



CASTELLA MARIS BALTICI 6

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Back cover: Royal palace in an Upper castle.

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On September 18–22, 2001 the Symposium Castella Maris Baltici VI was held in Lithuania. This is already the 6th symposium for the researchers of the medieval castles. The first symposium was held in Turku, Finland in 1991, the second – in Nyköping, Sweden in 1993, the third - in Malbork, Poland in 1995, the fourth - in Estonia in 1997, and the fifth – in Denmark in 1999.

The topic of the conference held in Lithuania was “Contacts and Genetically Dwellings in the Castle Buildings”. Over 40 scientists participated in the conference from Denmark, Belarus, Finland, Sweden, Switzerland, Germany, Russia, Great Britain, Poland, Latvia, Estonia, and Lithuania. In the conference there were not only reports presented but also the most famous castles of Lithuania visited in Vilnius, Trakai, Kernavė, Kaunas and Klaipėda.

The time of this conference coincided with the European Heritage Days “Defensive Fortifications in Lithuania”.

This conference was organised by the Public Institution Academy of Cultural Heritage established by Vilnius University, Vilnius Academy of Arts, Vilnius Gediminas Technical University, Ministry of Culture of the Republic of Lithuania and Department of Cultural Heritage Protection. The Symposium Castella Maris Baltici VI was sponsored by the Department of Cultural Heritage Protection.

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Especial thanks deserve my colleagues who organised this event Rita Mosiejienė, dr. Justina Poškienė and dr. Gintautas Zabiela.

Dr. Albinas Kuncevičius

ry findings and data. Now the time has come to finish the studies and precisely describe the finds generated by archaeological and architectural excavations, which document aspects of everyday life in Lubawa.

Among the most important works that are still ahead are reconstruction drawing of interesting Renaissance and Baroque stove tiles and more detailed analyses of a collection of oysters which inform the high level of consumption and luxury of the bishop table. Town authorities are still to decide how to

preserve and adapt the castle surroundings and to work out a programme to revitalise the castle completely. In the Lubawa panorama, closed by the towers of St. Mary and St. Ann parish church and St. John the Baptist's monastery church, the body of the castle is evidently missing.

The meaning and role of the castle does not function significantly in the minds of the present day citizens of Lubawa and the situation definitely needs to be changed.

Lars Bengtsson

THREE CROWNS - THE ROYAL CASTLE IN STOCKHOLM

Remains of the medieval castle concealed beneath the plaster of the present-day Baroque facade

Die alte Burg von Stockholm

Die alte Burg von Stockholm war eine Burganlage, die seit dem 13. Jahrhundert sukzessiv auf der Stadtinsel gebaut wurde. Die verschiedenen Gebäude wurden um zwei Innenhöfe aufgeführt mit der Hochburg und dem Turm Tre Kronor im südlichen, höheren Teil. Ringmauern und einige Häuser umgaben die nördliche Seite des grossen Burghofes gegen das Ufer von Norrström und den Einlauf des Mälarsees. Durch einen schweren Brand 1697 wurde die Burg so schwer beschädigt, dass der grösste Teil der unregelmässigen Anlage abgerissen werden musste. Die einzige Ausnahme war der nördliche Teil, nächst zu Norrström, der nur geringen Schaden erlitt und repariert werden konnte. Im östlichen Teil dieser Gebäude war die Schlosskirche eingerichtet und das ganze Gebäude ist seit 1692 umgebaut worden und in zeitgenössischem Stil dekoriert. Der erste, niedrige Nordflügel, der in den unteren Stockwerken der alten Ringmauer eingebaut war, war gerade mit zwei neuen Stockwerken zwischen den alten Ecktürmen zugebaut worden. Die damals moderne Barockfassade kann daher, hinter verputzten oder steinernen Oberflächen, mittelalterliche Mauern in den unteren Teilen dieser 115 Meter langen Fassade enthalten.

Dass es im nördlichen Teil des heutigen Schlosses Reste der mittelalterlichen Burg gibt, ist schon lange bekannt. Bei Fassadenarbeiten in den 1890er Jahren wurden alte Mauern zwischen den Ecktürmen bis zum Dachgesims

entdeckt. In den 1920er Jahren hat man in den unteren Teilen, die heute in den nördlichen Böschungen stecken, Mauern aus dem Mittelalter dokumentiert. Wie viel mittelalterliche Mauern es wirklich hinter den heutigen Fassaden gibt, wurde erst bekannt, als neulich früher unbekannte Dokumente im Archiv des Schlossarchitekten gefunden wurden. Es waren Notizen von 1954, als die nördliche Schlossfassade völlig freigelegt war. Es gibt keinen Bericht über diese Arbeiten. Die Dokumente bestehen hauptsächlich aus abgezeichneten Mauern im Massstab 1:20 in den zwei untersten Geschossen und mehrere Photos. Darin kann man den Umfang von verschiedenen mittelalterlichen Bauperioden erkennen, und es kann auch festgestellt werden, dass diese Mauern an die Ringmauer der ältesten Burg stossen. Die verschiedenen Bauperioden sind zwar undatiert, aber es ist doch sehr interessant, die Reste der mittelalterlichen Burgmauern mit Schiesscharten und Fenstern von verschiedenen Formen zu beobachten. Dazu gibt es Reste von Überkragungen, die vielleicht mit verschiedenen Scharten und einem Zinnenkranz verbunden waren. Diese neuen Dokumente werfen ein neues Licht auf die alte Burganlage. Hoffentlich werden sie, richtig interpretiert mit den noch stehenden mittelalterlichen Mauern in den Kellern verglichen, neue Erkenntnisse über die mittelalterliche Burg Kronor liefern.

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In 1954, the northern facade of the royal castle in Stockholm was extensively restored. The plaster was taken down and the masonry exposed, analysed and documented. Although there appears to be no written report on the findings, documentation recently discovered in the office of the Architect of the Royal Palace (SAK), primarily comprising field drawings and photographs, shows that a considerable proportion of the original medieval masonry, dating from various periods, is still to be found all along the facade. In spite of the fact that the various stretches of the wall have not yet been dated, the documents not only provided much new information and cast the old stones in new light but also raised further questions as to the periods when the medieval fortress and castle were constructed. Previously, restoration carried out during the 1890s had uncovered large areas of the wall of the old castle and, at the windows at the extreme ends of the facade, had identified the remains of the two northern corner towers stretching right up to the cornice. Although the 1954 documentation has not yet been fully analysed, an interpretation of certain field drawings and photographs is presented below. Might it be possible, for example, to identify influences from contemporary medieval strongholds and castles in the Baltic countries or northern Germany? Even though numerous 20th-century specialists have dealt with the many problems relating to the establishment of the castle and its successive enlargement, most of them base themselves on the results of Martin Olsson's ground-breaking work of the twenties and thirties published in 1940–1941 under the title of *Stockholms Slotts Historia*. Olsson's results also form the basis of the following brief summary of the history of the medieval castle.

In the following article, mention of medieval walls may envisage structures ranging anywhere from the mid-13th century up to the end of the 16th century. The criteria used for definition of medieval brickwork normally depends on the size of the bricks used, the bonds, the way the mortar is laid in the joints, and certain aspects of the mortar itself. In central Sweden, over the course of three centuries, these hardly changed at all. Levels given in metres refer to height above sea level.

Historical summary

During the early medieval period, the Stockholm region comprised large areas of rock interspersed with fertile valleys dominated by the ridges of gravel, running north to south, which characterise the area to this day. These ridges were created by the retreating inland ice, and the land is still rising at a rate of some 4 mm each year. What eventually became the main

island of the city was well chosen as a place of settlement, and, from the mid-13th century onwards, Stockholm became increasingly important as a barrier to the flow of traffic from Lake Mälaren out into the Baltic. In strategic terms, the location of the stronghold on the north-eastern shore of the island, with its angled navigable inlet to the Mälaren to the east and north, could hardly be bettered.

In 1697, the castle was destroyed in a devastating fire and most of the buildings were torn down immediately afterwards. The castle, which by then occupied a large section of the north-eastern corner of the island, had during the Middle Ages been gradually extended to form a large, irregular complex of buildings whose fundamental features and functions have been largely reconstructed by Dr. Martin Olsson. Fairly early on in its history, and by the 14th century at least, the stronghold consisted of two separate parts. To the south, at the highest point of the castle grounds - and probably of the island itself - a keep had been erected, a round tower that eventually became completely surrounded by various buildings. This part of the castle was called the High Castle, or Castle of Nobility. On the northern side, on the slope leading down to the water, later to be known as Norrström, lay the Large, or Outer, Courtyard bounded on three sides by a curtain wall. To the north, this wall was very strong and straight; it was approximately 115 metres long and more than five metres thick (its original height has not yet been determined). Over the centuries, the complex of buildings making up the castle saw the arrival of new structures. It is known, for example, that the small detached buildings that once stood in the Outer Courtyard gave way to new large-scale structures erected alongside the curtain walls using the curtain walls themselves as part of their own structure. Documents show that during the 16th and 17th centuries several large structures were erected that were typical of their times. By the mid-17th century, Sweden had become one of the great European powers and, taking their inspiration from the Continent, architects began to draw up plans for modernisation of the castle with the emphasis on its location in the townscape.

The oldest extant illustration of the city with an unencumbered view of the castle as seen from the north is an engraving by Frantz Hogenberg dating back to about 1580 (Fig. 1). The castle church had just been built into the eastern section of the northern wing, i.e. the two-towered building that by then completely enveloped and incorporated in its structure the northern curtain wall. Experts have considered this engraving to be fairly accurate, depicting as it does not only the urbanised areas of the city but also the castle complex as a whole, where various buildings cluster round the keep at the high, southernmost part of the castle compound. However, studies of the 1954 documents and comparison with the engraving suggest that Hogenberg's rende-



Fig. 1. Stockholm, the city and castle Three Crowns viewed from the north. The castle church, with its tall windows, is housed in the eastern section of the northern wing. There is no documentary evidence suggesting that the NW tower was round. Detail from an engraving by Frantz Hogenberg, ca. 1580–85, before the church was rebuilt and the towers were heightened. Photo, SSM.

ring of certain essential elements of the northern facade may be called in question. The north-western tower was not round; the many fenestration levels depicted in the western section of the facade have not been substantiated; cantilevers have been recorded at other levels and sections - and so on. These and other details will be discussed in our presentation of the 1954 documentation.

Drawings for proposed rebuilding schemes both large and small, the oldest dating back to the mid-17th century, have been preserved to the present day. Most appear to be based on survey drawings dating from about 1660, since that is the year that appears on a complete plan of the castle's top floors signed by Jean de la Vallee. Like the other trades of the castle, the design idiom of the two-storey northern facade was typical of the first half of the 17th century. Both Jean de la Vallee and the German-born architect Nicodemus Tessin the Elder made several drawings for large-scale restoration and rebuilding. It was the son of the latter, Nicodemus Tessin the Younger, who in the 1690s saw his plans for the northern wing actually carried out. Other documents that survive from the second half of the 17th century include those drawn up by Erik Dahlberg, a high-ranking military officer who left behind him large numbers of drawings and sketches depicting details and general views of both the castle and the urban surroundings. Parts of Dahlberg's enormous production were later used for the many engravings that appeared in *Suecia Antiqua et Hodierna*, published in 1716 (Figs. 2 and 14).

By the time the rebuilding of the northern wing got under way in 1692, radically new stylistic ideas had

begun to shape both interiors and exteriors, the architects, as may still be seen today, often taking their inspiration from the Renaissance palaces of Italy. The late-16th century castle church was retained, although it was extensively modernised. Two large storeys were added atop the original building, extending to the same height as the outer northern towers, which were completely integrated with the new building after their specially constructed rooftops had been taken down. The former medieval walls, with their masonry of granite and brick, were hidden behind up-to-date plaster-work and contemporary sandstone mouldings, which were professionally carved and set in place. The medieval castle had had a high, closed curtain wall facing north towards Norrström, over which it stood guard, and whose flow, owing to the steady elevation of the land, had over the centuries become ever more rapid. Nicodemus Tessin had been aware of this and had already planned to build large systems of ramps running from the so-called new North Vault along the central axis connecting the Courtyard with a lower level planned for a public street and bridge that would lead across to the island of Helgeandsholmen in the north and on towards Norrmalm.

Extensive reconstruction of the northern wing, including work on the new Baroque facade, had just been completed when the castle was destroyed in a great fire that broke out on 7th May, 1697. However, it did not take the architect Nicodemus Tessin the Younger more than a couple of months to produce drawings for a completely new palace, which were duly approved. Once the decision had been made to go ahead with the new palace, the old, irregular castle com-



Fig. 2. The castle viewed from the NE, 1669. The sunlit northern wing, with the castle church closest to the observer, is depicted as having a high, smooth base without oriels or cantilevering. Drawing by Erik Dahlberg, National Library of Sweden

plex - the Three Crowns keep, everything but the northern wing - was torn down. The area around the castle was levelled, the former moats on the west and south sides were filled in, and the inner courtyard was flattened and brought down to the level of the entrance to the Northern Vault in the northern wing, which had also been partly damaged by the fire. In spite of the damage, however, it was quickly repaired, and its exterior design was applied to the three buildings later erected that came to form the palace as we know it today. The construction of the new palace was delayed by a series of wars and bad finances, so that it was not until 1754 that the building was sufficiently complete to enable the royal family to move in.

Following the fire of 1697, it seems, therefore, that the oldest parts of the castle were pulled down and the high ground in the south, where the High Castle had stood, was lowered to a level below the ancient foundations. During the last century, excavations carried out along the northern side of the courtyard uncovered the remains of several types of medieval buildings, and there are still some areas where more remains may yet be located. Thanks to the fact that the northern wing was renovated and received an additional two storeys before 1697, much medieval masonry, as we shall see, still exists, not only in the cellars but all along the northern facade.

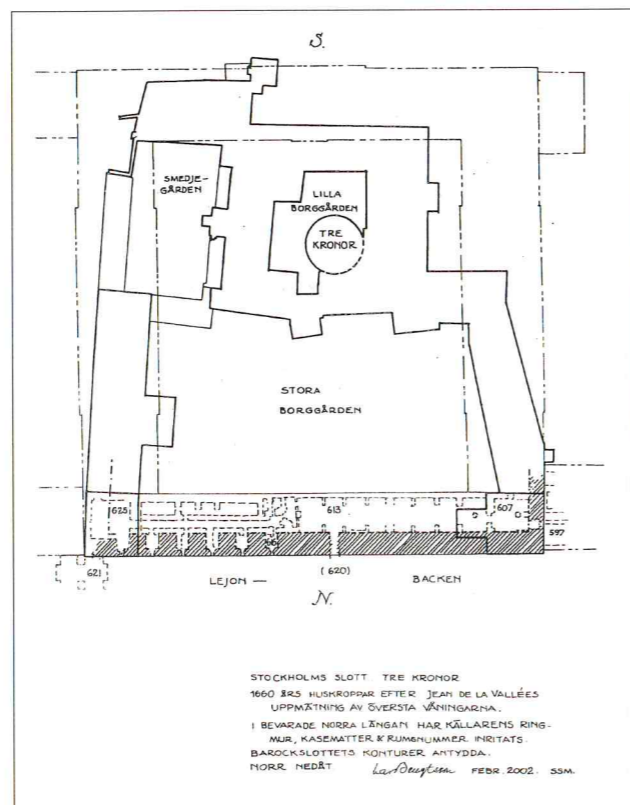


Fig. 3. Stockholm castle. The buildings as they were in 1660 as based on the drawings of the upper storeys made by Jean de la Vallée. The curtain wall of the basement, the casemates and room numbers are indicated in the surviving northern wing along with the contours of the present Baroque castle. North, downwards. Compiled by the author, SSM

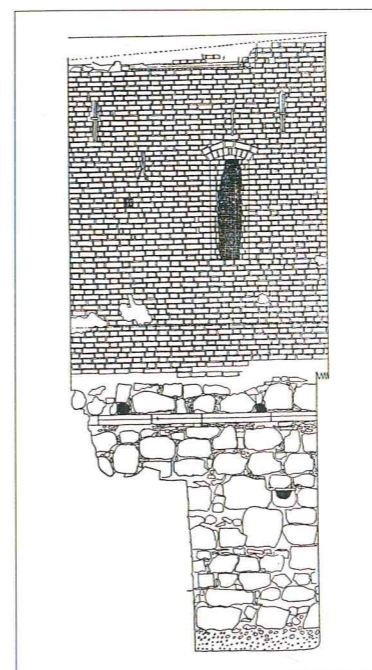


Fig. 4. The lower parts of the curtain wall were documented during excavations carried out in 1926 at the Lejonbacken ramp east of the portal, below window no. 9. The excavations revealed among other things an opening leading in to casemate 616 and a chamfered border ledge. Two beam holes were found on top of the border ledge. A scupper hole was found about one metre below the ledge. After M. Olsson, 1940, p. 43

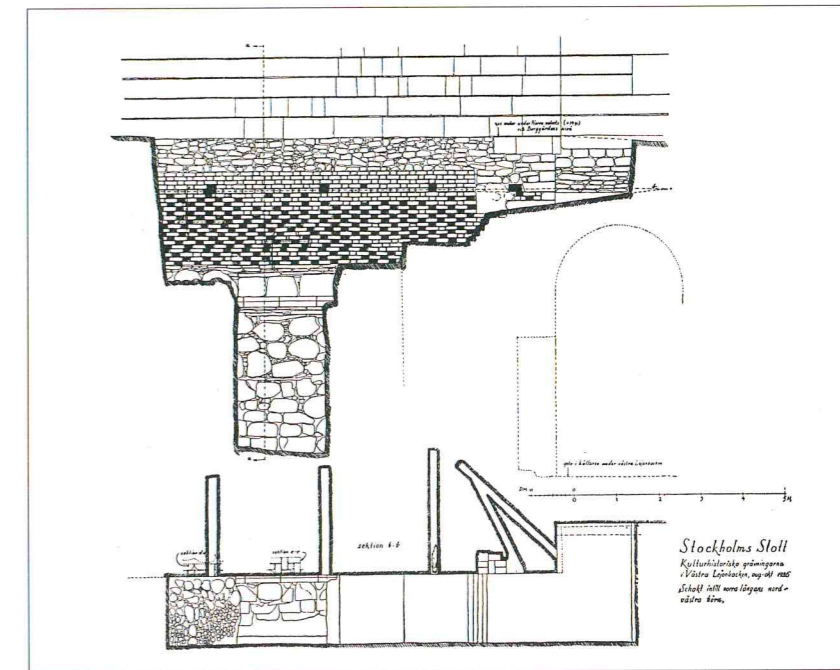


Fig. 5. The NW outer corner of the curtain wall was documented in 1926 in conjunction with excavations at the western end of Lejonbacken below windows 19-20. Section showing the facade and plan. Of particular note are the chamfered ledge, the Flemish-bond brickwork with its heavily blackened headers, and the deep beam holes. After M. Olsson, 1940, p. 38

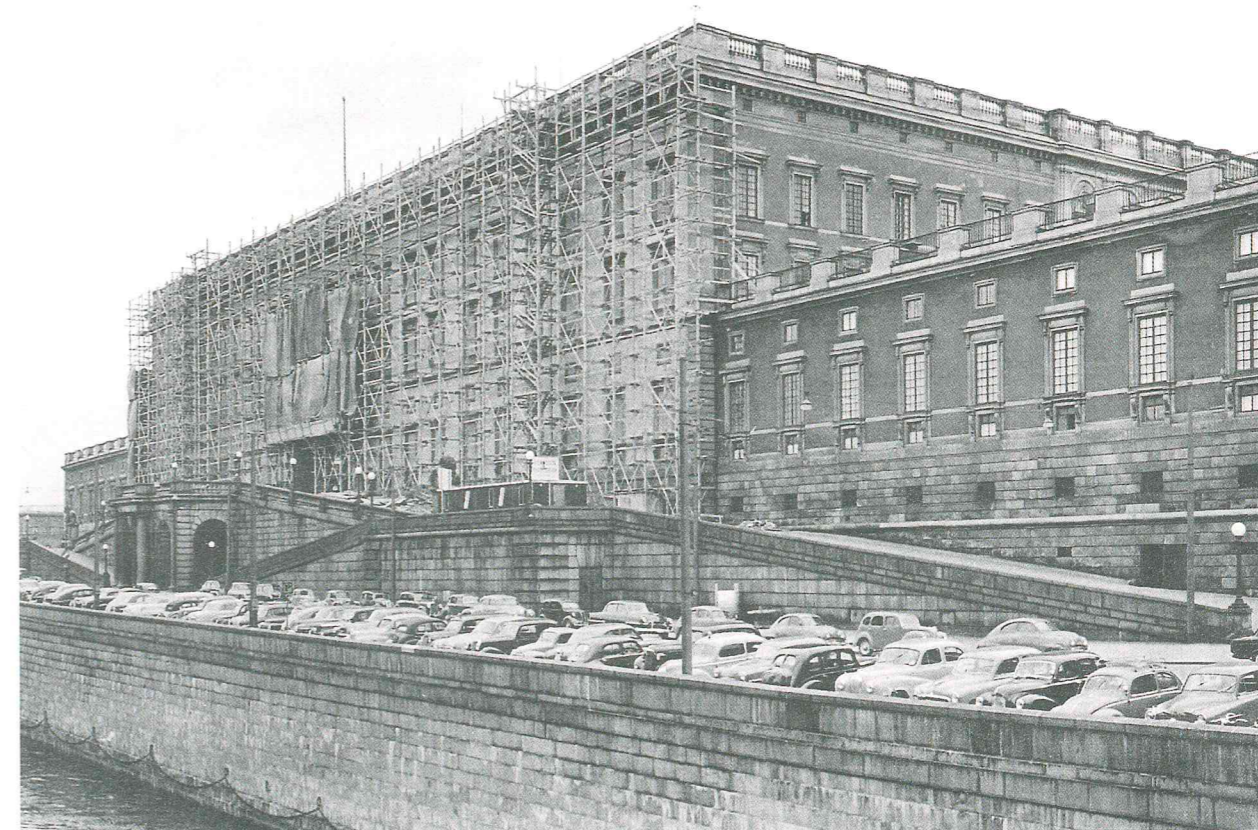


Fig. 6. The castle seen from the NW when the northern facade was renovated in 1954. Photo SAK

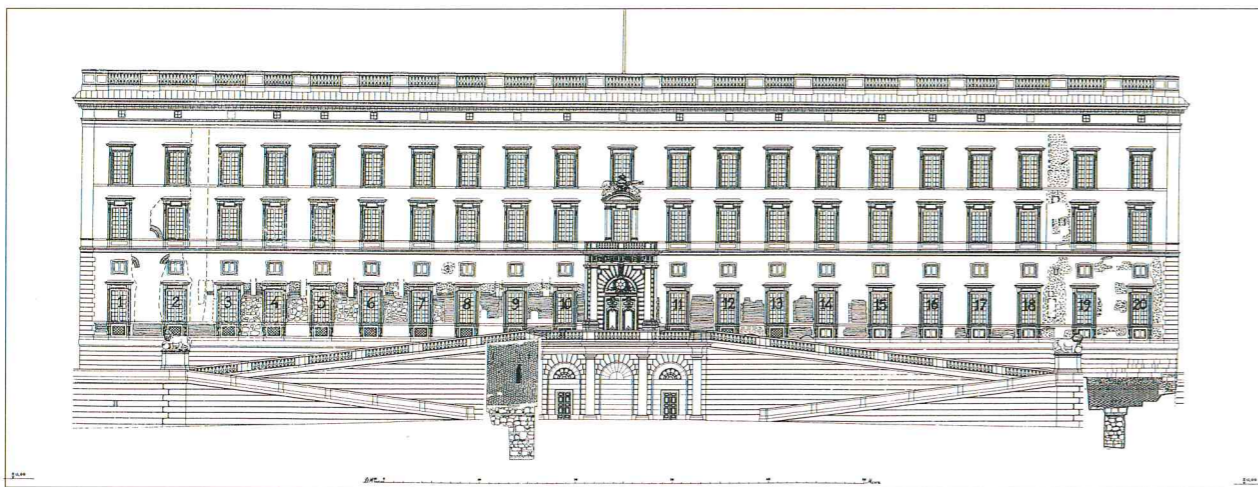


Fig. 7. The northern facade superimposed with the medieval documentation of 1954. The windows are numbered from the east. Granite walls were encountered in the bottom storey between windows 3 to 8. The horizontal lines correspond to medieval masonry dating from different periods. Grid lines indicate the damaged medieval facade with its trimmed-back surface, as at the NW corner tower and above the cantilevering at the loopholes between windows 3-10. As no drawings are available for the NE tower, the findings of the 1890s are indicated by broken lines. Martin Olsson's 1926 documentation of the curtain wall below window 9 and windows 19-20 is also incorporated. Compilation by the author on the basis of drawings in SAK. February, 2002, SSM

To complement the recently discovered material drawn up in conjunction with the 1954 restoration, the following paragraphs will provide a brief introduction to previous documentation of the medieval masonry encountered in the northern facade. These describe the:

- restoration and replastering of the northern facade carried out in the 1890s;
- extensive exploration by Dr. Martin Olsson in the twenties and thirties of the inner courtyard, the cellars below the northern wing and the north side of the northern facade, including the two ramps of Lejonbacken.

The 1890s – Renovation of the northern facade

According to a drawing made in the 1890s, the mortar was removed from the facade and masonry of medieval origin was documented all along the building. At both of the outermost window axes, the former NW and NE towers could be identified; these were about 14 metres wide and showed traces of medieval masonry extending right up to the cornice (Fig. 7). Arches for various types of opening were identified practically all along the ground floor, while in the eastern section the remains of brick-on-edge courses were found along with large areas of granite masonry - the latter were found in the walls between the third and eighth windows of the palace as numbered from the eastern corner. Generally speaking, the top level of the masonry identified as of medieval

origin was higher in the eastern half of the facade than in the west. No written report on these findings has yet been discovered, but the drawings are kept in the office of the Architect of the Royal Palace.

1920s and 1930s

Dr. Martin Olsson headed an archaeological investigation and analysis of the castle masonry not only in the inner courtyard and the cellars below but also as revealed during excavations below the former northern facade and in the two ramps of Lejonbacken. All the cellars beneath the northern wing still retain visible medieval masonry structures and make use of the inside of the curtain wall, running from the former NW corner of the courtyard (now cellar 607) to the NE end (in cellar 625). The inside of the north wall changes dramatically in character at about the middle section. The western section comprises a massive wall with no openings to the north and is more than 5 metres thick. In the east, meanwhile, there are the remains of six vaulted casemates, each about 4 metres deep and 3 metres wide and completely enclosed by the wall. They have tall, narrow openings to the north. By contrast, the western section of the interior of the wall is beautifully laid almost to its full height with granite bonds and a few sandstone slabs, while the walls of the casemates of the eastern section were built entirely of brick laid in Flemish bond whose headers have been heavily fired and turned black. The eastern section of the cellar system, with its casemates, remains to be investigated in detail.

In an attempt to identify the level of the foundation, Olsson sank exploratory shafts into each of the two Lejonbacken ramps on the northern side of the wall. Although it seems that he failed to penetrate to the lowest foundation level, his documentation of the four sites is nevertheless interesting:

In the exterior and easternmost cellar, no. 621, the exterior of the curtain wall is still accessible. Above the present-day floor level at +4.15 metres, granite bonds, surmounted by a chamfered sandstone ledge 20 cm thick, are clearly visible. Above this is another layer of granite bonds, which is 60 cm thick and retracted 15 cm from the lower facade before giving way to brickwork. The bricks have been carefully laid in Flemish bond, their heavily fired black headers contrasting with the stretchers, which are mostly red. This one-time exterior brick facade disappears up behind a later vaulting. On the brickwork, just above the chamfered moulding, the oldest known plaster of the castle can be seen. With its linear decor of inscribed and painted lines, it seems likely that this may be dated to the time of the work carried out by King Johan III between about 1580 and 1590.

Further to the west, Olsson and his team dug down to a depth of about 12 metres from the upper part of Lejonbacken, outside window no. 9 (Figs. 4 and 7). The pit-like excavation shaft followed the medieval facade of Flemish bond, skirted a bricked-up opening approx. 30 cm wide and 2 metres high, and continued downwards to a granite bond measuring 60 cm in height. This, in turn, stood on a chamfered stone ledge that formed the link with the underlying and successively widening parts of the granite foundation below. Two deep holes were encountered on top of the border ledge, while just over one metre below the border a scupper hole was found that had apparently once led rain water out from the courtyard behind. A high, narrow opening leading to a casemate (cellar 616) had an archway of headers bordered by another row of headers. This part of the facade had been carefully constructed in Flemish bond. Surprisingly, however, the headers here were plain red rather than heavily fired and black, as in the wall described above and in the walls inside the casemate.

It was probably some time during the 17th century that the present tunnel-like passage was opened through the curtain wall from cellar 613 to the outside, nowadays entrance no. 620 beneath the ramps of Lejonbacken. At floor level, the tunnel meets the original chamfered border ledge. It thus seems likely that the border extended the full length of the wall, with the top edge of the stone at same height of +7.40 metres all the way along.

At the NW outer corner of the castle the team dug down along the exterior of the curtain wall to a level of 7 metres below the Lejonbacken ramps. Although the shaft extended down to +3.60 metres, it was still not deep enough to reach the foundation level (Fig. 5). The appearance of the curtain wall was

the same as those sections already described. The distinctive lower granite bonds were also surmounted by the chamfered border stone, on top of which stood a further 70 cm of granite and, at +8.10 metres, a well-built wall of Flemish-bond brickwork of which heavily fired black headers contrasted with the red of the stretchers. At the +9.80 metre level, the masonry changes character, since above this level the headers are no longer fired black but are coloured an even red. At the same level, the team encountered holes for beams spaced at intervals of about two metres; two more beam holes, running diagonally, were found right in the corner. The holes vary in depth between 2 and 3 metres. The holes in the corner were positioned away from the neatly cut stones that formed part of the original quoins of the curtain wall. Above the +10.40 metre level, a shell wall of small, cut, raw sandstone blocks was encountered; this must have been a secondary structure built to provide a more satisfactory surface for the soil that was to be packed against the wall when the ramps were put in place at the northern side of the Baroque palace. Above this ramp, the ashlar wall, extending up to the ground floor of the palace at approx. +15.5 metres, is a shell of well-cut sandstone.

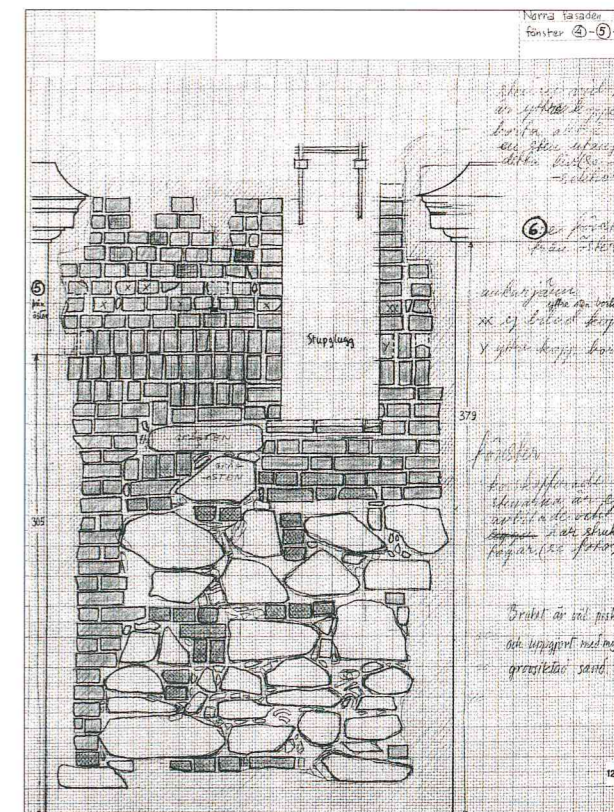


Fig. 8. The northern facade. Documentation of the masonry between windows 5 and 6. The remains of a loop-hole or crenellation are discernible above the granite wall. The brick-on-edge courses at the sides are the remains of cantilevering that has been trimmed back, as has the surface of the brickwork above. Survey: E. Hellenius et al. 1954, SAK

The 1954 replastering of the northern facade

A complete set of photographs and documentary drawings, dating from 1954 when the northern facade was completely replastered, was recently found in the office of the Architect of the Royal Palace. The masonry uncovered during the course of the work was analysed and documented, mainly with a view to identifying the medieval sections that are to be found all along the facade and which, in the outer sections, extend up to the cornice. In some places irregular and bricked-up areas were opened up to ascertain whether the insides of the openings could be examined and their proper function identified. Unfortunately, no written report has been found, and it is likely that one was never actually drawn up - a fact that might explain why this interesting documentation has never been given the attention it deserves. The material found comprises a careful survey of the measurements of the walls of the facade. The field drawings are on a scale of 1:20, with the more interesting details drawn on a scale of 1:10. There are also a few drawings of individual sections, reconstruction drawings and perspective sketches. Most of the photographs were taken from the scaffolding and show the remains of various openings, interesting cross joints and sections of masonry that are difficult to interpret. The drawings cover almost all the medieval areas, although some drawings of the masonry around and extending to the full height of the two eastern windows, nos. 1 and 2, as counted from the eastern corner, are unfortunately missing. In the 16th century, the castle church was built into the eastern part of the northern wing, the choir being inside the NE tower. Even if there are no drawings to document the masonry of the tower, the detailed and general photos taken in 1954 show among other things the remains of a round window, vertical joints and courses of brick-on-edge. As we lack contemporary documentation of the NE tower, these areas have been marked in accordance with the documentation drawn up in the 1890s. The sandstone-framed windows designed by Tessin are fairly large; the spaces between the window frames along the facade vary between 2.2 metres and 3.5 metres in width. The medieval masonry recorded in 1954 is shown in the drawing of the northern facade (Fig. 7). (The system adopted in 1954 of numbering the windows of the northern facade from 1 to 20, starting at the eastern corner, has been retained in this article).

Fig. 10. Medieval wall between windows 9 and 10 with the remains of an opening. Higher up are the remains of a loop-hole. The once cantilevered masonry extending up above the sides, like the corbel stones closest to the opening, has been trimmed back to the level of the wall below. Surveyed by E. Hellenius et al. 1954, SAK. Drawn, with the addition of the reconstructed loop-hole, by the author 2002, SSM

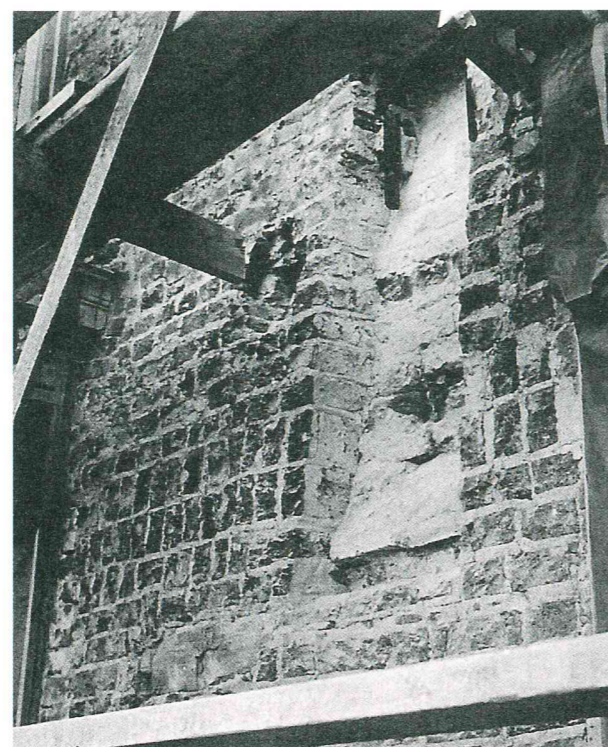
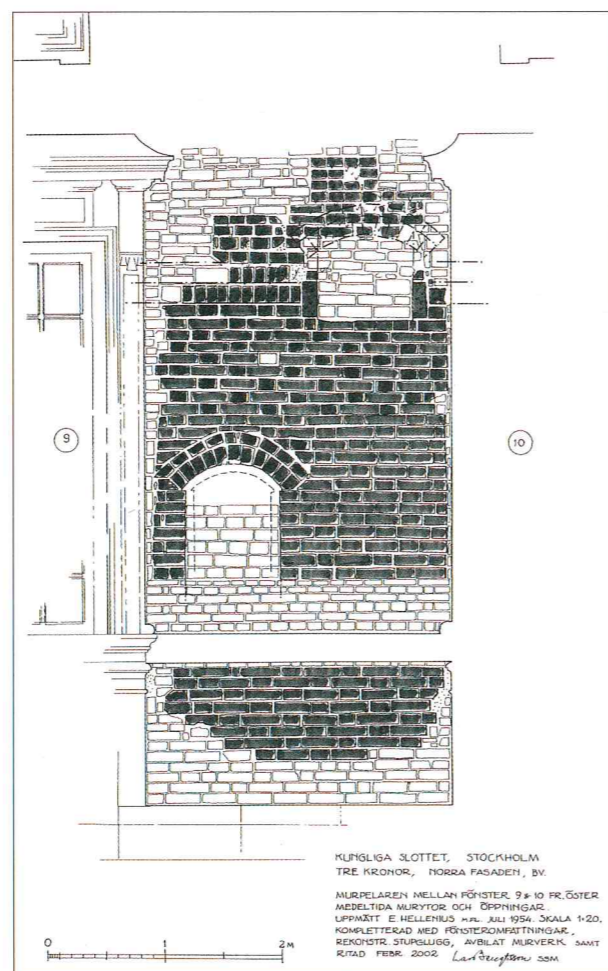


Fig. 9. The northern facade. Loop-hole or part of a crenellation between windows 5 and 6. The brickwork at the sides, from the cantilevering and up, has been trimmed back to the same level as the wall below. Carefully pointed brickwork in the vertical sides. Photo 1954, SAK



On the ground floor, the entire width of the masonry between windows 3 and 4 is made up of a carefully constructed wall of granite. At the upper part of the wall, the masonry changes to Flemish-bond brick, where the remains of an opening, 65 cm wide, can be clearly discerned. This opening is bordered by three courses of brick-on-edge. These seem long ago to have been trimmed back to the surface of the granite wall below. The surface of these three courses, along with the upper section of the same section of masonry, has been cut off, suggesting perhaps that they once served as a cantilever forming part of an overhanging parapet or battlement. On investigation, the bottom of the opening was found to be steeply inclined, but with vertical sides (Figs. 8 and 9). The remains of this opening is one of six openings of a similar nature recorded in the eastern half of the facade; no such openings are known in the western half. They were probably inclined loop-holes used for shooting missiles from the top of the curtain wall, even though that level has not yet been identified. In the following four sections of the facade, up until window no. 8, there are also the remains of granite walls, each surmounted by bonds of brick, courses of brick-on-edge, and three more loop-holes. The lower level of all three loop-holes was +19.80 metres, and the vertical sides of the openings were constructed of brick and not faced with stone. There is no information as to whether there were any traces of cladding stone in the inclined openings. The openings that have been documented are located well below the crenellation illustrated in the Hogenberg engraving of about 1580.

In the two following sections of wall, between windows 8 and 10, the medieval masonry changes in character (Fig. 10). Here, no granite is encountered; instead, there are homogeneous areas of brickwork, carefully put together in Flemish bond, and the remains of a window (?) opening in the lower part of each wall. These had been approx. 80 cm wide and had been topped by half-brick arches. Over one metre above these openings are the remains of two loop-holes at the same level as the others. Unlike the previous loopholes, however, the two brick-on-edge courses did not extend to the opening itself but stopped at rectangular limestone blocks designed to protect the base of the vertical sides of the loop-holes. These stones were 14 cm wide and 30 cm high, and the trimmed limestone had probably overhung the lower wall like corbels and carried the upper masonry which formed the

parapet. When the bricked-up opening between windows 9 and 10 was opened and investigated, the remains of an inclined limestone slab was found in situ which covered the similarly inclined loop-hole (Fig. 11). This proves that the opening had not been part of a crenellation but was an actual, inclined loop-hole. The appearance of this hole in the facade is unknown, although its construction suggests that the front could have been covered by an arch of brick, 30 cm deep, 15 cm or 30 cm high, that had supported the upper masonry. The height of the parapet above the cantilevering remains unknown, although the lower course of brick-on-edge was the same height as the base of the corbels. The original upper level of the curtain wall, behind the parapet, has not been identified.

In these latter sections of wall, from windows 8 to 10, as in the following narrow section abutting the huge portal, the original surface of the brick bonds has been trimmed off from the cantilevering upwards. In these upper sections the team found numerous bricks, mainly header ends mixed in mortar, forming the typical core of a medieval wall and, additionally, confirming that a shell construction had been used. When the projecting upper shell was removed is unknown, although it must have been trimmed back to bring the upper wall into level with the foundation, i.e. the curtain wall, in order to make way for the storeys to be added later. It is strange, however, that the Flemish bonds in the sections between these windows were constructed with normal red bricks, making almost no use at all of heavily blackened headers in the facade. It is also curious that the 1920s shaft sunk below window no. 9 also revealed a similar facade of red brick. The impression had otherwise been that the original Flemish bond had made systematic use of black headers.

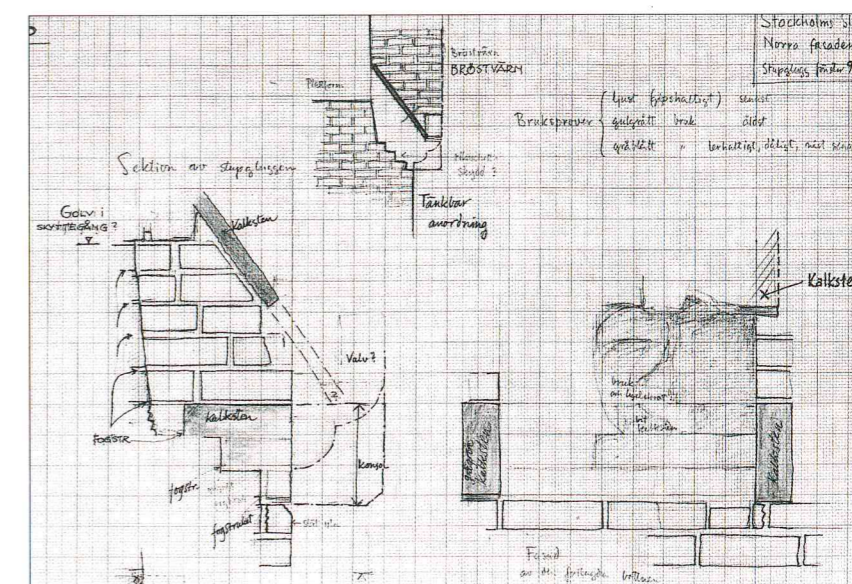


Fig. 11. Remains of the loop-hole between windows 9 and 10 with trimmed-back corbel of limestone and carefully pointed brickwork in the sides. Scale 1:10 field drawing showing section and facade and, above, a reconstruction sketch. E. Hellenius 1954, SAK

The curtain wall erected in the central and western part of the northern wing is a massive construction with a thickness of at least 5 metres. Hence, there are no casemates in this part of the wall, and the cellars use the original curtain wall to form their own northern boundary. The inner surface of the curtain wall is beautifully constructed of carefully laid granite bonds adjusted by sandstone (quartzite) slabs; there is almost no brick. This massive wall in the cellars of the western section had no openings to the north, either for daylight or defence. The upper northern facade in this part of the wing has no sections of granite at the ground floor level; all the masonry is of brick laid in Flemish bond. In this western section, the medieval wall has not been preserved up to the level of the eastern section; the highest level is one metre lower. Additionally, there are no traces of brick-on-edge bonds that might have been part of a cantilevering system and a traditional parapet. West of the huge Baroque portal on the ground floor there are almost no traces of medieval windows, with the exception of what has been interpreted as the vertical side of a late-16th century window in the wall between windows 14 and 15. However, there are the remains of brickwork arches at such a low level that they may have been part of a series of horizontal loop-holes serving the present-day basement level behind. (In one of the store rooms a complete horizontal loop-hole has been discovered.) This section of the wing may also house the remains of three similar openings, although they are today almost completely hidden behind the ashlar that make up part of the basement border.

The three sections of wall in the ground floor closest to what was once the NW tower, between windows 15 and 18, were put in place during the restoration of the 1690s. Only in the sills, up to the level of the lower part of the windows, are remains of older constructions encountered, among them one of the loop-holes mentioned above. It is unclear why none of the upper medieval masonry was retained in this section, although it may be remarked that various 16th and 17-century illustrations show that the construction of the roof and location of the windows here differ from the other sections. This applies both to the northern facade and the facade facing towards the courtyard.

The masonry around the two most westerly windows, nos. 19–20, is associated with the former NW tower. In 1954, all the old masonry of the tower walls, extending up to the cornice, was shown to have been extensively damaged, and it appears that what the investigators had encountered was actually the core of the wall at the lower floor levels and part of a cut shell in the facade at the top floor. According to the photos, it seems that the shell had been trimmed back by some 15 cm to a depth of about half a brick (Fig. 12). When the outer shell – which was probably constructed of brick bonds – was removed is un-



Fig. 12. Western corner tower of the northern facade. Brickwork masonry in the upper storey extends up to the cornice. Impressions in the wall, with remains of mortar in every other course, suggest that a brick shell approx. 15 cm thick has been removed from English-bond or cross-bond courses. The NE corner of the tower may be seen rising above the intermediate building. Photo SAK.

known, although it is certain that the facade of the tower had not been rounded, as Hogenberg's 1580s' engraving would otherwise suggest. However, it does show that the outer level of the facade of the former tower lay further to the north than the rest of the northern facade on this wing. Even the NE tower still stands at the same level as the adjoining walls. In the many drawings made by Erik Dahlberg in the late 17th century, there is no vertical line or other indication that the NW tower was built at a separate level from the rest of the facade, so it should have been adapted earlier. Although the surface of the facade of the NW tower might have been damaged, it has been shown that behind large areas of brickwork apparently put in place in the 1690s (adapted to the present windows), there are several older constructions behind the later shell. These were not revealed during the thorough investigations carried out at selected locations in 1954, but there are nevertheless several interesting remains of former openings. Small apertures at odd levels suggest that openings may

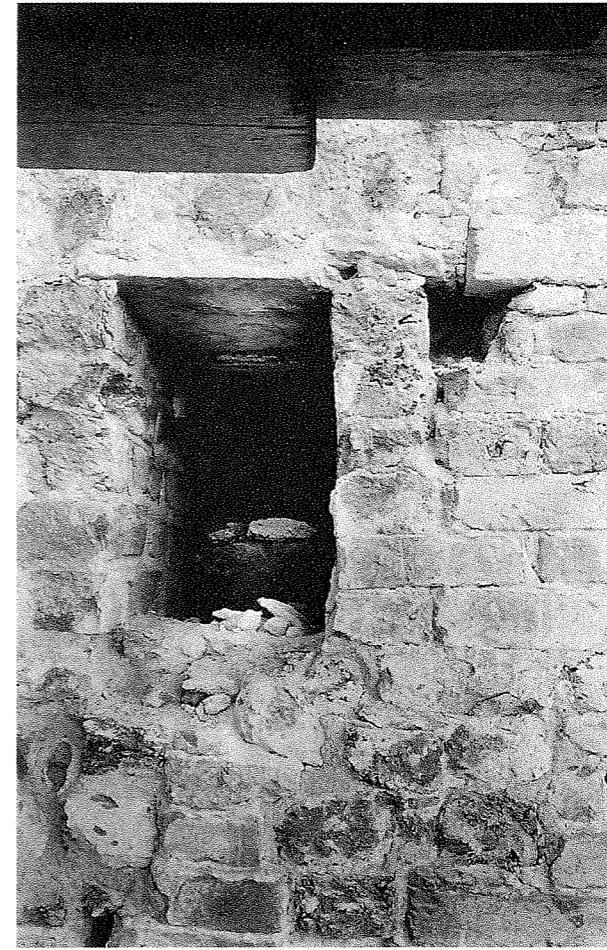


Fig. 13. A small opening with a limestone covering that may once have served to light up a spiral staircase running behind the wall up to the 2nd storey of the NW tower. The original brickwork has been trimmed back and, as in other places, the adjacent surfaces to the right were replaced in the 17th century by a new brickwork shell. Photo SAK.

have been provided to light up narrow spiral staircases (Fig. 13), while a large bricked-up section have served as a passage to an oriel or perhaps an overhanging privy. The 1954 investigations also recorded an impression in the wall at +34 metres between windows 18 and 19 that has been interpreted as the former site of a sloping roof.

It is quite probable that the brickwork shell of the former NW tower, now removed, started very low, possibly at the level of some unknown cantilever that has not been recorded, perhaps even that hidden behind the ashlar covering the foundation but above the level of the Lejonbacken ramp. As mentioned above, Martin Olsson drove a shaft from the ramp down towards the foundation and in that area found an intact wall clearly constructed of Flemish-bond bricks whose headers had been heavily blackened (Fig. 14). It is more likely, therefore, that the overhang, the cantilevering, was located in the area of the present high foundation above the level of the ramp and is thus today covered by the sandstone ashlar. In any case, the supposed cantilevering is located far below the

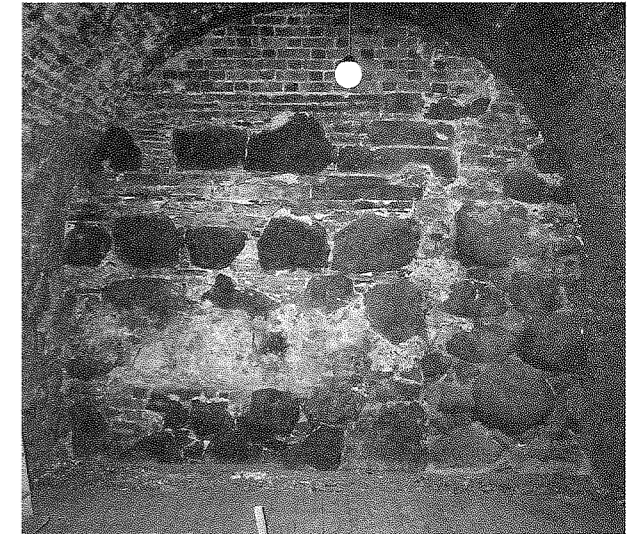


Fig. 14. The castle. The western facade of the original curtain wall is discernible at the NW corner in cellar 597. This illustration supplements M. Olsson's surveys of 1926, figs. 4 and 5, and shows medieval granite with a chamfered ledge and upper Flemish-bond brickwork with heavily blackened headers. Photo by the author 2001, SSM.

one recorded in 1954 as running all along the eastern half of the northern facade, where it abutted the inclining loop-holes. However, the facade of the northern wing is very long and it goes without saying that its various sections may have been adapted to local requirements; most of the eastern section looked out over the water, while to the west the building overlooked the little island of Helgeandsholmen and the area beyond the waters to the north. Dahlberg's drawings, which date from the 1670s, show the castle to have an even, vertical northern facade, with no type of oriel or privy (Fig. 15). Could the giant job of trimming back the surface of the NW tower have been carried out by King Johan III in the period around 1590? It is known that the king had by then not only modernised the castle church but had also rebuilt the upper floor of the former western wing and NW tower and turned it into a set of representative royal apartments.

Most of the above-mentioned construction details have consciously been left undated so as to discourage the reader from jumping to false conclusions, and it is the author's intention that they shall remain so until the material has been thoroughly investigated and put to the test. For this reason, more space has been devoted to some construction details than others, so that the expert may himself look for parallels in his own castles, be they in Sweden or elsewhere on the continent.

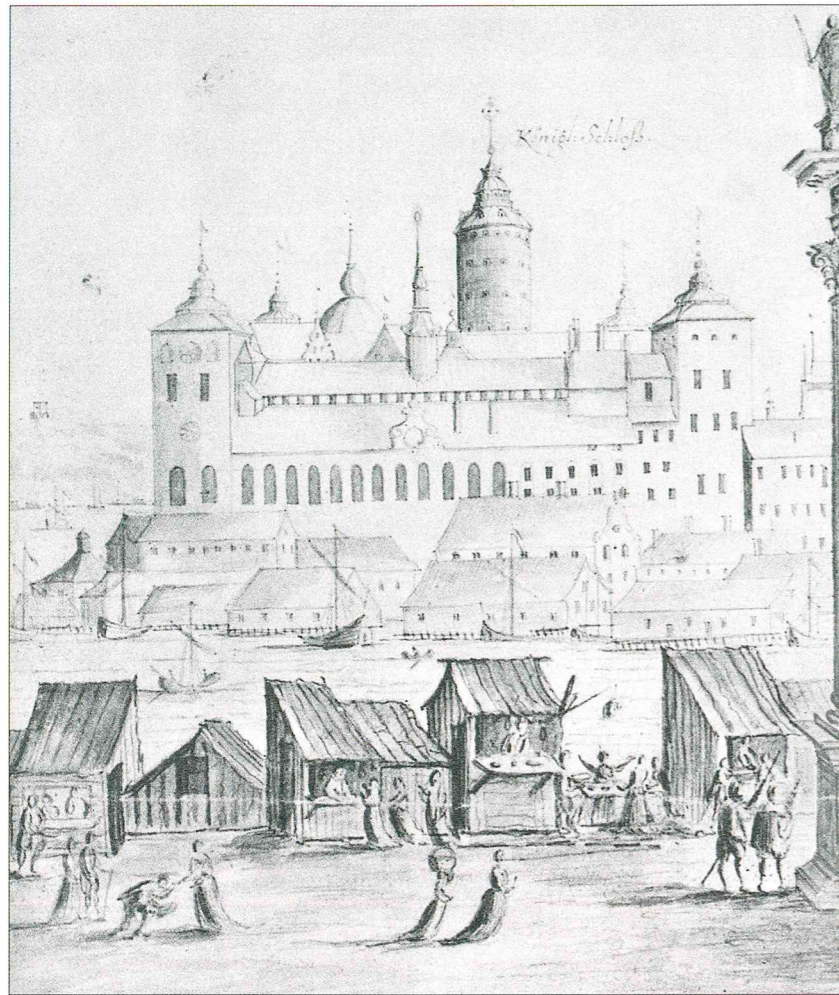


Fig. 15. Stockholm castle viewed from the north in the 1660s. In this drawing by Erik Dahlberg, the high base of the northern wing, the curtain wall, is concealed by the buildings of Helgeandsholmen. The church windows correspond to the windows in today's high lower storey and entresol. The two storeys added in the 1690s were in principle built up from the foot of the roof of the building between the towers

Abstract

Stockholm castle was a medieval fortress that was extended and improved over the course of several centuries. In 1697, when a devastating fire broke out, the castle was damaged so badly that most of the medieval structures were pulled down, with the exception of the northern wing that had been less badly damaged. Work on the northern wing had just been completed after two new storeys had been added above the wall running between the two towers that once formed the northern corners of the castle. The 1690s' facade, taking its inspiration from the Renaissance

palaces of Italy, was brought up to date and constructed in contemporary taste, leaving the medieval masonry concealed behind the new plaster and mouldings; exactly how much of the earlier masonry that remained hidden has hitherto been largely unknown. However, interesting new documentation has recently been recovered from the office of the Architect of the Royal Palace, comprising survey drawings and photos of the medieval masonry. This documentation was drawn up in conjunction with large-scale renovation of the facade carried out in 1954. Even though there appears to be no written report, the field drawings, executed on a scale of 1:20, are so detailed that accurate interpretation of measurements, notes and photographs might be expected to shed new light on the various types of construction encountered during the investigation. Construction was carried out in several stages all along the 115 metre facade, which, at the basement level, stands atop the curtain wall that can still be seen to this day. Of particular interest, for example, are the levels and locations of medieval loop-holes and openings and the fact that the masonry, even in the oldest sections, appears to vary considerably in character. Although several new questions have arisen as

to the oldest stages of the castle's construction, the information contained in the new documentation has proved an invaluable complement to our previous data and may help us interpret other sections of medieval masonry that still remain, including those in the southern facade of the northern wing and those that are now buried under the surface of the inner courtyard. It is also our hope that we may be able to identify continental prototypes. In this paper, the author reviews hitherto unexamined documentation of the medieval castle and shows the extent to which the medieval masonry has been preserved in the northern facade of the northern wing that remains standing to this day.

Maria-Letizia Boscardin

DIE WASSERVERSORGUNG AUF SCHWEIZER HÖHENBURGEN

A water collection system in Swiss Höhenburgen

Swiss castles constructed on cliffs mostly depended on a cistern for water. Man-made wells were common in the midlands, where softer stone deposits made the digging of wells an easier task. Even so, the construction of a well was labour-intensive and could involve digging to a significant depth.

The Tank Cistern, a water collection system which collected unfiltered water from rooftop runoff, was thoroughly established not in Swiss Höhenburgen (castles built on hills or mountains). Their straw rooftops, common before

the innovation of tiled rooftops after 1300, added impurities to the runoff water that made the cistern system of water collection impractical. Far more common than the Tank Cistern was the Filter Cistern, a wide stone pit sealed with clay and filled with stone, gravel, and sand, which in turn served to filter water collected from rooftop runoff. The water was then retrieved through a walled chute using a metal or wood container. Even through this filtration system, this water would not approximate to our modern European standards for drinking water.

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