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The Autopsy of Queen Christina of Sweden in Rome 1689

By

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PRECIS

This Research Report, which focuses on the autopsy of Queen Christina of Sweden in Rome in 1689, should be of interest to the general public, specialists in anatomy and infectious diseases, those interested in Sweden's history, and medicine as practiced in the 17th Century.

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A Note on Sources and Method

This research report should not be regarded as a source of original research or new information concerning the autopsy of Queen Christina in Rome in 1689. Instead, it presents an overview of existing literature on the subject in English, plus translations from articles and books published in Swedish and Italian. Some of the source material used herein appears in English for the first time, as far as the author is aware.

The books and articles used as source material are described in the Sources section (below).

The author's views are presented in footnotes in order to distinguish them from the source materials. In some cases, for example in the translation of the Queen's autopsy report from Italian to Swedish, the translator's comments appear in parentheses.

With regard to the source material, two deserve particular attention. The first is a record written by Swedish diplomat Carl Nils Daniel Bildt, who was ambassador to Rome when Queen Christina died. Ambassador Bildt wrote a first person account of the Queen's death, entitled *Drottning Kristina's Sista Dagar* (Queen Christina's Last Days), which was published in 1897.[1] The second is Professor Carl-Herman Hjortsjö's book, *Drottning Christina: Gravöppningen I Rom 1965* (Queen Christina's Grave Opening in Rom 1965), which is a medico-anthropological account of the Queen's remains. Though these two events occurred nearly 300 years apart, the observations and findings tend to reinforce one another, with the exception of one important point of contention. Hjortsjö also published an article in English, "Queen Christina of Sweden: A Medical/Anthropolgical Investigation of Her Remains in Rome" that appeared in Acta Universitatus Ludensis (Sectio II, No. 9, 1966). This is a 24-page article that in contrast to the 118-page book contains photographs of the Queen's skeletal remains, but no photographs of the Queen's remains photographed when the sarcophagus was opened in 1965.

Queen Christina, who never married, was raised, educated, and tended to dress and behave like a man. Other reports indicate that she spoke with a masculine voice. Speculation and outright accusations raised the question of whether the Queen was a homosexual, an "intersexual," a hermaphrodite, or a "pseudohermaphrodite." There were many sources of these allegations, including the Catholic church, which circulated pamphlets before the Queen's arrival in Rome and decades after.

> *The pamphlets against Christina began to circulate during the queen's stay in Antwerp and Brussels in 1654-55, that is, before her arrival in Rome. In them the monarch is accused of sexual immorality, of having performed abortions, of homosexuality, of not being feminine enough in her behavior and choice of clothes, of libertinism, of atheism and much more. According to the Swedish historian Curt Weibull these pamphlets had probably been ordered by [Cardinal] Mazarin to discredit the queen and prevent*

[1] Bildt's book was re-published by the Legare Street Press in 2022. The book has a statement from the publisher that states: "This work has been selected by scholars as being culturally important, and is part of the knowledge base of civilization as we know it. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant."

her from continuing to attempt pacification between France and Spain. The denigrating pamphlets, sometimes even pornographic, continued to be printed and circulated even in the following decades.[2]

The literature surveyed for this report clearly indicates that there is insufficient physical or anatomical information to sustain any of the accusations concerning the Queen's sexual orientation. For example, the Queen's physicians and the Queen herself documented her regular menstruations, which some believe are incompatible with hermaphroditism. With regard to "pseudohermaphroditism,"[3] there is no evidence on which such a finding could be based, only speculation. For example, Professor Hjortsjö came to "the conclusion that objective criteria for the diagnosis intersexuality are lacking. The anthropological investigation could not support the diagnosis."[4]

This report therefore focuses on the physical evidence contained in the Queen's autopsy protocol from 1689 and the anthropological evidence obtained when the Queen's sarcophagus was opened in 1965. The Queen's sarcophagus was also opened in 1943, though there is no documentation of the purpose or justification for the opening. One speculation is that the grave was opened in order to replace the Queen's internal organs that had been removed in 1689 and stored in a separate sarcophagus in the same crypt.

Introduction

On April 19, 1689, 63 year-old Queen Christina who had abdicated the Swedish throne in 1654, died in Rome.

(As a comment on the given birth and death data, i.e. December 18 and April 19, it should be stated that these refer to the Gregorian calendar. According to the Julian calendar, which was in force during this era in Sweden, the dates of birth and death are December 8, and respectively on April 9.)

At 4:00 PM on Wednesday, April 20, 1689, an autopsy was conducted at Riario Palace, the Queen's residence in Rome. Two copies of the autopsy protocol, both written in Italian, are known to exist – one in the Vatican archive, the other in the Vienna State Archive. A third version of the autopsy protocol was located in what is described as a "private archive" in Genoa, Italy. This third document has not yet been released to the public.[5]

The autopsy protocols make no mention of the name of the person who performed the autopsy of Queen Christina. How and when the protocol ended up in Vienna is unknown. However, three

[2] Wärnhjelm, Nigrisoli, Vera, and Zurlini, Fabiola. Il caso della storiografia medica sulla regina Cristina di Svezia: ricostruzione storica e prospettiva per nuove fonti di ricerca. The case of Queen Christina of Sweden in medical biography: a historical reconstruction and a perspective for new sources, In: *Storiografia Medica in Europa nel Novecento / Medical Historiography in Europe in the Twentieth century*, Padova, CLEUP Cooperativa Libraria Editrice Università di Padova, 2022.

[3] Pseudohermaphroditism is a condition in which the individual has a single chromosomal and gonadal sex, but whose external genitalia are those of the opposite sex. For example, according to the National Institutes of Health, "In female pseudohermaphroditism, the genotype is female (XX), the external genitalia are virilized," meaning the development of adult male characteristics in young males or females. "Female Pseudohermaphroditism," National Library of Medicine. https://www.ncbi.nlm.nih.gov/medgen/65964 Retrieved September 6, 2024

[4] Hjortsjö article, p. 17

[5] Email from Professor Vera N. Wärnhjelm, August 31, 2024

scholars assert that an autopsy was performed by Alessio Spalla, a court surgeon, who was assisted by Marcello Mapighi and perhaps other physicians.[6]

The Swedish language version of the autopsy protocol was translated into Swedish from the Italian by Dr. Alvar Erikson, a philologist known for his command of languages as well as his translations. The Swedish language autopsy protocol plus additional anatomical information is included in Professor Carl-Herman Hjortsjö's book, *Queen Christina: Grave Opening in Rome 1965*.[7] Professor Hjortsjo's journal article, *Queen Christina of Sweden: A Medical/Anthropological Investigation of Her Remains* is an extraordinarily detailed description of the Queen's remains.

Some of the information in this report was translated from Swedish into English by the author. A Swedish language version of the autopsy protocol as well as the additional anatomical information is included in the aforementioned Hjortsjö's book. However, the journal article does not include the autopsy protocol from 1689 that is included in Swedish in Hjortsjö's book.

A detailed assessment of the autopsy protocol in Italian appears in *The case of Queen Christina of Sweden in medical historiography: a historical reconstruction and a perspective from new sources*.[8]

The autopsy protocol is remarkable for several reasons.

> *The unpublished report of the surgeon Spalla integrates the knowledge of the queen's illness and death, stands as an example of a private autopsy performed by a court surgeon in the late Seventeenth-century Rome and as a case study on the development of new hybrid areas of knowledge, such as practical anatomy.*[9]

> *The comparison of Spalla's autopsy with the Viennese report of an anonymous practical doctor - suspected to be Marcello Malpighi -, who also participated in the Queen's dissection highlights how the two perspectives of investigation - the surgical-morphological and the medical-practical ones - are integrated in the theoretical and practical dimension of practical anatomy.*[10]

The autopsy protocol describes in detail the physical condition of the Queen at the time of death, which is in itself an extraordinary historical document.

The Autopsy

The text of the autopsy protocol that appears in Professor Hjortsjö's book in Swedish is as follows, as translated by the author of this report (Dr. Erikson, who translated the protocol from Italian into Swedish, provided the comments in parentheses):

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[6] Zurlini, F., Iorio, S., & Wärnhjelm, Nigrisoli, V. (2024). Alessio Spalla, court surgeon of Christina of Sweden and his unknown Queen's autopsy report. *Acta Chirurgica Belgica*, *124*(4), 332–338. https://doi.org/10.1080/00015458.2024.2350112 Retrieved August 30, 2024 Hereinafter, "Alessio Spalla…."

[7] *Drottning Christina: Gravöppningen I Rom 1965*, (Lund: Bokförlaget Corona, 1967), pp. 80-85

[8] Wärnhjelm, Nigrisoli, Vera, and Zurlini, Fabiola. Il caso della storiografia medica sulla regina Cristina di Svezia: ricostruzione storica e prospettiva per nuove fonti di ricerca. The case of Queen Christina of Sweden in medical biography: a historical reconstruction and a pers pective for new sources, In: *Storiografia Medica in Europa nel Novecento / Medical Historiography in Europe in the Twentieth century*, Padova, CLEUP Cooperativa Libraria Editrice Università di Padova, 2022. [Note: This article, which is in Italian, was translated using Google translate then edited by the author of this report.]

[9] Op cit, "Alessio Spalla…."

[10] PubMed, National Institutes of Health, https://pubmed.ncbi.nlm.nih.gov/38693894/ Retrieved August 30, 2024

20th of April 1689. Account of the illness of Her Majesty (H. M.) the Queen of Sweden, given after her body was opened. After the status that was described concerning H. M. on the 18th at 10:00 PM (some earlier report must exist) and which showed that the death process began with a short-term loss of consciousness, all the while her fever continued and her pulse became weaker and weaker. She nevertheless was able to eat supper (given the time it was at the same time as the evening meal) around half past three. After that she lay down to rest and the house doctor was not called, not even at the sound of thunder, when H. M. often on other occasions used to wake up. She slept until 9.

Impatiently the doctor (? Romolo Spezioli ?) wanted to go in, but in order not to wake her he restrained himself. Finally, after 10, after the doctor had entered, he called the queen three times. She did not answer, so he raised his voice. In this way she recognized him, but her eyes were clouded, her pulse weak, and her breathing shallow. The sick person pointed out that she felt very weak and that she could hardly speak. In this situation, she was helped first by priestly intercessions (possibly Father Slavatas and other nearby priests) and then with all appropriate elixirs, with doves on the head (unbelievable) and fire in the neck (possibly this was done by placing on the skin, in this case the neck region, a small amount of tinder or another type of flammable material such as moxa[11] that was set alight). But she became more and more unconscious and continued to weaken. She had completely stopped responding, was unconscious and did not move. After she entered the death throes, she died after half an hour, which happened around 12 the said day (i.e. at 12 noon on April 19, a time indication that is 6 hours after the one given by Bildt).

That morning, Wednesday the 20th of the same month at 16 (the hour struck does not fit with the expression before noon) after the corpse had been carried in to be opened, it was said that the queen had a bluish color in her face[12] and that blackish blood flowed from the nostrils. The outer parts of the thighs and arms as well as a large part of the side were bluish and peacock iridescent. The abdomen was white and swollen and to an extent distended. After the first incision was made, the common casings appeared with completely undamaged fat, two fingers (probably fingers crossed) deep. When one then reached into the bowels, these were expanded in a space of vapor-filled matter (difficult to understand, probably meant only that the bowels were filled with intestinal gases), even though not a drop of water was found in the abdominal cavity. It must be said that the intestines changed to a blackish color.

After the intestines were removed, the liver was observed, which in its upper part was likewise bluish and blackish, which color had spread to the stomach. The gall bladder was without bile and contained a stone, yellow and possible to break, which had the thickness of a hazelnut. The kidneys, especially the left, revealed a loose substance, and were full of a bloody, corrupted material.

The ureters were likewise blackish. Yes, even the bladder showed in its right part the same blue color and that was just like the..... (illegible adjective, possibly uterine?) part that was affected.[13]

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[11] Moxa is a downy substance obtained from the dried leaves of an Asian plant akin to mugwort. It is burnt on or near the skin in Eastern medicine. In the 17th and 18th centuries, treatment for a fever included placing various things on the patient's head, including melon bark, frogs, roosters, and pigeons.

[12] This is consistent with *livor mortis*, which occurs after death as the blood settles into the lower parts of the body, leaving purplish-blue discoloring on the skin.

[13] The importance of the inability to read this word was explained by Professor Hjortsjö in a footnote that addressed the issue of whether Queen Christina was a hermaphrodite as many have speculated. The footnote states as follows: "It was very regrettable that just this adjective, perhaps the most important in the protocol, could not with absolute certainty be read. If the interpretation 'the uterine part' is correct, it indicates that a uterus was in place when the autopsy was conducted, which if correct is a finding of definite importance in the context of Christina's intersexuality. It was with great interest, therefore, that the examination of the Rome Protocol (CUL 1692:16: f. 84) took place. That protocol leaves no doubt of the interpretation when one can quite clearly read the words 'la parte Uterina,' in other words the uterine part."

After that, they moved on to the chest, whose bone frame did not provide enough room for the internal organs. Thus, one understood that this was the original cause of all diseases. As far as the heart is concerned, this was outwardly medium-sized and natural. In the heart chambers there was a lot of blood, which was bluish, congealed (feculento actually means 'starchy content' but also congealed) and mixed with black bile (i.e., dark blood). This congestion was taken up (by the heart) and spread to the lungs has of the same [material] made these both slack and brittle (the Italian's fragidi should probably be fragili) leading to deterioration. In sum, the erysipelas[14] during the relapse with the intense fever bout in the blood and spread mainly to the internal organs (the Italian precordi must in this case mean the internal organs; meaning the tomb text associated with the previously mentioned half-dome-like sarcophagus), where it developed a life-threatening congestion.

The skull was opened, and one saw immediately that the vessels which were on the surface, were filled with a blackish fluid, and the membranes were of a soft substance. Convolutions on the cortex layer of the brain were clearly evident and natural, but the tissue looked lead-gray that could be broken apart easily.

The "center beam" (= brain stem? Possibly the so-called corpus callosum?) on the right side of the cerebellum was in the same condition as well, but on the left side it was whitish. The brain's ventricles were in good condition without excessive moisture, in the same way the chest did not contain any moisture and did not reveal any adhesions between the internal organs and the ribs. The optic nerves and the other (nerves) were very clear and led to their sense organs.

Finally, it was seen that the enlarged mass of moist material had fatally attacked the solid substances.

In collaboration with a pathologist, Professor Jan Mellgren, the autopsy protocol became the subject of an examination which led to the following conclusions:

The short data concerning the final phase of the disease, which are reproduced in the protocol, are multiple. Under the assumption that one can really trust the information about a fever, however, they are consistent with a general infection.

The bluish color found at the autopsy on the face, on the extremities and a large part of the side goes hand in hand with strongly prominent discoloration on the skin.[15]

The same goes for the dark discoloration of the liver, small intestines, stomach, kidneys, ureters, bladder, lungs, and brain. The miscoloring of these organs need therefore only indicate a pronounced postmortem blood overflow, a hypothesis. Taken together with the findings of a strong gas expansion of the intestines, flaccid consistency of the kidneys, fragile lungs and a fragile or soft brain substance, the discoloration can indicate advanced decay. The assumption is not contradicted by the fact that the autopsy was carried out 28 hours after death during April in the prevailing outside temperature in the Mediterranean area.

A deformation of the chest was obvious. In addition, consecutive heart disease, a so-called cor pulmonal, the protocol does not give any indication of, because the heart is stated as medium-sized and outwardly natural, even if so the dark lungs, "the blood clot spread to the lungs" and the dark liquid in the nostrils can indicate pulmonary stasis or pulmonary edema. However, the lung findings and the "bloody

[14] Erysipelas is a "bacterial infection often associated with rough red rash on the face or legs. The infection is known to spread from the legs to the lungs." The Queen's skin was full of bruises, concentrated particularly in the right leg and thigh where the erysipelas had in fact manifested itself." As can be seen in the autopsy protocol concerning the Queen's corpse, "the blood observed in the precordium was purulent, livid, and stagnant and, circulating had 'communicated' the disease to the lungs." Both of the protocols (Vienna version and the Vatican copy) observe that the Queen's "lungs appear to be the most compromised organ, affected by gangrene and black spots." In 1691, for example, Pope Alexander VIII died of erysipelas on the right leg which resulted in gangrene. Other symptoms of erysipelas include syncope (temporary loss of consciousness) and a high fever.

[15] This is consistent with the aforementioned *livor mortis*.

water" from the nostrils is consistent with pulmonary stasis and pulmonary edema. The finding of "bloody water" coming from the nose is consistent with aspirated vomit.

Under the assumption that the Italian expression "feculento", translated above into the term "congealed", could indicate the presence of fibrin clots, the anamnestic data and the autopsy findings (fibrin clots in the heart, the general blood overflow and the strong decay phenomena) would be consistent with a very general infection. The lung findings do not contradict that it may have been bronchopneumonia. The stone found in the gall bladder was probably a cholesteric stone. Convincing evidence of a cerebral stroke is the accumulation of the anamnestic data and the autopsy results are not corroborating. A cerebral hemorrhage can therefore be ruled out.

With regard to the many interpretations that the protocol allows, the probable diagnosis is: severe general infection with terminal heart failure and/or vomiting with aspiration. This probable diagnosis seems to be quite consistent with what has been assumed in the above discussion regarding the Queen's previous illnesses.

Due to what is mentioned in the literature, the Queen's possible intersexuality, it is finally observed that the autopsy protocol does not contain any mention of any abnormality in external genitalia. On the other hand, there is no hint of either some uterine prolapse, for the existence of which, according to Stolpe, however there is scarce documentary evidence.

Anthropological Examination

The following anthropological examination of Queen Christina's body is included in Professor Hjortsjö's aforementioned book in Swedish. There is also a considerable amount of anatomical information in Hjortsjö's aforementioned journal article in English.

Professor Hjortsjö's anthropological examination of the Queen's remains occurred when the sarcophagus, located in the crypt beneath St. Paul's cathedral in Rome, was opened in December 1965, nearly 300 years after the Queen's death. As noted above, Hjortsjö's book contains several photographs of the Queen's remains. Of particular interest to the Vatican was the silver mask buried with the Queen's remains that covered her face. The Vatican wanted to make a casting of the mask to contribute to a Queen Christina Exhibition organized by the Council of Europe.

In addition, Hjortsjö's article includes six photographs of the Queen's cranium, six photographs of 24 long bones, four photographs of the Queen's pelvis, and five tables containing dozens of measurements of the Queen's skeletal remains. For example, the Queen's stature was calculated to be approximately 150 centimeters (approximately five feet), which is consistent with the length of the remains as measured in the sarcophagus.

According to Professor Hjortsjö who led the examination in 1965:

The queen's dead body does not seem to have been embalmed, at least not in an effective manner. All external soft parts were deteriorated. In the interior of her body, however, one was struck by the degree of black-brown, strongly dehydrated and fragile remains of the internal organs, which were originally kept in a separate sarcophagus (see Bildt, 1897) but at some later time (1943 ?) were clearly transferred back into the body.[16]

As previously mentioned, for the sake of piety, certain parts of the Queen's body with preserved funeral textiles were not allowed to be the subject of any anthropological investigation, and due to other difficulties of a local and technical nature. Among other things, an X-ray of the skull and skeleton could

[16] Thus far, no record has been located to explain or justify why the Queen's sarcophagus was opened in 1943.

not be obtained. For example, an x-ray examination of the cranium and skeleton was not made. The lighting conditions and the time constraints, resulted in unsuccessful photographs. The techniques that were used has been described by R. Martin (1928). The results and the anthropological images are reported in the author's previous work: "Queen Christina of Sweden", (Acta Universitatis Lundensis, Sectio II, No. 9, 1966}.

Cranial Description

General characteristic. The color of the skull is yellow-brown with dark black-brown, unevenly distributed spots, mainly concentrated on the forehead and neck region. Through an incomplete horizontal saw cut, the skull cap has been separated. The cuts don't really fit together. Consequently, either the transverse width of the skull in question has been narrowed too small or the transverse width of the skull in height with the cut has become somewhat too large. The lack of congruence must have arisen in connection with the drying of the skull. In other respects, the skull is very well preserved, and it shows only minor postmortem weathering defects. In order to have belonged to a woman, the skull must be described as fairly large, and its calculated volume with the help of Pearson's formula (see Martin) characterizes it as aristencephalic. The structure of the skull is slender, almost weak. The sculpting of the bone surface produced by the musculature has an ordinary relief."

[Note regarding the Queen's teeth examined during the grave opening in 1965: Professor Hjortsjö used the Hareup system to identify the position of the Queen's teeth whereby the teeth were counted from the first incisor back to the molar, thus 1 to 8 on each side. He used a plus sign (+) to indicate the upper (maxillary) and a minus sign (-) to indicate the lower (mandibular). Hjortsjö's original notations are followed by the tooth number using the contemporary universal numbering system. For example, 5+ which indicates the fifth tooth from the right of the first upper incisor on the right side, is tooth number 4 using the universal method, i.e., the right first maxillary molar.]

A large number of teeth were lost during life, and postmortem all but one have fallen out of their respective socket (aveoli). To the right of the maxilla, the alveolar remains for both premolars, the right canine and the two incisors, i.e., the alveoli for 5+ up to l+. (4 to 8)[17]

The alveoli for the formed premolars are, however, exceptionally shallow. On the other hand, the alveoli in this part of the upper jaw are completely covered and the corresponding part of the alveolar process is atrophied, which shows that its three molars were lost during life. On the left side of the upper jaw, alveoli remain only for the second incisor and canine tooth, i.e. the alveoli for +2 and +3 (10 and 11). All of other alveoli in the left upper jaw half are completely deteriorated and the corresponding part of the alveolar process is atrophied. During life everything in this part of the upper jaw, the first incisor, then the two premolars and the three molars were lost. In the lower jaw, the alveoli remain for the first premolar,

[17] Forensic Odontologist Dr. Lowell Levine, who assisted with the identification of the Romanovs, commented on Queen Christina's dental condition:
The description of the Queen's dentition indicates she was a dental cripple with significant loss of teeth and the supporting structures of the few teeth remaining during life. This was not surprising in light of my dental history education and experience with the skeletal remains of the murdered Russian Royal Family, the Romanovs. George Washington, alive in the 1700s, wore dentures made of ivory. Paul Revere, famed in American history, for his Revolutionary ride, was a silversmith who fabricated dental prosthetic appliances for wealthy Bostonians. Czar Nicholas and Alexandra had significant dental problems. Nicholas had many missing teeth and severe periodontal problems. Alexandra had extensive dental treatment. The family physician Dr Eugene Bodkin was edentulous in the maxillary jaw and had many missing mandibular teeth. His maxillary full denture was held in place by suction cup. The Royal Family had dental treatment available through their well trained, for that time ,Court dentist Dr Serge Kostritsky. Dr Kostritsky was also a professor at the dental school in St. Petersburg. Thanks to the American Dental Profession excellent treatment allows healthy dental structures into old age today. Historically, even the wealthiest, most prominent people were dental cripples. Now routine dental treatment allows all individuals to maintain great dental health into old age. (Personal correspondence, December 9, 2024)

the canine tooth and the second incisors in forming two halves, i.e. the alveoli for 4- (28) to -4 (21). All these alveoli are very shallow as a result of a strong atrophy of the corresponding parts of the alveolar ridge. Also remains in the right mandibular half the second, possibly the third molar, i.e. 7- (31) or possibly 8-. (32) All of the teeth that fell out postmortemly have been recovered, with the exception of the lower jaw's first incisor to the right, i.e. 1-. (25) The teeth are very heavily worn down and coated with quite a lot of tartar. Occasional caries are also detected. On the other hand, the remaining molar is not worn down, which should be interpreted as meaning that the teeth in the upper jaw were lost relatively early in life.

The sutures between the cranial bones are largely ossified. Insignificant remnants of a sutura metopica remain, however. No suture bones can be observed. The present suture obliteration is consistent with the queen's age.

Norma verticalis (the head image). The outline of the skull has something like the regular line but closer to a spheroid. The width of the skull in this view is relatively significant. Neither hairline, browbones or eyebrow arcs are prominent.

Norma occipitalis (neck picture). Even in this view the skull is semi-round and rather low. It almost reproduces the shape that is often found in children's heads, designated in German literature as "Bombenformen". Had it not been for the aforementioned saw cut, an almost even curve would have proceeded from one processus mastoides to the other. The tubera parietalia are not prominent in this view either. A crista cranii is not present. Protuberantia occipitalis externa is marked but not particularly well-developed. Processus mastoids are relatively small and end in a point.

Norma lateralis (side view). The skull is also relatively low in this view. From a slightly marked, not recessed nasal root, the curva sagittalis rises over a non-protruding glabella in a steep ascending course over the vaulted forehead in the direction of the bregma. There is a clear precoronar clinocephali. This means that the curve used in this section fills a flattened course. The curvilinear course then continues back-shaped up towards the vertex, which lies approx. 3-4 cm behind the bregma, and then falls rapidly, in a short, bow-shaped end down to the protuberantia occipitalis externa. No more detectable bathrocephali thus exists. Not in this view either are protuberantia occipitalis externa particularly prominent.

The lineae temporales are weakly marked and are almost completely obliterated during their passage through the occipital bone. The outer hearing channels have a normal width and do not show any exostoses. The processus mastoideus have a normal shape. The facial skeleton is not protruding in this view. These depths are small. The face angle therefore becomes very high, more than 90°. However, the nasal skeleton protrudes significantly in front of the most anterior part of the maxillary area. Spina nasalis anterior is pointed and relatively strong. The low upper jaw below it shows in its outline a noticeable forward concavity.

Norma facialis (the facial image). The cranium in this view is of medium height with a beautiful oval form. The entire forehead region has a spherical character, both in transverse and vertical dimensions. Above the nasal root cone is the remnant of a sutura metopica. Glabella is very faintly marked, which is why the region above the nasal root appears flattened. The eyebrow arches are faintly marked. Protrusion of the forehead is gentile. This grace slightly highlights the entire facial skeleton, which is well modeled and of medium height. The eye sockets are high and large, symmetrical, and somewhat obliquely set.

From the lower parts of the cheekbones, along the contour line, arc-shaped down towards the narrow and, as it appears, the list of atrophic parts of the body. The defects are high and large, symmetrical and somewhat oblique. In their general shape, they are almost square with rounded corners. Similar to the other details in the facial skeleton, the margines supraorbitales are more rounded. They are also sharply marked, while the lower edges are more rounded. The fossa lacrimalis is relatively deep. The nasal root is fairly narrow, the orbital distance relatively slight. The apertura piriformis is also narrow, high and distinctly bounded by a sharp bony margin, which at its base, ends in the pointed spina nasalis. The well

preserved, elegantly curved nasal bones are narrow and vault-shaped and connected to each other, forming a somewhat saddle-shaped nasal ridge. The posterior parts of the nasal bones are prominent. The foramen infraorbitale is small on both sides are very small, and the fossa canina are slightly marked. As a result of the tooth loss, as previously mentioned, large parts of the alveolar process have, as earlier mentioned, been lost. Even its remaining parts has an extremely reduced height. Only juga alveolaria of the canine teeth are marked.

Norma basalis (skull base image). The skull's previously described strongly spherical form also appears in this view. The facial skeleton is shallow. Foramen occipital magnum is small and square in shape with straight, rounded corners on the front, back and laterally directed rounded corners. The condyli occipitales are unusually small. The processus styloides are well formed and preserved. The palate is narrow with atrophied alveolar processes, which makes it impossible to measure the height. The alveolar arcade must have been paraboloid with a tendency to a U-shape. Foramen incisivum is very large.

Norma basalis interna (internal skull base image). Since the skull cap is severed, the area of the hypophyseal fossa area could also be inspected. The sella turcica has a completely normal shape with well-developed processus clinoidei ant., medii, and post. and tuberculum sellae formed normally. There was no widening of the fossa hypophyseos.

Mandibula (lower jaw). Consistent with the gently formed facial skeleton, the mandibula is also delicate with small dimensions. From the moderately outward curved mandibular angles, the anterior margin of the rami (linea obliqua externa) rises upwards in a slight curve. In relation to their height, the rami are moderate in width. The interior margin of the ramus (linea obliqua externa) ends in the body with a slight bulge. The degree figure angulus mandibulae is normal. In front of the angulus, the lower contour of the body is slightly concave. The front edge of the branch that radiates down the body is slightly concave.

The degrees of the angulus mandibulae are normal. In front of the angulus up, the lower contour of the body shows a small concavity. The height of the lower body is greatly reduced, due to the atrophy of the alveolar process. In the anterior parts of the mandible, where the teeth are still present, although fallen out after death, the height is slight, as is that of the chin. The mental protuberance is rather prominent. The muscular relief is, on the whole, weak. The relief on the inside of the chin is extremely delicately formed. Only the original line of musculus mylohyoideus is clear. Juga alveolaria scarcely protrude.

Anthropological characteristics (ad modum Hjortsjö 1947): brachyeurycep hal, "3.ofrc ocfiamaecephal (L-H), eurychamaecephal (B-H), orthocep hal (L-EH), eurychamaecephal (B-EH), orthometop, spherometop, metriometop, brachyeuryfacial, brachyhypsifacial, metriofacial, hypsiorbital, dolichostenostaphylin, orthognath.

Characteristic for Queen Christina's cranium is thus the elaborate spherical neurocranium. Furthermore, the modeling of the facial skeleton is extremely soft and the entire construction of the facial skeleton is very graceful. Her jaw bones appear atrophic or reduced, to which a significant loss of teeth must have contributed. This suggests, among other things, that the lower jaw was formed in such a way that it seems to have been able to resemble a much older person than Queen Christina. The weak design of one of the cheek bones contributes to the fact that the face, if it did not have its strongly protruding nasal skeleton, appears to be withdrawn. Therefore the face angle appears to be very high.

Skeleton description

The skeletal parts that could be examined were relatively well preserved. The tibiae and fibulae were, however, very decomposed and measurements of the same could not be taken.

Claviculae, scapulae, vertebrae, costae I and metatarsalia.

Only a few measurements were made and only occasional neck and sternal vertebrae were removed for a purely general assessment. The bones of the hands and feet, with the exception of metatarsalia I, could not be inspected.

Claviculae (the collarbones} are almost exact mirror images of each other. It is possible that the coracoid tuberosity on the left side is slightly more developed than on the right side. In addition, a small extra tubercle occurs at the anterior edge of the left clavicle. No signs of healed fractures are present. The clavicles are gracefully built with ordinary curves. Their absolute length dimensions are small. The left clavicle is, however, 2 mm longer than the right, which according to Dwight is normal (see Martin, p. 1098). The length of the clavicle is in correct proportion to the length of the upper arm bones and the so-called claviculo-humeral index amounts to about 45, a value typical for Europeans (see Martin, p 1098).

The scapulae (shoulder blades) are uniform and gracefully built with absolutely small dimensions. The breadth is thus small with 150, respectively 151 mm. According to Dwight (see Martin, p. 1095), the mean value for women is 147 and for men 168. It is very rare that a male has a value of 150 or less. The width and height index of the scapulae are 65.6 and 66.7, which corresponds to typical values.

Vertebrae cervicales (cervical vertebrae) are gracefully built with typical dimensions typical for a female. No mentionable arthrosis deformans is present in the upper parts of the cervical vertebral column. It is possibly it is somewhat more advanced in its lower part and the upper part of the thoracic vertebral column.

Costae I (first ribs) have a normal configuration. The right is insignificantly smaller than the left. In addition, there is a synostosis where the latter joins the sternum. If the costae on the right-side are smaller, possibly significantly smaller, than the left-sided ones, the observation made at the autopsy, is probably correct: "the skeleton of the thorax did not provide sufficient space for the internal organs", is certainly correct. This, however, could not be investigated during the investigation, because the torso had to be left intact for piety's sake.

Metatarsal I (first metatarsal bones) were both the same length, 55 mm. The value is not high. Pfitzner (see Martin, p. 1179) states that the mean value for European women is 57 mm.

Humeri (upper arm bones). The humeri are uniform, symmetrical and, in absolute terms, short. The left is insignificantly longer than the right. The structure is quite slender with delicately formed muscle origins and attachments. The index of robustness is also typical for a female. The caput region and the lower epiphyseal part, however, have rather large dimensions in relation to the bone. The circumference of the caput has a relatively large value, and the epicondylar width is also fairly large.

Radii (radius). These are uniform, symmetrical and relatively slight in absolute length. The left is insignificantly longer than the right. Considering that it belonged to a woman, the general structure must be characterized as normal. The muscle origins and attachments are, however, delicately formed. This applies not least to the shape of the tuberositas radii. The furrows of the tendons of the extensor in the lower epiphyseal part are relatively poorly marked.

Ulnae (forearm bones). These are uniform, symmetrical and short. The left is insignificantly longer than the right. The general structure must be considered elegant. The upper epiphyseal part fairly wide, corresponding to the wide lower epiphyseal part on the humerus. The muscle origins and muscle attachments are rather poorly marked. The diaphyseal part is on both sides curved in such manner as to produce a lateral convexity.

Femora (femurs). These are uniform, symmetrical and of the same size. Having belonged to a woman they must be considered fairly powerful and to have a somewhat heavy structure, with well marked muscle origin and attachments. The transversal diameters of the diaphysis have rather high values, whereas the sagittal diameters are relatively small. Thereby the legs are given a flat appearance and index pilastericus as well as index platymericus have relatively low values. However, one cannot speak of any real platymery. Both of its indices have their lowest values on left side, which conforms to the rule

(see Martin, page 1139). If two femora are regarded from the front or the from the back, the shaft in its upper part shows a curve with the convexity directed laterally. Nor do the legs look completely straight when seen laterally. They thus show a slightly forward convexity, i.e. a slight campylomorphy. Smaller decomposition defects are found in the lower epiphyseal regions.

Pelvis (pelvis). This is completely symmetrical. The insignificant asymmetric interference, which arose when the sacrum was fitted into the pelvic ring, and thus has no meaning here. It was occasioned by the impossibility of being able to carry out an absolutely correct assembly of the pelvis by using plasticine in the joints as compensation for such decomposed articular cartilage. In view of the fact that the pelvis is from a female individual the general structure must be viewed as ordinary. The origins of the muscles and attachments are clear but not particularly strongly marked. The bone surfaces have the typical smooth character typical of the female pelvis. The pelvis is femininely low, with outward curved iliac crests. The two pubic bones are connected in the symphysis, forming a low arcus pubis.

This clearly gynecomorphic character is also seen in the shaping of the entrance to the small pelvis, which is circular. This is also seen in the triangular form of the foramen obturatum with its deepened contour of the frontal margin. The dimensions in the pelvis are those of typical female.

Queen Christina's skeleton is typically female, with the exception of the femurs, which are quite gracefully built. The limb bones are generally relatively short, and their length dimensions are the basis for a comparison of the body length obtained with Manouvrier's method (see Martin, p 1068) only worth 155 cm. The length of the body measured in the sarcophagus is 150 cm (59 inches, or 4' 11").

In a number of different respects, the skeletal bones exhibit typically female characteristics. This not least applies to the bones of the shoulder girdle as well in this respect to the pelvis. Asymmetry between the left and right limb bones, which does not fall within the limits of the completely normal, could not be established. However, a certain reservation must be made regarding the bone formation of the chest that could not be examined. Any signs of morbid disorders or damage caused during life that damaged the skeleton has not been able to be ascertained."

Additional Information

The purpose of this section is to provide supplemental information to the autopsy of Queen Christina (December 8, 1626 Stockholm – April 19, 1689 Rome).

The four (4) sources for this supplemental information, which are listed below, include a biography, a collection of photos and other images, a report concerning the opening of Queen Christina's grave in 1965, and a report by Sweden's ambassador to Rome who documented the Queen's last days and death.

These sources make the following points:

1. *The Queen was approximately 5 feet (152 centimeters) tall.*
2. *The Queen's face is described as "pockmarked."*
3. *The Queen was constantly ill throughout her life. A description her various illnesses, compiled by anatomy professor Dr. Hjortsjö, follows below.*
4. *Toward the end of her life, the Queen had gained a great deal of weight. She is described as a "ball," and as "a fat old lady with bad teeth."*
5. *Toward the end, the Queen is described as being diabetic, though there is no indication this diagnosis was made during her lifetime.*

6. *The Queen had lost almost all of her teeth during her lifetime. It is noted that throughout her life she refused to chew her food. There is no information about her diet other than what she drank.*

7. *The Queen did not drink any type of alcohol. As a child, her mother forced her to drink a small glass of akvavit (brännvin) a day. A physician once put her on a "milk diet." She once drank ten (10) "decanters" of milk in one day, but there is no indication of the size of the decanter. There is no indication of how long the "milk diet" lasted.*

8. *As an adult, the Queen drank only water. Toward the end, it is noted that the Queen was "always thirsty," thus drank a lot of water each day. This contributed to the modern diagnosis of diabetes.*

9. *Carl Bildt, the ambassador to Rome observed that in 1686 the Queen was diagnosed with erysipelas, but there is no indication of who or how this diagnosis was made. It is noted that the Queen suffered from "red sores" (rashes) on her legs, fainting spells, and fever, which are symptoms of erysipelas.*

10. *Toward the end, the Queen suffered from a sudden loss of consciousness (fainting spell). She would simply fall to the floor. These infrequent spells would last from a few minutes to a half hour.*

11. *When she died, the Queen raised her left hand to her neck, took her last breath, and died.*

Summary of Illnesses

The following descriptions are taken from Hjortsjö's book, pp 78-9.

The Queen was exposed to bodily harm which possibly resulted in a chest deformity or a broken clavicle and broken scapula. (It is documented elsewhere that the Queen's mother and nurses deliberately dropped the Queen on the floor, the motive being to kill her in order to make way for a male heir to the throne.)

The Queen's illnesses included the following:

Age	***Description***
6	*Breast abscesses*
7	*Nervous exhaustion, occasionally resulting in loss of consciousness (syncose)*
12	*Chickenpox of a "malignant type"*
13	*Nervous exhaustion, fainting spells, breast abscesses*
18	*Sickness brought on by over-exertion*
19	*Sickness brought on by over-exertion, measles, and since 22 years old or even earlier, malaria*
22	*Perhaps earlier, but by 25 she suffered from longer fainting spells*
28	*A fever that lasted 28 days. It was chronicled that the Queen suffered from over-exertion, over-work, lack of sleep, general physical decline, often treated with bloodletting, for the time more traditional medical therapies, such as diet, purgative treatments, including more bloodletting*
28	*At this age and thereafter the Queen had periodic "bad stomach"*
31	*Influenza*
40	*At this age and thereafter she was "permanently sick," pain in the right side, emaciation, and strong thirst*

50 Possibly a uterine prolapse

53 Gall stones. One was found during the Queen's autopsy.

60 At this age and thereafter periodical swelling and rash on the legs. The symptoms were interpreted as "erysipelas." One interpretation is that the "erysipelas did not appear externally with an ulcer, but became manifest in her blood, causing an inflammation of heart and lungs."[18]

62 Over a period of two months, the Queen had four fainting spells, each lasting several days, in between she recovered. No symptoms of paralysis or cramps. From time to time she was conscious and able to speak. From time to time there was bloodletting.

63 63 years and several months old the Queen died on the fifth day after she was struck by her fourth fainting spell.

[18] Zurlini, F., et al

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