a general article on structures being based on so much half understanding and with so many haphazard conjectures, and with so much ignorance concerning the really important work on silicates.

Might it not eventually be worth while to direct the attention of the responsible editors of Dana’s handbook to this matter? It is a matter of importance that so important a matter as the structure and classification of silicates must be presented by some competent person.

Another most astonishing feature of that article is that the author begins his story by telling that no one ever has made an attempt to classify all silicates on the base of structural theory. He seems not to be aware of the monograph of E. Schiebold, published 1932–33 in *Ergebnisse der exacten Naturwissenschaften*, vol. XI and XII. Even though Schiebold’s work is not a masterpiece, it is manyfold better than Berman’s.

I have met Berman 1932–33 at Goettingen, and I think he is not quite the personage to be entrusted with such literary work which demands very thorough scientific knowledge and intelligent judgment” (original English).

Goldschmidt wrote to Pauling rather than directly to Palache, presumably because Pauling was the leading American authority on silicate structures. Pauling forwarded the letter to Palache with the comment

“The article by Berman seems to me to be unsatisfactory in several respects although not quite so bad as Professor Goldschmidt suggests. . . . The article does not give a satisfactory idea regarding the historical development of our modern understanding of silicate structure. For example, in the section beginning on page 345 on “Results of the X-ray Analyses of Silicate Structures,” the reference given is to Bragg, 1930, with no mention of the investigators who formulated these principles.”

This I think is the key to Goldschmidt’s displeasure. He was extremely sensitive to any lack of appreciation of his own work or that

of his colleagues. Since both he and Pauling had been in the forefront of crystal structure work in the 1920's, it was natural for him to turn to Pauling for support in this matter.

Palache replied to both Goldschmidt and Pauling in letters dated August 25, 1937. To Goldschmidt he wrote:<sup>15</sup>

"I cannot but wonder whether you fully realize the main purpose of this paper. As a mineralogist you surely believe in the attempt to classify minerals, and your own work has contributed so conspicuously to the understanding of mineral groups that I know you must be in sympathy with any attempt to improve classification. I am sending you a copy of my reply to Dr. Pauling's letter in which I have attempted to give the point of view of the editors of the new edition of Dana. Not having heard from you directly, I do not know how much of this will meet your objections to Dr. Berman's work. I cannot believe, however, that he is 'ignorant concerning the really important works on silicates.' This work was the fruit of extremely careful study of all existing modern silicate analyses and its results were discussed very fully with Dr. Warren whose work in the field of silicate structure is, as you know, authoritative. It had Dr. Warren's full approval."

As a last word on this matter I may quote from C. S. Hurlbut's memorial to Harry Berman<sup>16</sup>:

"His doctoral thesis on the constitution and classification of the natural silicates was based on the meager structural data in the early thirties. A large percentage of the silicates studied since that time have been found to fall in the exact place in the classification in which he placed them, thus showing his vision and proving that the system was well grounded."

Lester Strock, who had returned to the United States from Göttingen in November 1935, rejoined Goldschmidt in Oslo in May 1937, accompanied by his wife and year-old daughter, and stayed until December 1938. Goldschmidt entrusted him with the task of setting up an optical spectroscopy analytical facility similar to that in Göttingen, and in training assistants. One of these was Aslak Kvalheim,<sup>17</sup> appointed as chemist in the Raw Materials Laboratory in October 1937; he became a close friend and associate of Goldschmidt and directed the laboratory after Goldschmidt's escape to Sweden in December 1942.

Throughout his life Strock remained a devoted disciple of Goldschmidt. Whenever we met we would indulge in nostalgic recollections of our days in his institute. In 1972, The Geochemical Society instituted the Goldschmidt Medal as its premier award and Strock endowed it with a monetary stipend.

Goldschmidt's father Heinrich died suddenly of a heart attack on September 20, 1937, a few weeks before his eightieth birthday. It

was a personal tragedy for Goldschmidt, since he had always been close to his father, and they had lived together throughout his life. Paul Rosbaud wrote:<sup>18</sup>

“I went to stay with him shortly after his father’s death. He had aged, his health had deteriorated, and he was embittered and tired. But he went on with his scientific and his relief work with almost inexhaustible energy. He spent more than he could afford in helping other people and managed to bring an aged aunt and a niece—still a child—from Germany to Oslo, and the niece from there to the U.S.A. He still enjoyed his food and an occasional drink and he maintained his old-fashioned courtesy. His humor had become more whimsical, more grim, and sometimes even caustic. I remember one day when I asked him to come with me to take some flowers to the crematorium as a tribute to his parents. We stood reverently in front of the urns, all made of beautiful green Norwegian olivine, two with the ashes of his parents and a third, empty and destined to hold his own, and finally V. M. remarked dryly: “Ja, Ja, the whole family in magnesium orthosilicate.”<sup>19</sup>

The aged aunt was Mrs. Greta Koehne, the widow of the brother of Goldschmidt’s mother. In 1938 she was living in Berlin, and he was able to obtain a Norwegian residence permit for her. She arrived in Oslo in January 1939 and lived with him until her death in November 1940. The niece was actually a grandniece, Erika Elisabeth Sarah Schulhof, born in Vienna on December 28, 1928; she was the daughter of Dr. Friedrich Anton Schulhof, the son of a sister of Goldschmidt’s father. Through Goldschmidt’s efforts she was able to leave Vienna for Norway in May 1939, and from there to Scotland, where she was educated at a convent in Aberdeen. Goldschmidt saw her often during his stay in Aberdeen in 1943–44, and they corresponded frequently until his death. After World War II she emigrated to the United States, where she had an aunt, Mrs. Marie Treuer, in Yellow Springs, Ohio. Her parents were deported to Poland in the autumn of 1941 and presumably perished.

Goldschmidt was also instrumental in obtaining a Norwegian entry permit for a cousin of his mother, the widow Stephanie Hirsch (born October 10, 1875) from Berlin. She came to Norway in January 1940 to await a visa for the United States, where her son, Dr. Felix Hirsch, was librarian at Bard College at Annandale-on-Hudson, New York. Because of the war Mrs. Hirsch was unable to proceed to the United States and she lived at Lillehammer, a country town about 100 miles north of Oslo, on money sent her by her son. After the United States entered the war the American payments were suspended, and Goldschmidt supported her financially. After the Jewish persecution began in 1942 he wrote to her several times, telling her to contact him if problems arose. On November 28, 1940 he received a postcard from her, saying that she was being sent from Lillehammer,

saying goodbye and thanking him for his help. The postcard was presumably sent on Thursday morning, November 27, 1940 shortly before her departure. She was sent to Oslo by train on that morning, arrived in Oslo about 2 p.m., and with other Jewish prisoners taken directly to the harbor and shipped to Poland on the prison ship "Donau," which left at 3 p.m. She was never heard from again.

On January 27, 1938, Goldschmidt had his fiftieth birthday, entering what was to be the last decade of his life. He made some typical comments in a letter to a friend in Göttingen:

"You will be interested to know that my fiftieth birthday was celebrated with much greater fuss than I had expected. I was visited at my home by distinguished delegations—from the university, led by the dean, from the Geological Survey, the presidents of the Geological Society and the Mining Engineers Association, a high official from the Ministry of Commerce, together with museum staff and students. And the newspapers and technical journals published the finest obituaries. I felt like the Emperor Charles V, who witnessed his own burial service" (translated from German).

In the same letter he comments on his working habits:

"I work from 7.30 in the morning often to 2 a.m. the next day, with only a few minutes for meals, weekdays and Sundays, on my university responsibilities, on my industrial interests, and in the preparation of manuscripts."

And on a visitor:

"The day after tomorrow I expect an out-of-town guest. Our university will have a large honorary graduation ceremony, and one of the honorary doctors will stay with me, a colleague from Helsingfors who in his youth did some of his most renowned work with me." (This was Professor Pentti Eskola.)

In 1938 Goldschmidt proposed his old student, Gulbrand Lunde, who was then Director of the Canning Industry Laboratory in Stavanger, for membership in the Videnskaps-Akademi (the Norwegian equivalent of the Royal Society). This was opposed by Barth, who cast doubt on the originality of some of Lunde's scientific work. Lunde successfully refuted these objections, and was duly elected, but the incident added to the growing hostility between Goldschmidt and Barth. The summer of 1939 saw a complete break between the two men. Barth had arranged to spend some months at the Geophysical Laboratory in Washington, D.C., starting on September 1. Barth proposed to sublet his half of the Holmenkollen house to a German diplomat, Dr. Ulrich Noack. Noack was a historian engaged in writing a book on Norway and Nordic history, and was attached to the cultural section of the German legation in Oslo. He was a member of NSDAP, the German Nazi party. Goldschmidt was furious that Barth would

invite a German official to occupy part of the house. The situation was resolved by Goldschmidt agreeing to pay Barth's share of the rent during his absence.

In 1938, Goldschmidt acquired a small but remarkable piece of real estate, the islet of Låven in Langesundsfjord. Langesundsfjord is a large inlet on the west side of the Oslofjord, famous to mineralogists the world over for its nepheline syenite pegmatites and their wealth of rare minerals, some of them unique to this region. In 1890, Brøgger published a classic 898-page monograph (it was the complete vol. 16 of the *Zeitschrift für Kristallographie*) on the region, with descriptions of 73 minerals, many of them new to science. Goldschmidt visited the region in 1910 in the company of Brøgger and Paul von Groth, the foremost crystallographer of that time, and returned again and again with parties of students and foreign scientists. Låven is only 60 meters long and less than 10 meters high, barren of vegetation, but contains many of the minerals for which the region is famous. In 1937, the Christiania Minekompani, which owned the island but never exploited it, offered it to the university for 1500 kroner (about \$500), but the university was unable or unwilling to buy it. Goldschmidt bought it to preserve it and as an honor to his old teacher. In 1940, he transferred it to the Naturfredningsforeningen (the Norwegian Conservation Society).

In his deed of gift he wrote:<sup>20</sup>

"It is my wish with this gift to preserve for all time the renowned mineral occurrences on the island in their present condition. They may therefore not be disturbed. However, the right to take minerals for scientific use is reserved to me and to future directors of the Geological Museum."

The privilege of collecting minerals on Låven was extended to a group of mineralogists, including myself, in an excursion organized by the International Geological Congress in 1960, and led by Dr. Henrich Neumann, the then Curator of the Museum.

After Goldschmidt returned to Norway in 1935 he received a letter from Zachariasen, now Professor of Physics at the University of Chicago, who expressed a keen desire to return to a position in Norway. Goldschmidt encouraged him and actively explored the possibilities, not only in Norway but also in the other Scandinavian countries. For a time there was a possibility of a physics professorship in Bergen, but this came to nothing. It is interesting to speculate on the potential result had Zachariasen returned to Norway at that time, since he played a vital role in the Manhattan Project in the elucidation of the crystal chemistry of the trans-uranium elements.

There was an extensive correspondence between Goldschmidt and Zachariasen between 1936 and 1939. On February 5, 1939 Goldschmidt wrote as follows:

“I am now host to a 70-year old aunt from Berlin, because of conditions in Germany. I work hard to bring relatives and friends from Central Europa, about half my time goes to correspondence on these matters. . . . Last year, on a bet from four young ladies, I lost 16 kg. Unfortunately, during the winter, because of good Christmas food, I gained most of it back, and have now begun a new reducing treatment. I always feel better when I am a little thinner” (translated from Norwegian).

The Zachariasen family and the Thomassen family visited Norway in the summer of 1939, which pleased Goldschmidt greatly. He was clearly much taken with Zachariasen’s young son Frederik. Another visitor that fateful summer was Professor Lark–Horowitz of Purdue University, with an invitation to him to be a guest lecturer at that university in the spring of 1940, another American invitation that was to be nullified by political events. After the outbreak of war on September 1, the Zachariasens and the Thomassens left for the United States on the first available steamer.

When the U.S.S.R. attacked Finland on November 30, 1939, Goldschmidt wrote to his old friend, Professor Pentti Eskola:

“Dear friend, The dreadful attack on your land and city distresses me greatly, and I am anxious to know of the situation of you and your family. Here in my home we speak daily of you, and I sincerely hope that you have it as well as can be expected under present conditions. I write to remind you that I stand ready to help you in any way. If you consider the possibility of sending your wife and daughter abroad, they will always be very welcome as my guests. If your country’s fate should be so cruel that you yourself consider coming to Norway, you are always welcome, both in my home and my institute, and it will be a pleasure and an honor to do anything for you, if there is anything you need that I can send you, just let me know.

I greatly admire the Finnish people’s heroic defence against the aggressors, and I only regret that I, an old and pacific person, cannot give more active expression of my feelings and desires.

My housekeeper is also full of concern for you and your family, and also the chauffeur of the hotel limousine asked me yesterday if I had heard from you; both send their warmest regards and best wishes” (translated from Norwegian).

Professor Brøgger, Goldschmidt’s esteemed teacher and oldest friend, and one of Norway’s greatest scientists, died on February 17, 1940, in his eightyninth year, mercifully spared the spectacle of the German invasion of his beloved homeland. His funeral service in the University Aula (assembly hall) was held in the presence of the King and Crown Prince and a large gathering of scientists and other dignitaries from the Scandinavian countries. At a memorial meeting of

the Videnskaps-Akademi on March 8, Goldschmidt spoke at length on Brøgger's contributions to mineralogy and petrology.<sup>21</sup>

His longtime friend, George de Hevesy from Copenhagen, spent a week as his house guest at the end of February and the beginning of March, during which time Hevesy gave an invited lecture at the Videnskaps-Akademi, *Isotopernes Anvendelse i Biologien* (The use of isotopes in biology), a subject for which he received the Nobel Prize in Chemistry for 1943.

Tom. Barth returned to Oslo from the Geophysical Laboratory on April 1, 1940, on the last ship from the United States before the German invasion. On Monday, April 8, it was announced that the British had laid mines in Norwegian territorial waters, to hinder the use of coastal waters by German ships carrying iron ore from Narvik to Germany. The Norwegian parliament was called into special session. In the excitement, few took note of a radio statement that afternoon that a ship had been sunk by a submarine off the south coast of Norway and that drowned horses and uniformed German soldiers were washing ashore. That evening I enjoyed a movie and a late supper with a friend, before taking the last train back to the student hostel at Blindern. As I was walking from the station just after midnight, the air raid sirens sounded. I thought nothing of it at the time (it was customary to test the sirens from time to time) and went to bed, to be awakened at dawn by one of my fellow students and dragged to the window to see German warplanes flying freely over the city.

King Haakon and the Norwegian government left Oslo on the morning of April 9. On the same evening, Vidkun Quisling proclaimed himself chief of state and his Nasjonal Samling (NS) party the ruling political party. This aroused such opposition that the German military authorities dismissed him after a few days. However, thanks to the German Reichscommisar for Norway, Josef Terboven, the NS steadily gained influence with the German civil administration. Opposition grew steadily, and on May 15, 1941, 43 organizations, including the university teachers, sent a letter to Terboven protesting illegal acts of the NS and the occupation authorities. Terboven replied on June 18 by calling representatives of the 43 organizations to a meeting in his headquarters, denouncing them, arresting several on the spot, and declaring some of the organizations dissolved. On September 11, 1941 the elected Rector of the University, Dr. Seip,<sup>22</sup> was dismissed and imprisoned, and Dr. Adolf Hoel,<sup>23</sup> a member of the NS, appointed in his place.

These developments had little immediate effect on Goldschmidt. He considered it his duty to continue to serve the university and the state to the best of his ability. He stepped up the work of the Raw Materials Laboratory, especially the utilization of low-grade phosphate deposits in the Fen area as a source of phosphate fertilizer. He also wrote Part X of his *Geochemische Verteilungsgesetze der Elemente*

titled *Über die Verteilung einige Elemente in Meteoriten* (with Aslak Kvalheim as co-author); it was submitted to the Videnskaps-Akademi on May 24, 1940, but never published. He then began work on Part XI; in a letter to Assar Hadding (September 25, 1941) he wrote: "I now have material ready for Part XI of the geochemical series, and I hope that both Parts X and XI will be published within the next year." It was not to be.

In June 1940 his house at Holmenkollen was commandeered by the Germans, and he moved, with his aunt and Miss Brendingen, to an apartment at Holmendamenterrasse 25 in the suburb of Smestad. His aunt died of cancer in November 1940.

Dr. Nils H. Houge has provided an interesting account of Goldschmidt's private life during the critical years of 1941–1942:<sup>24</sup>

"When you visited Professor Goldschmidt in 1940 he had a house in Holmenkollen. Later on in 1940 he rented the ground floor of a newly built two-family house below Holmenkollen hill. In January 1941 I bought this house from the builder who lived on the second floor, and on the condition that I could move into the ground floor which had access to the garden. I was at that time a medical student, and Professor Goldschmidt was, as one can understand, not too pleased to have to give way, but he agreed to move upstairs, where he installed himself with his housekeeper, Miss Marie Brendigen, and a maid, and where he had three offices for his different activities. I am happy to say that the relationship developed in a positive way. We had a German anti-aircraft battery not far away, and when it was active we all took shelter in the basement, which also brought us closer.

My wife and I had at that time a son, born 1938, and a daughter, born 1941, and Professor Goldschmidt took a great liking to the children. Our son, then three years old, had free access to go upstairs, where Professor Goldschmidt put his work aside and played with him, as by putting chairs in a row on which he placed the boy, the housekeeper and the maid and he himself being the conductor of the "train." We also played "air raids," in which everybody in the flat had to hide under tables while Goldschmidt went around banging blown-up paper bags.

I remember standing in the garden with him and looking at the children at play. He then said: "Dr. Houge, you are a lucky man." I answered that he too, as a famous scientist, had much to be pleased about. His answer was: "I can tell you one thing. Sometimes I regret that I never went out and drank beer with my fellow students." So everything has its price.

When the Jews in February 1942 had to register with the Nazi authorities his aunt, a sweet old lady who lived at Lillehammer, was transported to Germany together with others of the 1500 Jews in Norway. She was never heard of again. Goldschmidt himself

believed that the authorities needed him as a scientist and therefore would not permit his arrest. He told me that he had been called in by the Gestapo, but was set free when he produced a document, signed by Goebbels and one of the other Nazi leaders, and in which he in 1935 was allowed to resign as professor in Göttingen. In spite of this he was arrested in October 1942. Miss Brendigen immediately informed his lawyer, Dagfinn Dahl, now deceased, who mobilized the university and got him free. He was arrested again in November 1942 and was standing on the quay in the second row of Jews to be shipped with the prisoner-ship "Donau." When the first row was marched on board he was called up and released. By now he understood that his luck was running out. A few days later he came to me and said in his correct Norwegian, but with a German accent which he never lost: "Dr. Houge, I have a terrible cough. Do you think that you could give me something for that cough?" I promised that I should get him some tablets. He then added: "I cough quite a lot, so if you could give me plenty of tablets," which I promised him. And not surprisingly he disappeared a few days later. When he returned from England to Norway in 1947 he told me that he would be transported towards Sweden hiding in a waggon of hay, and that he expected there would be children in the consignment who might give them away if they coughed. He told me that there had been about 20 persons, grown-ups and children alike, so his foresight came in useful. When he returned from England in 1947, he was clearly marked by his condition—insufficiency of the heart—which also led to his death which took place here in his home" (original English).

The political situation in Norway changed much for the worse in January 1942. Reichscommisar Terboven instituted an NS government led by Quisling, with Gulbrand Lunde as Minister of Propaganda. All Jews were required to fill out a questionnaire detailing their ancestors back to their grandparents, and their identity cards were stamped with a large "J". Goldschmidt wrote a memorandum, dated March 5, 1942, regarding this:

"In accordance with the decree of January 20 I sent my identity card to the University Secretariat on February 12 with the following declaration. I have no documents regarding the religion of my four grandparents. I have good grounds for believing that at least two of my grandparents were not members of the Jewish religious community, at least in later life. I am not now a member of the Jewish religious community, but from February 1933 to August 1935 I enrolled in the Jewish community in Göttingen; my father enrolled at the same time. My mother was never a member of the Jewish religious community" (translated from Norwegian).

Hans Suess,<sup>25</sup> then at the University of Hamburg, visited Goldschmidt in the spring of 1942, and writes as follows:<sup>26</sup>

“When in 1942 I was sent to Norway for the first time by the German military, supposedly as a consultant for heavy water production, I was anxious to visit Professor Goldschmidt, who for many years had been corresponding with my father in Vienna. I found him planting potatoes with his assistant Dr. Ramberg in front of a large building that housed his Mineralogical Institute. To me he appeared amazingly confident about the future. He said the “Nazi spook” would soon disappear and a new German government would negotiate peace with the allies. I suggested that, in any case, it would be safer for him to go to Sweden and if possible to England.”

That he was not really so optimistic can be seen from a story told by Paul Rosbaud.<sup>27</sup> During the occupation of Norway Goldschmidt carried a capsule of poison in his pocket for emergency use. On one occasion a university colleague asked him for a similar capsule. “This poison,” he answered, “is for professors of chemistry only. You, as professor of mechanics, will have to use the rope.” This was his typical grim humor.

In March 1942 Quisling decreed all Jews in Norway to be illegal immigrants, an ominous pretext for ultimate deportation. As a possible protection, Goldschmidt obtained a statement from his physician, Dr. R. Hatlehol, as follows:

“Professor Dr. V. M. Goldschmidt has since 1939 been under my care for high blood pressure and chronic kidney trouble with the formation of stones. He also suffers from heart disease. He must maintain a strict diet and avoid physical exertion. His condition has required two periods of hospitalization, in 1937 from January 14–27 diagnosed as nephritis chronica, vitium organicum cordis, and again from March 6 to April 11, 1942” (translated from Norwegian).

The protection was illusory. On October 25, two policemen came to his home with an order for his arrest and the confiscation of his property, allowed him to pack some warm clothing, and took him to Bredtvedt prison in Oslo. The following day he was transferred to the Berg concentration camp near Tønsberg, 50 miles south of Oslo. Coincidentally, Gulbrand Lunde, who might have protected Goldschmidt, died in an accident on October 25. He was travelling with his wife in his official Mercedes; it was being loaded on a ferry near Ålesund on the west coast when the craft moved forward and the car and its passengers sank to the bottom of the fjord.

Goldschmidt was clearly a sick man, and the camp physician, Dr. Jervell, had him transferred to the County Hospital in Tønsberg. There he met two other Jewish prisoners, Moses Katz, an orthodox Jew and a hosiery peddler, and Lesser Rosenblum, socialist, atheist, and manufacturer of umbrella handles. Goldschmidt suggested that they

should remember the names of their oppressors, so that any survivors could exact retribution. The reply of the pious Moses Katz was a surprise: "Revenge is not for us; that must be left to the Almighty." Goldschmidt asked what prayers would be permissible to God from men in their position. Katz replied without hesitating a moment: "You may pray that the hearts of your enemies may be enlightened." Goldschmidt, unconvinced, turned to the atheist Rosenblum and asked for his view. His reply was equally unexpected: "We must break the evil circle of retribution, or there can never be an end to evil."<sup>27</sup> This experience affected him deeply. Shortly before his death he wrote to Paul Rosbaud:

"The wisdom of the Moses Katz principles is undeniable. . . . And I am fully convinced that it is my duty towards science and decency to stand firm in continuing my work as long as health permits, thus giving an example to at least some of my junior colleagues. Often I think that (to maintain these principles) to be even more important than my contributions to scientific and industrial research and my scientific teaching. To set a new standard of morality is a matter of great urgency in these times" (original English).

Moses Katz and Lesser Rosenblum were deported to Poland and died in the Auschwitz concentration camp.

Goldschmidt gave the following account of his release:

"While I was a prisoner in the hospital at Tønsberg, I was visited by my housekeeper, Miss Brendingen, and my secretary, Miss Else Høeg-Omdal, who informed me that the university had begun an action to release me. Miss Brendingen said that a serious point for my release was a demand that I should promise not to leave the country. I replied that I would have to agree to this. But the promise was never demanded of me, either orally or in writing, and I later learned that my release resulted from the actions of the Ministry of Agriculture, and was not linked to any promise from my side. Release was approved November 5, based on my work on Norwegian raw materials, especially the provision of phosphate fertilizer, being of vital importance. I was released on November 7 and returned to Oslo the following day. On November 9 I returned to my work at the university and the Raw Materials Laboratory" (translated from Norwegian).

His release was celebrated at the museum by a small gathering of his colleagues and a toast in cognac, drunk from laboratory beakers. It was no ordinary cognac; the label showed that it came from Roald Amundsen's South Pole expedition of 1910–12!

The reprieve was temporary. Goldschmidt's account continues:

"Quite unexpectedly a policeman came to my apartment on the morning of November 26 to arrest me. Since I was then at the

museum, he came there and arrested me. I told him that I had been released from Berg concentration camp in order to carry out vital work for the state and showed him my release letter of November 7, but he replied that this had no significance. He took me to my apartment in a taxi, told me to pack a suitcase with necessary clothes, a blanket, food for four days, and family mementos such as photographs. The policeman was at first rather gruff, but later he became polite. I should note that while I was packing I received a telephone call from a lawyer, Helge Skjerve, who said he had been appointed receiver of my property. I told him I was not permitted to speak with him, as the police forbade any telephone conversations.

I was taken to police headquarters at Henrik Ibsens gate 7, where my name was recorded. I was able to telephone the Commerce Department and report the interruption of my work. With other prisoners I was taken by taxi to Bredtvedt prison, where we were registered, our baggage checked, and taken to a new barracks with 14 beds in our room. We were served an evening meal of bread, butter, and tea, and the next morning a similar breakfast. Around 9 a.m. each of us was asked if we were married to a Norwegian woman. I said no, I am unmarried, and we were transported in two small gray busses to the Norwegian–America Line pier, where lay the 9000-ton transport “Donau” from Bremen.

We were lined up in rows of three; I was in the second row. At 10:50 the same policeman who had arrested me called out for Victor Moritz Goldschmidt. When I replied he told me that I was free to go home. He said he was pleased to be able to do this. I told him I had no money to return home, since my money and ration cards had been taken from me when I was registered at the prison. He then requisitioned at police expense a taxi for me. As I was driven from the pier a German soldier asked to see a pass. I had none, but he was satisfied with my “J” stamped identity card. I went home and continued my work at the museum.

On Sunday, November 30 I was visited by the lawyer Skjerve, who said he found it meaningless that my property had been confiscated, and that he would try to have it released. He asked for a written account of my civil service work, and this I sent him on December 1” (translated from Norwegian).

Goldschmidt believed that his release had been engineered by the university authorities, but this may be only partly true. Aslak Kvalheim recalls that when the news of Goldschmidt’s impending deportation reached the museum on the morning of November 27, an instrument maker, Ole Nielsen, said “Now it is my turn to do something.” Nielsen had been a colleague in the Norwegian Army with a Major Marthinsen, who now headed the Quisling police. Nielsen went to police headquarters and obtained a meeting with Mar-

thinsen, who informed him that, in spite of appeals from the university authorities, no action would be taken to free Goldschmidt. When Nielsen explained the importance of Goldschmidt's work on fertilizers for food production in Norway, Marthinsen became interested and asked whether anyone else could continue this work. Nielsen denied this, whereupon Marthinsen phoned the Agriculture Ministry, evidently confirmed Nielsen's statement, and issued the order for Goldschmidt's release.

After his second release Goldschmidt commented:

"I continued with my work and tried my best to get my instruments returned, because their confiscation made impossible the work of the Raw Materials Laboratory and much of the instruction of my students. On December 13 the electricity meter in my apartment was read "on account of my bankruptcy," from which I concluded that my apartment would soon be confiscated" (translated from Norwegian).

Hans Suess visited Goldschmidt in mid-December 1942, and gives the following account:<sup>28</sup>

"When Hans Jensen and I arrived, a table was covered with all kinds of delicatessen, and Goldschmidt said: "Help yourself; this was all confiscated by the Gestapo. Eat as much as you like." A distinguished lady was acting as hostess. A severe anxiety got hold of me, a sinister fear that I had not felt since, for the first time, I had heard of mass murders and genocide about a year before. Jensen and I tried to convince Goldschmidt by all means to leave Norway and escape to neutral Sweden, but he said he did not wish to leave his post as a University Professor and scientist. At the very last minute, when we left, the lady asked: "Do you ever get to Berlin? Then please try to get in touch with Mrs. Furtwängler (the wife of the symphonic conductor Wilhelm Furtwängler) and tell her about the situation." And Goldschmidt said "Wenn ich nun doch in den sauren Apfel beissen sollte. . . ." (If I should now have to bite into the sour apple [to leave Norway], then give my regards to all our friends.)"

On December 18 Goldschmidt was picked up by the Norwegian resistance movement and transported to Sweden. The movement was very active in rescuing Norwegian Jews, and succeeded in sending some 1100 to Sweden; of 760 sent to Poland only 24 survived to return to Norway after the war.

Goldschmidt gave the following description of his last day in Oslo:

"On December 18 I made a last effort to obtain the release of my scientific equipment. I arranged with Professor Solberg (dean of the science faculty) to meet with Prorector Hoel and inform him that I could not carry out my work at the university because of the

confiscation of my equipment. Prorector Hoel explained that I was in a precarious situation, but that he had an appointment with Statsminister Quisling on December 21 and would take the matter up with him. I became very angry, and said to Hoel that I had the impression of a gangster government, under which one could not carry out one's official duties, was repeatedly arrested, with threats of deportation equivalent to a death sentence. I said that while I had hitherto considered it was my duty to continue my work and it was beneath my dignity to leave the country, I would now reconsider my position, since it was impossible for me to continue my work in Norway. The conference lasted from about 3–4 p.m. and took place in the rector's office; present were Hoel, Solberg, and a secretary, if I remember correctly. I returned home and contacted a friend regarding the possibility of going to Sweden in the near future. He informed me I could leave the same evening. I immediately decided to go. I had already considered the possibility, and I had given my already-written Christmas cards to Mr. Granli at the museum, to be mailed at the appropriate time" (translated from Norwegian).

In a letter to Ole Nielsen (October 30, 1945) Goldschmidt recalled his escape from Norway:

"I have often dreamed of being brought to the slave ship Donau at the Amerika Line pier and standing in line to be marched on board, and I still dream of one moonlight December night tramping through a birch forest over the frontier to Sweden and being warmly welcomed by soldiers at a small barracks, together with almost 40 fellow escapees, among them a boy only 3 years old who was travelling alone to join his father. And the next morning, breakfasting on white bread, butter, and cocoa, and enjoying a sauna bath. I am deeply grateful to those who aided my escape from Norway, the people who guided us over the border, carried an amputee on a stretcher, and helped old ladies and young children" (translated from Norwegian).

On January 5, 1943, Rector Hoel learned of Goldschmidt's escape to Sweden from Professor Solberg, who had received a telephone call from Miss Brendingen, who said that on December 18 Goldschmidt had packed a bag and left home, since when she had heard nothing from him. Hoel decided that he was obliged to inform police chief Marthinsen, whom, he reported, was appalled and exclaimed "Yes, I should have known better than to believe you blue-eyed idiots" [Norwegian slang for childish naiveté]. Hoel was interrogated by the police and by the German Sicherheitsdienst, but no further action was taken against him.

Conditions at the university reached a crisis in late 1943. The commencement of the 1943–44 academic year had been postponed

until October 1, so that students could assist with harvesting. In September the government Department of Education, now in the hands of Quisling appointees, issued new regulations for university entrance, one of which provided for 25% of students being admitted without reference to academic qualifications—clearly an effort to “nazify” the student body. The university authorities protested strenuously, and began negotiations with the government authorities. These negotiations were cancelled by Quisling on October 14, and the following day 10 professors and 50–60 students were arrested. Worse was to come. On November 28, there was an arson attempt at the university. It caused little damage, and was probably an NS provocation—a Norwegian Reichstag fire. On the evening of November 29, the underground learned that at 11 a.m. the following day the university was to be occupied by SS troops, and all male students arrested and deported to Germany. Many students were forewarned and went “underground” or escaped to Sweden, but about 700 were sent to “re-education camps” in Germany.

The research institutes at the university were able to reopen after a short time, and provided a cover for continued underground activities against the German occupiers and their Norwegian collaborators. Arrests continued from time to time, and many students and professors ended up in German concentration camps, among them Goldschmidt’s colleague Anatol Heintz (Professor of Paleontology).

On February 8, 1945 police chief Marthinsen was assassinated outside the university at Blindern. In reprisal, 37 Norwegian hostages were executed. The war in Norway ended with the surrender of the German forces on May 8, 1945. Reichscommissar Terboven committed suicide. Quisling was arrested on May 9, tried for treason, found guilty, and executed on October 24, 1945.

In 1946, Adolf Hoel was the subject of a judicial inquiry into his position in the Quisling NS party and his actions during the war. Goldschmidt wrote the following letter in his defense:<sup>29</sup>

“On several occasions Adolf Hoel supported me when my life was in danger during the persecution of the Jews in Norway in 1942. I know that he participated in the action to release me from the Berg concentration camp, and he probably guaranteed me when I was released in mid-November in order to continue my researches on Norwegian phosphate deposits. The state police, however, disavowed this agreement, and arrested me again at the end of November with the intention of deporting me on the prison ship “Donau” the following day. Immediately before the ship’s departure I was released, probably because of protests from Adolf Hoel and others to “Major General” Marthinsen.

On December 18, 1942, I met with Adolf Hoel to protest the confiscation of my apartment, my instruments, and my library, since without them I would be unable to continue my scientific

research. I told him that under these circumstances I could no longer remain in my position, since I could no longer serve my country. Adolf Hoel could not promise that I would be able to recover my scientific equipment, but promised to take the matter up with the appropriate authorities.

The same evening I learned that I could join an illegal fugitive transport to the Swedish frontier. Since I felt that because of certain Allied interests my departure was highly desirable, I accepted the opportunity and crossed the border to Sweden the same night. On arrival in Stockholm I reported to the Norwegian authorities, and continued as soon as possible to the United Kingdom, although delayed by an unforeseen hospitalization. I arrived in the U.K. on March 3, 1943.

I would emphasize that Adolf Hoel was never aggressive against me, although he was certainly aware of my detestation of Naziism, a detestation which I have never concealed, either in this country or when I lived in Germany from 1929 to 1935.

As a scientist I deeply deplore that Adolf Hoel was so deluded as to join a party that was to become a disaster for our country. I must assume that he intended to serve the country. In the autumn of 1942 he volunteered to me that he considered it his responsibility to try to bring Norway through the war with the least possible damage.

Concerning Adolf Hoel's appointment as "prorector," I consider that, of the possible alternatives, it was an advantage for the university to have as "prorector" an able scientist with an understanding for practical administration. I believe that with a bureaucrat or politician as a "Nazi prorector" there would have been much more serious conflicts than with a scientist like Adolf Hoel who had a practical grasp on the realities.

When I was a committeeman in the Scientific Association in Göttingen (around 1930—I do not recall the exact date) I was glad to cooperate in honoring him by his appointment as foreign corresponding member of the association, as a recognition as the foremost Norwegian Arctic scientist after the death of Fridjof Nansen" (translated from Norwegian).