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RESEARCH ARTICLE

Hans Egede (1686–1758) and the alchemical tradition in Denmark-Norway

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Argument
Hans Egede (1686–1758), the famous missionary and natural historian in Greenland, was one of very few known Norwegian alchemists. This article seeks to place Egede's alchemy in the context of the European alchemical tradition by identifying his sources in alchemical literature. Through an analysis of Egede's account of an alchemical experiment performed by him in 1727, Ole Borch, Johann Joachim Becher, and Michael Sendivogius are identified as his main sources. Egede's procedure and choice of materials are shown to be based on texts by these authors. The article argues that Egede's alchemical interest was more pervasive than hitherto understood, through the demonstration of connections between his alchemical studies and his work as a natural historian. Further it is argued that Egede's alchemy was not unique or anachronistic but exemplifies the continued belief in and practice of transmutational alchemy in Denmark-Norway in the early decades of the eighteenth century.

Keywords: alchemy; Hans Egede; Greenland; Ole Borch; Johann Joachim Becher; Sendivogius; natural history; chemistry; antimony; Colony of Hope

The Norwegian Lutheran priest Hans Poulsson Egede (Johannes Pauli Qvercetanus, 1686–1758) is well-known in Norway and Denmark as "the apostle of Greenland" – the first missionary among the Inuits. He was also one of Norway's few known practicing alchemists. Alchemy was long not recognized as an object of academic study, and there has been little knowledge about Egede's alchemy among his biographers, who have been interested primarily in his role as missionary and natural historian.[1] His alchemical interest has remained unexplained and his only recorded alchemical experiment has been treated by biographers as a curious episode in the biography of this otherwise rational and pious man. Given alchemy's popular image as superstitious and fantastical it was almost unthinkable that this national hero, the famous first bishop of Greenland, could have had a serious interest in this.

The aim of the present article is to situate Egede's quest for the Philosophers' Stone in the history of alchemy. To do this, I will establish which alchemical texts were his main sources to alchemical knowledge, what type of alchemical method he used, and which works and theories inspired this method. Further the article will consider previously unacknowledged connections between Egede's alchemical interest and his work as a pioneer natural historian of Greenland, in the form of influence from Egede's alchemical reading on his published natural history, the *Perlustration*. Egede will be presented as an example of a relatively late, but not unique or

[1]Among biographers who have mentioned Egede's alchemical interest, are Eilert Sundt, in *Egedes Dagbog i Udtog* (Sundt 1860, 78-80); H.M. Fenger, in *Hans Egedes og den grønlandske Missions Historie 1721-1760* (Fenger 1879, 25); Niels Aage Barfoed, in *Hans Egede Grønlands Apostel* (Barfoed 1950, 87-90); Nils Fenger, in *Palasé Hans Egede i Grønland* (Fenger 1971, 108-109); Erik Gant, in *Omvendelse – om Hans Egede og det store værk* (Gant 1994, 227, 236-238); and Karl Erik Harr, in *Is og ild – i Hans Egedes kjølvann* (Harr 2008, 91-93).

anachronistic, alchemist, practicing at the end of the period in which transmutational alchemy was supported by premodern natural philosophy.

Even though several of Egede's biographers have mentioned that he performed an alchemical experiment, the scholarly literature about his alchemy is very scarce. Already in 1905 Thorstein Hiortdahl included Egede as Norway's first chemist in the article "Bidrag til kemiens historie i Norge" [Contribution to the history of chemistry in Norway] (Hiortdahl 1905, 339–340); however, the main works about Egede's alchemy since then have been a short semi-popular article, "Hans Egede – apostel og alkymist" [Hans Egede – apostle and alchemist] (Kragh 2002), by the Danish historian of science Helge Kragh; and, more importantly, the article "En alkymistisk tolkning av Hans Egedes drømmefabel" [An alchemical interpretation of Hans Egede's dream fable] (Furuset 2006), by his Norwegian colleague Kjell Furuset. Furuset was here the first to analyze Egede's report in order to determine which substances and method Egede used, and which processes took place. His article also contained the first interpretation of Egede's allegorical account of his experiment, the "Philosophical Dream," as an alchemical text. On the basis of these analyses, Furuset was able to give a detailed description of what actually happened on that day in the Colony of Hope from the point of view of a chemist and historian of science. In addition, Gina Dahl's chapter "Alchemy in Norway" in Henrik Bogdan and Olav Hammer's *Esotericism in Scandinavia*, contains a brief mention of Egede's alchemy (Dahl 2016, 31). There have thus been very few attempts to study Egede's alchemical practice in the context of the literature and traditions of alchemy, and only Furuset has added significantly to the information that can be read in Egede's own account.

This article's starting point will be Egede's report to the Royal Mission College in Copenhagen about an alchemical experiment that was terminated in the Colony of Hope in Greenland on March 12th, 1727, published in 1738 together with parts of his journals and reports from Greenland in *Omstændelig og Udførlig Relation ang. den grønlandske Missions Begyndelse og Fortsættelse* [Detailed and Thorough Account concerning the Beginning and Continuation of the Greenlandic Mission] (Egede 1738). Elements of the account make it possible to identify the alchemical literature that Egede read and which type of alchemy he practiced. Another important source is Egede's natural historical study of the nature and animals of Greenland and the customs of the Inuits, published in 1741 as *Det Gamle Grønlands Ny Perlustration eller Naturel-Historie* [The New Perlustration or Natural History of Old Greenland],[2] where the natural philosophical views that also underlay his alchemy are expressed.[3]

The diaries that Egede kept during his fifteen years in Greenland may have contained more information pertinent to his alchemical interests. Unfortunately, all of them were lost in the great fire in Copenhagen 5th to 7th of June 1795 along with the rest of the archives of the Royal Mission College. In addition to the diaries from 1724–35, Egede's annual reports from 1724–36 and all correspondence between Egede and the Mission College perished in the flames (Ostermann 1935, 1; Gulløv and Kapel 1971, 16). Transcripts of the correspondence between the colony and the Bergen Company were however published by P.R. Sollied and O. Solberg in 1932. The original documents are unfortunately lost. Examples of lists of goods that are mentioned in the transcribed text as having been part of the correspondence, but have not been included in the published text, suggest that lists of alchemical books and supplies ordered by Egede may also have existed as part of his correspondence with the Bergen Company. Should the original documents resurface, they could give valuable insight into Egede's alchemical practice in Greenland.

[2]In the period, Greenland was spoken of as Old Greenland, while the areas around the Barents Sea, i.e. Norway, Spitsbergen and Novaja Semlja, were called (New) Greenland (Gulløv 1978, 17).

[3]Both works were edited by Louis Bobé and published as *Relationer fra Grønland og Det gamle Grønlands ny Perlustration* in 1925 (Bobé 1925).

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Biographical and Historical Context

When eighteen-year-old Hans Egede in 1704 left his home in Harstad in northern Norway to study theology in Copenhagen, he is likely to have encountered ideas that would shape his future as missionary and alchemist.

Not least important among these was the current of Pietism, a motivating force behind the missionary movement in the early eighteenth century (Gulløv 1978, 27). The young Egede will have heard about great mission projects that were being planned. He may also have heard talk of plans to re-colonize Greenland. Greenland had first been colonized by Eirik Raude (Eric the Red) around year 970 (Gulløv and Kapel 1979, 11), and during the Middle Ages there was a thriving community with churches, cloisters, and about 300 farms. After about 1540, communications with the Norsemen in Greenland ended (Bobé 1925, 316, 319).[4] In Egede's time, foreign traders, particularly Dutch, had established trade with Greenland, and the Danish king increasingly felt the need to assert Denmark-Norway's rights to the colony and its resources. The belief that there were valuable minerals to be found in Greenland contributed to the interest in re-colonization (Bobé 1925, 13–14). Medieval sources, such as the thirteenth-century text *Konungs skuggsjá* [King's mirror], mentioned "red, blue, and green speckled marble" in Greenland (Brøgger 1947, 58), and this was repeated by Peder Claussøn Friis in his widely read *Norriges Oc Omliggende Øers sandfærdige Beskriffvelse* [Truthful Description of Norway And Surrounding Islands] in 1632 (Friis 1632, 175). It was also believed that gold had been found there more recently (Bobé 1925, 322). Just before Egede arrived in Copenhagen, Arngrímur Jónsson Vidalin had presented plans for Greenland's re-colonisation (ibid., 26).

Possibly Egede also encountered alchemical and Paracelsian theories during his student years. The renowned professor Ole Borch (Olaus Borrichius, 1626–1690), the first to hold a chair in chemistry at the university of Copenhagen (Fink-Jensen 2006, 13), had promoted Paracelsian alchemical ideas in his works *De ortu et progressu chemiæ* [On the Origin and Development of Chemistry], 1668, and *Hermetis, Ægyptiorum et Chemicorum sapientia* [The Wisdom of Hermes, the Egyptians, and the Chemists], 1674. He was internationally respected within the field of chemistry – immediately after his appointment to professor in 1660 he had left Denmark for an almost six years' journey in Europe, not least with the purpose of learning chemistry (Fink-Jensen 2000, 50), and had become acquainted with several famous European alchemists. One of these, Edmund Dickinson, later published the theory that all sciences were founded by Moses, who had learned them in Egypt. Dickinson's theories may have inspired Borch's *Hermetis*. Borch also met Robert Boyle (1627–1691) in London in 1663, and according to the latter's "Dialogue on the Transmutation and Melioration of Metals," he ("the learned Oleus Borrichus") told Boyle that he had witnessed the transmutation of silver to gold (Principe 1998a, 259–260; Danneskiold-Samsøe 2006, 45–46).[5] After returning to Denmark, Borch became a prominent chemist (Fink-Jensen 2000, 51). He was employed by king Frederik III as physician (Fink-Jensen 2006, 13) and was instrumental in bringing the Italian alchemist Francesco Guiseppe Borri (1625–95), whom he had met in Amsterdam, to Copenhagen to fill the role of royal alchemist (ibid., 2000, 46). In addition, he was appointed high court judge in 1686 and received the honorary title of Counsellor in 1689 (ibid., 64; Fink-Jensen 2006, 13). His *Conspectus Scriptorum Chemicorum Illustrorum*, an overview of alchemical texts which came to play an important part in Egede's life as an alchemist, was published posthumously only eight years before Egede's arrival in Denmark. Egede may have heard of Borch's work and may have had contact with people who were interested in alchemy during his student years, though he does not mention having read any alchemical texts at this time.

[4]According to Gulløv and Kapel, the last documented sign of life from the Norwegian colony is from 1408 (Gulløv and Kapel 1979, 19).

[5]Borch evidently knew Boyle well enough to gently chide him in a letter 30 March 1664 that his health was in danger because of excess work: "your body is worn away and exhausted by sleepless nights" (Principe 1998, 75).

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After less than two years' studies, Egede was ordained a priest and in 1707 received the living of Vågan, the neighboring island to his birthplace.He married Gertrud Rasch (1673–1735) the same year. While in Vågan, Egede became convinced that he was called by God to go to Greenland as a missionary, and in 1718 he left for Bergen to gather support and investors. In 1720 the Bergen Company (Det Bergenske Kompagni) was founded for the purpose of investing in the trade opportunities created by Egede's mission project (Gulløv and Kapel 1971, 10) and he also secured the king's support.

During the years in Bergen, Egede dedicated considerable time to alchemical studies (Bobé 1925, 18) and tried some experiments. After these proved unsuccessful, he asked for help from an apothecary who taught him some alchemical procedures. In his 1727 report he stated that his purpose with these experiments was to try to create the Philosophers' Stone and use it to transmute base metals into gold, in order to finance the Greenland mission (ibid., 194).

Egede and his wife and four children arrived in Greenland in July 1721. For the next fifteen years he taught and baptised Inuits, studied their customs and language, explored and described Greenland's geography, rocks, minerals, plants, and animals – and studied and practiced alchemy. After leaving Greenland in 1736, he moved to Denmark, where he founded the Seminarium Groenlandicum to train new missionaries for Greenland. He was given the honorary title of Bishop of Greenland in 1740.

The last years of his life Egede lived in his daughter Kerstine's house in the Danish town of Stubbekøbing, until he died in a plague in 1758 (Harr 2008, 148–149). The observation by his biographer Jacob Johan Lund of "a peculiar Oven and other Apparatus for chemical exercises" in the house shortly after Egede's death, suggests that Egede continued to practice alchemy even towards the very end of his life (Lund 1778, 70).

An Alchemical Experiment in the Colony of Hope

The annual reports that the Royal Mission College in Copenhagen received from Egede in Greenland mostly concerned mission work and hunting and fishing to sustain the colony. One account, sent in the summer of 1727, forms a remarkable contrast. On March 12th, Egede writes, he had aborted an alchemical experiment in the belief that it had failed. The "Chymical Substance" had been in digestion over a temperate heat for fifty days, when at one point the fire had accidently become too hot. The substance had turned black, and the process seemed to have stopped. Assuming that the matter was ruined Egede aborted the experiment by opening the sealed vial. The effects were fatal. Two puppies that Egede's children had taken inside to play with, immediately puffed up, writhed on the floor in pain, and died within a quarter of an hour. Egede could not see or smell any poisonous gas, but soon everybody in the room – his children, his wife, two Inuit girls and Egede himself – experienced a headache, felt weak and had difficulties breathing. Egede administered the antidote Theriac, and all affected soon felt better, apart from one of the Inuit girls who remained ill and died some time later (Bobé 1925, 193).

Consulting his alchemical books, Egede realized that the black substance in the flask was not the sign of a failed experiment but was characteristic of the *nigredo* stage of the transmutation process. This was a stage of corruption where according to theory the form of the substance was broken down, making it possible for the matter to adopt a new form and thereby be transmuted. Rather than failure, the blackness had been an indication that he was close to the goal of producing the Philosophers' Stone:

> [W]hether now either my Matter or Mode of Procedure have been correct, I will not say for sure; but from the Sign, that Philosophi Adepti assure in the Regimen of Saturn [i.e. antimony] is usually revealed, and lets itself be seen, I would almost conclude this; Because my Matter, after the Passage of 50 Days, began to turn completely black, which Philosophi called

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> "Signum exoptatissimum, operis initium, putrefactionis indicium certumq; commixtionis Principium & causa regenerationis. Nam unde fit corruptio inde fit vita ex regeneration" [Sign most welcome, beginning of the work, a sure sign of putrefaction and of the beginning of union and the cause of regeneration. For from corruption comes life through regeneration]. (Bobé 1925, 195)[6]

The result that Egede had observed corresponded with the characteristics of *nigredo* described by alchemical authors. The alchemical process had started, putrefaction had happened, and it could, according to theory, have continued to the rebirth of the matter in the form of the Philosophers' Stone, had Egede not interrupted it.

Egede chided himself for having ignored "the Experience and Warning of the Philosophers" (i.e. alchemists). This suggests that he already had theoretical knowledge about the danger posed by the abortion of the alchemical process during this stage, before the concoction had transformed the poison into perfection.

> I deemed my Matter to be ruined, wherefore I took it out, and to my Misfortune opened it prematurely, not heeding the Experience and Warning of the Philosophers: Beware you do not open or move your Glass, from the Beginning of the Work until the End, it might not only bring you great Damage, and you will never be able to complete your Work, but it might also kill you with its Poison; for its Stench is like the Stench of the Graves of the Dead, therefore beware of its subtle Poison. Before the appropriate Concoction it is the highest Poison, but after perfect Concoction, the highest Medicine. (Bobé 1925, 195)

When he gave up his experiment, it was however with good reason. Many alchemical texts stated that the stage of digestion should take six weeks (see for instance Roth-Scholtz 1718, 32–33) and Egede's substance had been in digestion for fifty days. It was also often advised that too strong heat would ruin the work (see for instance Newman 1991, 688). Knowing that the matter had been exposed to too strong heat and seeing no result despite the prescribed time having passed, Egede thus concluded that it was ruined.

Alchemists depended on qualitative information, such as color, smell, intensity of heat, and texture in order to assess the progress of the processes. This was tacit knowledge that could not easily be conveyed in text. Four centuries earlier, Pseudo-Geber had in the influential alchemical work *Summa Perfectionis* warned that practical alchemy should be learned through experience; to learn only from books would be slow and difficult (Newman 1991, 785). The traditional way to learn alchemy was through hands-on training in laboratories under the guidance of an alchemical "father." Egede had however learned alchemy almost exclusively from books, since he did not want his alchemical interest publicly known. Only after several failed experiments and broken glasses did he seek out an apothecary in Bergen to receive instruction in chemical techniques. Possibly Egede's lack of guided laboratory training may have contributed to the premature interruption of his experiment, as he may to a greater degree than those who had first-hand experience with the colors and textures of the processes, have followed the books and their prescribed six weeks allotted for digestion.

Despite his disappointment, Egede felt encouraged at discovering that the gold he had used in the experiment could not be recovered from the resulting substance, described as "a lead-like Matter almost like Antimony" (Bobé 1925, 195). He saw this as proof that transmutation had happened, and wrote: "Here I will let a wise person judge, whether fine and pure gold, which it was in the beginning, except through a Philosophical [i.e. alchemical] Operation could be changed into a lead-like matter, so that it could not be reduced back to its previous corpus?" (Bobé 1925, 195).

[6]All translations from Danish and Norwegian, and some from Latin and German, are mine.

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Egede is not the only alchemist to have written about this phenomenon, known as the "deterioration of gold," as proof of transmutation. Robert Boyle described in *Anti-Elixir* in 1678 an experiment where gold was transformed into a brittle "lump of Metal of a dirty color" with less specific gravity than gold, by means of an "Anti-Elixir" (Principe 1998a, 68, 116, 284), adding that in fact the resulting substance looked "more like a *Mineral*, or *Marchasite*, then like any *Imperfect Mettal*" (ibid., 289). *Anti-Elixir* is composed as a dialogue taking place in a group identified by Lawrence Principe as either the Royal Society or a fictitious analogy to it (ibid., 69), to reflect the contemporary debate about the existence of transmutation, where a main counter-argument was that metals were too "stubborn" of nature for transmutation to happen (ibid., 66). Just like Egede, Boyle saw the transformation as proof of the possibility of transmutation, and states, through the voice of "Pyrophilus":

> if it can be made [to] appear that Art has produc'd an *Anti-Elixir*, (if I may so call it) or Agent that is able in a very short time, to work a very notable, though deteriorating, change upon a Metal; ... I see not why it should be thought impossible that Art may also make a *true Elixir*, or Powder capable of speedily Transmuting a great proportion of a baser Metal into Silver or Gold. (ibid., 280)

In *Origine of Formes and Qualities* (1666) Boyle similarly described an experiment where gold deteriorated into silver through a process that involved butter of antimony (antimony trichloride) and concluded that "there may be a real Transmutation of one Metal into another" (ibid., 80). The phenomenon had been observed also by other alchemists – it was described in Valentinian and Lullian texts (ibid., 83, 289), and Boyle mentions that the sixteenth century alchemist Gaston DuClo had performed a similar experiment (ibid., 83–84). It is worthy of notice that both Boyle and DuClo were corpuscularians who denied the existence of the Aristotelian forms; seeing the deterioration of gold as proof that the transmutation of metals was possible did not depend on any one specific model of matter and material change. That Boyle thought the observation had potentially great theoretical consequence is clear from his conclusion in *Anti-Elixir* that "the effects of this *Anti-Philosophers Stone*, as I think it may not unfitly be call'd ... may prove very *Instructive* to Speculative Wits" (ibid., 289). Even though the *Anti-Elixir* was not published, it is not impossible that Egede had read about the deterioration of gold elsewhere, but he may also have independently come to the conclusion that the phenomenon was evidence of the possibility of transmutation.

What really happened on the 12th of March in the Colony of Hope? Thanks to Kjell Furuset's analysis of Egede's account, we know which substances and processes were involved in Egede's experiment. The gas that emitted from the vial was invisible, odorless, had higher density than air, and was acutely poisonous. This and the symptoms of headache, a feeling of weakness, and breathing difficulties indicate that the gas was stibine, or antimony trihydride (SbH_3), which develops when antimony comes into contact with acid (Furuset 2006, 319). Furuset concluded that the process that had taken place was the reduction of stibnite, i.e. antimonytrisulphite (Sb_2S_3), to antimony. Egede's report also included an allegorical account of the experiment, composed as a dream about a virgin who has to be purified in order to be able to marry a prince. This purification is achieved by means of a hot bath, and the fortifying powers of Mars and Venus, which indicates that iron and copper were used to purify the stibnite, as these metals were traditionally associated with the planets Mars and Venus respectively (ibid., 317). We also know that the experiment involved the use of gold, as Egede reported having tried to retrieve his gold from the resulting matter. In the allegory, the gold was represented by the prince, who was the most noble among his relatives, like gold was the noblest of metals.

The procedure that Egede had performed, was thus to remove the sulphur from stibnite to produce pure antimony, which – as opposed to stibnite – has the ability to conjugate with gold. Alchemists used the term "antimony" about both antimony and stibnite, in which form antimony

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is usually found in nature (Principe 2013, 240 n. 4). Afterwards, Egede added a small amount of gold and left it to "digest" over temperate heat for a long time. Digestion was slow heating which according to alchemical theory would balance the primary qualities of the substance (Becher 1716, 191, 207). After this, a process of putrefaction would lead to the dissolution of its "form," leaving prime matter which could take on the essential nature of the gold (ibid., 181–182). The final product would be the powerful Philosophers' Stone, a red powder which contained the perfect qualities of the gold and had the ability to transform large amounts of base metal to gold.

As it happened, Egede's experiment never got that far, but he was encouraged by the partial success of having transformed his gold into a lesser substance. As Principe explains in his discussion of Boyle's "anti-elixir," a very small amount of antimony – one part to 1920 parts gold is enough – will cause gold to become brittle and white (Principe 1998a, 284–285). This fact must be seen as further confirmation that it was indeed antimony that Egede used in his experiment. According to the report, Egede later made two more attempts at producing the Philosopher's Stone, but neither progressed as far as to effect this change (Bobé 1925, 195–196).

Alchemical Literature in the Colony of Hope

Whereas alchemy was previously thought of as one tradition, scholars have become increasingly aware that alchemical theory and practice changed over time, and we now acknowledge the existence of a variety of alchemical "schools" characterized by different theories, methods, and materials (Principe 1998b). Which literature, materials, and methods Egede used can help us determine his place in European alchemy.

Of the texts that Egede studied, he emphasized two as his main sources to alchemical knowledge: Ole Borch's *Conspectus Scriptorum Chemicorum Illustrorum* [Overview of Famous Chemical Texts], 1696, and the German natural philosopher Johann Joachim Becher's *Oedipus Chymicus* (1664). Borch was one of three famous Danish alchemists – the other two were Peder Sørensen (Petrus Severinus, 1540/2–1602) and Tyge (Tycho) Brahe (1546–1601) (Kragh 2006, 12). All three were influenced by Paracelsian ideas. Peder Sørensen's work *Idea medicina philosophicæ* (1571), the first systematic presentation of Paracelsus' ideas, had played a key part in the development and transmission of Paracelsian ideas in Denmark in the seventeenth century (Fink-Jensen 2002, 102; Shackelford 2004, 468). Sørensen praised Paracelsus as representing the culmination of a historical development of alchemy beginning with Hermes Trismegistus, thereby providing Paracelsianism with the legitimacy that followed from its being derived from a trusted source (Shackelford 2004, 75). He also removed the obstacle against Paracelsianism's wider acceptance posed by the belief that the analogical correspondences and connections in nature, which according to Paracelsian doctrine existed particularly between microcosm and macrocosm, were of a magical nature. Sørensen insisted that these correspondences and connections were entirely natural and that using them to obtain for instance medical effects did not entail any involvement in magic (Fink-Jensen 2000, 63). On the contrary, the practice of alchemy was the most instructive way to learn about nature; Sørensen therefore admonished the Christian natural philosopher to "purchase coals, build furnaces, be vigilant and tend to your preparations without weariness. For thus will you come to an understanding of bodies and their properties, and not otherwise" (Shackelford 2004, 264).

Ole Borch followed Sørensen in his Paracelsianism and also in his historical perspective on alchemy, writing that it was founded in Egypt by Hermes Trismegistus and Tubalchain, the father of the Biblical patriarch Noah (Borch 1696, 1; Fink-Jensen 2006, 17; Fink-Jensen 2000, 54; see also Trevisanus 1659, 684; Sendivogius 1718c, 1; Becher 1716, 160), and further developed by Paracelsus. Like Sørensen he denied that there were any magical elements in the Paracelsian doctrine of signatures (Fink-Jensen 2000, 61: Shackelford 2004, 344–345). Avoiding an association of Paracelsianism with magic had become more urgent after Sørensen's time, since the Danish

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regulations against magic of 1617 defined all magic as demonic (Fink-Jensen 2000, 63). Borch's assertion that Paracelsianism was devoid of magic may have been important for Egede, who despite being an orthodox Lutheran priest who worried that peers might condemn his alchemical studies did not mention involvement in magic among the reasons for this potential criticism.

Borch's *Conspectus Scriptorum Chemicorum Illustrorum* is a bibliography with descriptions of more than eighty alchemical works, dating from Antiquity to Borch's own time. Egede explained in his report that while in Greenland he relied on Borch's recommendations in *Conspectus* to choose which alchemical works to acquire and read. His alchemical library in the Colony of Hope comprised more than sixty authors, and it has been suggested that it was the largest in Norway (Hiortdahl 1905, 340), Greenland being a Norwegian colony and fiscally part of Norway since the Middle Ages. Egede certainly had many more alchemical books than were in any of the Norwegian clerics' libraries inventoried by Gina Dahl (Dahl 2010).

In addition to *Conspectus* and the previously mentioned *Oedipus Chymicus* by Johann Joachim Becher, which Egede states having read in the Colony of Hope, he names three authors which he had read during his two years in Bergen.

First, he read "the so-called Saxon manuscripts" and Johann Joachim Becher's *Chymischer Rosen-Garten* [The Chymical Rose Garden], a collection of alchemical recipes which inspired his first experiments in Bergen.[7] Becher was a respected natural philosopher and is famous in the history of science for having formulated the theory of *phlogiston* to explain the combustibility of substances. The *Chymischer Rosen-Garten* was newly edited and republished in 1717, which can serve as an indication that Becher's alchemical work was still considered relevant.

Becher states that the recipes, purportedly describing 100 chymical processes, were gathered during his many travels and conversations with alchemists and are supplied with philosophical explanations where necessary (Roth-Scholtz 1717, 52–53). The book is divided into two parts, corresponding to two types of processes – "Subtiliation of gold" and "Mercurial oils and waters," which both contain descriptions of several different methods of producing Stones and tinctures for transmuting metals into gold. The procedures are described in a technical language with exact quantities and with substances and processes represented by symbols. Becher announces that this book contains "no riddles nor ornaments, but true stories and experiments" (ibid., 53). These recipes, Egede wrote, initially gave him hope that making gold would not be too difficult (Bobé 1925, 194).

However, after having achieved "nothing but trouble and dirty hands, and the loss of some money" (ibid.), he returned to studying alchemical works, whereof two authors are named. One of these was the Polish alchemist Michael Sendivogius' (Mikal Sędziwój, 1566–1636) (ibid.). Egede does not specify which works by Sendivogius he read, but as we will see, textual evidence shows that he read at least two of the three works included in *Chymische Schriften: derinnen gar deutlich von dem Ursprung, Bereit- und Vollendung des gebenedeiten Steins der Weisen gehandelt wird* [Chemical Writings, wherein is very clearly treated the origin, preparation, and completion of the blessed Philosophers' Stone]. This is a collection of Sendivogius' texts written in the early seventeenth century and, like Becher's *Chymischer Rosen-Garten*, very recently published by Friederich Roth-Scholtz, in 1718, the same year as Egede arrived in Bergen. Its recent publication is indicative that Sendivogius was considered relevant in the period, and, as the many subsequent publications of his famous work *Novum Lumen Chymicum* [New Chemical Light], 1604, suggest, also later. That *Chymische Schriften* is likely to be Egede's source to Sendivogius' works, may be indicated by his choice of the word "Skrifter" in referring to the books that he read: "Imidlertid var mig endeel andre Chymiste Authores komme til Hænde, saasom Sendivogii og Com. Bernhardi og fleres Skrifter" (ibid.).

[7]No further information is given of what is meant by the "so-called Saxon manuscripts," but from Egede's later remark that this experience led him to conclude that "all Process mongering is pure Fraud" (Bobé 1925, 194), it would appear that these were also recipes.

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The other author named by Egede is Com. Bernhardi, i.e. the Italian Count Bernardus Trevisanus (Bernhard of Tregos, circa 1406–1490). Again, Egede does not name a specific text. It is however probable that he read *De Chemico miraculo, quod lapidem philosophiae appellant* [Of the Chemical Wonder, which they call the Philosophers' Stone], the most famous of the texts attributed to Trevisanus. It was printed in a work edited by the Paracelsian alchemist Gerhard Dorn in 1583 and was the only text by Trevisanus included in volume one of the publisher Lazarus Zetzner's *Theatrum Chemicum* (1602), an anthology which aimed to present all important alchemical works. Its inclusion among these certifies that *De Chemico miraculo* was considered a central alchemical text. A further indication that *De Chemico miraculo* was the work by Trevisanus that Egede read is that it contains a parable repeatedly referred to by Sendivogius, whose esteem of this work is likely to have contributed to Egede's perception of Trevisanus as significant enough to be among the very few authors named in his report.

Both Sendivogius and Trevisanus were recommended in Borch's *Conspectus* (Borch 1696, 29, 31). Sendivogius was particularly praised by Borch, as one of the foremost authors on the alchemical art and "a frank author (as much as the scruples of the alchemists allow)" who shared alchemical knowledge "without elaboration of the processes, without inversions, and deceits, his words openly reveal his opinion, free from parables, and very close to the truth" (ibid., 31). This must have sounded promising to Egede, who wanted to learn alchemy from books. The high regard held by Borch for Sendivogius is further demonstrated by his honoring him with a quotation from *Novum Lumen Chymicum* on the very last pages of *Conspectus*. Here Sendivogius praised the progress of the chemical arts by declaring that if Hermes, Geber, and Lull could be revived today, chemists would consider them students, rather than masters, because of all the new distillations, circulations, calcinations, and innumerable other works of art that had now been invented, thanks to their writings. Only the knowledge of creating the Philosophers' Stone, or the Tincture of natural philosophy, was lacking, Sendivogius claimed, among modern chemists (ibid., 47–48; Sendivogius 1628, 11–12; Sendivogius 1718c, 3). Egede will have read this statement both in *Conspectus* and in Sendivogius' own text, which was included in *Chymische Schriften* as *Zwölff Tractatlein von dem Stein der Weisen*.[8]

Sendivogius based his theory about the development of metals on the idea of a seed or *semen*, a "central salt" or "sal nitrum" that carried each metal's individual nature. The various metals were formed when this salt was combined with philosophical sulphur inside the earth (Sendivogius 1718c, 23–24; Newman 2003, 87). Surplus steam would rise up to the surface, where it turned into moisture and provided nourishment for plants and everything else (Newman 2003, 88). With Sendivogius originated the school of alchemists who searched for the prime matter of alchemy in a salt (ibid., 211–213), and his idea of a life force in air has been credited as a contribution to the discovery of oxygen. He does however not divulge from which material the "central salt" or "sal nitrum" should be extracted. *Chymischer Schrifften* includes a dialogue between the spirit of mercury and a monk-philosopher, prefaced by the words "Est in Mercurio quicquid quaerunt Sapientes" [In mercury is what the wise seek], and a short poem beginning with the same words in German: "In mir Mercur ist all's verborgen / Warum die Alchymisten sorgen"; it is however clear from the last line of the poem, "Wann du es findst / Heimlich behalts" [When you find it, you have the Secret], that what is meant is not just ordinary mercury (Sendivogius 1718b, 177).

Roth-Scholtz' foreword to *Chymischer Schrifften* includes instructions on how to produce the "universal salt" and the universal tincture, i.e. Philosophers' Stone (Roth-Scholtz 1718b, 25–44), stating that the method was taken from *Chymischer Glücks-Hafen*, another, larger, recipe collection by Johann Joachim Becher. Sendivogius' works in *Chymische Schrifften* (for instance Sendivogius 1718a, 86) and also Roth-Scholtz' foreword (ibid., 39) also contain several references to Trevisanus and particularly the "fountain parable" from *De Chemico miraculo*.

[8]The original Latin title was *De Lapide Philosophorum Tractatus duodecime naturae fonte et manuali experientia depromti* [Twelve Treatises on the Philosophers' Stone taken from the fountain of nature and manual experience].

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Trevisanus' work opens with a short history of alchemy, beginning with Hermes Trismegistus' restoration of the art after it had been lost in the Deluge (Trevisanus 1659, 684). He explains that his little book is meant to be a guide back to the right path (ibid., 685). That Trevisanus' realization of the urgency of such help was dearly bought is then demonstrated through his alchemical autobiography, a pitiful account of years and money wasted on attempts at making the Philosophers' Stone (ibid., 685–690). The gist is that after having tried all kinds of ingredients, including human excrement, blood, urine, seeds from plants and animals, eggs (he recounts how he bought 2000 eggs and distilled them for two years [ibid., 687]), as well as various chemicals, and mercury in combination with gold and silver (ibid., 686–689), and spent many years reading alchemical texts (ibid., 690), he finally understood that the Stone must be made from mercury and nothing else. Mercury was the *proximate matter* of all metals (ibid., 691–692, 695), containing its own sulphur which when heated would cause it to develop into perfection (ibid., 701). Trevisanus is thus a representative of the "mercury only" school of alchemy, which originated around the start of the 14th century with the influential work *Summa Perfectionis* by pseudo-Geber (Newman 1991, ii, 208). Trevisanus also refers to pseudo-Geber in his argument against mixing mercury with inferior substances (Trevisanus 1659, 688). To be able to transmute, mercury must be reduced to prime matter (ibid., 692) through purification and balancing its constituent parts, the principles sulphur and mercury, which were in their turn composed of the elements fire, air, water, and earth (ibid.). Finally, Trevisanus hints at how to make the Philosophers' Stone in the fountain parable (ibid., 705–709).

Despite the supposed clarity of Sendivogius and the technical, straight-forward explanations of the *Chymischer Rosen-Garten*, Egede describes these early alchemical studies as "tormenting" himself with alchemical "speculations." He "understood no more of their Hieroglyphic and flowery Modes of Speech than if [he] had read a strange Language" and could not see any agreement between the authors. In these as in other alchemical texts, metals, chemicals, and processes are represented by symbols, metaphors, and, allegories, many of them probably incomprehensible to Egede. The difficulty posed by the lack of agreement between the authors was just as serious. As alchemy was believed to be one single tradition which originated in the time before the Deluge, it was assumed that the many different names, methods, metaphors and individual substances of the various texts expressed one fundamental truth. To be able to glean the universal truth behind the various wordings and images from the texts was to understand their real meaning (see for instance ibid., 690).

One important example is the lack of agreement between Sendivogius and Trevisanus regarding which substance the prime matter of the process is or should be derived from. Although it is often called "mercury," and Trevisanus states that gold should be made from only mercury, they emphasize that something entirely different from ordinary mercury is meant (Sendivogius 1718c, 24, 36,37; Sendivogius 1718b, 143). It is called by a variety of names, such as "philosophical mercury" (Sendivogius 1718c, 24; Roth-Scholtz 1717, 64), "our mercury" (Trevisanus 1659, 701; Sendivogius 1718b, 143), "universal menstruum" (Roth-Scholtz 1718b, 42), and "water" (Sendivogius 1718c, 43). Its identity is spoken of as a great mystery and is hinted at in allegories only (Trevisanus 1659, 705–709; Sendivogius 1718c, 60–68).

As Egede did not want it known that he was interested in gold-making, he did not dare to seek out help to understand the texts (Bobé 1925, 164). After arriving in Greenland Egede however read Johann Joachim Becher's *Oedipus Chymicus* (1664), which provides an overview of Becher's alchemical theories. When in the 1717 edition of the *Chymischer Rosen-Garten*, *Oedipus Chymicus* is advertised as a Räthsel-Deuter [riddle-solver] in which occult chymical vocabulary is explained, and secrets revealed (Roth-Scholtz 1717, 39), this will undoubtedly have attracted Egede's attention. The work features a list of symbols and metaphors commonly used in alchemical texts, along with their meanings (Becher 1716, 194–195). Both this and Becher's clear exposition of alchemical theories must have been very helpful to Egede. He recounts how *Oedipus Chymicus* "gave [him] not a little Light," so that he felt that he understood enough to "lead ... Theoriam to Praxin" (Bobé 1925, 194–195).

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The Philosophical Dream

Allegories had been common in alchemical texts since Antiquity but became a regular part of European alchemical literature particularly from the fourteenth century when a Christian alchemical tradition developed in Europe (Joly 2013, 82). In including an alchemical allegory of his own in his report to the Royal Mission College, Egede clearly connected his alchemy with the literature of the European tradition. That this was a consciously written allegorical description of Egede's experiment, was long not understood. The biographers Louis Bobé and Niels Fenger both interpreted it as a reaction of Egede's subconscious to his experiment's failure. Bobé wrote in 1944 that "[t]he event caused Egede to experience a "vision," "in which that Experience has re-arisen in his Subconscious in dramatised Form" (Bobé 1944, 124). Fenger in 1971 called it a "satanic relation" through which Egede processed the self-reproach and regrets that he suffered after his failed experiment and adds that "one thinks in horror what a pretty story today's dream interpreters could have derived from the erotic hallucinations that seasons this philosophical dream" (Fenger 1971, 108–109). Erik Gant in 1994 called it "embarrassing," and with his comment that only "the devil and his great-grandmother" were lacking from its list of characters (Gant 1994, 227) insinuates that he, like Fenger, sees something demonic in it. Even though all these biographers understood that the content of the parable was alchemical, they failed to see it as what it is – an emulation of the allegories of the European alchemical literary tradition.

The "Philosophical Dream" begins as Egede, after having tormented himself with "Philosophical Thoughts and Speculations" for a long time, falls asleep. He dreams about a beautiful prince, who was the foremost of his kin, well able to procreate, however there was no female suitable for him to marry, apart from a maiden who had a congenital impurity and was not fit to marry and conceive children. Being a priest, Egede wanted to marry them to see their glorious offspring. After having "consulted with experienced Medicos [i.e. alchemists]" to find a medicine with which the virgin could be "cured and prepared for fertility" (Bobé 1925, 196–197), Egede treated her with seven baths in a "Saturnine water well" heated by Vulcan, while she was waited on by her relatives, the children of Saturn, and aided and fortified by Luna, Mars, and Venus. She rose from the bath as a beautiful Diana and was united with the prince in a crystalline bridal chamber, the door of which Egede locked with help from Vulcan. The couple fell into a deep sleep. Soon they turned black, and after waiting for a long time for them to awaken, Egede aborted the process: "Sorely horrified I took the key back from Vulcan and thoughtlessly opened the chamber, at which was emitted a gruesome, penetrant, yet odourless stench, which almost cost all us who were present, our lives" (ibid., 197).

As previously mentioned, Kjell Furuset's interpretation of the parable, where the "impure maiden" represents antimony and the "prince" is gold, supports his conclusion that the material that Egede was working with, was antimony. Iron and copper, of which "Mars" and "Venus" are synonyms in alchemical literature, were also used in the process (Furuset 2006, 317). Antimony crystallizes as silvery bright needles, thence the image of the "very beautiful Diana" arising from the bath; Diana being the Roman moon goddess and the moon associated with silver in the alchemical tradition (ibid.).

The metaphors of purification, marriage, corruption, death and finally resurrection are common to many alchemical texts. Egede's Philosophical Dream has similarities with a parable that follows Becher's "dictionary" of alchemical metaphors in *Oedipus Chymicus*. In Becher's allegory, the gold is first purified, here represented by a battle between a red lion [gold] and a wolf [antimony]. The "glorious victor" [purified gold] is locked inside a transparent prison [glass vial], with ten or twelve eagles [mercury]. The key to the prison is given to Vulcan [the glass is sealed by melting]. A crow [nigredo] appears, then a peacock tail of multiple colours, and in the end the phoenix [the Philosopher's Stone] is reborn, incorruptible and immortal, "the result with which everything under the moon is remade" (Becher 1716, 195–197).

While Becher's parable is likely to have contributed to inspiring Egede's Philosophical Dream, Sendivogius' and Trevisanus' works also contain allegorical stories about a couple who go through

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a process of rebirth after being immersed in water. In an allegory in Sendivogius' *Tractatus de sulphure altero naturae principio* (1616), included in *Chymische Schrifften* as *Vom Schwefel*, a prince sees the beautiful maiden Diana bathing in a river. They fall in love whereupon both drown in the river. Their souls tell the alchemist that they will be resurrected in their purified bodies (Sendivogius 1718b, 165–166). In Trevisanus' fountain allegory the king is instead locked up in a hidden fountain with a simple servant who keeps his bath warm. The king goes through several color changes, and in the end his flesh appears a rich red color, representing the Philosophers' Stone. The fountain is said to be as the king's mother, who also kills and resuscitates him (Trevisanus 1659, 705–709).

Other alchemical allegories contain similar symbolism. Particularly interesting is *Der Triumph-Wagen Antimonii* [The Triumphal Chariot of Antimony], 1604, which is considered the most important of alchemical texts about the use of antimony (Principe 2013, 140). It was attributed to Basil Valentinus, a pseudonym for several authors. He was highly recommended in both Borch's *Conspectus* and Becher's *Oedipus Chymicus*, Becher mentioning him as one of the most important alchemical authors in his chapter on alchemical texts (Borch 1696, 30; Becher 1716, 217). Images and expressions in *Der Triumph-Wagen Antimonii* are strikingly similar to those used by Egede, such as the bride being purged in a "fiery Bath full of Love, by which the Spouse ... may legitimately lie down with her Bridegroom in the Marriage Bed," helped by Vulcan (Valentinus 1624, 109), and there can be no doubt that Egede knew it. Another Valentinian text, *Ein kurtz summarischer Tractat, von dem grossen Stein der Uralten* [Of the great stone of the ancients], 1599, also describes a process similar to the one described in Becher's parable and contains metaphors used by Egede. Here Valentinus explains that a "chaste bride" [i.e. purified antimony] must be married to the "king" [gold] after the king's body has been eaten by a wolf [antimony] who is a "child of old Saturn" (Principe 2013, 144–145). As in Becher's allegory, antimony, represented by a wolf, is being used to purify the gold. The "bride" is called Diana, and antimony is referred to as a relative of Saturn (ibid., 146), as in Egede's Philosophical Dream.

Egede's framing of his allegory as a dream likewise has deep roots in the alchemical tradition. Allegorical descriptions of alchemical processes framed as dreams appeared in alchemical literature since Zosimos of Panopolis in the third or fourth century AD (ibid., 18–20). A state of tiredness or sleep introduces Trevisanus' and Sendivogius' allegories. In the fountain parable Trevisanus, tired from studies and philosophical disputes, goes for a walk and sits down to contemplate the fountain. After being told by an old man the story about the king's transformation in the fountain, Trevisanus falls asleep and accidently drops a golden book that he has been awarded for his adeptship, in the fountain (Trevisanus 1659, 705–709). Sendivogius' falling asleep, tired from his work, likewise starts an allegory in the twelfth treatise on the Philosophers' Stone (Sendivogius 1718c, 60).

Another example of an alchemical text that contains both the dream motive and alchemical symbolism similar to that of his "Philosophical Dream" is *Dastin's Dream*, a poem attributed to the English alchemist John Dastin (c.1293-c.1386). Borch gave this poem a particular recommendation in *Conspectus* (Borch 1696, 27). In the dream, Dastin sees "a Marriage ... Betweene twaine Borne of the Imperiall blood" (Ashmole 1652, 258), a couple consisting of a king (gold) and his mother (mercury). In addition to the dream theme, the goddesses Diana and Venus and the motive of purification (Ashmole 1652, 259) are metaphorical elements that *Dastin's Dream* has in common with Egede's. After purification, gold and mercury are locked up in a "Closset round ... Cleere as Cristall of Glasse a litle shrine," i.e. a glass vessel like Egede's "crystalline bridal chamber." Subsequently the substance turns "Blacker then Jett or Bugle" [9] (Ashmole 1652, 267), before the "cherishing might" of the temperate fire causes it to turn white, then go through several color changes, before finally the couple's child appears, "fresher then any flowre, / With a mantle of everlasting whitnes" [sic] (ibid., 268), just as Egede could have expected that his substance would become, had he not aborted the process prematurely.

[9]Bugle is black scallop (*Ajuga reptans*), a plant with black leaves.

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Why did Egede write his parable? As he had already divulged his activities earlier in the report, Egede's motive in including the "Philosophical Dream" in his report was clearly not to conceal his alchemical interest. The purpose of allegories in alchemical texts is often said to be the protection of alchemical secrets from the "unworthy" (Principe 2013, 18). Egede's plain text account left out some information that would be essential, should anybody want to repeat the experiment: which matter and procedure he used. As we have seen, Sendivogius' and Trevisanus' both hide information about the matter of the Philosophers' Stone in dream allegories. And in Becher's *Oedipus Chymicus*, Egede will have read that presenting knowledge through riddles, parables, and hieroglyphic figures comprises the third and final part of the philosophical method of chymistry, the two first being the knowledge of the principles of matter and explaining the changes and combinations of the elements (Becher 1716, 224).

The dream allegory accordingly served two purposes in Egede's account of his alchemy. Firstly, it lets Egede divulge his method and matter to readers already familiar with alchemical literature, and not to others. He thus adheres to the rule of secrecy traditionally imposed on alchemists. Secondly, and perhaps most importantly, by means of conventional *decknamen* and allegories, Egede writes himself and his experience into the alchemical textual tradition, "more Philosophico parabolic-wise" (i.e. "parabolically in the manner of alchemy") (Bobé 1925, 196), declaring himself to be one of the chosen who knew the secrets of alchemy.

His use of conventional symbols shows that he did not strive for originality, but emulated well-known alchemical allegories, in this way making himself one with the tradition. It is also easy to imagine that composing the allegory may have provided a pleasant pastime for Egede a dark evening in the Colony of Hope.

Theory, Method, and Influences

What Egede did in his recorded experiment was to purify antimony to provide the prime matter of the process and add a little gold. The gold was thought to contain the seed, which would cause the "menstruum" to "conceive" as it was permeated by the nature or essence of the gold. After this union, the mixture was to "digest" during which process its qualities would become balanced, and after this the matter would begin to putrefy. The putrefaction was thought of as the destruction of the form of the matter, which was necessary for the new form to arise. After a period of inertia, during which the substance was black and "dead" – at this stage Egede's experiment was aborted – the matter would "resurrect," go through a series of transformations visible as color changes, and finally the wonderful Philosophers' Stone would appear.

The matter theory behind this is the ancient doctrine, laid out by Aristotle, that the various metals are produced by combinations of the natural principles sulphur and mercury, made from the four elements fire, air, water, and earth. This also forms the foundation of the methods explained by Trevisanus, Sendivogius, and Becher. All three open their expositions of the principles of matter with an account of this theory (Sendivogius 1718c, 23–24; Trevisanus 1659, 692, 701; Becher 1716, 31; see also Sendivogius 1718c, 11–13). Salt, the principle which together with mercury and sulphur forms the Paracelsian *tria prima*, is included in Becher's matter theory (Becher 1716, 51–54), and is also central to Sendivogius' theories, but played no practical part in the procedure that Egede performed. Neither had Sendivogius' theory of a vital part of air that enters the pores of metals, which would later earn him credit as a contribution to the discovery of oxygen, any significance for Egede's alchemical practice.

Both Sendivogius and Becher speak of a seed or *semen* as necessary for the development of metals (Sendivogius 1718c, 23; Becher 1716, 22), and both speak of a male and a female principle roughly corresponding to the principles of sulphur and mercury. In *Oedipus Chymicus* Egede thus read that the "sulphur" in metals provided the "matrix" or "semen" of the metal (Becher 1716, 55), while the "water" or "philosophical quicksilver" served as its nourishment (ibid., 53–55, 155–156,

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159–160). Sendivogius described metals as generated from a sulphuric "radical moisture" and a mercurial steam inside the earth (Sendivogius 1718c, 23–24). The chymists' work was according to both to copy nature.

Trevisanus' theory differs in that he believed the metal mercury to be sufficient as the sole matter of the Philosophers' Stone, as mercury already contained the sulphur that would make possible its development towards perfection (Trevisanus 1659, 701). "Mature" mercury contained the element of fire and was considered masculine semen, while crude mercury was feminine semen or aqua vita (ibid., 697). In the fountain parable's metaphorical account of alchemical practice, however, Trevisanus' story of a king in a fountain could still be interpreted as advocating the addition of gold (ibid., 705–709).

When Egede used gold as a seed in his alchemical experiment it was thus based on Sendivogius', Becher's, and possibly Trevisanus' theories of transmutation, which provided a framework where development happened as the result of the conception of the seed of gold in prime matter, and the practice described by Becher in *Oedipus Chymicus*.

According to Egede's sources, the key to the Philosophers' Stone was thus to produce philosophical mercury or mercurial water, which, as was repeatedly emphasized, was not identical to ordinary mercury (Becher 1716, 203, 206; Sendivogius 1718c, 24). The original matter must be reduced to its elements to create a "new unity" and let the matter receive a new form (Trevisanus 1659, 692, 696; Sendivogius 1718c, 20; Becher 1717, 36–37, 39–43). The new form would appear through the development of the male principle or form ("sulphur") in the "menstruum" or female principle ("mercury") (Sendivogius 1718c, 25–26). The "sulphuric seed" of gold was to be united with the "menstruum" or "philosophical mercury," after preparing both through heating and purification (Sendivogius 1718b, 148; Sendivogius 1718b, 35–36; Becher 1716, 206, Roth-Scholtz 1717, 75–76; see also Roth-Sholtz 1718, 40). The mixture was to be left to "digest" and eventually "putrify" over moderate heat in a closed glass vessel (Becher 1716, 195–197, 207–208; Roth-Scholtz 1718, 32). Over a period of usually several weeks or months the matter would go through a series of color changes, which all the three authors describe in allegories. The first of these was the blackness of *nigredo*, as Egede observed in his recorded experiment. Finally, a strong red color would appear as the transmutation into the Philosophers' Stone was complete (Becher 1716, 210; Roth-Scholtz 1717, 94; Roth-Sholtz 1718, 32–34, 40–41; Sendivogius 1718c, 38; Trevisanus 1659, 701).

The preliminary purification of the gold by means of antimony, described by Becher as a wolf attacking a king, was not included in the procedure that Egede performed in the recorded experiment. Possibly he used a gold coin and considered it already sufficiently pure. He will have encountered the use of a gold coin in an alchemical process in *Chymischer Rosen-Garten* (Roth-Scholtz 1717, 87).

That Egede thought of the gold used in his experiment as functioning as a "male" principle providing the "semen" in the process, is reflected in his allegorical description of gold as a "grand and beautiful Lord, fully capable of procreation" (Bobé 1925, 196). The representation of the union of the two principles as a wedding reflects the matter theory underlying the method.

From this analysis of Egede's method and allegorical account in connection with the sources that he has named in his report, it is clear that the theoretical basis and practical instruction for his alchemical practice in the Colony of Hope was found in these texts: Becher's *Oedipus Chymicus* and at least two of the texts included in Sendivogius' *Chymischer Schrifften – De Lapide Philosophorum Tractatus duodecim* (*Novum Lumen Chymicum* or *Zwölff Tractatlein von dem Stein der Weisen*) and *Tractatus de sulphure* (*Vom Schwefel*) – were his main sources of information, with Trevisanus and Becher's *Chymischer Rosen-Garten* playing supportive roles.

The Matter of the Art

Sendivogius and Trevisanus insist that knowing the identity of prime matter of the Philosophers' Stone is crucial, but never divulge what it is. Emphasizing that it is not common mercury, they

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speak of it only through metaphors and *Decknamen*. Indeed, when asked about the identity of the "water" that perfects the "fruit of the Solar tree," Saturn shouts so loudly in anger that Sendivogius wakes up from his dream (Sendivogius 1718c, 60). A hint is however given in an allegory in Sendivogius' treatise on sulphur, where the alchemist dreams of an old man who tells him that he is the true authority of conception and that his name is Saturn (Sendivogius 1718b, 155). Saturn further says that when you know the "mother," in which the sulphur [i.e. male semen] is released, you will have the Stone (ibid., 163–164).

Becher believed that all metals were based on the same substance, and his allegory in *Oedipus Chymicus* describes the use of mercury as the material basis of the Philosophers' Stone (Becher 1717, 31–32). According to Trevisanus, mercury is the proximate matter of all metals (Trevisanus 1659, 695), but he distinguishes "mature mercury" from ordinary mercury (ibid., 697). Sendivogius' texts give no clear indication of the identity of the substance from which the prime matter should be manufactured, except for its association with Saturn.

When Egede used antimony as the prime matter of the Philosophers' Stone this was in accordance with advice read in Borch's *Conspectus*. Borch himself and many of the alchemical authorities that he recommended used antimony in gold-making. As Borch praised the frank speech of other authors, he also named the substance in plain words and explained that the *Decknamen* "Saturn" commonly meant antimony (Borch 1696, 35).

Alchemists recommended in *Conspectus* used antimony both for purifying gold and as the prime matter of the Philosophers' Stone. Borch cited Johann Grasshoff (Chortolasseus, d. 1623) (Priesner 1998, 165–166) as having described the production of the Philosophers's Stone from "the common mineral of Saturn, or antimony" (Borch 1696, 35) and remarked: "Grasshoff's matter of the Work is nothing other than the mineral of Saturn from Meissen" (ibid., 35–36). By removing the sulphurous earth from one pound of "minera Saturni," Grasshoff had produced more than eight ounces of pure matter (ibid., 24). Another German seventeenth-century text cited by Borch, *Clangor Buccinæ*,[10] likewise described the process of purifying "minera Saturni" or antimony (i.e. stibnite) by removing the "sulphurous earth" (ibid.). This was part of the process that Egede performed in the Colony of Hope and described in the Philosophical Dream. The German alchemist Johannes de Monte-Snyder (circa 1625–1670) is cited as having recommended the use of butter of antimony (antimony trichloride) to "resurrect" imperfect metals (ibid., 43).

Among the alchemical texts that Borch recommended, the Valentinian allegories is another likely source for Egede. *Der Triumph-Wagen Antimonii* describes the removal of sulphur from stibnite to produce antimony that can conjugate with gold, using allegorical expressions resembling the ones used by Egede. Another Valentinian text, *Ein kurtz summarischer Tractat, von dem grossen Stein der Uralten*, describes a process where gold is purified by antimony before gold and antimony are left to digest (Principe 2013, 144–145); this is the same process as in Becher's allegory in *Oedipus Chymicus*.

Sendivogius' further speaks of the matter of the Philosophers' Stone as a "Chalybs," which is a special type of steel [sonsten Stahel]. When mixed with the Chalybs, gold will *release its semen and become weak*, almost *bitten to death* [my emphasis]. The Chalybs will then conceive and give birth to a son who is as strong as his father. If the son [i.e. the Philosophers' Stone] is thereafter placed back inside his mother's womb [i.e. the Chalybs] he will cause her to bear fruit a thousand times (Sendivogius 1718c, 33). Given the statement that the gold was "bitten to death" by the Chalybs, and the common use of the metaphor of a wolf attacking a king to represent the purification of gold by means of antimony, it would be reasonable to believe that the Chalybs was antimony.[11] Sendivogius stated that there was also a Chalybs made by nature that was "the beginning of our

[10]*Clangor Buccinae* (publ. 1631) was, according to Johann Heinrich Zedler's *Grosses vollständiges Universal-Lexicon aller Wissenschafften und Künste* (Leipzig, 1731-1754), written by Johann Cunrath Rhumel senior (1574-1630) (Flood 2006, 1692).

[11]Another argument for identifying the Chalybs with antimony could be that the deterioration of gold when mixed with antimony could not unreasonably be interpreted to be a weakness of the gold after it had released its semen into the antimony.

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work" and able to absorb "the rays of the sun" [i.e. the qualities or nature of gold] (Sendivogius 1718c, 34). Newton interpreted this to be antimony which he used in his own alchemical experiments (Fanning 2009, 158).

That Sendivogius was a source to Egede's ideas about the matter of the Philosophers' Stone and one of the "Philosophers" that he consulted after the aborted experiment is also shown by textual evidence. Realizing that interrupting the process had caused the poisoning of his family, the two Inuit girls, and the puppies, Egede wrote "Before the appropriate Concoction it is the highest Poison, but after perfect Concoction, the highest Medicine" (Bobé 1925, 195). This sentence is taken verbatim (though translated to Danish by Egede) from Sendivogius' *De Lapide Philosophorum Tractatus duodecim*, included in the *Chymischer Schrifften* ("vor geburlicher Kochung ist es das hochste Gifft, aber nach bequemer Kochung ist es die hochste Medicin") (Sendivogius 1718c, 65).

Egede's use of antimony as the basic matter of the Philosophers' Stone is typical of the period. Many natural philosophers were interested in antimony as it seemed to have promising properties. It was a frequently used ingredient of Paracelsian alchemy, and in Paracelsian medicine, which was characterized by chemically manufactured medicaments. Robert Boyle experimented for forty years trying to make the Philosophers' Stone from philosophical mercury made from purified antimony (Principe 2013, 16), and Ole Borch had demonstrated the spontaneous melting of antimony in front of several well-known scientists in Paris and believed the ability of the substance to generate heat to be indicative of its possibilities (Nielsen and Pedersen 2006, 67–69).[12] Neither did antimony lose its relevance in the years that Egede performed his experiment. For example, Herman Boerhaave experimented with antimony purified by means of iron a few years later, in 1734, trying to produce the Philosophers' Stone (Powers 2012, 178–179).

Egede's Alchemical Sources and the Natural History of Greenland

Although Egede's biographers have so far presented an image of his alchemy as an irrational episode, separate from and in opposition to his lauded work as the pioneering natural historian of Greenland, this is far from the truth. On the contrary, his *Perlustration* not only reflects a view of nature that includes ideas central to alchemical theory but also contains passages that reveal the direct influence on his natural history by the alchemical works that he read. When Egede travelled through the Greenlandic landscape to map its natural properties and teach the nomadic Inuits about the mysteries of salvation, what he saw was a landscape formed by mercury and sulphur (Bobé 1925, 331), where the sun, moon, and stars caused the growth of plants, minerals, and metals, and the health, illnesses, and habits of the people. His use of the term "Spagyric Art" in the *Perlustration* (ibid., 329) about a metallurgical operation of retrieving particles of gold ("Particulae Solis") from a red crystal found in Greenland, testifies to his reading of Paracelsian alchemical literature. The term "spagyric" was coined by Paracelsus as a term referring to distillation (Principe 2013, 129).[13] According to Becher the spagyric art was the purification, perfection,

The release of the semen would according to Sendivogius cause the Chalybs to "conceive," and Egede did indeed interpret the change as transmutation and as a sign that he was close to producing the Philosophers' Stone.

[12]Nielsen and Pedersen consider that spontaneous melting of antimony using the method described by Borch is very unlikely and call what happened a "mystery."

[13]Although Egede based his alchemical experiment on advice from Paracelsian authors, those parts of his reports that concern practical medicine show that he did not reject Galenic medical theory. What characterizes Paracelsian medicine in addition to chemically manufactured medical products was the principle that a disease caused by a poison must be cured by a similar poison. In opposition to this, Galenic medicine sought to cure diseases by balancing out a superfluous humoural quality by means of remedies that had the opposite quality (Debus 1991, 14; Shackelford 2004, 437). Egede's reports contain several accounts involving the use of Galenic medical cures. In December 1728, when no beer could be brewed due to lack of firewood, he ruled that every person in the colony was to be given half a *pægl* (i.e. about 2,4 decilitres) of brandy every day "to somewhat conserve their Health against the excessive Water-Drinking" (Bobé 1925, 214). In this he was following Galenic prophylactic

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and alteration of bodies ("spagyrica est *corpora purificare, perficere & alterare*") (Becher 1717, 152–153).

A fundamental assumption in premodern natural philosophy which also underlay alchemical theory, was the existence of regularities in nature in the form of correspondences between natural phenomena. In the *Perlustration*, Egede pointed to the correspondence between the phases of the moon, the movements of the ocean, and hidden springs to exemplify this. There was in nature, Egede wrote, a

> wonderful Harmony and Correspondence ... in the Well-Springs on Land and the great Sea or Ocean. Namely: that in Flow-Times [i.e.] new and full Moon, when the Sea is most in Commotion and when Ebb and Flow are greatest, then the hidden and secret Springs on Land, too, break out in the open. (Bobé 1925, 332)

The same example of the heavenly bodies' influence on the movement of water is found in Sendivogius' *Tractatus de sulphure*, included in the *Chymische Schrifften*: "Nun ist offenbar, das alle Ströme des Wassers ... das alle Flüss und Quellen, so [i]hren Lauf in das Meer haben, von dem Ge[s]tirn entspringen" (Sendivogius 1718b, 109), where it is immediately followed by an account of the creation of the world as an alchemical process, and distillation processes in nature as influenced by astrological emanations (ibid., 110–111).

Another example is Egede's use of the concept of *complexion* to account for the characteristics of the Inuits. The doctrine of correspondences was connected with ancient ideas about the qualitative character or *complexion* of each individual geographical area, which had been current in premodern natural philosophy since Antiquity. Hippocrates' *Airs Waters Places* (circa 400 BC) and Ptolemy's *Tetrabiblos* (second century AD) had explained how the complexion of a place arose from its geography and climate and the astrological influence that it was exposed to, and how it affected the health and moral character of its inhabitants. According to these theories, differences between inhabitants of different geographical regions originated from the varying elemental composition of each region. Theories about complexion and the underlying doctrine of elements, laid out by Aristotle, formed part of the basis for ideas about transmutation, as according to alchemical theory the composition of the elements and primary qualities determined the type of metal, and the unique mixture of emanations from the stars at any individual time and place was an effective cause of the development of the various metals.

In Egede's time, such ideas were still used to explain a wide spectrum of natural, medical, and cultural phenomena. In the *Perlustration*, Egede thus uses ideas of complexion to account for the weather, health, and diseases, and characteristics of the Inuit people and their culture. The humoural characteristics of the Inuits were, he explained, caused by the cold and moist complexion of Greenland: "the Main Temperament of this People is phlegmatic, wherefore they are also completely stupid, dumb, and cold-minded by Nature, and rarely show any kind of Affect and Passion, but are in almost all their Behaviour of an emotion-less mind" (Bobé 1925, 367). This description of the Inuits is virtually identical to the characteristics of the phlegmatic temperament given in Becher's *Oedipus Chymicus*: stupid, weak, lazy, of a dull and timid nature, with dull desires (Becher 1717, 70 n.l),[14] and the similarities of wording indicates that Becher's alchemical

principles. It was believed that beer and liquor had a "hot" quality that would prevent scurvy by restoring the body's humoural balance, as this illness was characterized by excess coldness. Water, on the contrary, with its "cold" quality, was believed to be a cause of scurvy. Egede's praise of the usefulness of distilling plants such as scurvy-grass and wild rosemary in his medical alchemy in Greenland also connects him with the Galenic tradition (Bobé 1925, 32, 326). Becher shares the opinion that Galenic and Paracelsian medicine are not mutually exclusive, stating in *Oedipus Chymicus* that chymists cure diseases by means of both similarities and contraries (Becher 1717, 111-112).

[14]Possibly Egede also knew that Vitruvius had summed up the character of northern peoples in the first century AD along similar lines: "northern nations, being enveloped in a dense atmosphere, and chilled by moisture from the obstructing air, have but a sluggish intelligence" (Vitruvius Pollio 1914, 173). Egede, himself born further north than the Inuits were, moderates this

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text has influenced Egede's description of the Inuits' character traits. Like Becher (ibid.), Egede also ascribes illnesses to complexion, explaining scurvy and "weakness of the chest," i.e. diseases affecting the lungs, such as bronchitis and pneumonia, as caused by the cold and moist complexion of Greenland (Bobé 1925, 18, 331).

As according to ancient natural philosophy, including theories of complexion, emanations from the heavenly bodies were an effective cause of the generation of the various metals (Roth-Scholtz 1718, 25; Sendivogius 1718c, 11; Becher 1717, 158), they were believed to influence alchemical processes. Egede accepted the claim, promoted by the apologist of Paracelsianism Peder Sørensen, and also accepted by Ole Borch, that the effects of the correspondences in nature involved no magical forces. Like them he thus thought of astrological effects as natural and he took astrological theory into consideration in his alchemical practice. There is evidence in Egede's report that he took care to choose an astrologically auspicious time for his alchemical experiment. Since he aborted his alchemical experiment on March 12th after a digestion period of fifty days, we know that this phase was initiated on January 22nd. As Furuset has pointed out, this was the first new moon of the year, and the astrological influence of the growing moon would, according to alchemical theory, be helpful for the process (Furuset 2006, 314). There was however another significant astrological reason to choose this date. On January 22nd the sun had just left the Zodiac sign of Capricorn and entered the sign of Aquarius, both associated with Saturn. As antimony was also associated with Saturn, indeed termed "the mineral of Saturn" by alchemical authors, an alchemical process involving antimony would be augmented by sympathetic planetary influence if initiated at this time. The positive effect of these Zodiac signs on antimony was explained by the French natural philosopher Jean d'Espagnet (1564-c.1637) (Forshaw 2013, 163–164). d'Espagnet was recommended by Borch in *Conspectus* (Borch 1696, 36–37) and he is thus a likely source for Egede. Sendivogius states that the alchemist should consider the positions of the planets in order to ease the development of the seed and conception; this will also have been significant to Egede (Sendivogius 1718c, 32).

Neither was Egede the only alchemist among his contemporaries to believe that astrological effects were significant for alchemical processes. Indeed, Egede was not the only one to choose January 22nd to initiate the digestion of the alchemical matter: Herman Boerhaave, who also experimented with antimony, chose the same day in 1734 to begin digesting purified quicksilver and gold in an attempt to produce the Philosopher's Stone. This is not a coincidence but must be seen as evidence of the maintained belief in astrology's significance for natural processes as part of chymical theory even in this relatively late period. Like Egede, Boerhaave also noted that the matter turned black after fifty days (Powers 2012, 178–179).

Hans Egede and the Alchemical Tradition

Although only one of Egede's experiments has been described in any detail, the available evidence suggests that he was interested in alchemy for several decades. In addition to the experiment of the winter 1727 he mentions "many glasses" broken in "some" experiments performed in Bergen during the years 1718 to 1721.[15] He studied, and may also have experimented with, alchemy in the

by emphasizing that the "stupidity" of the Inuits was to a large extent caused by a lack of education, and that he had "also found quite a few of an excellent Ingenium" (Bobé 1925, 367). Further, according to Vitruvius, "the races that are bred in the north [have] a great deal of blood, owing to the abundance of moisture and the coolness of the atmosphere." Because of this they are "rendered over-timid and weak by fever" (Vitruvius Pollio 1914, 170-171).The abundance of blood, and the resulting low tolerance to fever, was later used by Egede to explain the Inuits' vulnerability to smallpox (Bobé 1925, 366-367).

[15]The sources do not tell us when these attempts were made. Egede does not provide any more information about them or any later experiments. The account of the aborted experiment was published as a part of *Relationer fra Grønland 1721-36*, which is based on his journals from Greenland. As all Egede's diaries were lost with the Royal Mission College archives in the great fire in Copenhagen in June 1795, we do not know whether the mention of the two later experiments was included in the original journal entry. It is possible that Egede added this information later, before *Relationer fra Grønland* was published. If it

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Colony of Hope in the period 1721–27, before the recorded experiment, and mentions having performed two more experiments after March 1727. Further, the observation by Jacob Johan Lund of alchemical equipment in Egede's daughter's house in Stubbekøbing, where Egede lived from 1753 to his death in 1758, suggests that he practiced alchemy during these years. Lund, who was married to Egede's granddaughter and got information directly from the family, provides evidence of continuity in Egede's alchemical interest also before the years in Stubbekøbing, with the statement "It cannot be denied that H. Egede always had a particular Love for the Study of Chymistry" (Lund 1778, 70). The available evidence thus points towards a relatively consistent interest in the theory and practice of alchemy for forty years.

Egede's belief in transmutational alchemy did not make him a rare exception in his time. Even though transmutation and gold-making had largely lost credibility in scientific circles, there was still no theoretical basis for a claim that transmutation could not happen. Hjalmar Fors has in his study of the Swedish Mining Bureau shown how alchemy's loss of status at the start of the eighteenth century did not happen primarily because of scientific proof against transmutation, but that alchemy was pushed aside as a consequence of economical and structural developments fuelled by Enlightenment ideals of utility and economical rationality (Fors 2015). Chemistry rejected transmutational chymistry during the first decades of the eighteenth century primarily because of its lack of useful results (ibid., 4, 11).

During this period metals and minerals became a commodity and a means of economic gain for the Swedish state, hence discovering new metals and minerals proved more economically profitable than researching the inner composition of matter (ibid., 119). This development enlisted natural philosophy in the service of the state and favored a conception of metals and minerals as the smallest unit of nature, as elements or species (ibid., 45, 118–19). This was how transmutation was eventually relegated to the realm of the strange and fantastical as an opposite to the rational and useful (ibid., 122).

During the first few decades of the eighteenth century there were thus still a number of persons in good standing in the scientific community who believed in and practiced transmutational alchemy. Among them were men holding central positions in the Swedish Mining Bureau, such as Urban Hiärne (d. 1724) (ibid., 60, 62–63), and the noblemen Thomas Blixenstierna (d.1753) and Gustav Bonde (d. 1764) (ibid., 133–134). Another example is the previously mentioned Hermann Boerhaave (d. 1738), professor of chymistry at the prestigious Leiden University. In Copenhagen, Rosenborg castle had a large and well-equipped laboratory, built by king Christian IV (r.1588–1648) (Kragh 2006, 35–36), and several alchemists still practiced at Frederik IV's court in the early 1720s (Kragh 2002, 32–33; Kragh 2006, 42). In Norway, a few apothecaries of the period have been identified as practicing alchemists. One of them was the Danish-born Arnoldus von Westen, who was an apothecary in Trondheim from 1680, another Andreas Thue (1703–1751) in Fredrikstad, who was interested in gold-making (Dahl 2016, 26). When Egede sought instruction in laboratory techniques in Bergen after his first failed experiments, it was to an unnamed apothecary that he turned. Reports by reliable persons who had witnessed successful transmutation contributed to its continued plausibility. Among them was Ole Borch himself, who had seen silver transmuted to gold (Kragh 2006, 37).

Egede's studies of alchemical texts were extensive, as was his collection of alchemical books. In his report from 1727 his alchemical library is said to comprise more than sixty authors (Bobé 1925, 195). He further reported that these alchemical works had been chosen based on the recommendations in Borch's bibliographical work *Conspectus Scriptorum Chemicorum Illustrorum*. As Borch's bibliography comprises about eighty works, Egede's collection of more than sixty will have

was included in the original report to the Mission College, the two experiments must have happened between March and July 1727, and Egede is likely to have performed further unreported experiments during his remaining nine years in Greenland. If they were added later, they took place between March 12th, 1727 and 1738, most likely before 1736, while Egede was still in Greenland.

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covered the majority, and we may therefore assume that the contents of *Conspectus* give a relatively good idea of the contents of Egede's alchemical library.

In addition to functioning as Egede's guide to alchemical literature, Ole Borch was a main influence behind his use of antimony as the prime matter of his alchemical experiment. The procedure performed in Egede's recorded experiment was based mainly on theoretical elements found in Sendivogius' *Chymischer Schrifften* and Becher's *Oedipus Chymicus*. Further, his alchemical method, as well as his allegorical account of it, had strong similarities with the account in the Valentinian allegory *Der Triumph-Wagen Antimonii*, the most famous of the alchemical texts proposing the use of antimony, which Egede has most likely read.

The influence of Sendivogius' theory of matter as consisting of a male and a female principle is reflected by the use of the wedding metaphor, also used in the Valentinian *Triumph-Wagen Antimonii*, in Egede's Philosophical Dream. The dream motive adopted by Egede is present also in the allegories of Sendivogius and Trevisanus. Apart from Borch and Becher, Sendivogius and Trevisanus are the only two authors out of Egede's alchemical reading mentioned by name; this most likely reflects their perceived importance for Egede.

The available evidence suggests that Egede did not doubt the truth of transmutation or the possibility of producing the Philosophers' Stone. He was convinced by the authority of Ole Borch and the alchemical texts recommended by him, as well as his own observations that conformed to alchemical theory. The method he used conforms to the descriptions he had read in these texts both as regards operation and materials; his experiments have not had as their purpose to discover new alchemical truths, but rather to reproduce results and verify truths handed down by tradition.

Egede's reading of Sendivogius and Becher also contributed to his natural historical studies. Whereas previous historiography has considered his alchemical studies as completely separate from, and in contradiction to, Egede's role as pioneer natural historian of Greenland, this article has revealed how his natural historical and alchemical studies were closely interwoven. Although theories of correspondences, complexion, and astrology were not specifically alchemical, but form part of premodern natural philosophy, textual evidence points to direct influence on the *Perlustration* from the alchemical works that were also the most important sources to Egede's alchemical knowledge.

The boundaries between alchemy and pursuits now considered scientifically valid, such as metallurgy and the manufacture of drugs, were in Egede's time still blurry. There is evidence in Egede's writings that he mastered and practiced metallurgical techniques and had knowledge about the distillation of medicines (Bobé 1925, 230, 326, 329), both skills that were needed in his daily work as head of the colony. The link between his metallurgical work and his reading of Paracelsian alchemical literature is visible in his use of the term "spagyric" when referring to the extraction of gold from a crystal (Bobé 1925, 329; Becher 1717, 152–153). Further, the overlap between commonly accepted natural philosophy and alchemical theory contributed to the continued plausibility of transmutation. Central premises on which alchemical theory rested still held explanatory power in generally accepted natural philosophy. As shown above, Egede's pioneer study of the nature of Greenland and the customs of the Inuits, published in 1741 as *Det Gamle Grønlands Nye Perlustration*, thus contains descriptions of natural phenomena using natural philosophical theories and concepts that also formed the basis for theories of transmutational alchemy. Important among these were the aforementioned theories of complexion and correspondences, and Egede's text regarding these topics was strongly influenced by the alchemical literature that also guided his attempts to make the Philosophers' Stone. The *Perlustration* was widely read, and its translation into German (1742), English (1744, 1760/1818), Dutch (1746), and French (1763) (Gulløv and Kapel 1979, 16) suggests that Egede's view of nature did not deviate to any significant degree from theories that were deemed acceptable at the time.

In the following century alchemy would lose the support of natural philosophy and come to represent the opposite of science and rationality. The famous Norwegian sociologist Eilert Sundt

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(1817–1875) in 1860 expressed surprise that the normally so rational Hans Egede believed in the Philosophers' Stone: "It was certainly strange, that such a sensible and clear-thinking Man as Egede could ever be seduced into the Promises of the Art of Gold-Making." Sundt continued by expressing the vain hope that Egede had, by the time that he lived in Stubbekøbing, turned away from alchemy and towards the more useful science of chemistry: "it is not said that it was the Art of Gold-Making that he had practiced in his old Age; it might very well have been the Science of Chemistry itself, that appealed to his pensive and active Spirit, and the Study of which afforded him a useful Pastime" (Sundt 1860, 169 note 28). Sundt's remark reflects that transmutational alchemy had in the mid-nineteenth century been completely expelled from the concept of chemistry.

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