

Who was Peter Karlsson of Helsingborg?

An Attempt to Identify a Medieval Seal Stamp Find

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Finds of seal stamps in graves from the Middle Ages are very rare, especially if they are undamaged. The owner of the well-preserved stamp in grave 207 in the Church of St. Clement in Helsingborg was a nobleman, called Peter Karlsson. His coat of arms, which is quartered, restricted the searching for his relationships geographically. A 'terminus ante quem' was set by the archaeological investigation. The individual age was determined by means of an osteological and odontological investigation. It has not, on the whole, been possible to connect the actual name with any known armorial seal with the quartered shield. The unclear family relationships of this time and the only accidentally preserved documents from the Middle Ages do not offer the research worker of genealogy and heraldry sufficiently reliable sources. Even if there is no clear evidence, however, many facts nevertheless support the presumption that the seal owner in grave 207 was identical with Mayor Peter Karlsson of Helsingborg and also that he was a member of the Thott family.

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THE GRAVE 207 IN THE CHURCH OF ST. CLEMENT

In connection with the archaeological excavations, between 1958 and 1962, of the 11th century Church of St. Clement in Helsingborg, ruined as a result of the Reformation of 1536, (Weidhagen 1972, unpublished M.A. thesis) a seal stamp of bronze came to light in one of the tombs in the nave containing a wooden coffin (Fig. 1). The grave was positioned precisely along the central axis

and the head end of the coffin lay pressed up against the west end foundation wall.

Investigations showed that the burial had taken place after 1332 when, in connection with a fire, the nave had been extended to the west: the original tower section with burial chapel had been destroyed and the church then acquired a new floor and vaulting of brick. This was how the grave came to lie in line with, and immediately to the east of, the central grave of the chapel belonging to the

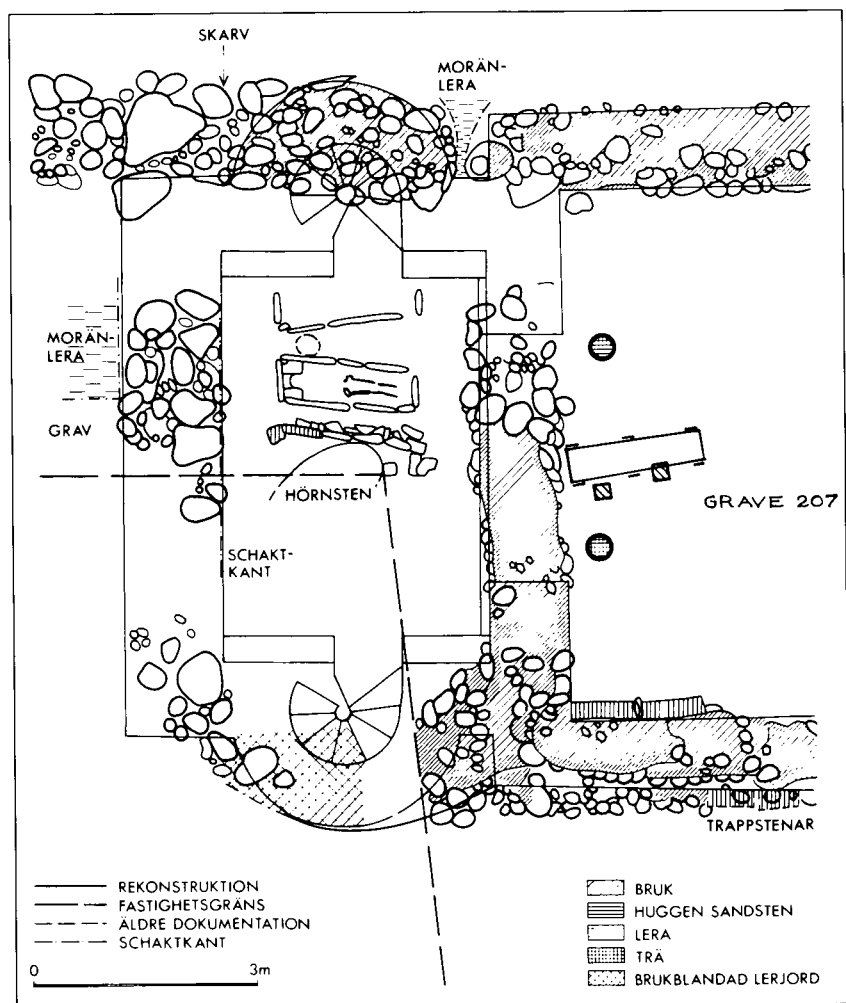


Fig. 1. Reconstruction of the original tower section with burial chapel of St. Clemens Church in Helsingborg. Drawing from Weidhagen-Hallerdt 1986 with addition of grave 207.

foundation period of the church; and was probably, like this one and perhaps also the nearby stone coffins in the demolished burial chapel, marked with a floor slab. (Weidhagen-Hallerdt 1986:137).

The coffin was more or less completely decayed but extant timber remains round the nails indicated that the material used was oak. With the aid of residual traces of paint and the coffin nails still in situ - a total of 16 - it was possible to make a reliable reconstruction of the coffin. The bottom had probably been in one piece, nailed from

underneath with 5 strong nails opposite each other on either long side.

The ends and lid had been inserted between the sides, and the lid held in place by a nail half way along each of the sides. The position of the nails and the very prominent lines of the sides, 1 cm. in breadth, indicate that these were vertical and the lid was flat. The coffin proved to be somewhat smaller at the foot end (36 cm.) in relation to the head end (42 cm.) and was 186 cm. in length. The strong nails in the corners indicate that the coffin might have been carried. Dating of the

coffin is difficult but is probably a matter of somewhere between 1350 and the beginning of the 15th century. (Weidhagen-Hallerdt 1972). Two wooden poles (app. 12 x 12 cm.) - almost completely decayed - were driven down into the right side of the coffin, which was broken apart in the middle.

From investigations *in situ*, it emerged that the right thigh bone and hip bone were missing, as well as all the bones of the forearm and the lower rib bones (Fig. 2). Further, the left foot was out of position and a number of metatarsal bones and toe phalanges were missing. The remaining metacarpal bones and finger phalanges on the left clavicle showed that the dead person had lain with the arms crossed over the breast: this type of arm position was very common during the late Middle Ages. (Redin 1976). The missing parts of the apparently otherwise undisturbed skeleton indicate that the body had been subjected to some form of injury a fairly short time after the burial, probably in connection with the damage done to the southern side of the coffin by the wooden pole.

A well preserved seal stamp was found in the coffin just near the dead person's right shoulder, and had obviously been placed there before the coffin lid had been nailed down. Finds of seal stamps in graves from the Middle Ages are very rare, especially if, as in this case, they are undamaged. Since, throughout the Middle Ages, the seal impression was the only accepted ratification of the genuineness of a document - and not, as now, the personal signature - the seal stamp had always to be in the safekeeping of its owner and after his death immediately destroyed or in some other way made inaccessible to others. In order to identify individual members of the nobility, researchers are, with few exceptions, referred entirely to original documents where the seal still hangs by its ribbons. On medieval documents and other records people are, for the most part, named only by their first name followed by a



Fig. 2. Grave 207 (to the right) in the western part of the nave of St. Clemens Church. Photo: Helsingborgs museum.

patronymic, irrespective of whether they belonged to the nobility or the townsfolk, and sometimes even the manor or other place name is put in, making personal identification easier. It is really not until the 16th century that family names begin to be used more generally.

It was possible to determine the age of the dead person in grave 207 to between 20 and 24 years old, by means of an osteological and odontological investigation of the skeleton carried out by Torstein Sjøvold and Håkan Mörnstad (see below). The set of teeth was as

normal for this age, with little wear and no outbreaks of caries. On the lower left jaw, however, a strong melting down of the mandibular corpus was observed. Pathological changes on the surface of the bone may indicate that the person in question had suffered from actinomycosis, an illness which, if it spreads downwards to the breast and stomach, can immediately be a threat, and subsequently often leads to death. This may possibly have been the cause of death here.

Clear indications of the gnawings of rats were observed on the right side of the lower jaw, this having occurred while the soft parts of the body still remained on the skeleton: the rats have therefore, at a relatively early stage, been able to get into the coffin. This is also confirmed by the archaeological investigation: the wooden poles mentioned in that connection, one of which had broken apart the right side of the coffin, may have been driven down in order to mark the exact spot where the grave was to be found; this would have made it easier to position a grave slab customarily made for prominent members

of the nobility - which would, perhaps, not have been ready until much later. (Gustafsson and Weidhagen 1968:157-159).

THE SEAL STAMP FIND IN GRAVE 207
After this long, and seemingly irrelevant, digression from the subject, we now come to a description of the actual seal stamp. From the legend, "+S':PETRI:KARL:S'", it appears that the owner of the stamp was called PETER KARLSSON and the coat of arms, which is quartered, indicates that he was a nobleman. The stamp is 2.5 cm. in diameter and on the back there is a short shank with a hole for a leather thong or cord. The shape of the shield cannot be closely dated but is of a type which was in existence during the whole of the 14th century as well as the early years of the 15th century. The first quarter of the shield shows a type of check (chequy) or, more nearly, a grid-patterned field, which may be some form of hatching (a term for engraved or drawn lines producing different patterns of shading which, during the Middle Ages, only had the decorative function of enlivening the unicoloured divisions of the shield: these often represent a metal). The second quarter, the right-hand field, is blank; while in the third and fourth (the two lower) quarters, the situation is reversed. The seal impression, of course, becomes a mirror image of the stamp, with the hatching in the second and third quarters (Fig. 3).

The majuscules of the legend show an angular and uneven style and indicate a lack of skill on the part of the engraver who, however, succeeded better with the coat of arms. Perhaps it is a question of an old stamp which has been re-used? Vaguely distinguishable remains of engraving indicate something of the sort. The angularity of the style would, in such a case, have been a matter of the earlier engraved legend being too difficult to grind off, with the result that the engraver had problems hiding the traces of the earlier legend. People in high places might, besides, have more than one seal simultaneously. It



Fig. 3. Impression of the seal stamp in grave 207. The stamp is 2.5 cm in diameter. Photo: Helsingborgs museum.

was not unusual, either, for a young person's first seal to have been taken over from his father or another close relative, at which point only the legend would need to be re-engraved. (Svanberg 1991:106). The clear engraving with sharp edges on this stamp shows also that it cannot have been used for any long period of time.

A large number of family members, combined with a very limited name form through the generations, made it necessary to differentiate the family coat of arms shared by them all by making small changes or reciprocal tincture (colour) inversions. In known cases, where a more exalted family name has been taken over - often that of a maternal grandfather - this person's coat of arms was given a brisure by adding a mark of difference on his own coat of arms. It was mainly through the marrying off of daughters with members of influential families that the great were further able to strengthen their own positions of power. Sons and daughters born out of wedlock were, in many cases, also acknowledged: they could inherit great estates and were even allowed to bear the arms of the family, with the addition of a mark of bastardy or varied patterns of hatching.

WHO WAS PETER KARLSSON, WHEN DID HE LIVE, AND WHERE DID HE BELONG?

It can be stated, in the first place, that the name and coat of arms indicate that he belonged to Southern Scandinavia. The fact that his tomb is in Helsingborg (then a Danish town) makes it likely that he had a strong connection with that place, and was, in all probability, living there at the time of his death. Further, his coat of arms indicates that he belonged to the nobility and the position of the grave within the church shows that he himself, or members of his family, had high social status and sufficient wealth to be able to acquire an excellent burial site - in a town parish church regarded as having been built on royal initiative in connection with a now

vanished royal manor (Cinthio 1968). The grave was - as has already been mentioned - positioned in line with, and immediately to the east of, the original central tomb of the tower chapel from the period of the foundation of the church (the grave of the donor).

There are some ten noble families to choose between when it comes to investigating those who have borne this quartered shield. Of these, two of the oldest noble families in the province of Skåne - at that time part of Denmark - had a direct connection with Helsingborg during the Middle Ages. The most well known of these, the Thott family, has a shield, gules and or (red and gold) - the evidence for the tinctures being early - whilst for the other, the Kethelberg family, there is no certain information on tinctures. The actual name form is not known either within this family. In the Thott family, Peter and its patronymic are fairly common, especially within the Härlöv branch, while Karl is only used as a patronymic in one known case, namely that of Ingemar Karlsson. Whether he is to be regarded as having belonged to the family is, however, in doubt as far as a specialist such as Raneke is concerned (Raneke 1982:92), despite the fact that Ingemar Karlsson bears that coat of arms on his seal. In Langebek's seal collection there is, by his name, a note in the margin: "Thord Ake's brother by Jon Benedict's wife", which means that Thord Åkesson (Thott) must have had an unknown brother with the first name Karl, who was the father of Ingemar Karlsson of Bergsjögård in Skåne. (LD:11: 10). His seal is to be found on a letter of 12th September, 1344. (DAS 324). He was presumably born out of wedlock and therefore does not appear on any family tree. However, he is regarded as a family member in Åke Thott's family register (Thott 1983:77).

Other families, like the Guse (Gusa) from the then Danish province of Småland, are certainly worth thinking about as far as the name form is concerned (even if not in this actual combination), but there is no prove-

able connection with Helsingborg; while the members of the Thott family had high offices within the town and county, as governors of Skåne and captains of Helsingborg Castle, at the end of the 14th century. They were also allied by marriage to another early important family in Skåne with Helsingborg connections, namely the now extinct Galen family (with a shield showing five divisions). Early on, some of its members held the highest posts within administration and government.

It has not, on the whole, been possible to connect the actual name form with any known armorial seal. Of potential interest, however, in this connection, is a seal with a quartered shield, which belonged to one, Peder Hvid, from Lyngø in the Kronborg juridical district of Denmark, dated 11th August, 1364 (DAS 594). The heraldry specialist, Jan Raneke, thinks that the second and third quarters show a grid patterned field of the same type as the Helsingborg stamp and that its primitive engraving indicates that its owner belonged to the lower nobility. No form of hatching on the Lyngø seal has, however, been taken up by Petersen, who has only called attention to "...the shield quartered..." (DAS 1897:28, no. 594). No other seals have been preserved either, nor is the patronymic of Peder Hvid known; and no connection with Helsingborg has been traceable. Besides, his age does not fit with that of the person buried in St. Clement's Church. Thinking of the interval between the first document from 1364 and the last document from 1375 - the latter mentioning his widow - he must have been at least 30 years old when he died.

When it comes to clearing up family relationships, documents concerned with inheritance disputes and wills are of particular interest. In one such, from 24th August, 1344 (Dipl.Da. 3:2 no.77), is mentioned a certain Peter Karlsson, who belonged to another of the great families of Skåne, Rane (Rani), and was the son of Karl Petersson (Rane) in Lund and Elisabeth av Saltensee (also known as Else or Elsif). The latter

proves to be the daughter of another distinguished knight, Peter Nilsson (Galen) av Eljaröd. He also had another daughter, Edle, married to Nils Körning (Thott) av Löddeköping, knight (Thott 1983:179) who, for example, had taken his maternal grandfather's name and added to his ancestor's coat of arms a brisure or mark of difference (DAS 325 and Dipl. Da. 2:11 no. 321). Peter Karlsson and his brother, Nils, are only mentioned in the document of 1344 - then as deceased. Their sister, Ingerd, inherited both her brothers as well as their earlier deceased father. The brothers clearly had no families, since the sister was their sole inheritor: presumably they died before reaching adulthood. In this related document is to be found the actual name form; but the coat of arms must have been that of the Galen family or, more probably, that of the Rane family, which was a combination of the arms of Saltensee and Galen.

The Helsingborg stamp impression, with hatching in the second and third quarters - showing a chequy or grid-patterned field (metal) - is identical with the seal of Edle



Fig. 4. Stamp impression of Edle Stigsdotter (Thott) on a document from Northern Jutland in Denmark of 14th July, 1401. Photo: Thiset 1905. Herald. Fig. LXVIII:6.

Stigsdotter (Thott) (TSig: LXV:6) on a document from Northern Jutland in Denmark of 14th July, 1401 (Fig. 4). Edle must have been the daughter of Stig Åkesson (Thott), knight and Councillor of the Realm, of Naes, who in 1394-1395 became Captain of Helsingborg Castle. She was probably born out of wedlock, since she, similarly to the earlier-named Ingemar Karlsson, is not found mentioned in any family register as a member of the Thott family, i.e. in her case the Naes branch (Thott 1983:103). Raneke does not mention either her or Ingemar Karlsson in his armorial register of well known members of the Thott family. (Raneke 1982:92-93). Thiset informs us that she was married to Peter Jensen, but put a question mark be-

side the name Thott (TSig 1905:87), probably because of the somewhat different pattern of the hatching.

A closer examination of another Thott seal from almost the same period - namely a seal of 1397-1402 owned by Axel Petersson (Thott), knight and Councillor of the Realm, of the Härlöv branch (Fig. 5) - also shows a chequy or grid-patterned field in the second and third quarters (Thott 1983:127, illustration 22) - though less clearly reproduced in Petersen (DAS 1088). Perhaps Stig Åkesson's seal stamp, rediscovered in 1671 in the garden at Naes (Thott 1983:105), had the same type of hatching? It is not known, however, whether it still remains in the Thott family archive and there is no known illustration of the stamp.

As for the special position of Peter Karlsson's tomb in St. Clement's Church in Helsingborg, an obvious method of working is to search for a person with this name form, who held high office in the service of the town at the end of the 14th century or beginning of the 15th. Remarkably enough, there actually existed a person of this sort, and with just such a name, at this period. An extant original document, dated Helsingborg, 22nd January, 1403, mentions, namely, one PETER KARLSSON, as "proconsul Helsingborgensis", i.e. MAYOR OF HELSINGBORG; but unfortunately his seal does not remain on the document, where he witnesses a mortgage deed for "Briddemölle mill in Råå-ån" (SD: no.270, 22/1 1403).

The holding of high offices at a young age was not unusual in the Middle Ages if the person in question belonged to a distinguished and influential family. By placing relatives in important posts within administration and government, increased power could be gained and financial advantages acquired. Stig Åkesson (Thott) must have had just such influence as Captain of Helsingborg Castle, 1394-1395, as also his relative, Johannes Due, who was his successor, 1396 to 1400.

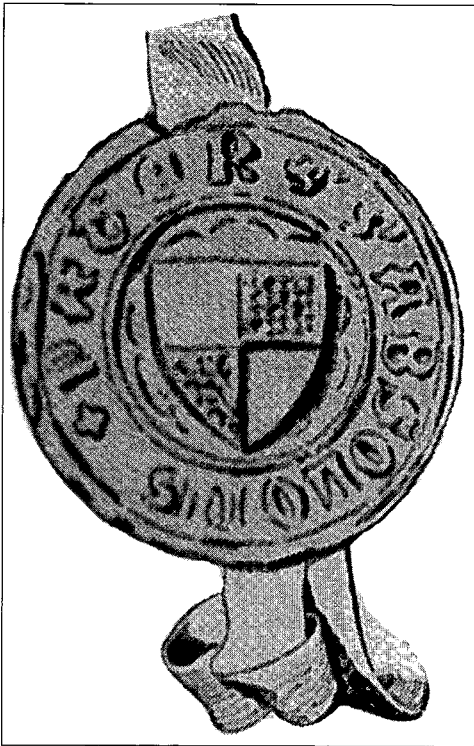


Fig. 5. Stamp impression of Axel Petersson (Thott), knight and Councillor, of 1397-1402. Drawing: Petersen 1897: DAS 1088.

If the owner of the seal stamp in grave 207 is identical with Mayor Peter Karlsson of Helsingborg, it would seem probable that he had become mayor c. 1399 at the earliest (at which time he was around 20 years old), and at latest c. 1403 - thinking of the age of the buried person, whose upper age limit is set at 24 years. Mayor Peter Karlsson is not named in any other known documents. He

may possibly have died shortly after 1403, and at latest c. 1407. This would then coincide well with what has emerged above, both in relation to the buried person's youth and as far as the demonstrably small amount of wear on the stamp is concerned.

Translation by Skans Victoria Airey.

SKELETAL PRESERVATION, SEX, AGE, STATURE AND PATHOLOGIES

The degree of preservation is very good, although some fragmentation has occurred. The skull is fairly complete, though restored (Fig. 6, 7). The only important part missing from the skull is the left mandibular ramus. The second through the sixth cervical vertebrae are missing. Ribs, sternum, and sacrum are fragmented. Of the appendicular skeleton the right clavicle, radius ulna, coxal bone and femur are missing, and both patellae. Most of the carpals, tarsals, metapodials and phalanges are also missing. The preserved bones of the hands and feet are left Mc1-2, four proximal and three intermediate phalanges (side undetermined), the right calcaneus, navicular, Mt1-2 and Mt5, and the left Mt2 and Mt5. Some of the existing metatarsals, notably those of the left foot, are not complete. The muscular attachments are not very pronounced.

Sexing is possible based on the skull and the left incisura ischidadica major. The latter is rather narrow and indicates a male sex. This character is regarded as decisive in order to determine the sex. The sagittal and transversal diameters of the head of the left femur are 48 and 47 mm, also indicate a male sex. The skull shows mastoid processes of medium size and fairly well developed supraorbital area. The medial, inferior border of the mandible is rather angular, indicating again a male sex.

The age of the individual is important in

relation to the possible occupation. It may be noted that all teeth are erupted and in occlusion, including the third molars. It may also be noted that all epiphyseal rings of the vertebrae are fused, though some of the proximal and distal ends of the vertebral bodies have remained traces of the juvenile pattern. In the skull, the spheno-occipital synchondrosis is completely closed. Also, all epiphyses of the long bones are completely fused. On the other hand, the medial epiphysis of the right clavicle and several epiphyses of the ribs are in fusion and not completely fused.

Since the individual has been osteologically identified as a male, and this is also supported by the name on the seal stamp, it is reasonable to compare the age indicators of the skeleton with the skeletal age status of a male population between 17 and 30+ of age (McKern & Stewart 1957). This study was made in connection with a repatriation program of U.S. war casualties from the Korean War. Identity and age were exactly known for each individual. Most of the cases studied were thus born during the period 1925 to 1935. The results obtained have mostly reconfirmed earlier studies, which are referred to in the following.

Two sets of epiphyses are in fusion. The one is the medial epiphysis of the (left) clavicle. Complete fusion is recorded between age 25 and 28 (Stevenson 1924), 23 and 31 (McKern & Stewart 1957, Stewart 1970), whereas Todd & D'Errico (1928) report that fusion has ceased at the age of 27. The pre-

vious studies by Stevenson and Todd & D'Errico were based on bodies from dissection-rooms. The individuals aged around 20 years in their materials ought therefore generally to have been born between 1890 and 1910, and may be supposed to be of low socio-economic status. Because of the inferior nutrition level of such a social class, this might have resulted in a delayed skeletal development. However, as will become apparent below, correspondence between the different studies was remarkably good.

The second set is the proximal epiphyses of the ribs. Lack of fusion of the epiphyses may lower the upper age of the individual compared with the medial epiphysis of the clavicle. Eighteen proximal rib ends exist. One of the first pair of ribs has been identified. On the other hand, one twelfth rib exists. That is the only rib where the epiphysis is completely fused. All other rib epiphyses are in fusion. According to Stewart (1970), ossification begins in the upper and lower ribs and slowly progresses towards the middle. On the other hand, at the age of 24, all rib epiphyses are completely fused. At the age of 23, 92-96% of the ribs are completely fused. This corresponds rather well with Stevenson (1924), who stated that all rib epiphyses were united after the twenty-second year. Even the presacral vertebral column is completely ossified by 24 years of age (Stewart 1970). This indicates that he was younger than 24 years of age.

The upper limit of the age was determined by comparison with samples where all epiphyses were fused at a certain age. It is not possible to use the completed fusion of epiphyses in order to delimit the lower age range exactly. On the other hand, it is possible to regard the normal fusion ages of the epiphyses, assuming that the individual followed the normal procedure of epiphyseal fusion. The most relevant bones to use in this connection is the bone where the onset of fusion is the latest. This concerns the proximal epiphysis of the humerus, where fusion

generally takes place between 20 and 25 years of age in males (Ferembach *et al.* 1980). Stevenson (1924) reported that "union of the head of humerus indicates that the individual under observation is twenty or more years old", based on no union observed for younger individuals. As for McKern & Stewart (1957), their figures indicate complete fusion among 27 of 107 individuals aged 17-19 years, whereas fusion was completed at the age of 23 years for some 229 among 239 individuals, or 96% of the sample. Similar figures may be obtained for the fusion of the epiphysis on the iliac crest: in 36% of the sample fusion had taken place at the age of 18 and 19, and no one was unfused after the age of 23 years. Stevenson (1924) claimed the fusion to take place during the interval 19-21 years of age. Finally, Ferembach *et al.* (1980) gave the figure 21-24 years for both sexes.

Based on this, a conservative estimate of the age at death of the present individual would be 20-23 years of age, where the upper limit is better secured than the lower. However, if it may be assumed that the skeletal development was neither very accelerated nor particularly retarded, a more definite age determination based on the references cited would be about 22 years of age.

The stature of the individual can be estimated based on the length of the existing long bones, maximum lengths of the left and right humeri are 327 and 332 mm, of the left radius and ulna 251 and 279 mm. Maximum length of the left femur is 485 mm. The left and right fibula measure 377 and 376 mm, and the left and right tibia, measured along the long axis of the bones from the most prominent point of the lateral condyle to the tip of the medial malleolus, measure 382 and 381 mm. Using the mean value of paired bones, the combined estimates based on Sjøvold's (1990) method for Caucasian gives a stature of 174 cm. This is somewhat, but not very much taller than the mean stature of males from the same church

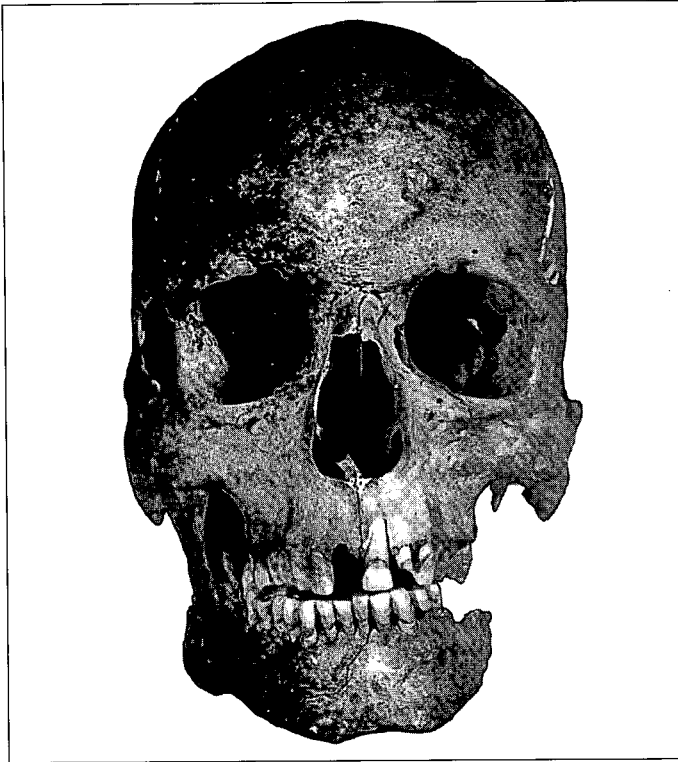


Fig. 6. The skull seen from the front. On the left of the face an inflammatory reaction was observed on the zygomatic bone, on the lateral sphenoid and temporal bones. Photo: Britt Olstrup, The City Museum of Stockholm.



Fig 7. The skull seen from the right. Photo: Britt Olstrup, The City Museum of Stockholm.

studied by Arcini (1995), which was 172 cm.

Both pathologies and pseudopathologies are observed on the skeleton. The pseudopathologies comprise gnaw marks from rodents on the right ascending ramus of the mandible. Marked gnaw marks from rodents are observed on the semicircular incisura, between the coronal process and the caput mandibulae, and on the posterior border of the same ramus, between the caput mandibulae and the gonion.

The rodent gnawing has taken place while there was still soft tissue left on the body. There are no other signs of gnawing on other parts of the skeleton. This indicates that rodents (mice or rats) had access to the body while there still was soft tissue left on the bones. Since the body had been buried in a coffin, this period may include the period until the coffin collapsed. Hardly any report on rodent gnawing on skeletons from graves have been made on Danish or Swedish mediaeval, skeletal material. Occasional reports are known from other countries. For instance Wells (1967) lists rodent gnawing under the heading 'Animal Agents' acting on recently buried remains. He also refers to examples from Africa and France. The areas most often affected by rodents are the orbits and the posterior edge of the foramen magnum. Other examples are known from Hokkaido in Japan, where several cases of rodent gnawing of the posterior edge of skulls of interred Ainu had previously been mistakenly interpreted as trephination (Kodama 1979). However, rodent gnawing is more a curiosity than a particular attribute of the skull, adding to the different taphonomic agents acting on the skeleton. It is particularly mentioned by Wells because of the possibility of false interpretation such as ante mortem injury or osteitis. On the other hand, the rodent gnawing on the present mandible is particularly striking because of the good preservation of the skeleton.

The pathologies consist of ossification of one of the ligaments of the vertebral canal,

ligamenta flava, and a pathological change to the left side of the lower jaw, the left zygomatic bone and mandibular joint. The ossification of the ligament, is occasionally included among normal, degenerative changes. Swedborg (1974), for instance, recorded the prevalence of two kinds of ossifications, depending on their location at the vertebral foramen. The frequencies in the total, Polish, Mediaeval material was about 17% in her younger male group (26-50 years) and about 13% in her younger female group (19-50 years). Gejvall (1983), on the other hand, found an 100% incidence in the 8th-10th thoracic vertebrae in males over 40 years from the Mediaeval churchyard of Västerhus, pooling the different ossifications.

The present individual presents ossification to a varying degree from the 4th thoracic through the 1st lumbar vertebra. According to McKern & Stewart (1957), ossification of the ligamenta flava occurs frequently throughout their material, and even at ages between 20 and 23 years ossification was observed, with only two exceptions in between 40 and 69% of the cases for the 4th through the 12th thoracic vertebrae, though the frequencies tended to increase by age, corresponding, in practice, to the result obtained by Gejvall for those older than 40. For ages 20 and 21 the frequencies for the first lumbar were just 16 and 8%, rising to 36 and 34% for the 22 and 23 years olds. Though age dependent, therefore, the bony spurs resulting from the ossification of the ligamenta flava may be regarded as a rather harmless, normal ossification which may even occur at an early age.

At the dorsal side of right intervertebral joint between the second and third lumbar vertebra, a greenish tint was observed, mostly on the dorsally situated. Such a tint generally indicates some kind of contact with an implement of copper or bronze.

The teeth of the skull and mandible are well preserved. Two teeth are missing post-mortem. All teeth have been erupted without

crowding or any other abnormality. There is no dental caries. There is a slight to moderate destruction of the alveolar bone as a sequelae to periodontal disease, which apparently is caused by poor oral hygiene as suggested by the accumulation of calculus on the crowns of almost all teeth.

An age estimation from the teeth has been made by the method described by Miles (1962). The abrasion of those parts of the third molars that have been in occlusion is only slight, and the age has therefore been estimated to about 23 years. The lower limit of the range of an uncertainty is 18 years owing to the fully formed third molars. The upper limit can not be scientifically set, but could be suggested to be about 30 years. The degree of abrasion is depending on the texture of the food, and this may well be softer than normal in an upper class individual. An attempt has also been done to estimate the age with the so called amino acid method (Mörnstad *et al.* 1994). An exact age can not be arrived at with this technique since there are two unknown parts in the cause of racemization, i.e. the higher in vivo racemization, and the slower post-mortem racemization. However, in comparison with other dental remains from the same area, the age of about 23 years was supported.

The lower jaw is well preserved with the exception of the missing posterior part of the left body and the ascending ramus. The body is broken between the lower left second premolar and first molar. The anterior surface of the broken surface has normal impressions of the mesial molar root, whilst the remaining parts show a large cavity in the bone. This cavity has variably smooth and rough surfaces with a few small projections into the surrounding bone. From the lower part of the cavity there is an opening towards the lower mandibular margin. The walls of this opening have smooth linings. The otherwise normal bone anteriorly of the bone cavity has a frost-bitten, pitted appearance of a periosteal reaction extending to the man-

dibular foramen. The same appearance of the bone can be seen in a wide area posteriorly to the mandible, covering the zygomatic arch, the temporal bone, including the temporomandibular joint..

Unfortunately the mandible has been broken through the cystic cavity of the bone, which of course is a *locus minoris resistentie*. The posterior half was not recovered during the excavation.

It is only possible to speculate about the reason for the bone cavity and its influence on the life of the individual. The location of the process would suggest some kind of odontogenic cyst or tumour, perhaps a dentigerous cyst or ameloblastoma. The irregular bony lining is most suggestive for a tumour. However, the widespread periosteal reaction is less likely to be caused by a benign odontogenic tumour, if not secondarily infected. It is also possible that the lesion is caused by trauma, possibly a cut from below, followed by a secondary infection. In this case he has survived at least a couple of months, as suggestive from the bone remodelling. A possible infectious disease in the area could be actinomycosis. Some support for this diagnosis could be the widespread periosteal reaction and the openings in the lower border of the bone cavity, which possibly could represent the walls of draining sinuses, typical for actinomycosis. For the moment this diagnosis seems to us to be the best guess.

The cause of death of the individual can also only be speculated around. The only serious pathology found in the skeleton is that of the mandible. Although, a large infected area in this region could well cause death, it is less likely. However, actinomycosis may well affect other areas of the body. Typically this disease has three forms according to location; the cervico-facial, thoracic and abdominal forms. The latter two forms are more likely to be mortal than the first one.

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