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KARL LUDWIG GIESECKE: HIS LIFE, PERFORMANCE AND ACHIEVEMENTS

by

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Abstract

Karl Ludwig GIESECKE (1761–1833), later known as Sir Charles Lewis GIESECKE the Dublin-based Professor of Mineralogy, was a pioneer geological explorer of Greenland in the years 1806–1813. After an early career in the late 18th Century centred around the Viennese theatre he eventually became a mineral dealer, and travelled extensively in Germany and Scandinavia. He obtained approval from the Danish king to explore the geology of the Faeroe Islands and Greenland. It was in Greenland that he became effectively stranded for seven years partly as a result of the Napoleonic wars.
In Greenland he explored and assessed the mineral resources, in particular cryolite, and located and collected many new mineral species. Although principally a mineralogist he interpreted Greenland geology using Wernerian principles. He later distributed his minerals around various important European mineral collections, especially those in Dublin, Copenhagen, Vienna and Graz. Studies of his scientific activities and of his early field work in Greenland are important and supportive of his reported claim made in Vienna in 1818 that he contributed significantly to the text or libretto of MOZART's celebrated opera, 'The Magic Flute'.

Introduction

The illustration presented in figure 1 is of Sir Charles Lewis GIESECKE (1761–1833) painted by the famous Scottish portraitist Sir Henry RAEBURN in late 1813 or early 1814 immediately after his arrival in the British Isles. It is a picture of a distinguished and highly respected academic professor of mineralogy who at the time of the painting was approaching the peak of his scientific work and achievements. From the evidence of the portrait alone, however, it is difficult to envisage why there have been some commentators in the past (non-scientists it must be said) who have given GIESECKE at best a 'mixed press', and one in particular who on occasion described him as a liar and a swindler.

Partly this is because GIESECKE had two careers, firstly as an actor and writer for the stage until his mid-thirties (in the late 1790s), and secondly as a mineral dealer and mineralogist until his death at the age of 71. Detailed information on the quality of the achievements from his first career is not always easily available, although many points of past disputation have been subsequently clarified by discoveries of letters, newspaper reviews, articles, and comments from other parties.

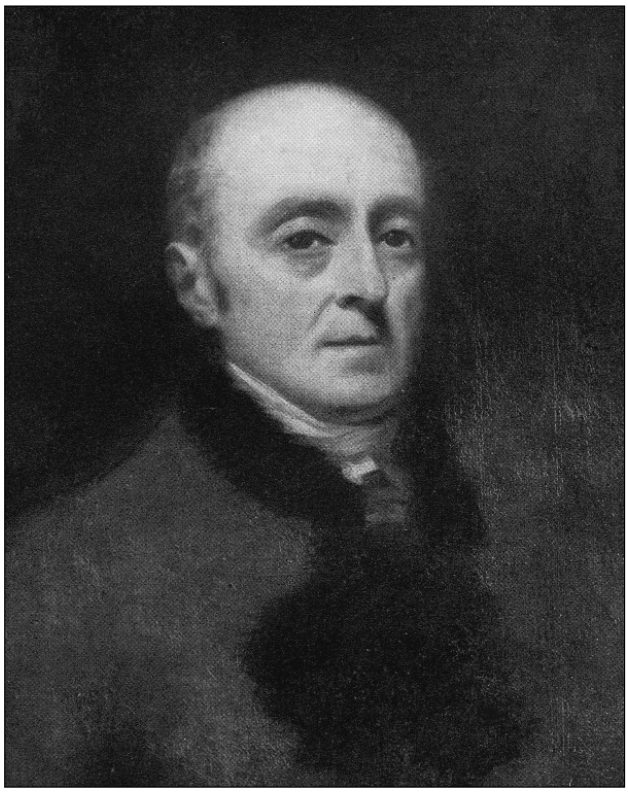


Figure 1
Portrait of Sir Charles Lewis Giesecke by the Scottish painter Raeburn.

The man who eventually became known as Karl Ludwig GIESECKE was born as Johann Georg METZLER in Augsburg on the 6 April 1761. He was the second son an Augsburg protestant master tailor named Johann Georg METZLER, and his wife Sibylla Magdalena GOETZ. The precise identification of GIESECKE's family origins only became known with certainty in 1910 with the publication of biographical details by the Danish geologist STEENSTRUP (1910). In fact it was the chance discovery of a letter from GIESECKE's sister to the Danish authorities written in 1810 and enquiring about the welfare of her brother whom she knew to be in Greenland, that GIESECKE's relationship with the Augsburg METZLERs was firmly established. Before the publication of the 1910 account there had been much confusion about his precise origins and identification for several reasons; (1) his early adoption of a pseudonym, (2) his travels and frequent change of location, and (3) because of his adoption of two totally unrelated careers. The confusion was compounded by GIESECKE's apparent reluctance ever to discuss his earlier career on the stage after he became established as the professor of mineralogy to the Royal Dublin Society. The attitude of contemporary academic scientists to the stage is encapsulated by the remarks of Ignaz von BORN on hearing that his scientific protégé Friedrich KEPPNER (1745–1820) had done the reverse of GIESECKE by leaving a very promising scientific career for the theatre. BORN's comments are paraphrased as follows '*Mr Keppner has sacrificed all for the theatre. A theatrical poet will surely not provide a permanent living for an honest man*' (RIEDL-DORN, 1987, 1991).

Although little is known of his early life it is clear that the young METZLER was a bright and intelligent schoolboy. This is apparent from the comments of his schoolmaster at the St Anna Gymnasium Augsburg, Hieronymus Andreas MERTENS, who gave him an excellent commendation before he went to Goettingen University in 1781. This laudation was copied by the young GIESECKE into his autograph album (Stammbuch) which is one of two such books now preserved in the National Library of Ireland in Dublin. At Goettingen University GIESECKE studied law in the years 1781–83. It was while he was a student at Goettingen that GIESECKE took an early interest in mineralogy by attending some of the lectures of the famous German naturalist BLUMENBACH; this we learn from GIESECKE's application for the Dublin professorship in 1813. Reverting to the two albums, we also know that the young METZLER had adopted his pseudonym (both first names as well as surname) as early as September 1781 because the introductory page to the album gives his name in Latin as Carolus Ludovicus METZLER cognomine GIESECKE. After his appointment to the Dublin professorship and his becoming a Member of the Danish Order of the Dannebrog in 1814 (later raised to Commander in 1817), he occasionally called himself Karl Ludwig METZLER von GIESECKE.

It is not known why GIESECKE chose these pseudonyms. Before the STEENSTRUP account it was commonly believed that he had adopted his mother's maiden name, but this obviously was not the case. Despite some later views that he may have had a patron named GIESECKE who might have provided some funding for his university education, it seems more likely that, given his subsequent first career and as an artistically-inclined young man, he may well have been an admirer of the Klopstockian poet and writer Nicolaus Dietrich GIESEKE. This is partly supported by some of the early entries in his album from his stays in Bremen which definitely have a Klopstockian, sentimental flavour to them (see WATERHOUSE, 1936).

GIESECKE's autograph albums provide the main source of information about his subsequent movements. One of the albums (Album 3) was purchased in 1909, while the other (Album 5) was donated by the Misses HUTTON of London in the same year. From the albums we can follow GIESECKE's travels reasonably well from the spring of 1781 to the spring of 1783, but there are only three entries for 1784, one for 1785, and one for 1786. Then follows the first great gap until the spring of 1793, when a single entry shows that GIESECKE was in Dresden. The second great gap begins here and continues until October 1799, when a Swede and two Danes (all medical men) wrote their names in Album 3 in Vienna. From September 1800 the autographs are numerous and we can follow GIESECKE virtually from day to day, and certainly from week to week (WATERHOUSE, 1936). Because of the numbering of the two preserved albums, WATERHOUSE (1936, 1970) commented on the possibility that there was originally a total of five albums. WATERHOUSE also surmised that Albums 1 and 2, if they ever existed, were confined entirely to GIESECKES's schooldays, but that Album 4 may have covered the two great gaps mentioned above. If so, it is likely to have recorded his career as an actor, librettist and writer, together with the signatures and comments of MOZART, SCHIKANEDER, SCHACK, GERL and other well-known personalities of the time he spent in Vienna.

In connection with Album 4, WATERHOUSE (1970) had contact with Professor G. RADDATZ of Berlin and Herr Gerd IBBLER of Augsburg who reported a record of proceedings against GIESECKE for non-payment of rent in the municipal archives of Vienna.

It is known that GIESECKE left SCHIKANEDER's company in August 1800, but it now seems that he left clandestinely. RADDATZ and IBBLER reported to WATERHOUSE (1970) that the Viennese records show that in 1801 distraint was levied on such effects as GIESECKE had left behind for non-payment of a year's rent. Professor RADDATZ found a catalogue of the books and papers sold, amongst them *'An album with some pictures…' (Ein Stammbuch mit einigen Gemaelden…)*. It seems possible therefore that Album 4 may still exist forgotten in some attic, or in some private or public library in Vienna or elsewhere.

GIESECKE and the theatre

The earliest entries in Album 5 date from March, May and July 1781 in Bremen and it is not entirely certain that these entries are those of GIESECKE or of some other previous owner of the book (see WATERHOUSE 1936). Nevertheless, it is clear that he left the St Anna Gymnasium, Augsburg at Michaelmas 1781. Album 3 was started in September 1781 when GIESECKE obtained numerous entries from his schoolteachers and other Augsburg dignitaries. After the date of his first Christmas vacation from Goettingen spent in Augsburg, there are ten entries in Album 5 made in Bremen, dating from January and February 1782, and prompting the question as to why GIESECKE was in Bremen and not at his university in Goettingen. CASTLE (1946) stated categorically that GIESECKE was at this time fascinated by the beautiful actress Felizitas ABT, wife of the actor-manager Karl Friedrich ABT, and followed her to Bremen at Michaelmas 1783. Although CASTLE (1946) gives no source for this statement it is correct to note that various well-documented circumstances of the ABT company in Bremen at this time do fit with what is known of GIESECKE's situation.

Karl Friederich ABT and his wife Felizitas ABT (1741–1783) first took their theatrical company to Bremen in May of 1780. They were particularly interested in musical drama and also in the works of SHAKESPEARE (interestingly ABT was likened to the famous English actor David GARRICK by at least one of his contemporaries, although it was Felizitas who achieved fame playing the role of Hamlet from 1779 onwards) (RUEPPEL, 1996). The ABT company played in Bremen in the autumn months of September to December in 1780, 1781, 1782–83 and also had a close association with Goettingen and its university from the middle of the year 1781. Felizitas ABT was apparently very unhappily married according to all accounts and made her final stage appearance in Goettingen as Henriette in GROSSMANN's play entitled *'Henriette, oder: Sie ist schon verheyratet'* (Henrietta, or: she is already married) in June 1783. Only a few months later she died in Goettingen on 12 September 1783 to be followed only two months later by her husband, who died in Bremen on 20 November of that same year.

GIESECKE was in Bremen for much of 1782 and the early part of 1783 while the ABT company was in residence there. The albums are consistent with GIESECKE having had some affiliation with the ABT company during this period. As well as having many works by GROSSMANN in its repertoire, and whose company GIESECKE joined by the end of 1783, it is worth noting also that the ABT company performed MEISSNER's comic operetta *'Der Alchymist, oder der Goldmacher'* (The alchemist, or the goldmaker') in Bremen on 12 December 1781.

An important entry from Bremen by Johann Fr. BEKENN in Album 5 (WATERHOUSE, 1936) and dated 6 July 1782, shows GIESECKE not only to have had relatives in that town, but it also has a tone suggesting that the comments are directed at a young man in despair over something or other. It is also worth noting that the ABTs had two sons named Karl Friederich Kasimir ABT and Ludwig Friederich Martin ABT; both first names were taken as pseudonyms by GIESECKE, although this may only be coincidence.

By July 1783 GIESECKE was to be found in Gustav Friederich Wilhelm GROSSMANN's theatre company in Frankfurt where he made his September debut playing the part of Phillip, a servant in *'Der argwoehnische Liebhaber'* (The suspicious lover) by C.F. BRETZNER. With the GROSSMANN company GIESECKE also played other secondary roles and carried out behind-the-scenes activities through the early and middle part of 1784. By December of that year, however, GIESECKE apparently slipped away quietly and secretly from the GROSSMANN company (BLUEMML, 1923). Why he did this is not known. According to BLUEMML's (1923) account GIESECKE made his way to Regensburg and from 1784–86 was a member of the BOCK company as a writer and actor there. During this period he also wrote and edited a 'theatre journal' which reviewed events at the Regensburg theatre. Following this he moved to his home town of Augsburg where he added playwriting to his list of skills.

The entries in GIESECKE's albums at this date show their first great gap. Apart from a single entry in 1793, the years 1787 to 1799 are not recorded. By 1787 he was in Salzburg, however, where on 20 February he produced his first piece of writing for the stage, *'Das Muttersoehnchen auf der Galeere'* (The mother's boy of the galley) a comedy in three acts based on the Italian play (Il Padre di famiglia) by GOLDONI. It is interesting to note that this work was dedicated by GIESECKE to his patron Siegmund HAFNER Edler von Imbachhausen (1756–87), to whom MOZART dedicated the Haffner symphony (K385) only five years earlier on the occasion of HAFNER's ennoblement in 1782.

Later in 1787 GIESECKE left Salzburg for Esterhazy in Hungary after he had joined the Johann Baptist LASSER company. Subsequent to this in 1787 he went to Linz with part of the same company and worked under the direction of the impresario BORCHERS. By 1788 GIESECKE had moved to Graz where he presented his second published work *'Die glueckliche Reisende' (The lucky traveller) ('Ein Singspiel in zwei Aufzugen, fuer die Buehne bearbeitet von Johann Georg Karl GIESEKE, Mitglied der hiesigen Schauspielergesellschaft, Graetz, 1788'* [BLUEMML, 1923]). This singspiel was a reworking or adaptation of Pasquale ANFOSSI's 'I viaggatori felici', with original libretto by Fillipo LIVIGNIS. Professor WATERHOUSE in his notes pointed out the use of some of GIESECKE's proper birth forenames in this 1788 reference.

GIESECKE in Vienna

By 1789 GIESECKE was in Vienna where he joined Johann FRIEDEL's Theater auf der Wieden (the Freihaus Theater), and where as early as 5 January he appeared in a comedy *'Die Erbschaft'* (The inheritance) by Grafen BRUEHL. Later the same year the Freihaus Theater was taken over by Emanuel SCHIKANEDER with whose company GIESECKE remained for many years. With the company he worked as an actor (playing small character roles mainly), as a singer, and as the company's playwright (Fig. 2).

Lists of some of the roles played by GIESECKE during his involvement with the SCHIKANEDER company are given by BLUEMML (1923) and DEUTSCH (1952). Worthy of special mention perhaps is GIESECKE's first opera libretto for the Freihaus company which was an adaptation of WIELAND's story 'Oberon', with music by Paul WRANITZSKY (and in which GIESECKE also played the minor role of Osmin). The opera, first performed on 7 November 1789, was a great success with many subsequent performances.

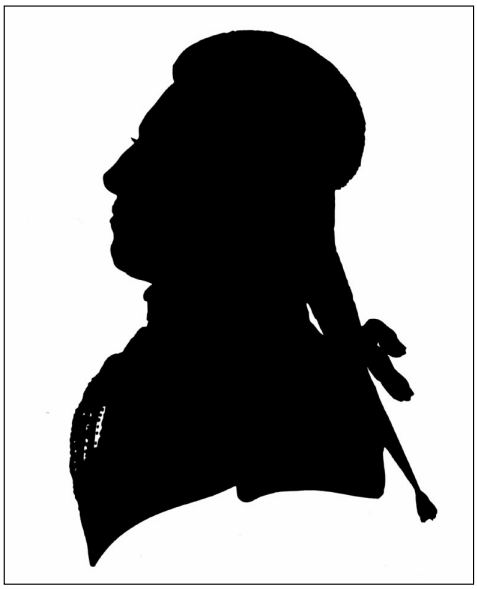


Figure 2
Karl Ludwig Giesecke.

GIESECKE's contribution to this opera has caused much dispute because apparently it is very similar to a slightly earlier existing opera text of 'Oberon' written by Friederiche Sophie SEYLER. Although this has given rise to accusations of plagiarism against GIESECKE by many commentators, it is true to say that plagiarism was not uncommon in those days and that there may well have been good reasons for taking maximum advantage of existing material. Given the date of GIESECKE's arrival in Vienna (probably late 1788) and the fact that FRIEDEL was in charge of the theatre until 31 March 1789 so that SCHIKANEDER's direction of the Freihaus Theater did not enjoy its premiere until July 12 1789, there was clearly little enough time to prepare and rehearse a programme for the coming autumn season. Like all such enterprises the main concern of the Freihaus Theater was to attract audiences big enough to earn income, and thus it was imperative for the individuals concerned to be acutely aware of the urgency and discipline of meeting production and performance deadlines. It seems reasonable to assume that SCHIKANEDER as Director had full confidence in GIESECKE's ability to produce a useable script efficiently and quickly so as to provide the theatre company with fresh material. This would be essential, especially in the launch of SCHIKANEDER's first season at the Freihaus. Indeed the fact that GIESECKE worked for eleven years or so in a very responsible position with the SCHIKANEDER company suggests complete mutual respect between the impresario and his librettist. It also seems likely that WRANITZSKY would not wish to risk his growing reputation as a composer by working with a librettist who was not up to scratch (especially bearing in mind that it was WRANITZSKY who was later to be selected as a composer by no less a figure than GOETHE when he was considering a sequel to MOZART's 'The Magic Flute').

Paul WRANITZSKY the composer was a freemason who had been a member of the Crowned Hope masonic lodge (Zur gekroenten Hoffnung) since the year 1784 (WAGNER, 1996). His close association with GIESECKE during the composition of 'Oberon' coincides approximately with the time (late 1788) when GIESECKE is first mentioned as a freemason and a member of the lodge Crowned Hope in Vienna (BRADLEY, 1913).

His name also appears (as 26. GIESEGE [sic] Karl Ludwig) in a list of members of the Crowned Hope lodge in 1790 together with that of MOZART (ROBBINS LANDON, 1982). GIESECKE is described in this document as an actor (Schauspieler) belonging to the First Degree (Entered Apprentice) of the masonic system. Many of GIESECKE's subsequent contacts and activities were greatly facilitated by his association with freemasonry. Of special interest in this context is his awareness of, and possible association with, Ignaz von BORN, one of the leading Viennese freemasons of the 1780s and the doyen of central European science in the fields of mineralogy, chemistry and metallurgy.

BORN's position in the Enlightenment of central Europe and his leadership of the masonic lodge True Harmony (zur wahren Eintracht) is particularly relevant because he was first and foremost a mineralogist who was likely to have greatly inspired GIESECKE. BORN was also responsible for the scientific journal known as the Physicalische Arbeiten der Eintraechtigen Freunde in Wien (PAEF) of which three volumes were published between 1783 and 1785. Each volume contained some 300 pages of articles on mathematics, astronomy, physics, and importantly, mineralogy and geology. Numerous leading mineralogists were associated with the lodge during its prime. One of the most distinguished of these was the Swedish mineralogist and protogeologist Torbern BERGMAN (1735–84) who was extremely influential in European scientific circles and greatly influenced BORN and Abraham Gottlob WERNER of the Freiberg Mining Academy. BERGMAN was a correspondent of BORN between 1778 and 1781 when they exchanged notes and ideas on various aspects of mineralogy, geology and chemistry. Other Earth scientists who published work and results in the PAEF, which would be known to GIESECKE, were Peter PALLAS (geology of Russia and Siberia, 1783), Joseph RAAB (geological survey of Galicia [1782] and its minerals, published 1784), Karl HAIDINGER (accompanied RAAB to Galicia in 1782 and published an account in PAEF in 1785), Andreas STUETZ (mineral surveys of Austria 1783), Johann B. RUPRECHT (metals and minerals in Hungary, chemist of the Schemnitz Academy, 1784) and Johann MUELLER (mineral surveys in Transylvania, experiments on antimony and bismuth, 1785)(WEISBERGER, 1993).

Bearing in mind GIESECKE'S earlier interest in mineralogy from his days at Goettingen, it is easy to see how the prevailing cultural and especially the scientific atmosphere in Vienna in the late 1780s may well have reawakened his latent interest in the natural sciences, which apparently came into full flower in1794. It is also important to emphasise that the 1780s and 1790s in science saw the transition from types of alchemical protoscience (manifest as the phlogiston theory at this time) into modern chemistry with the publication of LAVOISIER's work in 1783 (WHITTAKER, 1998). Various parts of alchemical lore and hermetic philosophy, as well as providing some of the philosophical infrastructure for freemasonry, have always been a rich source of material for stories, fairytales and stage performances (which were extremely popular in Vienna at this time). Indeed, GIESECKE as writer, stage performer, apprentice scientist and freemason was almost uniquely placed to exploit this fusion of esoteric ingredients and elements given his interests in Vienna during the last decade or so of the 1700s.
In the meantime he continued his work with the SCHIKANEDER company and in 1791 appeared in the non-singing role of the First Slave in MOZART's celebrated opera 'The Magic Flute'. Other plays and performances in which GIESECKE appeared, often in minor roles, are listed by BLUEMML (1923).

GIESECKE's play *'Es giebt doch noch treue Weiber! Ein Schauspiel in drey Akten nach einer wahren Geschichte bearbeitet'* (There are still faithful wives after all! A play in three acts adapted from a true story) was produced in Vienna in 1790. It is of special interest here because of its possible autobiographical input by GIESECKE. In the play is a character, law Licentiate Metzler, who is the university friend of the chief actor Freyberg. Metzler is a quiet person, upright and caring who is involved in an unhappy love affair and hence slightly misogynist. The play provides some reverberations with GIESECKE's surmised relationship with the beautiful Felizitas as well as providing some possible links (via misogyny) with 'The Magic Flute'. Parts of the text according to IRMEN (1991, 1996) are further resonant of famous quotes from 'The Magic Flute', for example Freyberg's cry 'for me there is no help but death and despair', and reference to 'roses flower among the thorns'.

In addition to 'Oberon' he also wrote another opera libretto 'The noble peasant maiden' *(Das adelige Bauernmaedchen)* after Saverio ZINI's 'La Pastorella Nobile', with music by Pietro GUGLIELMI, performed in Bruenn at the end of 1791. He was raised to the Third Degree of Master Mason in the Crowned Hope lodge on 21 March 1793 and signed the document, which was written in French, as Charles Louis METZLER, nommé GIESEKE. It is clear from the list of parts that he took in the remainder of the 18th Century that he did not specialise in any particular type of role as far as his acting career was concerned, a view confirmed by Ignaz CASTELLI who in 1861 wrote *'Mr GIESECKE had no actual speciality, and played precisely what he had to' (Herr GIESECKE hatte kein eigentliches Fach und spielte, was er eben musste)*. However, he was also a man of many other parts in addition to acting on the stage. He worked as an author, adaptor or translator of 18 operas, including the first translations into German from the original Italian for the Vienna stage of MOZART's 'Figaro' (Die Hochzeit des Figaro, 28 December 1792) and 'Cosi fan Tutti' (Die Schule der Liebe oder So machen sie's alle, 14 August 1794). In addition he wrote five chivalric plays (Ritterstuecke) and four travesties in Knittelversen, in total turning out more than 30 works for the theatre. In 1796 he was appointed as official playwright of the Freihaus Theater and in 1795–6 apparently actually lived in the Freihaus tenement block (Court 5, Stair 24, First Floor)(BLUEMML, 1923).

Apart from the one entry from Dresden on 19 February 1793, there is a gap in the albums until the three Vienna entries of 6, 15 and 26 of October 1799 provided by one Swedish and two Danish medical men with whom GIESECKE may well have discussed Scandinavian and possibly even Greenlandic mineralogical matters. However, it seems certain that GIESECKE was actively pursuing his mineralogical interests from 1794 onwards. Perhaps this was the time when he travelled in Hungary, Transylvania, Bohemia, Carinthia, Styria and Italy as recorded in his professorship application for the Dublin post. By 1799, however, SCHIKANEDER and Bartholomaeus ZITTERBARTH had begun to merge their two companies and to build a new theatre (Theater an der Wien). The Freihaus Theater eventually closed on the 12 June 1801, and the Theater an der Wien opened the day after. Whether this forthcoming change unsettled GIESECKE so that he saw the opening of the new theatre as a possible threat, or perhaps saw the arrival at the Freihaus of the playwright Joachim PERINET from the rival Leopoldstadt Company in 1798 as a challenge, is not known. Or perhaps GIESECKE simply wanted to devote all his energies to his rediscovered interests in mineralogy. However, in April 1800 he applied to the Vienna Magistrate to become an official mineral dealer, for which he registered on 6 May 1800.

One aspect of GIESECKE from his writing which has not been commented on thus far is his love of comedy and sense of fun. These traits of character are very apparent not only from his obvious enjoyment of stage comedy and his playwriting, but also from his travel diary. It is also exemplified briefly by his entry into the autograph album of Herr Otto HATWIG, when he signed his name and wrote beneath it 'k.k.priv.Mineralhaendler'! (Otto HATWIG was a former pupil of MOZART who was possibly present at MOZART's funeral service in 1791 together with another MOZART pupil FREYSTAEDTLER and possibly with ALBRECHTSBERGER the musician.)

Ironically, one of GIESECKE's last works (13 August 1799) for the Freihaus stage *'Der traverstirte Aeneas'* a comedy in rhyming verse and first given at a benefit performance for the writer himself, was the work which brought most money into the box office after 1800 (HONOLKA, 1990). By August 1800 GIESECKE had clearly left Vienna behind for a new life, witnessed by his non-payment of rent for one year noted above.

GIESECKE and mineralogy

Although GIESECKE's professional life from now on was dominated by scientific activities he maintained a close interest in, and contact with, many of his artistic friends and colleagues. In late August and early September 1800 GIESECKE was in Salzburg, where he collected seven signatures including C.B.M.SCHROLL and Herr HARTLEBEN (both court advisers), Herr AUER (Master of the Mint) and Joseph Bernard HAIM (Mining Adviser/Bergrat). For much of September 1800 he was in Neuoetting and met Georg DENGLER (a theatrical impresario), Michael KISTLER (singer and member of the SCHIKANEDER company who played the role of the second priest in MOZART's Zauberfloete) and Georg TRAUER an actor. Both of the last two entries state *'Geschrieben in Hauptquartier'* and have led to the suggestion that Neuoetting may have been the location of Archduke Johann's army defending the River Inn before the defeat at nearby Hohenlinden on 3 December 1800.

By late September 1800, however, GIESECKE was in his home town of Augsburg where, rather touchingly, in October he collected a small leaf from his mother's grave (she died in 1794) and pasted it in the album. He remained in Augsburg until early November but then moved on to Erlangen. On 13 November he met with Nanette SCHIKANEDER (the niece of Emanuel SCHIKANEDER who played the part of the First Genie in MOZART's Zauberfloete); she wrote in the album *'the instant of meeting again compensates the separation of anxious hours'*. It was also possibly about this time that the GIESECKE album entry (unfortunately with no date or place) of Joseph Grafen zu SALM was obtained with a quote from 'The Magic Flute' (Act 1 Scene 17).

Nur der Freundschaft Harmonie
Mildert die Beschwerden,
Ohne diese Simpathie
Gibt's [sic] kein Glueck auf Erden

The autograph is that of Joseph Altgraf zu SALM-REIFFERSCHEID-DYCK (1773–1861) a well-known botanist and member of the Viennese lodge Crowned Hope. Perhaps SALM gave the above quotation because it combined GIESECKE's close association with 'The Magic Flute' (representing his previous life) and the miner's departing wish *'Glueck auf Erden'* (representing his new life).
In Erlangen and Wunsiedel GIESECKE met with Friederich HILDEBRANDT (Court Adviser and Professor of Physics and Chemistry), Ernst Wilhelm MARTIUS (Court and University Apothecary), H.SIEVERT (Mining Engineer), and D.SCHMIDT (Stadt und Landphysicus). From here he moved on to Wurzburg, Bamberg, Bayreuth and Jena where he met numerous scientific professors and high ranking government officials, including, in Jena (25 January 1801), Friederich Wilhelm VOIGT (1752-1821). VOIGT had been sent by GOETHE as a student (under the tutelage of the celebrated WERNER) to the Freiberg Mining Academy in 1776 and by 1801 was a Mining Advisor (Bergrat) in Weimar and a leading vulcanist of the time. On the same day GIESECKE met Professor Johann Georg LENZ of Jena University who held a number of important positions in the mining service, and who had adopted Wernerian principles. LENZ also wrote a well-known contemporary book entitled 'Mineralogisches Handbuch durch weitere Ausfuehrung des Wernerschen Systems' (1791).

At the end of January 1801 in Leipzig and en route to Berlin GIESECKE met Franz Anton HOFFMEISTER (Austrian music publisher, composer and kapellmeister) the first publisher of a considerable amount of MOZART's music, and his co-publisher Ambrose KUEHNEL. HOFFMEISTER wrote several singspiels, the most successful of which was 'Der Koenigssohn aus Ithaka' to a libretto by SCHIKANEDER first produced at the Freihaus Theater on 27 June 1795 but later given in Budapest, Prague and Warsaw. GIESECKE knew HOFFMEISTER as a result of their collaboration over the heroic-comic opera *'Die Belagerung von Cythere oder: Die Macht der Liebe'* (The Siege of Cythere, or The Power of Love) with libretto adapted from the French by GIESECKE to the original score of GLUCK, with new musical sections by HOFFMEISTER, first performed at the Freihaus Theater on 19 January 1796 (BLUEMML 1923). MOZART also wrote variations on a theme by HOFFMEISTER (song, *'An die Natur'*) and was a subscriber to a monthly publication of piano works launched by the publisher. HOFFMEISTER also published works by ALBRECHTSBERGER, BEETHOVEN, DITTERSDORF, HAYDN and PLEYEL.

With his arrival in Berlin in February 1801 it is clear that GIESECKE's journey after he left Vienna was not a haphazard wandering but a carefully planned route for meeting the necessary influential people, for furthering his education, and for additional collecting and negotiating of mineral sales. GIESECKE arrived in Berlin in February 1801 (see HOPPE 1990, 1991) where his albums show him to have met 15 people, many of them potentially influential to his interests. Between his arrival in early February and his departure in June 1801 he met with the following: Professor SIMON on 2 February (Mining Inspector, Professor at the Berlin Mining Academy), Martin Heinrich KLAPROTH on 20 February (Berlin Academy, mineral analyst, mineral collector and famous chemist), Friedrich Wilhelm SIEGFRIED on 3 March (wealthy mineral collector), Dietrich Ludwig Gustav KARSTENS on 5 March (Senior Mining Adviser, mineral collector), and Professor Johann Georg Ludwig MANTHEY on 27 April (Professor of Chemistry in Copenhagen).

While in Berlin it is likely that GIESECKE attended some of KARSTEN's lectures on mineralogy and helped the latter by organising and cataloguing his mineral collections. He also met Joseph Michael BOEHEIM, an actor in the Berlin National Theatre on 15 May 1801.

It is also apparent that GIESECKE, described in the Berlin Natural History Society's diary as a 'mineral dealer from Augsburg', sought unsuccessfully to become a member of that Society, even though he had presented it with gifts of minerals and a book. GIESECKE clearly got on well with KARSTEN, who may well have advised GIESECKE to visit WERNER in Freiberg before extending his scientific activities. GIESECKE's stay in Berlin was also of fundamental importance for his future career because it was while in Berlin that he collected minerals for the Royal Prussian mineral collection and began to use the title K.Pr. Bergcommissaer und Mineral. Haendl. auf Reisen ('Royal Prussian Mining Commissary and Journeying Mineral Dealer'). This title changed in due course to K.Pr. Bergrath ('Royal Prussian Mining Adviser') and was notably senior to the previously-mentioned one. It was a title that GIESECKE used a great deal from then onwards and one which greatly facilitated his new career. The matter is discussed in detail by HOPPE (1991) who comments that the title certainly seems to have been accepted by all his professional contacts from then on, despite the present day absence of documentation in the Berlin archives to confirm the award of the title. Before moving on to Freiberg, GIESECKE apparently visited Brunswick where he met Prince Dimitri of Gallitzin, the President of the Jena Mineralogical Society.

GIESECKE and WERNER

By late June and early July 1801 GIESECKE was in Freiberg where he met the famous mineralogist and geognosist Abraham Gottlob WERNER (1749–1817), who wrote in the album *'Das Studium der Natur ist bildend fuer Hertz und Geist, und unerschoepflich'* (The Study of Nature is Instructive for Heart and Spirit, and inexhaustible). Presumably GIESECKE had lengthy discussions with WERNER at this time and doubtless attended some of WERNER's celebrated lectures at the Freiberg Mining Academy. GIESECKE's sojourn in Freiberg and the Erzgebirge region is particularly important in demonstrating how his Greenland scientific work and results managed to be fully up to date within the prevailing geological paradigm, not only in terms of WERNER's mineral system but also with the developing Wernerian ideas on geognosy and geological sequence.

WERNER in addition to introducing his successful 'Mineral System' or taxonomic classification of minerals, was also strongly influenced in his wider geological work by Torbern BERGMAN the celebrated Swedish mineralogist. WERNER in 1777 had produced the beginnings of a stratigraphical approach to the Earth sciences with his 'Short classification and description of the various rock types' ('*Kurze Klassification und Beschreibung der verschiedenen Gebirgsarten*') (not published in outline until 1786).
This system recognised a sequence of four main divisions of rock types, in downward sequence as follows:

1. Aufgeschwemmte Gebirge (Alluvium, in places with fossils),
2. Vulkanische Gebirge (Ashes, pumice etc with occasional fossils),
3. Floetz Gebirge (Limestone, sandstone etc - the term means 'stratified and low-dipping rocks' – often holds fossils), and
4. Uranfangliche Gebirge (basically, 'basement' rocks of various types (including basalt) and containing no fossils).

WERNER stated that it is not always possible to separate these four divisions from each other as they seem to show transition phases. Later, WERNER in his lectures brought in a second scheme or system, with the introduction of the Uebergangsgebirge or transitional rocks, placed between the Uranfangliche Gebirge and the Floetz Gebirge. This second, later scheme included five main divisions of the sequence of rock types subdivided further into 'formations' (based upon a concept of the mode and time of formation of the rocks). This second scheme or system was shown with the oldest rocks at the top of the list and becoming younger downwards, as follows:

I. Urgebirge ('basement' rock 'formations' – fossils are absent),
II. Uebergangsgebirge (Devonian and Carboniferous limestones plus grauwacke),
III. Floetzgebirge (with various 'formations' recognised and importantly hinting at the beginnings of recognition of the Permian, Triassic, Jurassic, Cretaceous and Tertiary sequences),
IV. Aufgeschwemmte Gebirge ('alluvium', gravel etc),
V. Volcanic rocks (comprising 2 divisions).

In addition, and importantly in the present context, WERNER had relocated some basalt occurrences in the construction of this later (second) scheme or system by moving them out of the Urgebirge ('basement' rocks) into the Floetzgebirge (stratified rocks). These basalts, and subjacent sandstones, 'wacke', and brown coals were incorporated in his second scheme and known as the Floetztrappgebirge ('Formation' Number 11 of the Floetzgebirge); they had been examined at the Scheibenberg locality by WERNER and assigned to a better, or more realistic, position in Werner's sequence of rock formations, but still believed by Werner to be deposits of aqueous origin. These rock formations are nowadays classified with the Tertiary and Cretaceous systems, that is they are relatively young in a geological sense and certainly not associated with basement rocks as WERNER had thought hitherto.

While in the Freiberg region in 1801 GIESECKE also met many famous and subsequently well-known mineralogists, geognosists and mining engineers. Amongst these were C.A. HOFFMANN, Mining Inspector and author of the ‘Handbuch der Mineralogie’, the only authorised version of WERNER’s Mineral Systematik. From Freiberg in early October GIESECKE travelled south-west to the Erzgebirge, to Chemnitz, then Loessnitz to Eibenstock and Schneeberg in which area he stayed for the month of October. Judging by the route he took it seems certain that he not only went mineral collecting but also went to see and familiarise himself with WERNER’s famous locality of Scheibenberg, the place where WERNER first recognised that the columnar basalts were not of similar age to his primitive rocks (Urgebirge), but part of his Floetz division thereafter named the Floetztrappgebirge.

Subsequently, in late 1801 GIESECKE made his way south westwards via Bayreuth, Bamberg and Wuerzburg until he eventually arrived in Frankfurt in 1802. After a few months there he moved on again to Marburg, Kassel, Brunswick, Hamburg and Bremen. The signatories in his albums from these locations are mainly professors of mineralogy or chemistry, or mining advisors and engineers but with occasional singers and actors. The Bremen entries contain two individuals by the name of OLBERS, an intellectual family actively promoting the theatre in Bremen and including the well-known Bremen astronomer Heinrich Wilhelm Matthias OLBERS who had been a student at Goettingen University and a member of the Oldenburg masonic lodge Golden Hart (RUEPPEL, 1996).
From Bremen GIESECKE travelled on to Hamburg and Luebeck where a man named DE VILLIERS in January 1803 made an early intimation of 'a long geological voyage' yet to come for GIESECKE (although there is a reference to 'a great journey' to be undertaken as early as May 1802). References in the albums to a long geological voyage increase as GIESECKE travelled along the north German coast from Rostock, Stralsund, Greifswald, and back to Hamburg in 1803, with mention of an 'Appalachian' visit, and an American journey. These references to America rather than to Greenland clearly puzzled WATERHOUSE (1936) considerably but are simply reflecting the poor state of knowledge of the geography of these Arctic regions in the early 19th Century when people were uncertain as to whether Greenland was part of the American continent or separate from it.

GIESECKE in Greenland

GIESECKE then travelled in Denmark, Sweden, the Faeroe Islands and Norway collecting and selling minerals, but also applying his scientific expertise to the curation and description of other people's mineral and rock collections as well as his own. His first stay in Copenhagen (October 1803) had echoes of his visit to Berlin in that he met some very influential people including THORKELIN (the Keeper of the Royal Privy Archive), NEPPERSCHMIDT (Royal Prussian Mining Advisor), D. Friedrich MUENTER and Gregorius WAD (Professor of Zoology and Mineralogy).

Of particular interest amongst this group is Friederich MUENTER (1761–1830) who was a prominent German freemason (since the age of 19), historian and antiquary based in St Petri's Church in Copenhagen which served as a German cultural enclave and meeting point for visiting German intellectuals. He eventually became Professor of Theology in Copenhagen and Bishop of Seeland, was the same age as GIESECKE, and also shared an interest in KLOPSTOCK. In 1781 MUENTER travelled extensively in Europe as part of his university studies, became a member of the Illuminati (in 1783), and resided in Goettingen (another strong Illuminati centre) while at the university there in October 1781. Perhaps this is where MUENTER first met GIESECKE, because the latter left all his books and mineral collections in St. Petri's Church Copenhagen while carrying out his Greenland research and exploration. MUENTER also apparently had some interest in Rosicrucian aspects of freemasonry which GIESECKE may also have shared. However, it was through the Illuminati connection that MUENTER became very friendly with Ignaz von BORN and his daughter Maria ('Mimi') during his visit to Vienna in 1784.

BORN's house became a second home for MUENTER who was also very interested in science and in archaeology. He reported that the two best masonic lodges in Vienna were BORN's True Harmony lodge and GEMMINGEN's Beneficence (Wohltaetigkeit) lodge. He also described BORN's True Harmony lodge in his diary in the following terms *'the whole BORN lodge is a kind of academy of science'*, and made reference to BORN's scientific and technical work with the comment *'The Brothers of every lodge stay exactly together, it is as if between them were a kind of Amalation [sic](?Amalgamation)'* (ROSENSTRAUCH-KOENIGSBERG, 1984).

In late 1803 until mid-1804, GIESECKE travelled to Gothenburg, Stockholm, Upsala and Falun where he met more professors of mineralogy, chemistry, mining engineering and botany. In Upsala he met Axel FERSEN, Chancellor of the University who thanked him for curating the royal mineral collection, and described him as 'one of Germany's mineralogical collectors and a particularly knowledgeable man'. On 28 April 1804 GIESECKE was made a member of the Royal Academy of Sciences in Upsala together with the famous French anatomist Georges CUVIER. GIESECKE also presented the Upsala Academy with more minerals for its collection, together with books for the reference library. He returned to Copenhagen in September 1804 and renewed the friendship established in Berlin with Professor MANTHEY (chemist and mineralogist) in October of that year. Details of the arrangements made by the Greenland and Faeroes Trade Commission for GIESECKE to conduct mineralogical surveys are given in STEENSTRUP (1910) and it is interesting to note that Professor MANTHEY's comments and work figured prominently in a bid by the Trade Commission for financial support from the Danish crown dated 7 May 1805. In this bid for supportive funding, which was eventually unsuccessful, we find GIESECKE described formally as Royal Prussian Mining Advisor (K.Pr. Bergrat), and are made aware that GIESECKE had curated and catalogued MANTHEY's mineral collection. Nevertheless, the crown gave permission for GIESECKE to visit Greenland and the Faeroes at his own cost. Accordingly, GIESECKE visited the Faeroe Islands during August and September 1805 (see JØRGENSEN 1996), followed by visits to the Norwegian mining districts of Christiansand, Arendal and Kongsberg in late 1805.

It seems likely that GIESECKE's proposal to explore Greenland may have had its roots in various reports of potentially important mineral occurrences in Greenland that were filtering into Europe via Copenhagen, the Danish capital city. Sometimes these reports came from native Eskimo or Inuit people as well as from Danish settlers in Greenland. In particular, specimens of the mineral 'copper glance' (a valuable and rich copper-bearing ore, later to be named bornite by HAIDINGER in 1845), and cryolite (an early source of carbonate of soda and later of aluminium), had been discovered and brought to Europe but not yet located in situ in Greenland by Europeans. The natural resources of colonial territories were of great concern to European powers at this time because of their importance to national economies and to developing industrial processes.

By January 1806 GIESECKE was back in Copenhagen where he met again various members of the MUENTER family in whose church of St. Petri he left most of his belongings and specimens, hopefully secure before his departure for Greenland. In mid-April 1806 GIESECKE set sail on the six week sea journey from Copenhagen to Greenland and after two severe storms en route arrived safely at Friederichshaab on 31 May 1806. He didn't know of course that this projected visit of a year or two would last for seven years because of the Napoleonic wars.

Giesecke in fact was effectively marooned or stranded in Greenland for this length of time and eventually suffered great hardship, living and travelling in very difficult, even at times terrible and very dangerous, circumstances.
Much of his longer distance travelling in Greenland had to be done by boat. He clearly describes his journeys by umiak (Fig. 3), an Inuit open boat rowed by several (usually six) Inuit women, but of course he also frequently had to travel by sledge or on foot (Fig. 4). Most of GIESECKE's mineralogical and geological exploratory work was carried out along the west Greenland coast although he also visited south east Greenland too. He soon discovered the bornite locality (on 15/8/1806) and after initial observation recorded that the deposit was not large and therefore probably not economic.

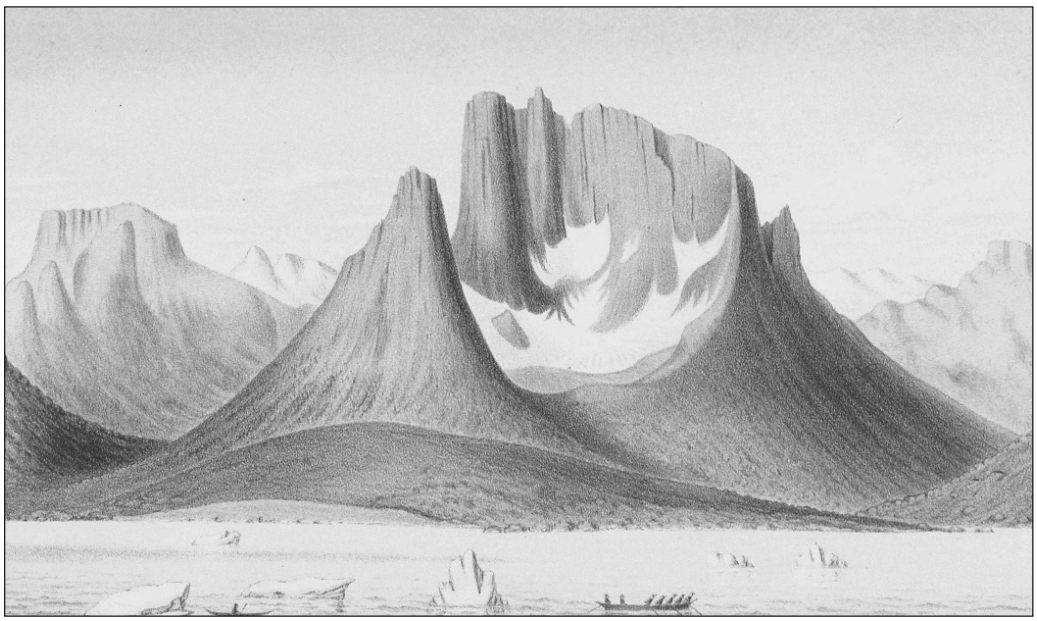


Figure 3
Mount Suikarsuak in Tasermiuk fjord showing an Inuit umiak (with kayak escort) illustrated against dramatic Greenland scenery by Kornerup (in Steenstrup and Kornerup 1881).

As early as 25 May 1807 in a letter to Friederich MUENTER he wrote *'I have already lived through one winter in this great stony, frozen theatre and play comedy in the morning with gusto with which tomorrow morning I go to sea……I am now busy doing field work where I hew and slog from morning till night. Stone collecting and distributing has its moment says wise Solomon our protective patron…..I come with luck to Copenhagen so as to disperse over the whole world'*.

He visited all parts of the west Greenland coast from Cape Farewell in the south (at 69 degrees north latitude), as far as 76 degrees north. He collected large quantities of minerals and shipped them to Copenhagen. During the Napoleonic wars, which included Britain being in conflict with Denmark, one of these shipments was captured by a British frigate and a large collection of his minerals finished up in Leith, the port near Edinburgh. As a further result of the war, his stay in Greenland lengthened because of the consequential communication difficulties.

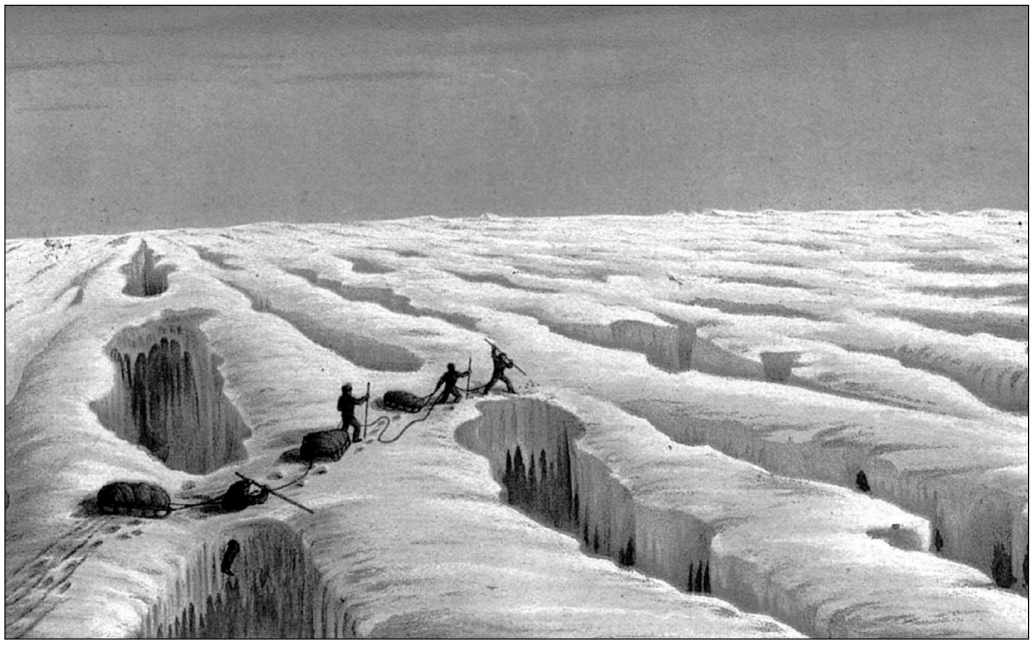


Figure 4
Some of the hazards of the inland ice of Greenland illustrated by Kornerup (1879).

The ultimate nadir of his time in Greenland was the news that his existing collections, books, records and belongings at the St. Petri's Church vicarage in Copenhagen had been destroyed during the British bombardment of the Danish capital city (2–5 September 1807).
This experience acted as a spur to GIESECKE because he began collecting again with renewed vigour to replace at least part of the lost collections. His activities in connection with this later phase of collecting, however, were not helped by the particularly bad weather and climatic conditions suffered during the later part of his sojourn in Greenland. Sometimes there is a touch of despair from his travel diary, although conversely there are times when the splendid sights of the aurora borealis and other atmospheric phenomena of the arctic gave him much pleasure and some inspiration. Behind much of his writing, whether in the diary or in his letters and papers, there is invariably a persistent literary or even poetic flavour, and frequent reference to the stage. One example is provided by his observations at 9 pm on the evening of 17 December 1811 when he saw a comet he had been watching for several days disappear and then – *'at the same time, extending across the whole horizon from south east to north west were very beautiful, arched bows of Northern Light with the brightest rainbow colours. Over these bows blazed beautiful, single, fire-red perpendicular beams like rockets. It was to me the most beautiful, incomparable firework of Nature which no art could approach. I had the good fortune for over one hour to feast my eyes on this majestic spectacle'* (Zu gleicher Zeit zeigte sich ein sehr schoenes bogenfoermiges Nordlicht mit den brennendsten Regenbogenfarben, welches sich ueber den ganzen Horizont von Suedost nach Nordwest erstreckte. Ueber dem Bogen flammten schoene einzelne feuerrothe Strahlen lothrecht, wie Rakketen auf. Es war das schoenste unvergleichlichste Feuerwerk der Natur, welches keine Kunst nachzuststuempern vermag. Ich hatte das Glueck mich an diesem majestaetischen Schauspiele ueber eine Stunde laben zu koennen).

GIESECKE's mineralogical and geological achievements in Greenland

It would seem on the face of it that GIESECKE regarded himself first and foremost as a mineralogist rather than a geologist. However, the matter is not as simple and straightforward as it may seem because it can be clearly demonstrated that he had a full understanding of Wernerian geognosy or geology (which at that time was effectively the mainstream geological paradigm). Before that, however, a brief note of some of his mineralogical achievements.

GIESECKE, as well as being a dedicated collector and an acute and fully scientific observer (for his time), was also a reliable and extremely accurate recorder of mineralogical and, indeed, geological data. In addition to his vast 'routine' collection of general Greenland minerals from a very wide area and under extremely difficult circumstances, he discovered and collected many new species of minerals during his stay in Greenland. GIESECKE was also the first geologist to visit the famous tourmaline occurrence at Ameralik Fiord in 1808, a locality now well known for the size of the tourmaline crystals.

Amongst the new minerals discovered by GIESECKE were sapphirine, a manganese aluminium silicate (discovered 5/9/1809 and formally described by STROMEYER in 1819); sodalite, a sodium aluminium silicate with chlorine (discovered 28/8/1806 and formally described by THOMSON in 1811); arfedsonite, a complex multimetallic silicate (discovered 7/7/1806 and formally described by LAUBE in 1873). Also discovered were allanite, a complex multimetallic silicate (discovered 1/8/1806); eudialyte, a complex sodium, calcium, iron, zirconium silicate (discovered 28/8/1806); anthophyllite-gedrite (an iridescent orthoamphibole sometimes marketed as the gem material 'nuummite'), a magnesium iron silicate (discovered 1/6/1810 and described by BØGGILD in 1953). Noteworthy too is the mineral gieseckite (Fig. 5), a pseudomorph of mica or nepheline consisting of sodium/potassium aluminium silicate (discovered 30/7/1809 and described by SOWERBY in 1817 [Fig. 6]).

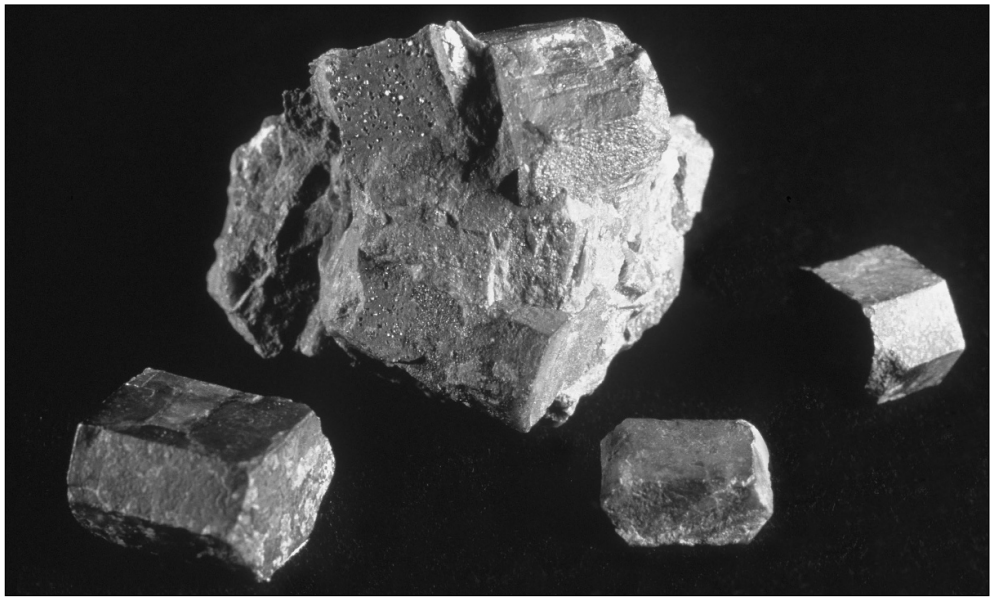
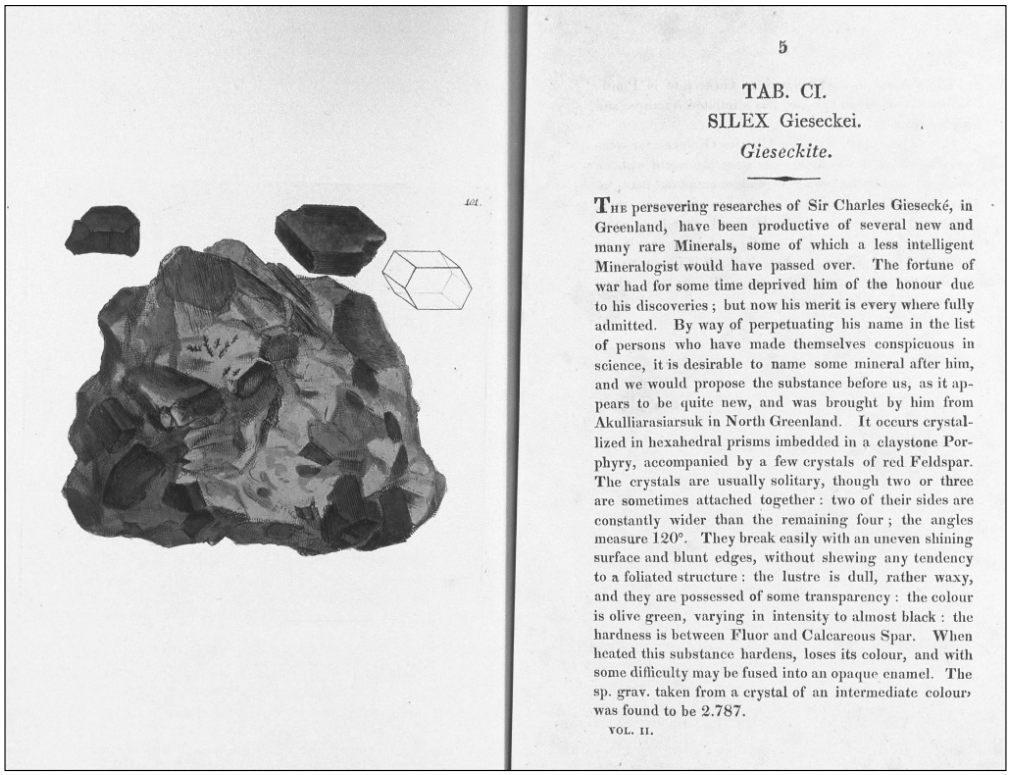


Figure 5

A specimen of the mineral gieseckite presented by Giesecke to Archduke Johann in 1818 in the collections of the Joanneum Museum, Graz.



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TAB. CI.

SILEX Gieseckei.

Gieseckite.

THE persevering researches of Sir Charles Giesecké, in Greenland, have been productive of several new and many rare Minerals, some of which a less intelligent Mineralogist would have passed over. The fortune of war had for some time deprived him of the honour due to his discoveries; but now his merit is every where fully admitted. By way of perpetuating his name in the list of persons who have made themselves conspicuous in science, it is desirable to name some mineral after him, and we would propose the substance before us, as it appears to be quite new, and was brought by him from Akulliarasiarsuk in North Greenland. It occurs crystallized in hexahedral prisms imbedded in a claystone Porphyry, accompanied by a few crystals of red Feldspar. The crystals are usually solitary, though two or three are sometimes attached together: two of their sides are constantly wider than the remaining four; the angles measure 120°. They break easily with an uneven shining surface and blunt edges, without shewing any tendency to a foliated structure: the lustre is dull, rather waxy, and they are possessed of some transparency: the colour is olive green, varying in intensity to almost black: the hardness is between Fluor and Calcareous Spar. When heated this substance hardens, loses its colour, and with some difficulty may be fused into an opaque enamel. The sp. grav. taken from a crystal of an intermediate colour, was found to be 2.787.

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Figure 6
First formal description of gieseckite by James Sowerby (1817).

GIESECKE and the Ivigtut cryolite

The mineral species cryolite (Na_3AlF_6) deserves particularly special mention. This very rare mineral was traded as early as the beginning of the 18th Century amongst the native people of the western coast of Greenland. They used the cryolite as sinkers or weights for their fishing lines and nets because the mineral is very soft, easy to shape and to drill into. It was also apparently ground up as an additive to snuff. The first samples were brought to Europe via Copenhagen as curiosities by Danish missionaries in the middle part of the 18th Century. A regimental surgeon and assistant professor in mineralogy at a private natural science society by the name of C.F. SCHUMACHER in 1795 and in 1798 described some of the physical properties of the above-mentioned specimens. He concluded, unfortunately wrongly as it turned out, that the mineral was barytes.

P.C. ABILDGAARD the Danish veterinary scientist was the next person to look at cryolite. He had a great interest in mineralogical science and at the suggestion of the Brazilian-Portuguese mineralogist J.B. D'ANDRADA, with whom he was in contact, ABILDGAARD succeeded in demonstrating the presence in the mineral of aluminium and fluorine but did not manage to carry out quantitative chemical analyses.

In his 1799 paper ABILDGAARD at the suggestion of D'ANDRADA used the name cryolite (with Danish spelling 'Kriolit') for the first time. The name is very apt because it is derived from the Greek words for 'ice' and 'stone' which refer to the visual appearance of this mineral and, indirectly, to its low melting point. It was analysed chemically and established as a mineral species by KLAPROTH of Berlin in 1800.

According to his travel diary GIESECKE (1910) first mentioned cryolite (a few small pieces) briefly on 9 September 1806, and his diary finishes for that year on the following day (10/9/1806). From the diary it seems that GIESECKE did not find the major deposit of cryolite at Ivigtut until 10 August 1809 on which occasion he gave a full and detailed description of the occurrence. However, in his account entitled 'On Cryolite; a Fragment of a Journal' published in 1822 in the Edinburgh Philosophical Journal, he describes how towards the end of September 1806 he visited the famous Ivigtut locality and investigated the place thoroughly in September 1806. Since his diary is usually extraordinarily reliable, a view which is held by all subsequent scientists and investigators, it seems possible that he may have made a simple transcription error of 1806 for 1809 when preparing the Edinburgh Philosophical Journal account for publication in the early 1820s some fifteen years later. In the 1822 account he states quite categorically *'that we owe the first discovery of cryolite to the Greenlanders'*, and that *'It was of course incorrectly stated in some periodical papers, that the cryolite was discovered by me; I only found its geological situation, and I dare say by a mere accident'*.

The first mining in Ivigtut was not for cryolite but for argentiferous galena in 1854, found in the contact between the cryolite body and the surrounding granite. These mining activities were organised by JW TAYLER a British mining engineer who after only six months realised that the amount of galena was too low to sustain extraction economically. Apart from this 'false start' as it were, the history of mining at Ivigtut is connected mainly with the use of cryolite. Between 1849 and 1852 the Danish industrial chemist Julian THOMSEN discovered a process by which cryolite (sodium aluminium fluoride) could be converted into soda, aluminium and other things. Originally, the cryolite was used chiefly as a source for sodium carbonate but that market gradually declined and ceased in 1894.
Aluminium production from cryolite began in Copenhagen in 1859 after which mining at Ivigtut accelerated. Initially, the quarried mineral was hand-sorted because the ore shipped had to contain more than 85% cryolite. In 1864 the whole area was taken over by one (Danish) company ('Kriolit Mine og Handels Selskabet') which kept production going until the major breakthrough in the use of cryolite occurred in 1886-1887. At this time the Hall-Heroult process was discovered through which aluminium metal is obtained by electrolysis of alumina from solution in molten cryolite. This remains the process by which aluminium is obtained at the present time. For the first 30 years or so of production from Ivigtut, that is until the end of the first decade of the 20th Century, about 20 thousand tons of crude cryolite were produced per year. In 1962, after about 3.5 million tons had been produced, it was decided to cease mining operations, although for the following 20 years about 500 thousand tons of cryolite were shipped out using material which had been used for local Greenland purposes of coastal protection and road construction. The Ivigtut location is still a great attraction to professional and amateur mineral collectors alike, principally because of the fluoride mineral group, represented at Ivigtut by about 16 different mineral species.

GIESECKE's field geology in Greenland

During this early 19th Century period of transition of the geosciences, from early mineralogy to geognosy and eventually to geology, GIESECKE's writings and published work show him to have been thoroughly conversant and fluent with contemporary Wernerian geognosy and geology, and therefore fully abreast of the principles of what was then the mainstream geological paradigm. GIESECKE as far as is known did not produce a geological map of any part of Greenland. This is not surprising given that although he had a rather crude and inaccurate small-scale map of part of the region, he would not wish to despoil any rare, invaluable, and indeed potentially life-supporting document such as this by making notes on it or similarly 'misusing' it. This is especially true given that writing-paper, or indeed paper of any sort, would always be in extremely short supply in Greenland at that time, or simply not available at all in his difficult later years there.

Firstly, it should be pointed out to the non-specialist or non-geologist that Greenland geology is extremely complex. This is because most of the rocks exposed there are very ancient (in fact the oldest rocks in the world are present in, and dated from, west Greenland) and they are very complicated in terms of their composition, sequence and particularly their geological structure. These oldest rocks have an age greater than 3,800 million years, and much of the ice-free area comprises crystalline rocks of what geologists call the Greenland 'Precambrian Shield'. This shield has acted as a stable block on which deposits accumulated at various times during the Precambrian; all of these deposits were later deformed structurally and metamorphosed under conditions of high temperature and pressure. In north and east Greenland some sedimentary deposition continued into Palaeozoic and Mesozoic times and some of these younger rocks (together with some of the basement Precambrian rocks) were subjected to tectonic and metamorphic events during these later times. Later still in geological time (in the early Tertiary) there was considerable volcanic activity in both west and east Greenland.

From his travel diary it is clear that GIESECKE (1910), in addition to identifying or describing accurately the mineral species present at the many localities he visited, also recognised many of the major rock types present despite the geologically complicated terrain and the presence of some rather exotic or unusual rock types from place to place. Using Wernerian principles he thus recognised and produced precise descriptions of granite, syenite and gneiss 'formations' (used in the Wernerian sense) and recognised in his writings the major Wernerian divisions of the Urgebirge, the Uebergangsgebirge and the Floetzgebirge. He also very clearly describes the types of terrain present and their underlying geology using WERNER's system.

His work on the Disko Island region shows that he had a clear understanding of stratigraphical sequence and of correlation. In fact the word 'stratification' is actually used by GIESECKE in his 1823 account. The apparent mineralogical emphasis of the title of his 1823 paper 'On the Mineralogy of Disko Island' published in the Transactions of the Royal Society of Edinburgh, belies the fact that the account actually describes the Wernerian formations present and thus the geology of this region as well as the mineralogy. In this account and in his diary he describes the Disko Island 'floetztrap formation' or the 'floetztrappgebirge' and its sequence in detail. He also recognises several divisions of the Disko Island basalt, separated by ferruginous clays, and resting upon granite with gneiss basement at Ounartosoak, near Godhavn. The 1823 paper presents a fine drawing of the basalt sequence here and its numbered divisions as elucidated by GIESECKE (1823)(Fig. 7).

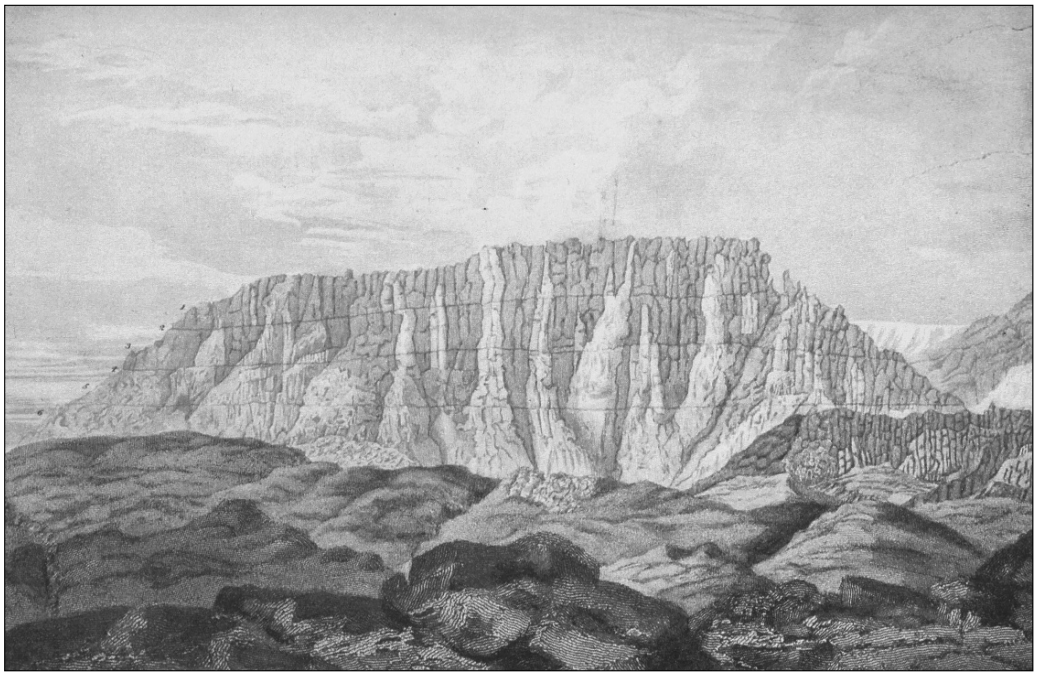

Figure 7
Annotated drawing by Giesecke of the Floetztrappgebirge basalts (Tertiary) overlying the Urgebirge basement gneiss (Precambrian) at Mount Ounartorsoak near Godhavn.

He also describes and illustrates, by means of a drawing, the region of the Waygat, a seaway separating Disko Island from nearby Umanak. Hereabouts he recognised and described the basalt's subjacent strata of coarse-grained sandstones and thick brown-coal seams. In addition to the local correlation of this Wernerian 'formation' (that is the Floetztrappgebirge) wherever it occurs on the coast of western Greenland, GIESECKE by use of the name also demonstrated the long-range correlation (c. 4000 kilometres) of this 'formation' from central Europe to western Greenland. This is the first long-range correlation of these previously unknown rocks, achieved by GIESECKE using the gebirgsformation classification of the Wernerian system by the year 1807.

Given the contemporary knowledge of geoscience, GIESECKE provided first class descriptions, and he clearly had an excellent understanding of Greenland's mineralogy and geology. His detailed and accurate descriptions of the landscape and geology are such that maps produced much later (beginning with those made in the 1870s by HAMMER and STEENSTRUP in 1878–1880 (see JOHNSTRUP (1883), through to the latest, modern maps of the Greenland Geological Survey (ESCHER and PULVERTAFT 1995)) allow clear and straightforward recognition of the geology of Giesecke's locations described in his 1806–1813 travel diaries. Thus GIESECKE's accuracy of observation and understanding are amply confirmed by much later (including modern) work. Comparison of his geological descriptions with modern maps also makes it apparent that GIESECKE could have produced a workmanlike geological map of the Greenland terrain if he had the necessary resources at his disposal.

Before leaving GIESECKE's involvement with Greenland it is essential to note that his work there was also extremely productive in the fields of zoology, botany, meteorology, geography, ethnography and linguistics, some of which is amply demonstrated by the varied collections he brought back to Europe. One of his keen interests that is not so obvious except to those who read his papers and travel diaries in detail is his reportage of Eskimo or Inuit customs, religion and folklore. From this and related general comments of his it is clear that GIESECKE had a considerable knowledge of, and great interest in, folklore and mythology from ancient as well as contemporary times.

GIESECKE in Ireland and his later visits to the continent

GIESECKE left Godhavn on 16 August 1813 and arrived on the 19 September1813 in Leith near Edinburgh. Once again, as in Berlin and Copenhagen, he very soon established contact with influential people. The first signature in his album dated 8 October 1813 was that of Sir George MACKENZIE (1780–1848) one of the leading figures in Edinburgh who was a baronet and freemason as well as a renowned scientist noted for proving that diamonds are composed of carbon. On 19 October GIESECKE then met Robert JAMESON (1774–1854) Professor of Natural History at Edinburgh University, founder of the Wernerian Natural History Society in Edinburgh, and a former student of WERNER from September 1800 to February 1801. Apparently, it was MACKENZIE who took Thomas ALLAN to meet GIESECKE in Leith (ANON 1834). ALLAN became GIESECKE's host during his stay in Edinburgh and was the man who some years earlier had benefited from GIESECKE's misfortune when the latter's specimens were captured by a British ship as booty. ALLAN had recognised the presence of the rare mineral cryolite when the material was dumped and offered for sale by the navy in Leith, and was anxious to meet the collector. From then on, rather like a fairytale, GIESECKE's fortunes changed dramatically. Within weeks of landing in the British Isles he applied for, and was subsequently appointed to (2 December 1813), the newly-established professorship of mineralogy at the Royal Dublin Society at a salary of £300 per annum and began preparations for his lectures, and for the curation of the famous Leskean mineral cabinet. This was despite being able to speak no English at this stage. It was during this brief Edinburgh stay that GIESECKE, at the suggestion and cost of MACKENZIE, sat for the portrait painted by RAEBURN.

In 1814 shortly after his Dublin appointment he travelled to Denmark to wind up his affairs there and was made a member of the Danish Order of the Dannebrog. Subsequently he used the courtesy title of 'Sir' Charles Lewis GIESECKE. His lectures on mineralogy commenced in April 1815 during which time GIESECKE was still in close contact with Copenhagen, Vienna and Graz because of his projected European visit. In fact by March of 1816 he had already been in touch with Karl von SCHREIBERS (1775–1852) the Director of the Austrian Imperial Museum by sending him a portion of the Irish meteorite which had fallen on Tipperary in August 1810. In Ireland, the removal and arrangement of the Dublin mineral collection comprising the Leskean, the new Systematic, and the Greenland cabinets, occupied much of GIESECKE's efforts over this period but the tasks were completed by June 1816.

All these specimens and other illustrative material were exhibited at GIESECKE's first course of lectures in July, August and September of 1816, at about which time a second collection of his Greenland material arrived in Copenhagen (he had brought the first back to Dublin from his 1814 visit to Copenhagen). Following this he devised a course on 'Economical Mineralogy' which began in December 1816.

By May 1817 it was decided by the Dublin Society's authorities to allocate £300 for the purchase of the *'most deficient species of simple minerals, which according to the list and index handed to us by your Professor, amount to 129 species and sub-species'*. Accordingly, GIESECKE was given leave of absence to proceed on his proposed tour and purchase the specimens required. Soon thereafter (12 June 1817), he was awarded a gold medal by the Dublin Society (Fig.8) and at the same gathering (to mark this occasion to honour GIESECKE) Sir George MACKENZIE sent the RAEBURN portrait (Fig.1) as a gift to the Society. It was also in this year that SOWERBY (1817) published the formal description of the mineral gieseckite.

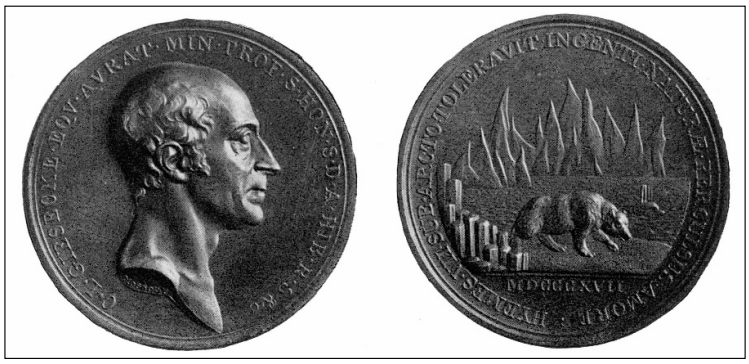

Figure 8
The gold medal awarded to Giesecke by the Dublin Society in 1817.

GIESECKE left Dublin in late July 1817 to make his journey to the continent. En route he spent some time in London (where he met Joseph BANKS President of the Royal Society on August 15) to examine a mineral collection at the Geological Society of London; but by September he was aboard the vessel 'Johanna' bound for Copenhagen, which he reached later that month and where he remained until June of 1818. Then he travelled south via Hamburg and Goettingen where he met (July 24 1818) Friederich STROMEYER (famous professor of chemistry who analysed sapphirine) and then on to Vienna to present his collections to the Imperial Museum. The collections were transported from Copenhagen to Kiel, Hamburg, Lueneburg and Leipzig to Regensburg and thence via the River Danube to Vienna, the freight costs being borne by the Emperor. Delivered to the museum in Vienna were the following categories of specimens: (1) 215 ethnographic items (valued at 100 ducats), (2) 41 skeletal parts of sea lions (200 ducats), (3) 43 pelts of sea lions, foxes and birds (100 ducats), (4) zoological specimens in preservative, several shells and 200+ specimens of dried plants, algae, lichens and some valuable Transactions of the Royal Irish Academy (100 ducats), and (5) mineral specimens divided into three sections; 325 specimens from south Greenland; 145 specimens from north Greenland; and 402 specimens from Greenland, Iceland, and part from England, Scotland and Ireland plus some from North America (1000 ducats). In total 832 specimens were presented to the Emperor valued at 1500 ducats (that is 6–7000 gulden or 650 English pounds). The Emperor gave GIESECKE 1000 ducats (450 English pounds) to cover expenses and a splendid golden snuff box set with diamonds.

Of course Vienna was the location where the famous meeting took place in 1818 between GIESECKE and various well-known Viennese theatrical personalities including CORNET. It was CORNET (1849) some thirty years later who reported a claim by GIESECKE at this meeting that it was he (GIESECKE that is) who was responsible for important parts of the libretto of 'The Magic Flute', a claim which has given rise to seemingly endless dispute as to its veracity ever since. Background and comments to this event can be found in BRANSCOMBE (1991), ECKELMEYER (1991), HONOLKA (1990), IRMEN (1991, 1996), KOMORZYNSKI (1948), KIRCHMAYER (1995, 2001) and WHITTAKER (1998). The present work finds no incompatibility with the suggestion that GIESECKE may well have contributed portions of the libretto. In fact the greater the quantity of detailed data which emerge about GIESECKE's work, interests and background, the more plausible such an input seems. The suggestion that 'The Magic Flute' is an alchemical, numerological and masonic allegory (WHITTAKER, 1998) fits extremely well with GIESECKE's knowledge, background and interests in science, mythology and the theatre as outlined in this account. New findings such as those of BUCH (1997) underscore the fact that the Freihaus Theater's output was often a team effort, led of course by SCHIKANEDER. Of particular interest and relevance are the conclusions reached by IRMEN (1991, 1996) and his co-worker WICKMANN that both SCHIKANEDER and GIESECKE may well have been involved in the writing of the libretto as demonstrated by computer analysis of author-specific language characteristics. The computer analysis was applied to 'The Magic Flute' text and to various libretti of both GIESECKE and SCHIKANEDER with the conclusion that SCHIKANEDER wrote the dialogue ('unbound text') with an apparent 91% probability, and that the authorship of the 'bound text (arias etc)' may stem from either author with an apparent 50% probability for each. They thus conclude that GIESECKE cannot be excluded as a co-author.

In October 1818 GIESECKE was escorted from Vienna to Graz by Archduke Johann's Adjutant (Joachim Freiherr von SCHELL) where he met Lorenz von VEYT (Professor of Botany and Chemistry at the Joanneum Museum). On this visit GIESECKE presented specimens personally to Archduke Johann and thus to the Mineralogy Department of the Joanneum – 471 specimens of minerals and rocks together with two lists of the specimens written by GIESECKE himself (MELL 1911). During his sojourn in Graz, GIESECKE, also met with Matthias Joseph ANKER Curator of Mineralogy at the Joanneum.
GIESECKE spent the winter of 1818 in Vienna where he met with Karl von SCHREIBERS (6 December 1818) Director of the Imperial Museum (and son-in-law of Joseph Franz JACQUIN), Joseph HAMMER-PURGSTALL (18 December 1818) the Orientalist, Joseph Franz JACQUIN (12 January 1819) Professor of Botany (son of Nikolaus Joseph JACQUIN and brother of Gottfried JACQUIN – MOZART's good friend and companion), E.F.F. CHLADNI (27 March 1819) physicist, acoustician and musician, and F. ZIMMERMANN (15 February 1819) Professor at the Joseph's Academy. Neither did he neglect his artistic acquaintances and contacts. On 18 May 1819 he met the STREICHER family, Andreas, Nannette, Baptist and Sophie. Nannette (Maria Anna) STREICHER (1769–1833) was the daughter of Johann Andreas STEIN the celebrated Augsburg organ and piano maker who MOZART met in 1763 and in 1777 and whose pianos were highly praised by him. Neither did GIESECKE lose touch with the wider Viennese artistic scene. While in the city he became a member of the well-known Viennese artists' club 'Ludlam's Cavern' (Ludlams Hoehle) where he was known as 'Harpoon, the seal GIESECKE' (Harpun, der Robbe GIESECKE), a reference to his Arctic experiences.

He left Vienna in late May 1819 and travelled via Munich (where he met SCHLICHTEGROLL Director of the Academy of Sciences and obituarist), Augsburg, Stuttgart, Strasbourg, Cologne and London to Dublin where he arrived in mid-December. It was from Strasbourg on this return journey that on 4 November 1819 GIESECKE wrote to GOETHE asking whether he had received the mineral specimens sent to GOETHE on 20 June 1819. GIESECKE's connection with GOETHE was facilitated by museum director SCHREIBERS, and his gift to GOETHE (of 63 specimens including a fragment of the Tipperary meteorite) started a correspondence between the two men which covered observations and discussions on meteorology rather than mineralogy. However. the contact provided the opportunity for many Irish travellers to visit GOETHE in subsequent years as well as providing GIESECKE with a membership diploma of the Jena Mineralogical Society. In a reciprocal fashion GOETHE was made an honorary member of the Royal Irish Academy in November 1825 (WATERHOUSE, 1933; CASTLE, 1946).

On his return to Dublin GIESECKE commenced the delivery of an annual course of lectures on 'economical mineralogy and metallurgy' for the next ten years. Also, in his sixties and seventies, GIESECKE carried out mineralogical excursions to various parts of Ireland and published accounts of his scientific findings and results. Lists of his scientific publications can be found in STEENSTRUP (1910), and GUGITZ & KIRCHMAYER (1964). The above-mentioned suggestion that he would have been perfectly capable of preparing geological maps is confirmed from a suggestion by relevant members of the Royal Dublin Society in 1827 that GIESECKE should be given the job of making a geological map of Ireland after the long-awaited results of Richard GRIFFITH's mapping project had failed to materialise.

It was not until very late in his life that GIESECKE felt unable to pursue his researches and field work. He never married. There are indications that he had long suffered some lameness, probably the result of an accident in Greenland. In addition there was a pulmonary problem first hinted at during his journey to the continent in 1817 and apparently known to GIESECKE as 'the arctic cough', described by his obituarist (ANON, 1834) as 'a suffusion of water on the chest'. He died suddenly amongst friends in Dublin on March 1833. The esteem in which GIESECKE was held in his adopted homeland is illustrated by the sentiments expressed on his memorial plaque in St George's Church, Dublin (Fig. 9):

To the memory of

CHARLES L METZLER GIESECKE

Knight Commander of the Royal Danish Order of Danebrog
FRSE & GSL VPRIA HMRDS MWS MMBSLM RDAS
Member of the Royal Societies of Copenhagen
Upsala St Petersburg
Dresden Munich Jena Wetterau

Who devoted thirty six years to the sciences of mineralogy and geology in the pursuit of which he traversed a great part of Europe and passed seven years in Greenland amidst unnumbered obstacles & privations with an ardour unabated by the severity of inhospitable clime. He was distinguished by the favour of many of the crowned heads of Europe and was for nineteen years professor of mineralogy in the ROYAL DUBLIN SOCIETY.

He was beloved as a friend and sought as a companion by all who knew him.

BORN AT AUGSBURG APRIL 6th 1761
DIED AT DUBLIN MARCH 4th [sic] 1833

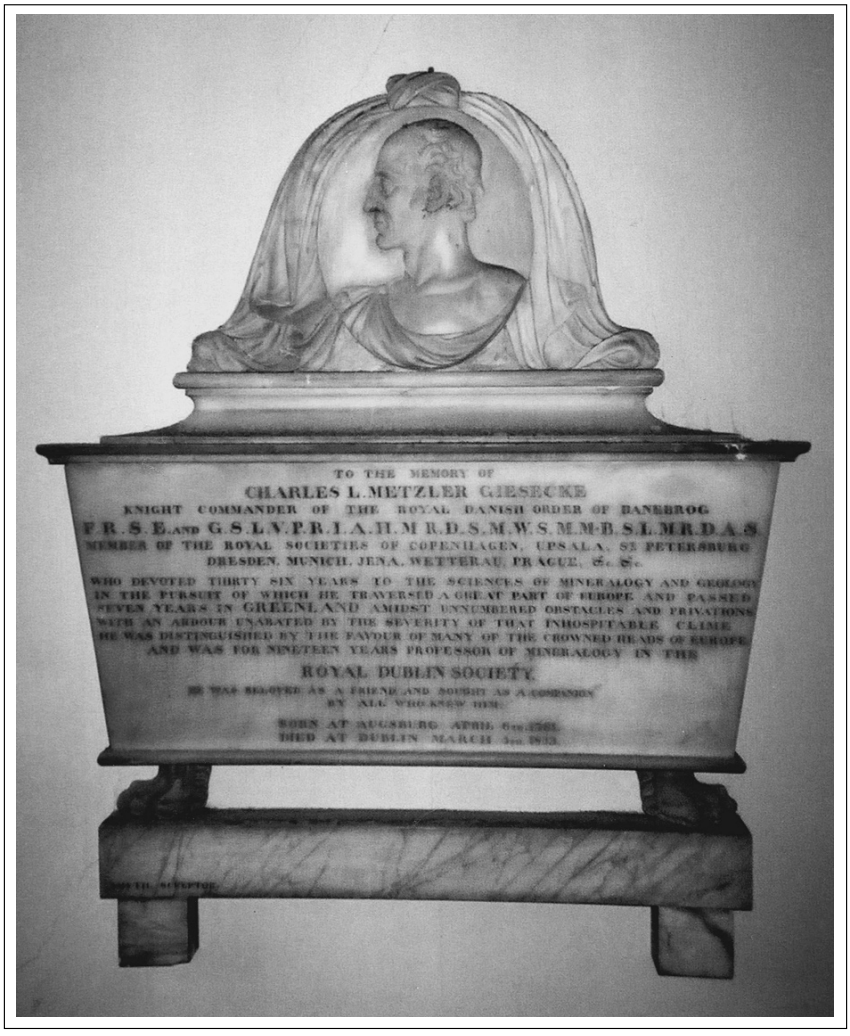

Figure 9
Giesecke's memorial plaque in St George's Church, Dublin.

Final Curtain

GIESECKE's original burial place (St George's Church) in Dublin has recently become a theatre, which in a sense is appropriate given his early love of the stage. Therefore perhaps we ought not to leave him on too serious a note. Below are two short pieces written in autograph albums by GIESECKE himself, the first in Otto HATWIG's Stammbuch, and written just before GIESECKE left Vienna. 'Friend Perinet' was the playwright Joachim PERINET (1765–1816) who was before 1798 a resident writer at the rival Leopoldstadt Theater but who in that year joined SCHIKANEDER's company at the Freihaus. GIESECKE wrote the following on the last page of HATWIG's album:

"Freund Perinet steht in der Mitte,
Drum kann ich nicht mehr dorten seyn:
Ich schreib nach meiner Art und Sitte
Mich auf dem letzten Blatte ein!
Doch bleib ich nicht als Freund der letze,
Ich schliesse mich an Ersten an,
Und jeder Freund, der je Dich schaetzte,
Ist auch mir werth, ist auch mein Mann!
Ich traeume oft von seelgen Tagen,
Wenn ich so in mein Stammbuch seh:
Wird dich um mich ein Freund einst fragen,
So nenn mich Deinen

Gieseke
k.k.Priv.Mineralhaendler
Wien 1800. 30 Junius."

The second is in GIESECKE's album (5) and is an entry made a quarter of a century later in Ireland (?Donegal) by an unknown person with initials A.E.A and dated 18 September 1826. The final verse was added by GIESECKE himself.

"Who in the mountain's caverned store,
Whose keen research and Learned lore
The polished marble did explore—
Giesecke.
A:E:A"

(Added by Giesecke)

"Who such bad poetry doth write
I must confess don't me delight
Nay - makes me grind my teeth with spite
And vex me!"

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