2 / *Early Years: 1888–1906*

VICTOR MORITZ GOLDSCHMIDT was born in Zürich on January 27, 1888, the only child of Heinrich Jacob and Amelie Goldschmidt. He was named Victor after Victor Meyer,[1] a famous chemist who was a colleague of his father, and Moritz after his maternal grandfather Moritz Koehne. Heinrich Jacob Goldschmidt was born in Prague on December 4, 1857, the son of a factory owner whose family had lived in Bohemia for many generations. The family can be traced back to the year 1600 and it was pure Jewish. Almost all the family was highly educated; most of them, at least in the early days, were rabbis, but in later generations there were numerous professors, physicians, judges, lawyers, and some military officers. Heinrich Jacob had been intended for a career in industry, but his life interest was chemistry, and after attending a commerce school he entered the University of Prague and received his doctor's degree in chemistry in 1881. In the autumn of 1881 he was appointed docent in chemistry at the Eidgenossische Polytechnikum in Zürich (now the Eidgenossische Technische Hochschule), and in 1885 he was promoted to professor. He married Amelie Koehne in Berlin on March 27, 1887. She was born in Danzig (then in Prussia; now Gdansk, Poland) on December 30, 1864, the daughter of a lumber merchant. The family was evidently well–to–do and she had received an excellent education, augmented by extensive travels in Europe with her parents. Although her home was in Danzig, the family evidently spent some of their winters in Berlin; her diaries mention the theater and concert seasons of 1883–84 and 1884–85 in that city, and it was probably here that she first became acquainted with her future husband.

Heinrich Goldschmidt moved to the University of Amsterdam in 1893, in order to work with J. H. van't Hoff,[2] perhaps the foremost physical chemist of that time. He remained there until 1896, when on the recommendation of Victor Meyer, he was appointed extraordinary professor of chemistry at the University of Heidelberg. Victor

Moritz probably began his schooling at the age of six in Amsterdam, and then attended a private school in Heidelberg. His friend and biographer, Paul Rosbaud,[3] tells the following story from that time, which sheds some light on Goldschmidt's personality. His mother was described as a dignified lady who taught young Victor always to be polite and also tell the truth, however disagreeable. After a few days at his new school the headmaster, a big man with a black beard and of alarming appearance, asked the young man how he liked the school, and ended by saying: "I hope we will become good friends. Do you already like me?" Aware of his mother's admonition, after a moment's pause he replied: "Nicht so besonders, Herr Göckel" (Not particularly, Mr. Göckel).

Heinrich Goldschmidt did not remain long in Heidelberg. In 1900 the chair in chemistry at the University of Oslo became vacant. He applied, and in November he was appointed by the unanimous decision of the Akademiske Collegium. Heidelberg tried to retain him by the offer of an ordinary professorship in physical chemistry, but Heinrich considered himself committed to the position in Norway. He arrived in Oslo with his wife and 13–year old son in April 1901.

Norway in 1901, although a small country on the outer margin of Europe, was in the midst of an intellectual and political renaissance. Some historical background may be in order. At the end of the Viking Age, around 1000 A.D., Norway was an independent kingdom with colonies in Iceland, the Faroes, and Greenland. King Harald Hardraade founded the city of Oslo in 1050; he claimed the English throne in 1066, and was defeated and killed at the battle of Stamford Bridge (near York), shortly before the battle of Hastings. In 1397 Norway was united with Sweden and Denmark under a single king. Sweden broke away in 1523, but Norway remained united with Denmark, and was ultimately reduced to a province. Danish became the official language, and much of the administration was appointed from Copenhagen. After a great fire in 1624 the ancient capital of Oslo was rebuilt and named Christiania in honor of the reigning Christian IV of Denmark; this was changed to Kristiania in 1877, and the historical name Oslo was reinstated from January 1, 1925.

During the Napoleonic wars Denmark was allied with France, much to the detriment of Norway, whose commercial interests were closely linked with England. After the defeat of Napoleon at Leipzig in 1813, Sweden attacked Denmark, and at the Peace of Kiel (January, 1814) Denmark ceded to Sweden its rights to Norway (but not its rights to the old Norwegian colonies of Iceland, the Faroes, and Greenland).

A considerable faction in Norway was opposed to union with Sweden. The governor of Norway, the Danish Prince Christian Frederick (later King Christian VIII of Denmark, 1839–48), called a constitutional convention, which on May 17, 1814, declared indepen-

dence and elected Christian Frederick to the Norwegian throne. Sweden threatened war; Christian Frederick resigned and Norway became the junior partner in a united kingdom of Sweden and Norway. The year 1814 is remembered in Norway for its national day, celebrated annually on May 17.

The union with Sweden was not popular in Norway, and by 1901 independence had long become a political objective. This was stimulated by a strong sense of nationhood, exemplified by the achievements of native sons, such as the explorers Fridjof Nansen, Otto Sverdrup, and Roald Amundsen, the dramatists Bjørnstjerne Bjørnson and Henrik Ibsen, the painter Edvard Munch, and the composer Edvard Grieg. So although small (the population of Oslo in 1901 was only 227,000) and somewhat remote, Norway was a stimulating environment for the Goldschmidt family. The university had some professors of international renown, including Waldemar Christopher Brøgger[4] in geology.

The university was established by Frederik VI, king of Denmark and Norway, by an edict dated September 2, 1811, and he named it Universitas Regia Fredericiana (in Norwegian Det Koniglike Frederiks Universitet; the name was changed in 1939 to Universitetet i Oslo). Frederik VI endowed the university with a considerable area of land at Tøyen, then on the eastern outskirts of Oslo. Teaching began in 1813 with five professors and 17 students. The university began its operations in rented quarters. The first permanent buildings were erected in downtown Oslo, the foundation stone being laid in 1841 on the thirtieth anniversary of its establishment, although the buildings were not completed until 1852. Three science museums, for zoology, botany, and geology, were built in the Tøyen area during 1911–17. By 1930 the university had outgrown its downtown area, and plans were made for a new campus on a farm at Blindern, in the northern part of the city. Most of the science faculties moved to Blindern during the 1930's, and the remaining institutions moved there after World War II. The university now (1990) has some 25,000 students and 3500 employees. The operations of the university are governed by an elected Rector (the first was Brøgger in 1907) and the Akademiske Collegium.

Victor Moritz evidently learned Norwegian rapidly and could soon read and write his new language with ease. His spoken Norwegian was grammatically correct and very eloquent, but throughout his life he retained a pronounced accent which informed the listener that Norwegian was not his mother tongue. On arrival in Oslo he was enrolled in the Vestheim Middle School (approximately equivalent to junior high school), and in June 1903 he entered a private Gymnasium (high school) from which he graduated in June 1905 with a grade point average of "meget tilfredsstillende" (very satisfactory). He passed written examinations in Norwegian, German, Mathematics,

and Latin, and oral examinations in Norwegian, German, English, French, Latin, History, Geography, Natural Sciences, and Mathematics. He was exempted from participation in the gymnastics program required by Norwegian schools, evidently because his physical abilities were not on the same level as those of most of his fellow students. Although he seemed robust, his health was never good, and this probably tended to make him somewhat of a loner. Late in his life he commented: "Sometimes I regret that I never went out and drank beer with my fellow students."

The year 1905 was an eventful one, both for Norway and for the Goldschmidt family. The union with Sweden was peacefully dissolved, and Prince Carl of Denmark was elected king, assuming the title of Haakon VII (Haakon VI, who ruled from 1355 to 1380, was the last king of independent Norway). The Goldschmidt family became Norwegian citizens, and in September he matriculated at the University of Oslo, where he studied geology, mineralogy, chemistry, physics, mathematics, zoology, and botany.

While still at high school he had evidently developed a keen interest in mineralogy. During his summer vacation in 1904 he discovered an occurrence of fine quartz crystals in fissures in schist at Fefor in Gudbrandsdalen in the Norwegian mountains. These crystals had strong pyroluminescence (emission of light when heated to 200–300°C), which is an unusual phenomenon, since most quartz crystals from other localities which he tested showed little or no pyroluminescence. He evidently discussed his research with Professors Brøgger and Hiortdahl,[5] who provided him with additional material from the university and their private collections. He made extensive experiments to explain pyroluminescence and its relationship to triboluminescence and phosphorescence. He exposed quartz crystals, which had their pyroluminescence destroyed by heating, to sunlight, arc light, electric sparks, and X-rays, none of which regenerated the pyroluminescence. However, the pyroluminescence was restored by exposing the crystals to the radiation from radium bromide (loaned by Professor Birkeland,[6] of Birkeland–Eyde fame). Professor Brøgger presented Goldschmidt's research on the pyroluminescence of quartz at the Academy of Sciences meeting on February 9, 1906, and his 19-page paper "Die Pyrolumineszenz des Quarzes" was published in the Academy's journal later that year.

During the spring of 1906 he travelled extensively on the continent with his parents. He observed the spectacular eruption of Vesuvius in April. Writing to Professor Brøgger on May 24, he described his visit to the villages of Ottajano and San Giuseppe, which had been destroyed by the fall of volcanic ash. He collected rocks and minerals from Vesuvius which he shipped to Brøgger from Naples. He apparently had promised Brøgger to collect rocks for him in Bohemia, but was unable to do this because his parents became ill and he had to

remain with them in Baden–Baden. In the same letter he informed Brøgger that he had been invited on an excursion to the Eifel, and offered to collect samples from the classic volcanic localities. Thus already in 1906 there was a close, friendly relationship between Goldschmidt and Brøgger, a relationship that was life-long. Goldschmidt had enormous respect for Brøgger as a person, a teacher, and a scientist. This respect was reciprocated by Brøgger, who early recognized his potential and did much to encourage its development.

In the summer of 1906 Goldschmidt worked for some weeks at the University of Freiburg, studying radioactivity with Professor G. Meyer. A fellow student was George de Hevesy,[7] and this acquaintanceship was to ripen into a lasting friendship.