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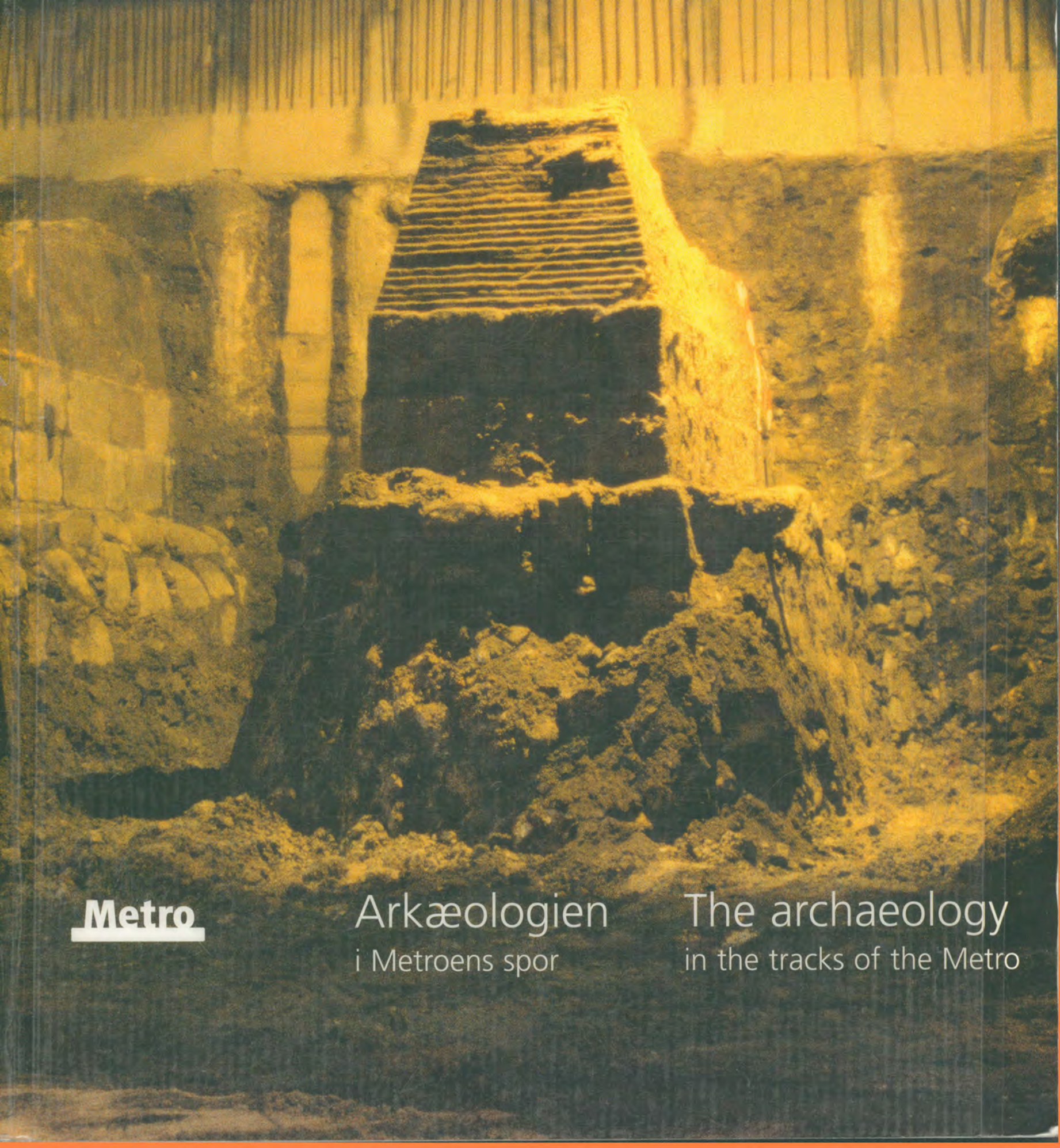

Metro

Arkæologien
i Metroens spor

The archaeology
in the tracks of the Metro

Arkæologien
i Metroens spor

The archaeology
in the tracks of the Metro

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Hovedstad og Metro
The Capital and the Metro

Knudepunkterne. Landet er et produkt af menneskers gøren og laden gennem tusinder af år. Særligt i byen kommer dette til udtryk. Byens form, gaders forløb og huses placering er ofte på den ene eller anden måde et produkt af tidligere tider. Og når der skal planlægges nye byggerier, vil disse tit blive lagt på en måde, som er betinget af ældre forhold. Således også med Københavns Metro.

Den nye bane krydser nogle af Københavns gamle trafikknudepunkter: Nørreport og Kongens Nytorv. Dette valg er ikke tilfældigt. Netop her vil den betjene nogle af de mest trafikerede områder af byen. Årsagen til denne koncentration af trafik skal søges langt tilbage i tiden, da to af byens vigtige indfaldsveje her nåede den tidligere bygrænse: Københavns befæstning, og derfor valgte man naturligt at lægge byporte på disse steder: Nørreport og Østerport.

Disse to lokaliteter blev også de steder, hvor de største arkæologiske undersøgelser i forbindelse med Metrobyggeriet kom til at foregå, for det var netop her, at koncentrationen af spor efter menneskelig aktivitet gennem tiden var størst.

Ørestadsselskabet og arkæologien. Da planlægningen af Københavns Metro blev indledt, var det fra starten klart, at man en række steder ved de kommende jordarbejder ville støde på forekomster af arkæologisk interesse. Ørestadsselskabet kontaktede derfor, allerede inden den egentlige projekteringsfase gik ind, den lokale arkæologiske myndighed, Københavns Bymuseum, for om muligt at få et overblik over, hvor omfattende et arkæologisk arbejde, der kunne forventes. De to parter blev enige om, at museet i forbindelse med VVM-redegørelsen skulle levere en vurdering af det bælte gennem byen, man forventede ville blive berørt af metroarbejderne.

Vor viden om, hvor der kunne forventes arkæologiske fund, var og er stadig for store dele af byens vedkommende meget sporadisk. Da det tilmed de fleste steder langs det påtænkte forløb ikke var praktisk muligt at foretage arkæologiske prøveundersøgelser, før anlægsarbejdet gik i gang, blev der med VVM-redegørelsen lavet en plan for arkæologien, hvor de berørte områder blev opdelt i tre kategorier.

For de arealer, hvor der ingen viden var om arkæologiske forekomster, og hvor der heller ikke var egentlige forventninger, blev det aftalt, at entreprenørerne blot skulle gå i gang med jordarbejderne og kontakte Bymuseet, hvis man stødte på noget, der kunne have arkæologisk interesse. Dette gjaldt Københavns yderkvarterer, hvor der først sent er kommet bebyggelse.

For de områder, hvor museet vidste, at anlægget ville komme i berøring med væsentlige forekomster, ville museet gå ind med egentlige undersøgelser, før arbejdet med Metroen gik i gang.

Tilbage blev en række arealer, hvortil der ikke umiddelbart kunne stilles arkæologiske forventninger, men hvor der kunne dukke væsentlige fund op. På disse strækninger blev det aftalt, at der ville være arkæologisk tilsyn efter behov, og at der ville blive foretaget undersøgelser, når det fandtes nødvendigt.

Traffic patterns and hubs. The physical environment has been shaped by people's activities throughout thousands of years. This is particularly evident in towns. The shape of a town, the routes taken by its streets and the way its houses are placed are often in one way or another determined by earlier times. And when plans for new buildings are being made, they are often based on conditions imposed by earlier contexts. This also applies in the case of Copenhagen's Metro.

The new Metro line cuts through two of Copenhagen's old traffic-hubs: at Nørreport and at Kongens Nytorv. This was not an accidental choice. It is precisely at those points that it will

serve the areas of town with the busiest traffic. The reason for this concentration of traffic has to be sought far back in time. At those points two of the important access roads to the town met the town boundaries that existed in earlier days: Copenhagen's fortifications. It was natural to place town gates at these locations, and this gave rise to Nørreport and Østerport (literally, North Gate and East Gate).

It turned out that these two locations were also the sites where the largest archaeological investigations connected with the building of the Metro were to be carried out, since it was there that traces of human activity through the ages were found in greatest concentration.

The Ørestad Development Corporation and archaeology. When the planning of the Copenhagen Metro began, it was clear from the outset that in a number of places the digging process would result in finds of archaeological interest. Because of this the Ørestad Development Corporation initiated contact with the local archaeological authority, Copenhagen City Museum, even before the scheduling phase was started, to try to obtain an insight into how comprehensive the archaeological work involved was likely to be. The two parties reached agreement that the museum, in the context of a comprehensive environmental investigation, should provide an evaluation of the belt of land through the city that was expected to be affected by the Metro construction work.

Our knowledge of where we might expect archaeological remains to be encountered was – and still is – very sporadic where large parts of the town are concerned. In addition, along most parts of the planned course it was not practically possible to undertake archaeological trial investigations before the construction work began. In the environmental investigation a plan was therefore included where the affected areas were divided into three categories with regard to potential archaeological interest.

For the areas where there was no prior knowledge of archaeological finds, and where there were no actual expectations, it was agreed that the contractors should simply go ahead with the digging work and should contact the City Museum if they came across anything that might be of archaeological interest. This applied to the outer areas of Copenhagen, which were not built up until a relatively late date.

In the areas where the museum knew that the construction work would come into contact with significant finds, the museum would carry out actual investigations before the work on the Metro began.

There remained a number of areas where there was no strong expectation of archaeological material, but where it was possible that significant finds could be made. On these stretches of the route it was agreed that there would be archaeological monitoring as the need arose, and that investigations would be carried out if they were found necessary.







Metroen i den historiske by.

The Metro in the historic town.

De arkæologiske udgravninger
The archaeological excavations

Faste Batteri. Det første historiske anlæg, der ville blive berørt af metroarbejdet, var det fredede Faste Batteri på hjørnet af Artillerivej og Njalsgade. Anlægget er gennem århundreder blevet anvendt som øvelsesbatteri, det vil sige, at man her har afprøvet artilleri og udført øvelsesskydning.

Ørestadsselskabet fik gennem en aftale med den daværende Skov- og Naturstyrelse i Miljøministeriet tilladelse til at fjerne den vestlige del af anlægget, da metroen her skulle lægges i en overdækket grav ved den såkaldte cut-and-cover teknik, mod at man retablerede anlægget. Det skulle ikke blot retableres, som det havde set ud, da man startede metroarbejdet. Anlægget, der med tiden var blevet noget reduceret, skulle rekonstrueres efter tegninger, billeder og kort og ikke mindst på grundlag af de supplerende oplysninger, der kunne hentes fra de arkæologiske undersøgelser, Bymuseet iværksatte af anlægget i forbindelse med jordarbejderne på stedet.

Bymuseet var i gang herude med en indledende undersøgelse allerede i januar 1996 og fortsatte med supplerende undersøgelser, indtil anlægget var endeligt færdigt i 2002.

Kongens Nytorv. Det sted på Metrobanen, hvor der stilledes de største arkæologiske forventninger, var udgravningen af stationsgruben på Kongens Nytorv foran Magasin. Det område af byen, hvor koncentrationen af arkæologiske forekomster er størst, er der, hvor der fra Middelalderen har ligget bebyggelse, og intet sted langs Metroens lange forløb kom man så tæt som her.

Da man oven i købet vidste, at befæstningen omkring byen blandt andet havde ligget lige her i adskillige århundreder, var der ingen tvivl om, at dette ville blive den største arkæologiske undersøgelse i hele Metroprojektet. Det skulle da også vise sig, at det skulle blive den hidtil største arkæologiske undersøgelse i Bymuseets historie, idet der blev undersøgt knap 2000 m^2 i selve stationsgruben. Derudover blev der foretaget en lang række undersøgelser i forbindelse med de nødvendige store ledningsomlægninger omkring gruben.

Da den store udgravning var forventet, indledtes den i god tid, inden Ørestadsselskabet skulle i gang med stationsanlægget. Bymuseet startede sin udgravning på stedet i slutningen af januar 1996, og den sidste supplerende undersøgelse blev foretaget i august 1998.

Faste Batteri (the Permanent Gun Battery). The first historic structure to be affected by the work on the Metro was the protected permanent gun battery at the corner of Artillerivej and Njalsgade. For centuries this structure had been used as an exercise battery, for testing out artillery and for shooting practice.

The Ørestad Development Corporation made an agreement with the National Forest and Nature Agency (then responsible for Cultural History within the Ministry of the Environment) which allowed them to remove the western part of the structure, since the Metro was here to be dug down into a covered ditch, using what is known as the cut-and-cover technique, in return for agreeing to re-establish the structure. It was not merely to be re-established as it was before the Metro work was started, however; the structure, which had over time been rather reduced, was to be reconstructed in accordance with drawings, pictures and maps, and not least on the basis of supplementary information gained from the archaeological investigations on the site, which the City Museum initiated in connection with the works carried out there.

The City Museum started work on this site with a preliminary investigation in January 1996, and further investigations continued until the construction was completed in 2002.

Kongens Nytorv. The point on the Metro route which gave rise to the

greatest archaeological expectations was the excavation of the station area at Kongens Nytorv, in front of the Copenhagen department store named Magasin. This part of town, where the concentration of archaeological finds is largest, is an area where there have been houses since the Middle Ages, and no other point on the long course of the Metro's route came as close to this old district of the town.

Since it was also known that the town fortifications had crossed this point during many centuries, there was no doubt that this would be the largest archaeological investigation in the whole Metro project. It would also turn out to be the largest archaeological investigation so far in the history of the City Museum, involving almost 2000 m^2 of excavation in the station area itself. In addition a large number of investigations were undertaken in connection with the re-positioning of pipes and services around the pit dug for the Metro.

Since a major excavation was foreseen, it was begun in good time before the Ørestad Development Corporation had to start work on the construction of the station. The City Museum embarked on its excavation on the site at the end of January 1996, and the last supplementary investigation was carried out in August 1998.

➔ Prikkerne angiver de arkæologiske undersøgelser, der blev foretaget i forbindelse med Metrobyggeriet.

Dots indicate sites of archaeological investigations undertaken in connection with the construction of the Metro.



➔ Den arkæologiske udgravning i stationsgruben på Kongens Nytorv.

The archaeological investigation in the pit for the station at Kongens Nytorv.



Nørreport. Den nok mest overraskende undersøgelse var udgravningen af broen uden for den gamle Nørreport. Efter bedste overbevisning havde museet vurderet, at broen, som havde ført trafik over voldgraven til og fra Nørreport, var blevet næsten totalt revet ned, da man sløjfede volden og graven på stedet i 1874. Dette viste sig ikke at være tilfældet.

Broen fra 1651-56 stod der faktisk endnu, idet man blot havde fjernet toppen, så alle pillerne var helt intakte. Museet måtte derfor ind og registrere dette store anlæg i kortere og længere perioder fra august 1999 til maj 2001, efterhånden som befæstningsværket kom frem, inden det blev revet ned og gik tabt. Da dette skete, efter arbejdet med stationen allerede var i fuld gang, måtte arkæologerne arbejde tæt sammen med Comet, som stod for arbejdet med stationsanlægget. Det betød lange arbejdsdage med flerholdsskift for arkæologerne, idet man måtte holde trit med entreprenørerne.

Sjæleboderne. Det ret store anlæg til ventilation og nødudgange til Metroen, der kom her, viste sig at give langt bedre arkæologiske resultater end ventet. Der synes meget sent at komme bebyggelse i denne del af byen, da der tidligere har været et relativt stort sumpet område. Den første bebyggelse fra tiden, da man begyndte at fylde området op, viste sig at være delvist bevaret. Bymuseet foretog derfor en undersøgelse og registrering af denne bygningsrest og fik desuden mulighed for at iagttage indersiden af byens vold ud mod Gothersgade ved flere lejligheder fra juli 1998 til oktober 2001.

Samarbejdet. Da Bymuseet som hovedstadens arkæologiske myndighed blev kontaktet af Ørestadsselskabet i marts 1994 to år, før anlægsarbejderne rent faktisk gik i gang, var det en hidtil uset praksis at lade arkæologerne indgå i det praktiske arbejde med planlægningen af et større anlægsarbejde i København. Ved at lade de arkæologiske interesser indgå som en naturlig del af de mange faktorer, der skulle tages hensyn til, blev det muligt at sætte tid og ressourcer af til arkæologien i projekteringen, og man slap for de store overraskelser. Det tidlige samarbejde gjorde desuden, at der var en tæt kontakt til bygherre, entreprenører og arkæologer imellem gennem hele afviklingen af projektet, hvilket er optimale forhold for det arkæologiske arbejde. Der er ingen tvivl om, at der er blevet sparet såvel tid som penge ved dette samarbejde.

Fundene. Denne bog er en præsentation af de arkæologiske resultater. Da det ikke er muligt at vurdere den nye og visse steder epokegørende viden, der er kommet frem, uden at se den i relation til, hvad der ellers vides om byen, er bogen bygget op som en lille københavnshistorie med dyk ned i historien de steder, hvor vi nu kan fortælle nyt. Dette er altså ikke en gennemgang af de enkelte arkæologiske udgravninger, men en præsentation af den nye historie om København, der kan fortælles på grundlag af de mange spændende resultater, de arkæologiske undersøgelser ved metroarbejderne gav, set i forhold til hvad vi vidste før.

Nørreport. Probably the most surprising investigation was the excavation of the bridge beyond the old Nørreport. On the basis of the best evidence, the museum had reached the conclusion that the bridge that had once carried traffic across the moat to and from Nørreport must have been almost totally demolished when the rampart and moat at this location were given up in 1874. It turned out that this was not the case. The bridge from 1651-56 was actually still there. Its upper structure had been removed in such a way that the bridge-piers were completely intact. The museum therefore had to get to work on registering this major structure, over both long and short periods between August 1999 and May 2001, in step with the uncovering of the fortifications, until the bridge had been demolished and was lost. Since this happened after the work on the station was well in hand, the archaeologists had to work closely with Comet, the enterprise in charge of building the station. This meant long working days with archaeological teams working in shifts, since the investigation had to keep pace with the construction work.

Sjæleboderne. The rather major construction required for ventilation and emergency exits for the Metro which was placed around the street called Sjæleboderne turned out to give much better archaeological results than expected. It seems that this part of town was built up at a very late stage, since previously it had been a relatively large marshy area. It turned out that the first buildings from the time when the area first began to be filled in had been partially preserved. The City Museum therefore undertook the investigation and registration of these building remains, and also, on several occasions between July 1998 and October 2001, gained the opportunity to examine the inner side of the town rampart where it ran along Gothersgade.

Cooperation. When the City Museum, as the archaeological authority responsible for the capital, was contacted by the Ørestad Development Corporation in March 1994, two years before the construction work actually began, it was an unprecedented means of proceeding to allow archaeologists to become involved in the practical work of planning a major construction project in Copenhagen. Enabling the archaeological interests to be integrated as a natural element among the many factors for which allowance had to be made meant that it was possible to allocate time and resources to archaeology within the project-scheduling, and the risk of major surprises could be eliminated. The early cooperation also resulted in there being close contact between the project-leaders, the construction-workers and the archaeologists throughout the whole development of the project, and this provided optimal conditions for archaeological work. There is no doubt that this cooperation produced savings both in terms of time and of money.

The finds. This book is a presentation of the archaeological results. Since it is not possible to evaluate the new and in some points epoch-making knowledge that has come to light without seeing it in relation to what is otherwise known about the town, the book has been structured as a short history of Copenhagen, diving down at points where we can now include something new in the story. This is not an account of the individual archaeological excavations, but a presentation of the new story of Copenhagen that can be told on the basis of the many exciting results generated by the archaeological investigations linked to the Metro project, seen in relation to what we knew before.

Metrostationen på Kongens Nytorv.

The Metro station at Kongens Nytorv.



Jægere og fangere
Hunters and fishermen

Kongemosetiden. De første spor af mennesker i det område, der senere skulle blive København, er 6000 år gamle. På den tid levede landets befolkning som jægere og fiskere, der ernærede sig ved vildt og planteføde fra skovene og udnyttede mulighederne for fiskeri langs landets kyster. I det område, hvor byen langt senere opstod, har landskabet dengang set helt anderledes ud, idet kysten før de store havstigninger, der fulgte, da isen smeltede efter sidste istid, har ligget noget længere ude, hvor der nu er hav.

Man slog sig ikke ned på selve kysten, men lidt inde i landet nær en åmunding eller et vandløb. Fangsten her har formodentlig været rigeligst i sommermånederne, og man forestiller sig, at fangerne i de måneder, hvor fiskeriet var ringe, er draget ind i landet for at jage vildt. I løbet af de 1000 år denne periode dækker, steg havet stadig. Det medførte, at kysten flyttede længere og længere ind i landet.

I området syd for Strøget fra Rådhuspladsen gennem middelalderbyen til Kongens Nytorv og videre over Amalienborg Slotsplads til Kastellet er fund fra såvel den periode, der kaldes Kongemosetid, som tiden lige efter, Ertebølletiden, ikke usædvanlige, når der graves så dybt, at man når ned til de lag, der ligger lige over det fyldmateriale, der blev afsat under sidste istid. Den såkaldte moræne.

Da man i 1891-92 gravede ud til Københavns nye frihavn, fandt man affald fra en af Kongemosefiskernes fangstpladser. Deres kasserede redskaber af flint, tak og knogle vidner om en høj håndværksmæssig kunnen. De er fint og omhyggeligt tildannede.

Fangstplads. På Kongens Nytorv var de ældste lag fra Ertebølletiden. Over moræne- og smeltevandssandet fandtes rester af en formodentlig 6000 år gammel strandrørssump, som har været et fladt, vådt landområde tæt ved kysten bevokset med siv og rør. I sumpen fandt man frø og skaller af jordbær, brombær eller hindbær og hasselnød; alle typer, der ikke kan gro i strandrørssumpen. De kan være endt her, fordi mennesker har bragt dem hertil og smidt dem som affald. Da der desuden blev fundet trækul og forkullede plantedele, som viser, at nogen har brændt ild, synes der at være tegn på, at Ertebølletidens fiskere også har haft fangstplads her.

The Kongemose period. In the area which was later to become Copenhagen, the first traces of human life date from 6000 years ago. At that time the population lived by hunting and fishing, feeding themselves on wild animals and edible plants from the forests, and fishing where possible along the coastline. In the area where the town was to grow up much later, the landscape at that time was completely different in appearance; before the major rises in sea-level that were caused by the ice melting after the last Ice Age the coastline lay further out where there now is sea.

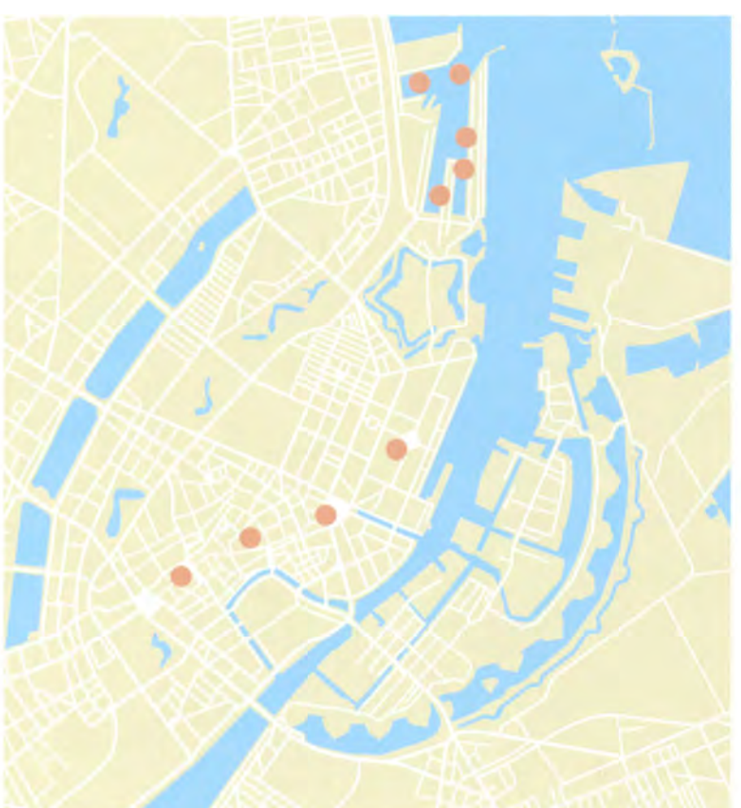
People tended not to live right on the coast; they preferred situations slightly inland near a river mouth or small stream. The catch there was probably best in the summer months, and one can imagine that in the months when the fishing was unproductive the fishermen would have turned inland to hunt animals. In the course of the 1000 years covered by this period the sea rose constantly. This meant that the shoreline moved further and further inland.

In the area south of Strøget (the main pedestrian street), from City Hall Square (Rådhuspladsen) through the medieval town to Kongens Nytorv and on across the palace square of Amalienborg to Kastellet, finds both from the period known as Kongemose and from the time immediately after, known as the Ertebølle period, are not uncommon. There one can dig so deeply that one reaches the layers that lie under the material that was deposited there during the last

Ice Age, which is known as moraine deposit.

In 1891-92, when excavation was carried out for the construction of Copenhagen's new Freeport, refuse from one of the Kongemose fishermen's fishing places was found. The discarded tools of flint, antler and bone are evidence of a high level of craftsmanship. They are delicate and carefully shaped.

Fishing sites. At Kongens Nytorv the oldest layers were from the Ertebølle period. Above the moraine and meltwater sand the remains were found of a 6000-year-old reedy swamp which had been a flat wet area of land close to the coast and covered with rushes and reeds. In the marsh area the seeds and husks of strawberries, blackberries or raspberries and hazelnuts were found; all these are plants that cannot grow in coastal marshes. They may have ended up here because people brought them here and threw them away as refuse. Since charcoal and remains of charred plants have also been found here, showing that fires have been made, there seem to be indications that the fishermen of the Ertebølle period also used this as a fishing site.





➔ Prikkerne angiver de arkæologiske fundsteder fra ældre stenalder (tv).

Redskaber fra Ertebølle- og Kongemosetid fundet ved udgravningen til Frihavnen 1891 (th).

➔ Dots indicate the location of the archaeological finds from the early Stone Age (left).

Tools from the Ertebølle- and Kongemose periods found during the excavation for the Freeport (Frihavnen) in 1891 (right).

Der opstod en by
A town grew up

Handelspladsen. Biskop Absalon bliver ofte kaldt Københavns grundlægger, men de senere års arkæologiske forskning har vist, at det er en sandhed med modifikationer. Det fortælles allerede i samtidige kilder om Roskildes bisp, Absalon, at han får Havn og store omkringliggende landområder af sin gode ven Valdemar, netop som denne havde vundet tronen og hele riget. Det er værd at bemærke, at Absalon altså får en bebyggelse, sandsynligvis en handelsplads. Denne bosættelse, der senere skulle udvikle sig til byen København, har altså allerede eksisteret, da Absalon overtager byen.

Arkæologiske undersøgelser har vist, at den ældste by skal findes i området mellem Rådhuspladsen og Gammeltorv-Nytorv mod nord afgrænset af Vestergade. Mod syd har havet givet en naturlig afgrænsning, og kysten har ligget meget længere mod nord end nu, det vil sige, tæt på hvor Lavendelstræde nu løber. Det bebyggede område er så lille, at det knap kan kaldes en by. Fund i Mikkel Bryggers Gade viser, at bosættelsen sætter ind lige før år 1100. De fundne affaldslag tyder på, at der er tale om spor efter en handelsplads, hvor fisk har spillet en væsentlig rolle.

Lagene indeholdt store mængder af fiskeknogler fra forholdsvis små fisk, og knoglerne viste ikke spor af tilberedning. Fiskene må altså være endt der som affald, det vil sige skidtfisk, og er ikke kommet på datidens københavneres spisebord. Dette ses som et bevis på, at der er foregået et fiskeri med salg for øje, hvor man kun har udnyttet de store pæne fisk, mens resten er blevet kasserede. Hvis denne tolkning holder stik, kan den tidlige bydannelse måske ses som en handelsplads, hvor den lokal befolkning har levet af at sælge deres fangster af fisk fra Øresund til de købmænd, der kom til stedet.

Det lille bysamfund bliver formodentlig i 1140'erne eller 50'erne befæstet med en vold og grav. Den får desuden en kirke, Skt. Clemens, nogle få årtier efter.

Byens navn. Saxo er den første dansker, der skriver om byen København. I sit store værk om danernes historie skrevet på bestilling af biskop Absalon i årtierne omkring år 1200 omtales byen som Portus Mercatorum, det vil sige Købmændenes Havn eller på datidens dansk Købmannahavn. I et brev fra paven fra 1186 betegnes byen blot Hafn, det vil sige Havn. Man mener dog, at byens navn fra starten har været Købmannahavn altså Købmændenes Havn, og at betegnelsen Havn blot er den korte udgave, på samme måde som vi omtaler Øresund som Sundet.

The trading centre. Bishop Absalon is often called the founder of Copenhagen, but in recent years archaeological research has shown that this is only partly true. Contemporary sources tell us, about Roskilde's Bishop Absalon, that he was given the village of Havn (meaning "harbour") and a large area of surrounding land, by his good friend King Valdemar, at the time when the latter had newly won the throne and the whole kingdom. It is worth noting that Absalon was given an existing settlement, probably a trading place. This settlement, which was later to develop into the town of Copenhagen, thus existed before Absalon took over the town.

Archaeological investigations have shown that the oldest part of the town is to be found in the area between the Rådhusplads and Gammeltorv-Nytorv, with the boundary to the north along Vestergade. To the south the sea provided a natural boundary, and the coast lay much further north than now, approximately where Lavendelstræde is now situated. The area of the settlement was so small that it could hardly be called a town. Finds in Mikkel Bryggers Gade show that the settlement began to be established shortly before the year 1100. The finds from the layers of refuse indicate that these are

traces of a trading site where fish was an important commodity.

The layers contained large quantities of fish bones from relatively small fish, and the bones showed no signs of preparation. The fish must therefore have ended up as refuse, discarded, and had not graced the dining tables of the Copenhagen residents of the time. This is seen as evidence that fishing was carried out with a view to selling the produce, and that only the good large fish were used, while the rest were discarded. If this interpretation is correct, the early town development can no doubt be seen as that of a trading site, with the local population living by selling the fish they caught in Øresund to the merchants and traders who came there to buy.

The small town community was protected by the construction of a rampart and moat in the 1140s or 50s. A church was also built, St Clements, some decades later.

The name of the town. Saxo was the first Dane who wrote about the town of Copenhagen. In his major work about the history of the Danes, commissioned by Bishop Absalon in the decades around 1200, the town is described as Portus Mercatorum, i.e. the Merchants' Harbour, or in the Danish of that time Købmannahavn. In a letter from the Pope dating from 1186 the town is simply named Hafn, meaning Harbour. It is thought, however, that from the outset the town's name was Købmannahavn, i.e. Merchants' Harbour, and that the nomenclature Hafn is only the short version, used in the same way as "the Sound" meaning Øresund.

Det ældste København.

Copenhagen in its earliest form.



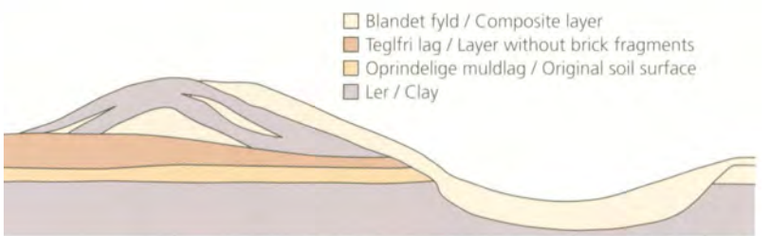
Fiskeknogler fra omkring år 1100 fundet i Mikkel Bryggers Gade.

Fish bones from around 1100, found in Mikkel Bryggers Gade.



Byens første befæstning fra 1100-årene, som den blev set under bebyggelsen ved Domhuset på Nytorv.

The town's first fortification, from the 12th century, as seen underneath the buildings beside the Courthouse at Nytorv.



Teorien om de to tidlige byer. De ældste teorier om Københavns opståen går ud på, at byen skulle være startet som to bebyggelser: én, der lå mellem det nuværende Rådhuspladsen og Gammeltorv-Nytorv, og én, hvor Nikolaj Kirke nu ligger, altså tæt ved Kongens Nytorv. Det antoges, at byen ved Gammeltorv-Nytorv var den oprindelige landsby, mens bebyggelsen ved Nikolaj var opstået som en handelsplads. Efterhånden som bebyggelsen groede, skulle de to byer være smeltet sammen.

Da man i mange år ikke fandt beviser på en tidlig handelsplads ved Nikolaj, blev denne teori opgivet. Derimod fandt man i Lille Kirkestræde mellem Nikolaj Kirke og Højbro Plads klare beviser på, at bebyggelsen her ikke var indledt før engang i 1220'erne. Før den tid havde området været anvendt til græsning af kvæg.

Dette sås som et bevis på, at man på dette sted var uden for den ældste by, som arkæologiske fund havde vist lå ved Rådhuspladsen.



Hvad jorden gemmer. I de senere år er der udviklet nye metoder til at uddrage mere viden fra de jordlag, arkæologerne undersøger. Hvor man før ledte efter spor af tidligere menneskers bygninger og genstande, er man nu begyndt at undersøge de jordlag, som stammer fra disse menneskers aktiviteter. Man ser på jordlagenes udseende og undersøger indholdet af planterester og dyreknogler med det formål at finde ud af, hvad der er foregået, da jordlaget i sin tid blev afsat. Sådanne undersøgelser hedder makrofossilanalyser og foretages af botanikere og zoologer.

Strandengen. København er – som Ørestaden – anlagt i et område, hvor der tidligere var store, fugtige strandengsarealer ud til kysten. Mellem Rådhuspladsen og Gammeltorv-Nytorv er der under affaldslagene fra den ældste by fundet velbevarede strandengstørv fra tiden, før man begyndte at bygge og bo på stedet, det vil sige i 1000-årene. Frø og plantedele viste, at der var tale om en bevoksning præget af rør og siv, det vil sige en tæt rørsump.

Ved en arkæologisk undersøgelse i Lille Kirkestræde fandt man spor efter en hel anden type strandeng. Den bevoksning, der har været herude et stykke øst for den ældste by, har i tiden før 1220'erne været domineret af helt lave planter uden rørbevoksning. Der var her tale om en strandeng, der var forandret som et resultat af mange års græsning af kvæg.

Dette blev tolket som et bevis på, at den ældste by lå inde ved Rådhuspladsen, mens man herude havde haft sine græsningsarealer, indtil byen i 1220'erne var blevet udvidet mod øst.

Øl. I Lille Kirkestræde blev der ved den arkæologiske undersøgelse fundet store mængder af pors og humle i strandengslagene. Disse to planter kan ikke gro på en strandeng, og de gror ikke de samme steder. De må altså være blevet ført sammen ved en eller anden proces og derefter transporteret herud på engen øst for den tidlige by af mennesker, formodentlig som affald. Den eneste kendte proces, hvor pors og humle bliver bragt sammen, er ølbrygning. Vi må altså forestille os, at der er blevet brygget øl med disse urter inde i den lille by i tiden før 1220.

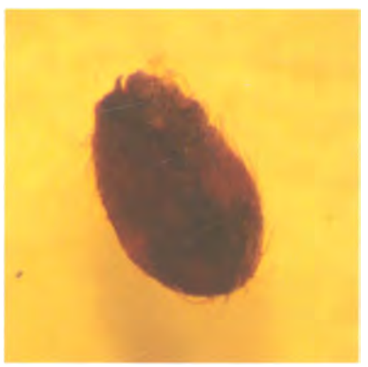
Pave Urban III's stadsfæstelsesbrev fra 1186.

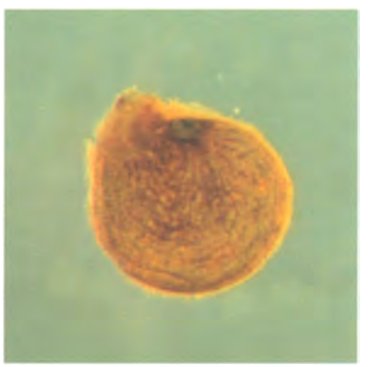
Pope Urban III's letter from 1186.



Den ældre teori om byens opståen: en landsby ved Vor Frue og en handelsplads ved Nikolaj Kirke.

The old theory about the origins of the town: a village surrounding Vor Frue Kirke and a trading place at St Nikolaj Kirke.





Porse- og humlefrø fundet i jordlag fra 1220'erne i Lille Kirkestræde.

Seeds of bog-myrtle and hops found in earth-layers from the 1220s in Lille Kirkestræde.

The theory about the two early towns. The oldest theories about how Copenhagen developed are based on the idea that the town originally began as two settlements: one situated between the present Rådhusplads and Gammeltorv-Nytorv, and one where Nikolaj Kirke (St Nicholas Church) now lies, close to Kongens Nytorv. It is thought probable that the area at Gammeltorv-Nytorv was the site of the original village, while the settlement at St Nikolaj developed as a trading-place. Eventually as the settlements grew they merged together.

After many years no evidence was found of an early trading-place in the Nikolaj Kirke area, and so this theory was abandoned. On the other hand, in Lille Kirkestræde, between Nikolaj Kirke and Højbro Plads, clear evidence was found that the settlement there did not exist before some point in the 1220s. Before that time the area was used for cattle-grazing.

This was seen as proof that this place was outside the earliest town, which archaeological finds had shown to be situated at the Rådhusplads.

The secrets of the soil. In recent years new methods have been developed for extracting further knowledge from the earth-layers investigated by archaeologists. In earlier archaeology the search was for traces of buildings and objects belonging to the peoples of earlier times; now the focus is on investigation of the soil-layers which come from the activities engaged in by those peoples. Observation of the appearance of the soil-layers and investigations of the contents, in terms of plant remains and animal bones, can lead to knowledge about what was happening there at the time when the soil-layer was deposited. These investigations are called macrofossil analyses and are carried out by botanists and zoologists.

The salt marsh. Copenhagen – like Ørestad – was built on a location where there had previously been large areas of marshy land stretching out to the coast. Between the Rådhusplads and Gammeltorv-Nytorv, under the refuse layers from the earliest town, well-preserved layers of salt-marsh peat have been found, dating from the time before people settled there, i.e. in the 11th century. Seeds and plant-remains show that the vegetation was dominated by reeds and rushes, indicating that this was a dense swamp.

During an archaeological investigation in Lille Kirkestræde, evidence was found of a totally different type of salt marsh. The vegetation that had grown here, a little to the east of the earliest town, had been dominated before the 1220s by very low plants with no reedy growth. This was a case of a salt marsh that had changed character as a result of many years of grazing by cattle.

This was interpreted as evidence that the earliest town was located near the Rådhusplads, while there had been a grazing area to the east until the 1220s, when the town was extended over this area.

Beer. During the archaeological investigation in Lille Kirkestræde, large quantities of bog-myrtle and hops were found in the marsh layers. These two plants cannot grow on salt marsh, and they do not grow in the same places. They must therefore have been brought together, by some process or other, and then transported by human hands out to the marsh east of the early town, probably in the form of refuse. The only process known to involve both bog-myrtle and hops is beer-making. We therefore have to surmise that beer was brewed with these plants in the developing town in the time before 1220.



En strandeng, der
ikke har været græsset.

A salt marsh that has
not been used for grazing.



➔ En strandeng, der har været græsset.

A salt marsh that has been used for grazing.

Vikingetidsgården på Kongens Nytorv
The Viking-Age farm at Kongens Nytorv

Grøftefylden fortæller. På Kongens Nytorv fandt arkæologerne ved den store udgravning til Metrostationen forbløffende nok en række grøfter langs Magasins facade. Grøfterne må formodentlig have dannet skel mellem en ejendom, der oprindelig har ligget inde under det nuværende Magasin, og strandengene udenfor i det område, der i dag dækkes af Kongens Nytorv.

Der må altså alligevel – på trods af hvad man antog – have ligget en bebyggelse her, og endda før den lille handelsplads, København, opstod lidt før år 1100.

Kysten har dengang ligget lige syd for dagens Vingårdsstræde, og skellet har altså løbet vinkelret ned på kystlinien. Den ældste grøft kunne dateres til et sted mellem sidste halvdel af 1000-tallet og den første halvdel af 1100-tallet, det vil sige fra overgangen mellem Vikingetid og Middelalder. Men den bebyggelse, den ældste grøft har afgrænset, er sandsynligvis endnu ældre, idet der blandt andet blev fundet en knogle, der kunne dateres helt tilbage til 1020. Hver grøft har kun fungeret et stykke tid. Efterhånden som en grøft groede til med affald og bevoksning, markerede man atter skellet ved at grave en ny. Til sidst opgav man grøfterne og byggede en lille jordvold og et lavt risgærde. Dette skete omkring 1275.

Vi kender intet til selve bebyggelsen, der har ligget bag ved grøfteskellet, men fylden i grøfterne fortæller om livet på gården og om de vilkår, det nærliggende hav har budt beboerne.

De mennesker, der har slået sig ned her, har valgt et sted, der har ligget på strandengen tæt ved havet. Hugspånerne fra deres arbejde med tømmer blev fundet lige over den naturlige overflade.

Det har ikke været uden komplikationer at bo her. Området har jævnligt været oversvømmet af havet; selv den højestliggende del længst væk fra vandet viste tegn på gentagne oversvømmelser blandt andet i form af opskyllet tang.

Gårdens beboere har dog dyrket jorden i nærheden, for de vandholdige grøfter er blevet brugt til rødning af hamp og hør, som blev brugt til tovværk og hørklæde. Rødning er den behandling, man giver disse planter, når de er høstet, så de dele af planterne, der omgiver de anvendelige fibre, kan rådne væk. Der blev fundet store mængder af begge planter, blandt andet et helt intakt bundt af hør, som blev holdt nede af tørv. Dette er formodentlig den måde, man har forhindret planterne i at flyde op til overfladen af grøftens lave vand.

Gårdens mennesker og dyr. Længst væk fra kysten viste store mængder af gødning og strøelse i grøfterne, at gården har haft kvæg på stald. Det har været en vanskelig opgave at holde liv i de opstaldede dyr vinteren igennem. Dyrene er blevet fodret med hø slået på fugtige enge, men det har ikke været muligt at skaffe nok foder ad denne vej. I hvert fald er høet blevet suppleret med løv og småkviste fra krat og træer i en nærliggende træbevoksning.

Dette kendes langt op i 1800-årene, hvor det var almindeligt, at køerne var så underernærede, at de skulle bæres ud på marken efter vinteropstaldningen, når det første græs begyndte at dukke op. Det betød, at køerne ikke gav mælk om vinteren. Man var derfor henvist til de produkter, der kunne holde sig vinteren igennem som smør og ost.

Men grøfterne indeholdt ikke kun gødning fra dyr. Affald fra husholdningen og ikke mindst store mængder latrin var også endt i grøfterne samme sted. Gårdens folk har måske, som det kendes langt senere, brugt stalden, når de var trængende. Man brugte mos som toiletpapir, og det er den store koncentration af dette blandet med frø og dele fra planter kendt fra husholdningen, der viser, at der er tale om latrinaffald.

A story told by a ditch. During the major excavation for the Metro station at Kongens Nytorv, the archaeologists were surprised to find a series of ditches running along the façade of the department store, Magasin. The ditches had probably formed the division between a property that was originally situated under the present Magasin and the salt marsh area beyond, which today is covered by Kongens Nytorv.

It seems that – in spite of what has previously been assumed – there must therefore have been a settlement here, even before the small trading place of Copenhagen came into being just prior to the year 1100.

The coast at that time was just to the south of what today is Vingårdsstræde, and the dividing ditch must thus have met the coastline at a right angle. The earliest ditch could be dated to between the second half of the 11th century and the first half of the 12th, which is in the transition from the Viking Age to the Middle Ages. But the settlement for which the oldest ditch was the boundary was probably even older, since e.g. a bone was found there dating right back to 1020. Each ditch only functioned for a certain period of time. Eventually, as each ditch became overgrown or filled up with refuse, the boundary was marked out again by digging a new one. Finally the ditches were given up and a small earth rampart with a low wattle fence was built instead. This took place around 1275.

We know nothing about the settlement that lay behind the dividing ditches, but the in-fill in the ditches can supply for us a story about the life on the farm there and the conditions which this sea-side location offered to its occupants.

The people who settled here chose a site on the salt marsh close to the sea. Wood-flakes from timber work they carried out were found just above the natural surface.

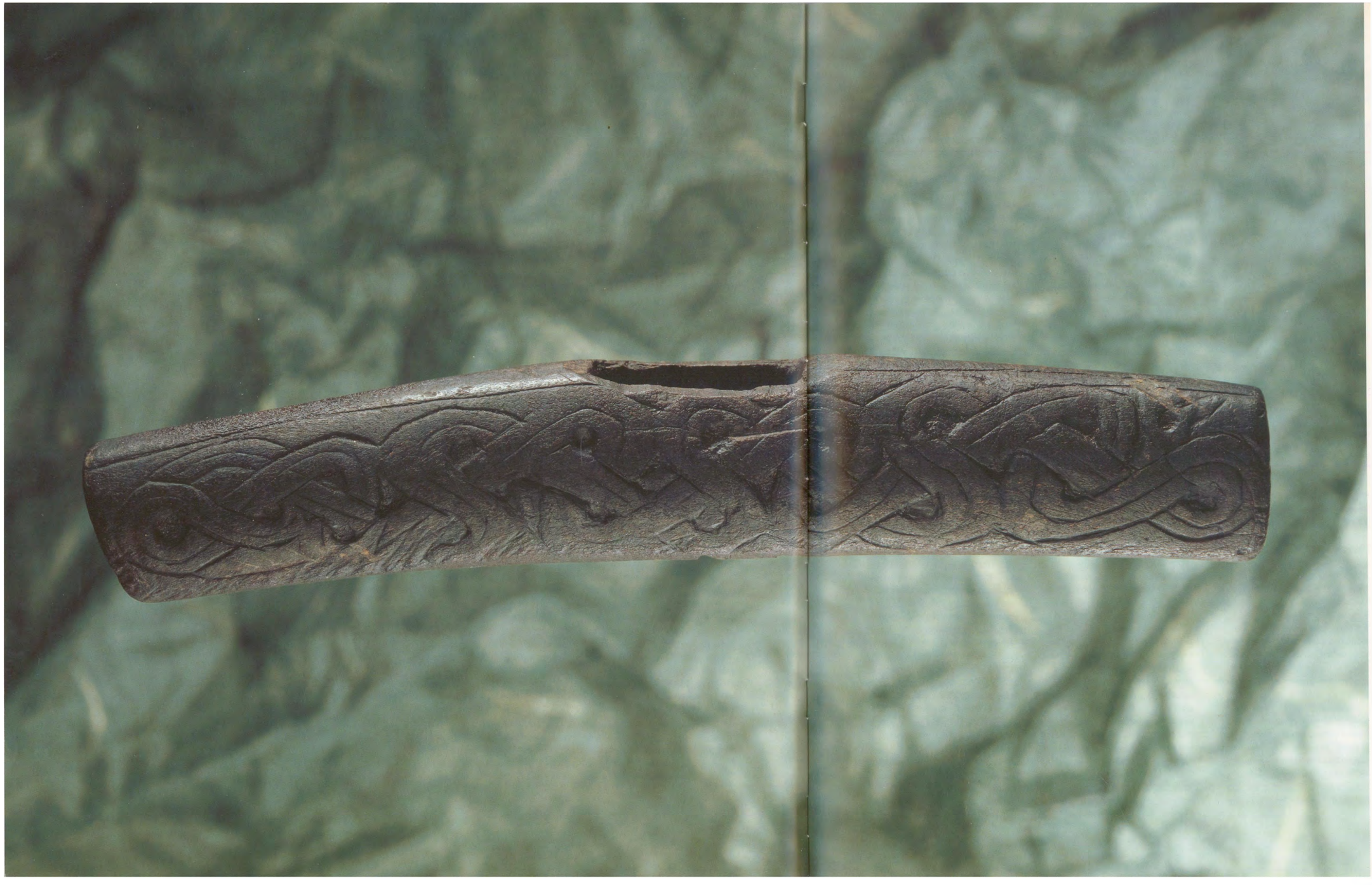
Living here would certainly not have been without complications. The area was regularly flooded by the sea; even the highest-lying part, furthest away from the water, showed signs of frequent flooding e.g. in the form of washed-up seaweed.

The residents of the farm must have cultivated land nearby, however, because the water-filled ditches were used for rotting hemp and flax, which were used for rope-making and linen cloth. This rotting is a process used for these plants when they have been harvested, so that the parts of the plants that surround the usable fibre can rot away. Large quantities of both plants were found, including a complete intact bundle of flax, which had been held down by turf. This is probably the way plants were prevented from floating up to the surface of the shallow water in the ditch.

The people and animals on the farm. In the area furthest from the coast there were large quantities of manure and straw in the ditches, showing that the farm must have had cattle in stalls. It would have been a difficult task to keep animals alive in stalls through the winter. The animals were fed with hay cut from damp meadows, but it was not possible to find enough food by these means. The hay was supplemented by leaves and twigs taken from undergrowth and trees in a nearby wood.

This method was still used far into the 19th century, when it was common for cows to be so undernourished after being kept in byres over the winter that they had to be carried out to the fields when the first grass began to grow. This meant that the cows did not give milk during the winter. One therefore had to rely on the products that could keep throughout the winter months, such as butter and cheese.

But the ditches held more besides manure from the cattle. Refuse from the household and not least human latrine waste in large quantities had also ended up in the same ditches. The people who lived on the farm possibly used the cattle-stalls in cases of urgency, as has been known from much later times. Moss was used as toilet paper, and it is the large concentration of moss mixed with seeds and remains of plants known from domestic use that shows that this is human waste.



Stokkehåndtag fra sen Vikingetid (1000-tallet).

Handle of a walking stick from the late Viking Age (11th century).

Dateringer. Et af de vigtigste problemer at få løst ved en arkæologisk undersøgelse er en datering af de spor efter menneskelig aktivitet, man støder på. Tidligere var man henvist til blot at se på de genstande og rester af bygninger, man stødte på, og derpå ud fra erfaring og viden om deres optræden at bestemme alderen på det, man havde fat i. Men ved hjælp af naturvidenskaberne er det nu muligt med flere forskellige metoder at datere for eksempel trækul, træ, frø- og plantedele, knogler, læder, teglsten og mørtel.

Den mest præcise metode er dendrokronologi, som er en datering ved hjælp af en registrering af årringe i træ. Gode år giver kraftige årringe, mens år med dårlige vækstbetingelser giver tynde. Den varierende takt i rækkefølgen af disse giver en helt speciel "stregkode" over en årrække. Denne er indsamlet for visse træsorters vedkommende fra i dag og langt tilbage i tiden. Det er så muligt at lægge "stregkoden" på et fundet stykke træ op mod den kendte tidslinie af bestående af årringe i træ og derved finde den mest sandsynlige datering for træet. Er man heldig, kan man endda få klarlagt, hvornår på året træet er fældet.

AMS og C-14 datering er begge metoder, der måler den tilbageværende radioaktive energi i de kulstofforbindelser, der er dannet i levende organismer. Her opnås altid kun en rammedatering, for eksempel 1050-1150. Det er muligt at indsnævre dateringsrammen, men det er til gengæld langt dyrere, da der skal måles længere på stoffet.

Termoluminiscens-, luminisens- eller blot TL-datering bygger på det faktum, at visse mineraler optager og oplagrer energi fra den radioaktive stråling, de udsættes for i naturen. Når genstanden opvarmes, frigøres denne energi. Ved at måle den opsamlede energi i genstanden kan man så bestemme den tid, der er gået siden sidste opvarmning. Metoden bruges på materialer, der har været udsat for kraftig opvarmning som for eksempel teglsten eller kalkmørtel.

Maden. Husholdningsaffaldet og latrinen i grøfterne viste, at gårdens folk har levet af en alsidig kost baseret på kød, kornprodukter og et rigt udvalg af grønsager samt frugt, når sæsonen tillod det. I husholdningsaffaldet var der knogler fra får og lam, ko, svin samt høns og gæs. Høns har man kunnet spise hele året, mens de øvrige dyr blev slagtet, når sommerens overskudsproduktion skulle væk inden den lange vinter, hvor opstaldningen og fremskaffelsen af tilstrækkelig foder bød på store problemer. Der har formodentlig været tale om gårdens egne husdyr.

Da gården eksisterede, var Danmark katolsk, og kirken krævede faste før alle større højtider samt flere dage om ugen. Kød var bandlyst under fasten, og det betød, at fisk spillede en vigtig rolle i kosten året rundt. Gårdens nærhed til havet har gjort adgangen til fisk nem. I disse år var især sildefiskeriet i Øresund overmåde rigt, så det er ikke sært, at netop denne fisk optræder i langt den største mængde. Torsk og ål har dog også spillet en væsentlig rolle.

Der blev kun fundet få forkullede korn af hvede og rug. Det skyldes nok, at kornmad, i den form man spiste den, forholdsvis let nedbrydes i organismen og derfor ikke kan spores i latrinen. Der var derimod frø fra klinte, en meget generende og giftig ukrudtsplante, som har groet i rug- og hvedemarkerne og er kommet med som forurening i kornet, da det blev høstet. Blandt grønsagerne blev der fundet havekål, cikorie, som også kaldes julesalat, pastinak og sødskærm eller spansk kørvel. Den sidste gror i dag vildt, men er oprindelig indført, dvs. at den på et tidspunkt er blevet dyrket. Dens blade går fint som grønsag, og dens frø kan bruges som krydderi.

I den periode, hvor gården har fungeret, var en rig krydring af maden begyndt at blive populær. Det er derfor ikke sært, at der blev fundet dild, måske mere overraskende, at der dukkede merian op. Gårdens beboere har desuden, som det var populært i Middelalderen, spist sennep til maden. Man har formodentligt drukket hjemmebrygget øl. Fund af humle og pors tyder i hvert fald på, at øllet nok er blevet produceret på stedet, da det snarere er affald fra brygningen end affald fra det færdige produkt.

Det er langt fra alle planter, der passerer gennem det menneskelige system uden at blive nedbrudt, men dem, der gør, viser, at beboerne også har spist frugter, når de fik mulighed for det. De fleste har man nok hentet i naturen. De har blandt andet spist jordbær, hindbær/brombær, blommer/kirsebær, æbler, tyttebær, korbær og hyld. Desuden har hasselnødder kunne supplere kosten i efterårs- og vintermånederne.

Dating. One of the most important problems that has to be solved in an archaeological investigation is the dating of the traces of human activity that are encountered. Previously one had to rely on simply looking at the objects and remains of buildings that were discovered, and on the basis of experience and knowledge of their origins one could hope to determine the age of the material in question. But with the help of Natural Science it is now possible to establish dates by many different methods, e.g. using charcoal, wood, seeds and plant remains, bones, leather, brick and mortar.

The most precise method is dendrochronology, which provides datings by means of registering the year-rings in wood. Good weather in one year will result in a strong growth in the corresponding year-ring, whereas years with poor growth-conditions produce thin rings. The varying sequence of these rings forms a quite specific "bar-code" over a period of years. These sequences have been collected in respect of certain types of tree from the present day far back in time. It is thus possible to match the "bar-code" on a piece of excavated wood with the known time-line consisting of year-rings in wood, and thus to find the most likely date for the wood. If one is lucky, one can even establish at what time of year the tree was felled.

AMS and C-14 dating are both dating methods that measure the remaining radioactivity in the carbon compounds that are created in living organisms. These processes always result in a broad framework dating, for example 1050-1150. It is possible to reduce the dating framework, but that is much more expensive, since the material has to be analysed for a much longer time.

Thermo-luminescence- or TL-dating is based on the fact that certain minerals absorb and store energy from the radiation to which they are subjected by the natural environment. When the object is heated this energy is released. By measuring the accumulated energy in the object, one can therefore establish the time that has elapsed since it was previously heated. This method is used on materials that were subjected, when they were made, to a considerable degree of heating, such as bricks or mortar.

Food. The domestic refuse and latrine-remains in the ditches show that the people who lived on the farm had a varied diet based on meat, cereal and a rich selection of vegetables and fruit according to season. In the household refuse there were bones from sheep and lambs, cows, pigs, hens and geese. Hens would have been available to eat all year round, while the other animals would have been slaughtered when the surplus of the summer months had to be reduced before the long winter, when stabling and provision of sufficient fodder caused major problems. No doubt the animals belonged to the farm itself.

When this farm existed Denmark was Catholic, and the Church required fasting before all major feast-days and several days of the week. Meat was banned during fasts, and this meant that fish played an important role in the diet all year round. The proximity of the farm to

the sea provided easy access to fish. In those years the herring fishing in Øresund was particularly plentiful, so it is hardly surprising that herring in fact occurs in the largest quantity. Cod and eel have also been important, however.

There were only a few finds of charred husks from wheat and rye. This is no doubt because cereal foods were eaten in a form that was relatively easily broken down in the organism and therefore cannot be traced in latrine-waste. There were, however, seeds of corn cockle, a very bothersome and poisonous weed that grew in rye and wheat fields and became contamination in the harvested produce. Among the vegetables were cabbage, chicory, parsnips and Spanish chervil. The last mentioned plant grows wild, but its leaves make a good vegetable, and its seeds can be used as seasoning.

During the period of functioning of the farm it began to be popular to flavour food heavily with herbs. It is therefore not strange that dill was found, but perhaps more surprising that there was also marjoram. The occupants of the farm also used mustard with their meals, as was popular in the Middle Ages. Home-brewed beer was probably drunk with meals. Finds of hops and bog-myrtle at any rate suggest that beer was produced at the site, since the remains appear to be refuse from brewing rather than from the finished produce.

Not all plants by any means pass through the human digestive system without being broken down, but those that do show the people here also ate fruit when they could. Most of it was probably collected from wild plants. There was evidence of strawberries, raspberries/blackberries, plums/cherries, apples, cowberries, dewberries and elderberries. Hazelnuts were also used as supplements to the diet in the autumn and winter months.

Sild.

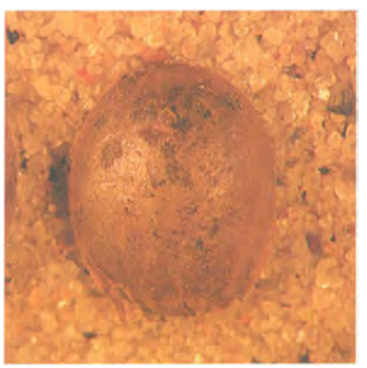
Herring.



Cikorie (tv) og hampefrø (th).

Chicory (left) and hemp seeds (right).





Byen vokser til købstad
The village grows into a market town

Sprængte rammer. Omkring 1200 begyndte København at sprænge sine hidtidige rammer. Startskuddet blev biskop Absalons anlæggelse af en ny kirke viet til Vor Frue på en lav bakke lidt uden for byen. Det er her, Vor Frue stadig ligger.

Knap 4 årtier senere fortælles det, at der oprettes et franciskanerkloster, et såkaldt gråbrødrekloster i København. Stedet kendes endnu på navnet: Gråbrødretorv. Sådanne tiggermunkeklostre blev altid anlagt i byerne, fordi det var meningen, at munkene skulle leve af det tiggeri, de kunne bedrive der. Der må altså have været by på stedet her, da klosteret blev anlagt.

Arkæologiske undersøgelser i Kompagnistræde og i Lille Kirkestræde viser desuden, at bebyggelsen på disse steder tæt ved den daværende kyst er sat ind i 1220'erne. Den lille bys grænser må altså være opgivet på dette tidspunkt. Dette passer meget godt med de foreløbige arkæologiske iagttagelser af den ældste befæstning, idet den synes at være opgivet omkring år 1200.

Vi ved ikke ret meget om denne tidlige by. Men da den allerede i 1249 plyndres og afbrændes af lybeckerne, kan den ikke have været uden en vis betydning.

Byen ejedes af Roskilde Bispestol, og i 1254 gav biskop Jakob Erlandsen København sin første stadsret, som er den lovgivning, der gjaldt i byen. I disse år groede byen enormt. I løbet af 1200-årene udvidedes den til et areal, der er knap 20 gange større end det, den lille handelsplads dækkede. Om denne udvidelse er sket langsomt eller med ét hug, ved vi faktisk ikke, men noget kunne tyde på det sidste. I hvert fald nævnes den nye store købstads befæstning i stadsretten. Dette kunne vel tyde på, at byarealet, da den blev givet, har været veldefineret, og stadens grænser kendte, for en befæstning lægges jo omkring en by. Denne middelalderbefæstning er blevet undersøgt flere steder i de første årtier af 1900-årene. Men de metoder og muligheder, der var til rådighed for datidens fagfolk, gjorde ikke nærmere datering mulig.

Kirker og klostre. I løbet af 1200-årene fik byen ikke bare én ny stor kirke, Vor Frue. Som andre middelalderlige købstæder fik den flere sognekirker. Tæt ved Vor Frue kom Skt. Peder, i dag Skt. Petri og den eneste middelalderkirke, der er tilbage i byen i dag. I den anden ende af byen rejstes Skt. Nikolaj. Den ødelagdes senere ved den store brand i 1795, men blev genopbygget i begyndelsen af 1900-årene.

Gråbrødreklosteret oprettedes som byens første kloster; derefter fulgte Helligåndsklosteret oprettet i 1300-årene, i dag Helligåndshuset og -kirken på Strøget. Som det sidste kom Clare Kloster lige før år 1500. Dets eksistens kan endnu spores i gadenavnet Klareboderne. Klosteret lå ved den nuværende Gammel Mønt.

Byen fik også flere kapeller i den sene Middelalder: et for enden af det nuværende Skt. Gertrudsstræde på Kultorvet viet til Skt. Gertrud, desuden et viet til Skt. Anne. Dette flyttede noget rundt, men endte formodentlig uden for byen nær det sted, hvor Skt. Annæ Plads nu ligger. I anden halvdel af 1200-årene får byen desuden et spedalskhedshospital, en såkaldt Skt. Jørgensgård, der kom til at ligge et eller andet sted ude ved den sø, der siden fik navn efter institutionen.

The framework cannot hold. Around 1200 Copenhagen began to grow beyond its previously existing boundaries. It began with Bishop Absalon's construction of a new church dedicated to Our Lady on a small rise just outside the town. This is where the present Church of Our Lady (Vor Frue Kirke) – Copenhagen's Cathedral – now lies.

According to the records, nearly four decades later a Franciscan monastery, a "Grey-friars' monastery", was built in Copenhagen. The site is

still known by the name Gråbrødretorv. Friaries of this type were always built within towns, because the intention was that the monks would live from the begging activity they could pursue there. There must therefore have been a developing town around this site when the friary was constructed.

Archaeological investigations in Kompagnistræde and in Lille Kirkestræde moreover show that building around these areas close to the then coastline began in the 1220s. The boundaries of the small town must therefore have been abandoned by that time. This fits well with the archaeological observations so far relating to the oldest fortifications, since they seem to have been given up around the year 1200.

We do not know very much about this early town. But by 1249, when it was plundered and burned by attackers from Lübeck, it must already have acquired a certain significance.

The town was owned by the Bishopric of Roskilde, and in 1254 Bishop Jakob Erlandsen issued to Copenhagen its first town law, setting out the legal measures that applied in the town. Around this time the town grew enormously. In the course of the 13th century it developed to cover an area almost 20 times that of the little trading-place. Whether this development happened slowly or all at once is something we do not know, but there are indications that the latter may have been the case. At any rate the fortifications of the new larger market-town are mentioned in the town law. This may well mean that the given area of the town was well defined and the boundaries were known, since the fortifications were obviously placed around the outer rim of the town. These medieval fortifications were investigated in several places in the early decades of the 20th century. But the methods and possibilities available to the archaeologists of that time did not enable precise dating.

Den fuldt udbyggede middelalderlige købstad København med kirker og klostre omkring år 1530.

The medieval market town of Copenhagen, fully developed with churches and monasteries, around 1530.



Helligåndshuset var oprindelig hospitalsfløjen i 1400-årenes Helligåndskloster (tv).

Skt. Petri Kirke i Nørregade er den oprindelige Skt. Peders Kirke fra Middelalderen (th).

Helligåndshuset was originally the hospital wing in the 15th century Helligånd monastery (left).

St Petri Church in Nørregade is the original St Peter's Church from the Middle Ages (right).





Churches and monasteries.
In the course of the 13th century the town acquired not just one large new church, Vor Frue. Like other medieval market towns it came to have several parish churches. Close to Vor Frue was St Peter's, now St Petri, which is the only medieval church left in the town today. At the other end of the town St Nikolaj's Church was built. It was destroyed later in the major fire of 1795, but was rebuilt at the beginning of the 20th century.

The Greyfriars' monastery was the first monastery to be established in the town; after that, in the 14th century, there followed the Monastery of the Holy Spirit, today called Helligåndshuset, on Strøget. The last was St Clare's Convent, built just before 1500. Its existence can still be traced in the street name Klareboderne. The convent was situated near where Gammel Mønt is today.

The town also acquired several chapels in the late Middle Ages: one at the end of the present St Gertrudsstræde beside Kultorvet, dedicated to St Gertrud, and another dedicated to St Anne. The latter was moved around, but ended up on the site where St Annæ Plads lies today, probably outside what was then the town area. In the second half of the 13th century the town also acquired a leprosy hospital, "St Jørgensgård", which was situated somewhere out near the lake which later took its name from the institution.



København befæstning på Kongens Nytorv. Forventningerne til den arkæologiske udgravning i metrostationsgruben Kongens Nytorv var store. Man var overbevist om, at der her ville blive mulighed for at finde den middelalderlige vold og grav for første gang i Nyere Tid, og tilmed var den middelalderlige befæstning aldrig tidligere blevet undersøgt på denne østlige side af byen. Den dukkede da ganske rigtigt også op, og som så ofte inden for arkæologien gav undersøgelsen af den en række forbløffende resultater.

Befæstningen bestod ikke overraskende af en vold med voldgrav foran ud mod strandengene og Sundet. Dateringerne peger på, at den må været anlagt omkring 1290, måske allerede i 1280'erne, og den har fra første færd været forsynet med en bymur af teglsten og tårne. Dette sidste var en nyhed, for ingen af de tidligere undersøgelser af den middelalderlige vold havde afsløret dette.

Desuden fortæller de skriftlige kilder, at volden i hvert fald fra Nørreport over Vesterport til kysten får erstattet det hidtidige plankeværk med en mur og tårne så sent som i perioden 1520-36. Men den arkæologiske undersøgelse afslørede altså, at den østre befæstning her på det senere Kongens Nytorv allerede havde murværk fra første færd flere århundreder før.

Befæstningens placering tydede desuden på, at den store byudvidelse var planlagt. Volden var nemlig anlagt præcist oven på de ældre skelgrøfter fra gården fra den sene Vikingetid. Nogen, og det må jo have været byens herre, altså roskildebispen, må have besluttet, at byen ved sin udvidelse skulle gå hertil og netop inkorporere denne ejendom i byarealet.

Det leder uvægerligt til spekulationer om denne gård mon har været bispens egen? Har den måske allerede før 1280'erne fungeret som ladegård til borgen, som den gør langt senere? Vi ved det ikke, men tanken er besnærende. Sikkert er det, at den ejendom, der ligger her lige inden for bymuren, langt op i tiden bevares som en meget stor grund i byen.

Anlæggelsen af volden ser ud til at være gået hurtigt. Man havde sløjfet gårdens skel og udlagt et kraftigt lag latrinmateriale over det. Dette lag indeholdt foruden en del planter, man havde spist, også velbevarede fluepupper og små orme, som viser, at jordarbejderne er foregået om sommeren.

The Copenhagen fortification at Kongens Nytorv. There were great expectations surrounding the archaeological excavation in the pit for the Metro station at Kongens Nytorv. The conviction prevailed that here there must be a chance of finding the medieval rampart and moat for the first time in modern history; moreover, the medieval fortification on the eastern side of the town had never before been investigated. True enough, the fortification actually came to light, and as is so often the case in archaeology, the investigation produced a series of surprising results.

The fortification consisted, not surprisingly, of a rampart with a moat in front of it, facing towards the marshy shore and Sound. The datings indicate that it must have been built around 1290, or perhaps as early as the 1280s, and from its earliest days it had a town wall of brick, with towers. This latter feature was new information, because none of the earlier investigations of the medieval rampart had revealed this.

In addition, according to the written sources, at any rate from Nørreport to Vesterport and over to the coast, the rampart had had its previous wooden structure replaced with a wall and towers as late as in the period 1520-36. But the archaeological investigation revealed that the eastern fortification here, at what later became Kongens Nytorv, already had a wall in its first phase several centuries before.

The placing of the fortification also suggested that the large-scale town extension was planned. The rampart was in fact built exactly over the earlier dividing ditches from the late Viking Age farm. Someone, and it can hardly have been anyone other than the town's overlord, i.e. the Bishop of Roskilde, must have decided that the town's development should go this far and thus incorporate this property in its area.

This inescapably leads to speculation as to whether this farm may have been the Bishop's own. Could it perhaps have served, even before the 1280s, as a farm for supplying the castle, as it did much later? We do not know, but the idea is alluring. What is certain is that the property, lying here just within the town wall, was preserved throughout a long period as a very large property within the town.

The building of the rampart looks as if it was done hastily. The boundary of the farm was demolished and a thick layer of latrine-waste laid over it. This layer contained, in addition to a number of plants that had been eaten, a large quantity of well-preserved fly-pupæ and small worms, showing that the construction work took place during the summer.

Gødningslaget fra 1280'erne på Kongens Nytorv.

The manure layer from the 1280s at Kongens Nytorv.

Fluepupper fra 1200-årene fundet på Kongens Nytorv.

Fly pupæ from the 13th century found at Kongens Nytorv.



Bymur og tårn
Town wall and towers

Vigtig by. Det var en stor overraskelse, at det kunne konstateres, at Københavns vold på det senere Kongens Nytorv havde været udstyret med en bymur fra den første tid. Befæstede byer fra 1200-årenes Danmark kendes, men der er oftest tale om jordvolde evt. med palisadeværk på voldkronen og voldgrave. Det er kun en egentlig befæstningsby som Kalundborg, der har stået med mure og tårne på denne tid.

Københavns murede befæstning må dog mere end antyde, at denne by har været vigtig. Hvorfor ellers ofre de enorme ressourcer en bymur og tårne har krævet. Vi ved ikke, hvornår befæstningsbyggeriet sætter ind, men den murede befæstning nævnes i byens første byret i 1254. Om den blot er planlagt på dette tidspunkt, eller om arbejdet rent faktisk er sat i gang, ved vi ikke, men befæstningen af byens østside tæt ved vandet, hvor den arkæologiske undersøgelse på Kongens Nytorv foregik, viste, at den her blev bygget i 1280-90.

En befæstning af format som Københavns blev ikke bygget på få år. Det er derfor muligt, at befæstningen er startet meget tidligere i århundredet på den anden side af byen ved den nuværende Rådhusplads, og man efter adskillige årtier er nået om til den østre befæstning omkring 1290. 1200-årene var urolige år, ikke mindst for København. I 1249 bliver byen plyndret og afbrændt af lybeckerne. 10 år efter tager kong Christoffer d. 1. under en konflikt med roskildebispen magten i byen, hvorefter bispens allierede fyrst Jaromar erobrer byen tilbage. Der har derfor været rigelig med grunde til at styrke byens forsvar.

Kong Hans' Vingård. Det hus, som i dag rummer Restaurant Kong Hans i Vingårdsstræde, er Københavns ældste stående bygning. På den store grund ud mod befæstningen, hvor der allerede lå en gård i 1000-årene, bygges i første halvdel af 1400-årene et stort stenhus af tegl. Huset var af så mægtige dimensioner, at det kan sidestilles med hovedbygningerne på de store borge Krogen, det senere Kronborg i Helsingør, Malmøhus og Københavns eget slot, alle fra næsten samme tid.

Det er altså en usædvanlig bygning, der er tale om. Sin nutidige typiske københavnerfacade til trods står der her en to etager høj særdeles velbevaret senmiddelalderlig munkestensbygning inde bag pudsen. Kælderen, hvor restauranten i dag er, var oprindelig en stueetage, som har rummet 3 separate overhvælvede lagerrum, mens overetagen bestod af to sale og et mindre rum bagerst. Den forreste sal har haft 2 spidsbuede vinduer i gavlen, som har vendt ud mod stranden. Her har der været en pragtfuld udsigt over vandet mod Bremerholm. Bygningen kan meget vel have været et forsøg på en modernisering af den eksisterende gård, som formodentlig har bestået af en række huse af varierende alder og med forskellige formål.

Bygherren til dette hus må have været en person med magt over tingene. Vi ved ikke, hvem der byggede det, men nye undersøgelser har vist, at huset nok er ældre end hidtil antaget og er bygget engang i første halvdel af 1400-årene. Erik af Pommern kan meget vel have stået for opførelsen af det, da han i 1416 overtager København fra roskildebispen og derfor er herre i byen. Gården kan blandt andet have fungeret som ladegård til slottet.

Affald fra en fornem have. I kanten af voldgraven lige over vandlinien blev der fundet et stort antal frø fra planter, der har været anvendt i en ikke helt kedelig husholdning: Morbær, valmue, hyld, figen, dyrket gulerod, havekørvel, spinat, pære, æble, sort sennep, pastinak, dild, persille, havesalat, kransbørste og katteurt. Flere af disse arter er aldrig før fundet så tidligt i Danmark. Affaldet må være udsmid fra et yderst velassorteret havebrug meget tæt ved. Det må være endt på stedet engang i 1400- eller 1500-årene før de senere ombygninger af befæstningen. Dette bringer tanken hen på Vingården –

den store gård i Vingårdsstræde. Har vi her et argument for dens funktion som ladegård for Slottet? Ingen havde vel en mere fornem husholdning end Kongen.

Important town. It was a great surprise to discover that Copenhagen's rampart in the Kongens Nytorv area had been equipped with a town wall from its earliest phase. Town fortifications from the 13th century are known in Denmark, but usually they consist of earthen ramparts, possibly with palisades on top of them, and moats. There was only one other genuinely fortified town, Kalundborg, which had walls and towers at that time.

Copenhagen's walled fortification must therefore be a strong indication that this town was important. Why else sacrifice the enormous resources a town wall and towers must have required? We do not know when the construction of the fortifications began, but a walled fortification is mentioned in Copenhagen's first town law in 1254. Whether it was only planned at that stage or was in fact in the process of being built is not known to us, but the fortification of the town's eastern side, close to the water, where the archaeological investigation at Kongens Nytorv was carried out, has now revealed that this part was built in 1280-90.

A solid fortification of the type found now in Copenhagen could not have been built in a few years. It is possible, therefore, that the work on the fortification began much earlier in the century on the other side of the town, near the present Rådhusplads, and that after some decades it reached as far as the eastern rampart, by around 1290. The 13th century was a period of unrest, and this also applied to Copenhagen. In 1249 the town was plundered and burnt down by people from Lübeck. 10 years later King Christoffer 1, during a conflict with the Bishop of Roskilde, took over control of the town, and then the Bishop's ally Count Jaromar reconquered the town. There were thus good reasons for strengthening the defences of the town.

King Hans's Vineyard. The house which today contains the Restaurant Kong Hans in Vingårdsstræde is Copenhagen's oldest standing building. On the large plot of land stretching out towards the rampart, where there already was a farm in the 11th century, a sizeable brick house was built in the first half of the 15th century. The house was of such significant dimensions that it could be compared with the main buildings of the large castles of Krogen, later Kronborg, at Elsinore, Malmøhus (in Malmö) and Copenhagen's own castle, all from virtually the same time.

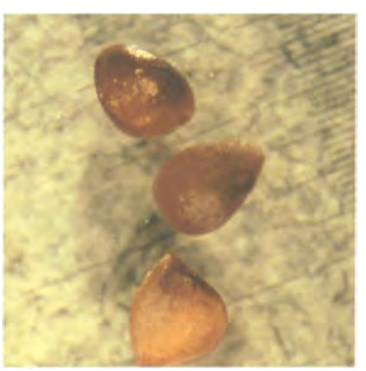
So this is a building out of the ordinary. In spite of its present typically Copenhagen facade there is in fact an exceptionally well-preserved two-storey late medieval brick building behind the plaster. The cellar, where the restaurant is today, was originally a ground floor, and contained 3 separate store rooms with vaulted ceilings, while the upper floor consisted of two large rooms and a small room at the back. The large room at the front had two windows with pointed arches in the gable facing out to the shore. Here there was a fine view over the water to Bremerholm. The building may well have been an attempt to modernise the existing farm, which probably consisted of a series of houses of varying ages and with varying purposes.

The person who commissioned this house must have been someone of considerable power. We do not know who was responsible for its construction, but new investigations have shown that the house is probably older than previously thought, and was built at some time in the first half of the 15th century. Erik of Pomerania may well have been responsible, since he had taken over Copenhagen from the Bishop of Roskilde in 1416, and was therefore in control of the town. The farm may among other things have functioned as a supply-farm for the castle.

Refuse from a distinguished garden. At the edge of the moat, just above the water line, a large number of seeds were found from a variety of plants that were used in this somewhat special household: mulberries, poppies, elderberries, figs, cultivated carrots, chervil, spinach, pear, apple, black mustard, parsnip, dill, parsley, lettuce, wild basil, and catmint. Several of these have not previously been found in Denmark from such an early date. The refuse must have been thrown out from a particularly varied and refined garden close by. It must have ended up here at some point in the 15th or 16th century, before the later rebuilding of the fortification. This encourages thoughts to turn towards the Vingård (the Vineyard) – the large farm in Vingårdsstræde. Can this be an argument in favour of its function as a supply-source for the Castle? No-one would have had a more distinguished household than the King.

Morbærfrø fundet i affaldslag fra 14-1500-årene på Kongens Nytorv.

Mulberry seeds found in the 15th-16th century refuse layers at Kongens Nytorv.







Kælderetagen på Kong Hans' Vingård, som i dag huser restaurant Kong Hans (tv).

Kong Hans' Vingård set fra Vingårdsstræde i dag (th).

The cellar level in King Hans's Vineyard, which today houses the restaurant named Kong Hans (left).

The house called King Hans's Vineyard seen from Vingårdsstræde today (right).



Illustration: Lars Henrik Engqvist

Kong Hans' Vingård i 1500-årene.

King Hans's Vineyard in the 16th century.

Vold og voldgrav
Moat and rampart

Vold i 300 år. Den arkæologiske undersøgelse af volden på Kongens Nytorv kunne afsløre, at der var bygget på befæstningen gennem hele dens funktionstid fra lidt før 1300 indtil begyndelsen af 1600-årene. Til den ældste tid hørte volden kronet med en mur og sandsynligvis også med et tårn, som dog var meget dårligt bevaret. Der må nok være tale om det tårn, der kendes som Smørhætten fra skriftlig omtale. Bygningen havde på et tidspunkt fået indbygget et ildsted, hvis endnu bevarede brændte aske og trækul afslørede, at det havde været anvendt til madlavning. Det kunne godt se ud, som om nogen har boet i denne bygning på et tidspunkt eller i hvert fald brugt den til køkken. Stykker af den senere nedrevne bymur fundet som fyld i voldgraven tydede på, at den havde været afsluttet med en såkaldt krenelering. Denne takkede afslutning gjorde det muligt at stå i dækning og skyde bag murens tinde.

Bag ved volden var der anlagt en voldgade med en belægning af småsten og dyreknogler. Denne gade har været vigtig, for at man nemt kunne komme rundt til alle dele af byens befæstning. Gaden har været brugt flittigt, og man så tydeligt flere hjulspor aftegne sig som fordybninger i dens belægning. Da volden senere i Middelalderen blev forhøjet og gjort bredere, blev voldgaden inddraget i voldarealet og dækket af dennes fyld.

Voldgraven har stået med en halv meter vand eller mere. Vandet var brakvand, altså hverken helt fersk eller rigtig salt, men de bevarede spor viste, at graven har haft kontakt med det nærliggende hav, for der var tydelige tegn på saltpåvirkning i plantesammensætning og i indholdet af snegle i dyndet på voldgravens bund. Dybest nede, det vil sige i den ældste tid, var saltpåvirkningen størst, mens den faldt opad, hvilket betød, at kontakten med havet i løbet af tiden var blevet mindre.

Teglovn. Nedgravet i voldfylden fandt man en teglovn. Ovnen kunne dateres til 1200-årenes slutning, og det er nærliggende at forestille sig, at den har været anvendt til at brænde de teglsten og den kalk, der skulle bruges til bymuren. Det var almindeligt i Middelalderen at bygge en ovn tæt på selve byggepladsen for byggeriet, da transporten af byggematerialer var tung og besværlig med datidens transportmuligheder. Ovnen var efter endt brug dækket til og stod nu inde i den tidlige vold.

Befæstningen udbygges. Det er klart, at en bybefæstning, der har skullet fungere over adskillige århundreder, er blevet repareret og udbygget, formodentlig adskillige gange. Den arkæologiske undersøgelse viste også klart, at det var tilfældet, men det var vanskeligt at udskille faser fra trin i selve byggearbejdet. Det var dog tydeligt, at der efter den første vold med voldgrav kunne udskilles mindst én udbygning mere i løbet af Middelalderen. Det var imidlertid ikke muligt at tidsfæste den nærmere, end at den er foregået senere end anlæggelsen lige før 1300 og før de næste store arbejder i slutningen af 1500-årene. Ved denne første udbygning kunne det blot konstateres, at volden var blevet forhøjet og gjort noget bredere.

Den største udbygning var dog den, der kom til at foregå i 1581. Den mægtige Christoffer Valkendorf, rentemester og medlem af rigsrådet, satte dette år store arbejder i gang på befæstningen. Rentemesteren lod senere forfatte et skrift, som fortæller om de mange fortræffelige projekter, han lod gøre i København. I dette fortælles det, at han blandt andet satte gang i en udbygning af volden med kampesten fra Nørreport til Østerport. I stationsgruben på Kongens Nytorv kunne arkæologerne konstatere, at han fortsatte arbejderne syd for Østerport, som jo lå ud for Østergade, det vil sige det nuværende Strøgets udmunding i torvet. Ved denne lejlighed blev en del eller måske hele bymuren nedrevet.

Valkendorf fik bygget en kraftig kampestenskonstruktion på ydersiden af den gamle vold, og meget tyder

på, at denne har båret en ny og sikkert også mægtigere mur. Ud mod volden lagdes et kraftigt jordlag op af kampestensfundamentet. Dette har dannet den nye voldfront ud mod voldgraven. Voldudbygningen blev placeret på et kraftigt lag af murbrokker, nedrivningsaffald fra den middelalderlige bymur. Det samme blev fundet ude i voldgraven, hvor såvel kridtsten, munkesten og hele murstykker vidnede om den gamle murs sammensatte karakter.

Årsagen til Valkendorfs kraftige udvidelse har formodentlig været, at volden ikke mere gav tilstrækkelig værn for de våben, der nu var i anvendelse. Kanonerne var blevet almindelige, og der skulle helt anderledes kraftige jordvolde til at beskytte mod deres skyts.

300 years of ramparts. The archaeological investigation of the rampart at Kongens Nytorv was able to show that building continued on the rampart during the whole of its functional lifetime from shortly before 1300 until the beginning of the 17th century. The earliest phase consisted of a rampart crowned by a wall, probably with a tower as well, although the tower was very poorly preserved. Probably this is the tower known from written references as Smørhætten, "the butter hood". At some point the building had had a fireplace built into it, and the still preserved ashes and charcoal revealed that it had been used for cooking. It looks as if someone lived in this building at some time, or at least used it as a kitchen. Pieces of the town wall from when it was later demolished were found as infill in the moat and suggest that the wall had been topped with crenellations. Battlements of this kind meant that it was possible to remain under cover while shooting from behind the battlements on top of the wall.

Behind the rampart there was a road with a surface of pebbles and animal bones. This road would have been important to ensure that there could be access at any time to all parts of the town fortification. The road has been much used, and one can clearly see several tracks made by wheels, in the form of hollows in the surface. Later, when the rampart at some point in the Middle Ages was raised and widened, the road was absorbed into the area of the rampart and covered by the infill used for it.

The moat had half a metre or more of water in it. The water was brackish, neither completely fresh nor really salt, but the evidence preserved showed that the moat was connected with the nearby sea, in that there were clear signs of salt-water influence in the types of plants and in the snail-contents of the mud deposited at the bottom of the moat. Deepest down, i.e. in the earliest period, the salt content was greatest, but it diminished in the upper layers, which means that contact with the sea in the course of time was reduced.

Brick kiln. Dug down into the rampart a brick kiln was found. The kiln could be dated to the end of the 13th century, and it is tempting to imagine that it was used to make the bricks and mortar that were to be used for the town wall. It was common practice in the Middle Ages to build a kiln close to the construction site itself, since transport of the building materials was difficult and laborious with the means of transport available then. When the kiln had completed its usefulness it was covered over and left in place in the early rampart.

Extension of the fortification. It is evident that a town fortification that has had to function throughout several centuries will have been repaired and extended, probably several times over. The archaeological investigation also showed clearly that this was the case, but it proved difficult to separate these phases from those of the actual building work. It was clear, however, that after the first rampart and moat there was at least one further distinguishable extension in the course of the Middle Ages. It was not possible, on the other hand, to date that extension more precisely than that it had taken place later than the original building just before 1300 and before the next major works at the end of the 16th century. Of the first extension it can only be said that the rampart was raised and made somewhat wider.

The largest-scale extension was the one that was carried out in 1581. The powerful Christoffer Valkendorf, Treasurer and member of the State Council, initiated major construction work on the fortification in that year. The Treasurer later had a document written giving an account of the many fine projects he had had carried out in Copenhagen. In this it is mentioned that among these works he had initiated work on an extension of the rampart, using boulders, from Nørreport to Østerport. In the pit dug for the station at Kongens Nytorv the archaeologists were able to observe that he had continued these works south of Østerport, which lay just beyond Østergade, at the place where the present Strøget meets Kongens Nytorv. While this was in process part or perhaps the whole of the town wall was pulled down.

Valkendorf had a massive boulder-construction built on the outer side of the old rampart, and there is much to suggest that there was a new, safer and more solid wall on top of it. Against the outer side of the rampart a thick layer of soil was built up around the foundations of the boulders. This created a new rampart-facing towards the moat. The extension of the rampart was placed on a dense layer of rubble consisting of demolition-remains from the medieval town wall. Similar material was found in the moat, where pieces of limestone, bricks and whole pieces of masonry provided evidence of the composite character of the old wall.

The reason for Valkendorf's major extension was probably that the rampart no longer provided sufficient protection from the weapons that were at this time in use. Cannons had become common, and earth ramparts needed to be massive to a totally different degree in order to provide adequate protection against attack by cannon-fire.

Snegle og skaller fundet i voldgraven på Kongens Nytorv.

Snails and shells found in the moat at Kongens Nytorv.



Christoffer Valkendorfs udbygning af voldgraven fra 1581, som den viste sig i udgravningen på Kongens Nytorv.

Christoffer Valkendorf's extension of the moat from 1581, as it could be seen in the excavation at Kongens Nytorv.

Teglovnen, som blev fundet inde i volden.

Brick kiln, found built into the rampart.



De få bevarede dele af tårnet Smørhætten fra kort før år 1300.

The few preserved parts of the tower known as Smørhætten (The Butter Hood), from just before 1300.



Gamle og syge
The old and the sick

Socialt arbejde. I den middelalderlige by var det kirken og klostrene, der stod for det sociale arbejde. De tog sig blandt andet af de gamle og syge og stod for hospitalsvæsnet. Da man ved reformationen i 1536 afskaffede klostrene, overgik en stor del af ansvaret for dette store arbejde til byens styre. Man var dog, som også klostrene tidligere, helt afhængig af økonomisk støtte i form af gaver fra private for at kunne løfte den tunge byrde. I København betød reformationen, at Gråbrødre Kloster og Clare Kloster blev nedlagt, bygningerne blev enten revet ned eller brugt til andre formål, kun Helligåndsklosteret bevarede sin status som hospital. Der blev snart en akut mangel på institutioner, der kunne tage sig af de socialt nødlidende.

Da Albert van Gocks enke, Johanne, i 1550 overdrog 14 såkaldte sjæleboder tæt op til volden i øst til byen, har det derfor været en kærkommen gave.

Sjæleboderne. I gaden Sjæleboderne mellem Vognmagergade og Gothersgade dukkede der i en udgravning til etablering af nødudgang og ventilationsskakt til Metroen bag den middelalderlige vold et stykke munkestensmurværk op. Det viste sig at være den sidste bevarede stump af de sjæleboder, Johanne van Gock gav til de fattige og husvilde i byen. Det var umiddelbart svært at forstå, hvorfor murværket og dermed bygningerne lå så dybt i forhold til den nuværende gade, men arkæologernes naturvidenskabelige undersøgelser viste, at området oprindelig havde ligget lavt, og at der havde været vådt og sumpet på stedet. Der har været et vandhul eller en sø i byen her inden for befæstningen, som på et tidspunkt, måske da disse boder skulle rejses, var blevet renset op, hvorefter det var blevet fyldt op med ler iblandet lidt af dyndet fra det fugtige areal. På det ældste kendte kort over København fra lige før 1600 ses der endnu et stort vådområde inden for volden ud for Skt. Clare Klosters grund. Det lader altså til, at man endnu på dette tidspunkt, mere end 50 år efter vi første gang hører om de van Gockske boder, ikke har skaffet sig af med hele vådområdet inden for østvolden, men blot har fyldt et stykke af søen op for at udnytte den til bebyggelse.

Til sjælens frelse. Udtrykket sjæleboder stammer fra Middelalderen, hvor man ved gaver til kirken eller et kloster kunne forsøge at redde sin sjæl fra skærsilden og helvede. En bod, det vil sige en ejendom eller som i dette tilfælde hele 14 af slagsen, givet med det gode formål at være til gavn for syge og husvilde, var i Middelalderen en værdig gave til hjælp for ens sjæls frelse. Denne praksis ophørte ved reformationen. Selvom man ikke længere kunne frelse sin sjæl ved at hjælpe de fattige, blev det stadig betragtet som en god gerning og et tegn på fromhed at gøre det. Betegnelsen Sjæleboder lever videre, for eksempel i gadenavnet.

Social work. In the medieval town it was the church and the monasteries that carried the burden of social care. They looked after the old and the sick and ran the hospital system. During the Reformation, when the monasteries were abolished in 1536, a large proportion of the responsibility for this major work was transferred to the town authorities. The process of carrying the heavy burden of this work was still totally dependent, however, as it had been in the monasteries in the past, on economic support in the form of donations from private persons. In Copenhagen the Reformation meant that the Greyfriars Friary and the St Clare Convent were closed, the buildings were either torn down or used for other purposes, and only the Monastery of the Holy Spirit preserved its status as a hospital. There soon arose an acute lack of institutions that could look after those in social need.

In 1550, when Albert van Gock's widow, Johanne, handed over to the





town 14 "charity-booths" – Sjæleboder – close to the eastern rampart, it must therefore have been a welcome gift.

Sjæleboderne. In the street called Sjæleboderne, between Vognmagergade and Gothersgade, in an excavation to establish an emergency exit and ventilation shaft for the Metro, a piece of old brick masonry turned up behind the medieval rampart. It turned out that this was the last preserved piece of the *sjæleboder* Johanne van Gock donated to the poor and homeless in the town. It was at first difficult to understand why the piece of masonry and thus the buildings were lying at such a deep level in relation to the present street, but the Natural Science investigations carried out by the archaeologists showed that the area had originally been low-lying, and that it had been damp and marshy. There had been a water-hole or a lake here in the town, inside the rampart, and at some point, possibly when these booths were put up, it had been cleaned up and filled with clay mixed with some of the mud from the waterlogged ground. On the earliest known map of Copenhagen, from just before 1600, there is still a large wet area inside the rampart beside the grounds of St Clare Convent. It therefore looks as if, at that point, more than 50 years after the van Gock booths are first mentioned, the marshy area within the eastern rampart had not been entirely cleared; part of the lake had merely been filled in so that it could be used for building on.

For the salvation of the soul. The expression *sjæleboder* ("soul booths") dates from the Middle Ages, when by means of donations to the church or to a monastery one could try to save one's soul from purgatory and hell. A booth is a small dwelling – in this case there were 14 of them – given for the benevolent purpose of helping the sick and homeless; in the Middle Ages this was a worthy contribution towards the salvation of the donor's soul. This practice came to an end with the Reformation. Even though one could no longer save one's soul by helping the poor, it was still considered a worthy deed and a sign of piety to do so. The name *Sjæleboder* lives on in the street name.

➔ Udsnit af Admiral Gieddes kort fra 1757. Sjæleboderne er den lange bygning på matrikel nr. 57 (tv).

Sjæleboderne kort før de med resten af kvarterets bebyggelse blev revet ned i 1907 (th).

Part of Admiral Giedde's map from 1757. The "Sjæleboder" are in the long building at land register no. 57 (left).

The "Sjæleboder" shortly before they were pulled down, with the rest of the block, in 1907 (right).

Nordens metropol
The Metropolis of the North

Saltvandsindsprøjtning. Christian 4. havde store visioner for såvel København som Danmark. I løbet af hans regeringstid, som kom til at vare i 60 år, arbejdede han på at omdanne byen til en renæssancestad. Hans mål var at gøre København til Nordens økonomiske, religiøse og kulturelle centrum. For at gennemføre dette måtte byen udstyres med en række institutioner af moderne europæisk tilsnit. Han gav derfor byen Børsen, hvor købmænd fra ind- og udland kunne mødes, og der kunne handles.

På Gammeltorv renoverede han det senmiddelalderlige rådhus og dets omgivelser, så det med sine nye tårne, balkon og svungne gavle kom til at ligge midt på en stor åben plads. Det efterhånden flere århundreder gamle og håbløst forældede slot fik sine tårne moderniserede blandt andet med spir, det største endda med 3 kroner; et symbol rettet mod ærkefjenden Sverige, som hævdede, at brugen af de tre kroner var deres ret.

En modernisering af selve slottet synes han at have opgivet. I hvert fald byggede han sig en ny bolig, Rosenborg, lige uden for byen samt et jagtslot, Frederiksborg ved Hillerød. Som noget af det første tog han dog fat på en modernisering af byens befæstning. Selvom Valkendorf ganske få årtier før havde udført meget store arbejder på volden, var den allerede nu totalt utidssvarende, da udviklingen inden for våbenteknologien krævede, at byen fik helt andre og langt større jordværker for at klare et eventuelt angreb.

Produktion. Alle disse projekter var begrundet i kongens økonomiske politik. Kongen arbejdede energisk på at styrke landet ved at gøre det uafhængigt af import fra udlandet og give landets andel i storhandelen en saltvandsindsprøjtning. Ved på den ene side at styrke den hjemlige produktion og på den anden at sætte gang i egenimporten af varer fra udlandet skulle landet opnå større magt over økonomien. Derfor satte han gang i en hjemlig produktion af forskellige varer. Ved Mølleåen startedes en hjemlig papirproduktion, i København indledtes en klædefabrikation, og det forsøgtes at sætte gang i fremstillingen af silke i gaden, som fik navn efter forsøget, Silkegade. Flere af disse initiativer mislykkedes.

Handelskompagnier. På handelssiden inviterede kongen til, at der oprettedes handelskompagnier, hvis formål det var at sætte gang i storhandelen især på fjerne destinationer. Rige danske, men især københavnske købmænd satte penge i disse konsortier, som kom til at stå for blandt andet handelen på Island og den vigtige hvalfangst i Nordhavet.

Det Ostindiske og senere det Vestindiske Kompagni stod for udsendelsen af ekspeditioner for at afsøge handelsveje til det sagnomspundne Indien med dets rigdom af handelsvarer som silke og krydderier, og det var kompagnier som disse, der for første gang hjembragte de eksotiske varer på egne skibe.

An injection of new life. King Christian IV had glorious visions for both Copenhagen and his kingdom as a whole. In the course of his reign, which came to last for 60 years, he worked to develop the town into a true Renaissance capital. His goal was to make Copenhagen the economic, religious and cultural heart of the North. In order to carry this through, the town had to be equipped with a number of institutions of modern European character. He therefore gave the town the Bourse (Børsen), where merchants from Denmark and abroad could meet and trade.

At Gammeltorv he renovated the late medieval town hall and its surroundings, so that was left standing in the centre of a large open square, with its new towers, balcony and curved gables. The old castle, which by then was several centuries old and hopelessly out-of-date, had its towers modernised, some of them with

spires and the largest with three crowns; this was a symbol directed against the arch-enemy Sweden, which claimed exclusive right to use the three crowns.

Modernisation of the castle itself appears to be an idea Christian IV rejected. At any rate he built himself a new residence, Rosenborg, just outside the town, and a further grand residence, Frederiksborg, at Hillerød, 40 kilometres north of Copenhagen. As one of his first works, however, he set about modernising the Copenhagen fortifications. Even though Valkendorf had carried out very major work on the rampart a few decades earlier, it was already by this time completely out-of-date, since developments in weapon technology meant that the town would need quite different and much larger earthworks to defend itself against possible attack.

Production. All these projects were based on the King's economic policies. He worked energetically to strengthen his kingdom by making it independent of foreign imports and to instil fresh life into the country's share of trade. The intention was that by strengthening domestic production on the one hand, and setting up direct import of goods from abroad on the other, the country should reach mastery over its economy. Christian IV therefore launched domestic production of several types of goods. On a river north of Copenhagen he began paper production, and in Copenhagen itself a clothing manufactory was set up; an attempt was made to produce silk in the street that took its name from this enterprise, Silkegade. Several of these initiatives did not succeed.

Trading companies. The King encouraged the establishment of trading companies for the purpose of activating large-scale trade, particularly with distant destinations. Wealthy Danish and especially Copenhagen merchants invested money in these consortia, which e.g. conducted trade with Iceland and ran the important whale-fishing in the Norwegian Sea.

The East Indian and later the West Indian Company were responsible for sending out expeditions to discover trading routes to the fabled India, with its abundance of trading goods such as silk and spices, and it was companies such as this that for the first time brought home the exotic goods on their own ships.

➔ Københavns Slot malet omkring 1680. I baggrunden ses Børsen.

➔ Copenhagen Castle painted around 1680. In the background is the Bourse.



➔ Børsen i dag. I baggrunden ses Christiansborg, som er bygget på ruinerne af Københavns Slot.

➔ The Bourse today. In the background is Christiansborg, which is built on the ruins of Copenhagen Castle.





København 1611.

Copenhagen 1611.

Kort over København tegnet af den svenske ingeniør Heinrich Thome 1624.

Map of Copenhagen drawn by the Swedish engineer Heinrich Thome in 1624.





➔ Udgravningen på Kongens Nytorv.

The excavation at Kongens Nytorv.

Ny befæstning. Det første arbejde, kongen satte i gang, var en opfyldning af den gamle voldgrav i området mellem Østerport og stranden. Arbejdet indledtes i maj 1608, men den entreprenør, der stod for projektet, synes at have haft problemer med at styre det. I hvert fald kunne arkæologerne ved udgravningen af stationgruben på Kongens Nytorv erfare, at der kun var kommet ganske lidt fyld i graven, før man var gået i stå, og der atter var begyndt at gro dynd i dens bund. I regnskaberne for befæstningsarbejdet kan man da også læse, at entreprenøren blev fyret på grund af sin "efterladenhed" med arbejdet, og man måtte ansætte andre til at klare jobbet. I udgravningen kunne det konstateres, at der kom til at gå flere sæsoner, før det kom i gang igen, og graven endelig blev opfyldt med morænesand, sandsynligvis hentet lige udenfor på det sted, hvor den nye voldgrav skulle anlægges. Oven på den opfyldte voldgrav lagde man en ny vold, bredere og højere end den tidligere.

Den befæstning, Christian 4. byggede, var et såkaldt bastionært anlæg, det vil sige en befæstning bestående af lange lige voldstykker, kurtiner, afbrudt af spydformede udbygninger, bastioner, fra hvis fæstningsvolde man har kunnet beskyde, eller som det kaldes bestryge, kurtinerne i tilfælde af et angreb på befæstningen. Ved den arkæologiske udgravning på Kongens Nytorv var det kurtinen mellem Østerport ud for Østergade og den sydligere såkaldte Bastion ved Iskulen ved Laksegades udmunding, der blev udgravet.

I nordenden af udgravningsfeltet fandt arkæologerne et lag bestående af teglbrokker og mørtel- og teglsmulder. Teglsten var dyre, og man genanvendte gerne sten fra ældre byggerier. Da man nedbrød den gamle Valkendorfske befæstning, rensede man derfor stenene for at genbruge dem i den nye befæstning. Dette arbejde var altså foregået her.

New fortification. The first work the King initiated was the filling in of the old moat in the area between Østerport and the shore. The work was begun in May 1608, but the builder responsible seems to have had problems with controlling the work. At any rate the archaeologists were able to observe, during excavation of the pit for the Kongens Nytorv station, that only a small amount of infill had been put in the moat before the work had come to a halt, and silt had again begun to collect at the bottom of the moat. In the accounts of the fortification project one can also see that the builder was fired because of his "negligence" concerning the work, and others then had to be employed to carry out the work. In the excavation it could be observed that several seasons in fact went by before work started again and the moat was finally filled up with moraine sand, probably brought from just nearby, from the place where the new moat was dug out. On top of the filled-in moat a new rampart was built, broader and higher than the previous one.

The fortification Christian IV built was what is known as a bastion construction, i.e. a fortification based on long straight ramparts, known as curtains, broken up by pointed protrusions, i.e. bastions, with ramparts from which men could shoot, or in military terminology "rake" the curtains in the case of an attack on the fortification. During the archaeological excavation at Kongens Nytorv it was the curtain between Østerport, at the end of Østergade, and the southern so-called "bastion at the ice-pit" at the end of Laksegade, that was excavated.

At the north end of the excavation field the archaeologists found a layer consisting of brick fragments and mortar – and brick dust. Bricks were expensive and any left from older buildings were welcome for re-use. When the old Valkendorf fortification was demolished, the bricks were therefore cleaned for re-use in the new fortification. This work had been carried out here.

Christian 4.'s opfyldning af voldgraven fra 1608-9 under opmåling.

Surveying of the moat abandoned by Christian IV in 1608-09.



Byens porte. Siden befæstningens anlæggelse omkring 1290 havde den eneste adgang til København over land været gennem byens porte. Indtil Christian 4.'s anlæggelse af Christianshavn var der blot tre, én ved hver af byens store indfaldsveje: Vesterport, Nørreport og Østerport. Senere kommer Amagerport, eller som den hed Christianshavns Port til i 1624-25, som gav adgang til Amager gennem Christianshavns Vold.

Vi ved ikke meget om, hvordan portene har været markerede og udstyrede i Middelalderen. Men da det med Metrogravningen på Kongens Nytorv nu er konstateret, at 1200-tals volden blev anlagt med bymur og tårne, må det være nærliggende at forestille sig, at i hvert fald Østerport, som stod ud for Østergades udmunding, fra starten har været bygget af tegl. Hvis de øvrige porte ikke har været det, er de i hvert fald på et tidspunkt senere i Middelalderen blevet udstyret med teglbygninger.

Da Christoffer Valkendorf i 1581 påbegyndte sin renovering af befæstningen, var det første, han gik i gang med, "den skanse og hvælvingen og mur i Nørreport". Den har åbenbart på dette tidspunkt trængt til en istandsættelse, men det vides ikke, hvornår den er bygget. Pillerne til portens bro er dog nævnt i 1508, så den må være ældre end dette.

Den middelalderlige Nørreport lå oprindelig ud for Nørregade, men i 1654 blev den flyttet et stykke, så den kom til at ligge mellem to bastioner ud for det sted, hvor Frederiksborggade i dag krydser Nørrevoldgade. Den gamle middelalderlige port blev opslugt ved ombygninger af befæstningen, og først i 1854 blev den fundet igen. Så sent som i 1915 blev den undersøgt af Nationalmuseets folk, inden den endeligt måtte vige for at give plads til de store jordarbejder, der skulle til, da den såkaldte Boulevardbane, det vil sige jernbanens underjordiske linieføringen fra Østerport over Nørreport til Hovedbanen skulle etableres.

Den middelalderlige Nørreport 1874 ved voldenes sløjfning. (Tegning af Zeuthen, Nationalmuseet).

The medieval Nørreport in 1874, when the rampart was demolished. (Drawing by Zeuthen, National Museum).



The Town Gates. Since the construction of the fortification in around 1290, the only access to Copenhagen by land had been through the town gates. Until Christian IV's construction of the part of town named Christianshavn there were only three gates, one on each of the access routes to the town, at Vesterport, Nørreport and Østerport. Later Amagerport, known until 1624-25 as Christianshavns Port, was added, giving access to the island of Amager through Christianshavn rampart.

We do not know much about how the gates were marked out and equipped in the Middle Ages. But now that it has been observed, during the excavation for the Metro at Kongens Nytorv, that the 13th century rampart was built with a town wall and towers, it is possible to surmise that at least Østerport, which was the gateway at the end of Østergade, would have been built of brick from the start. If the other gateways were not also brick-built, they must at any rate have been replaced later in the Middle Ages with brick buildings.

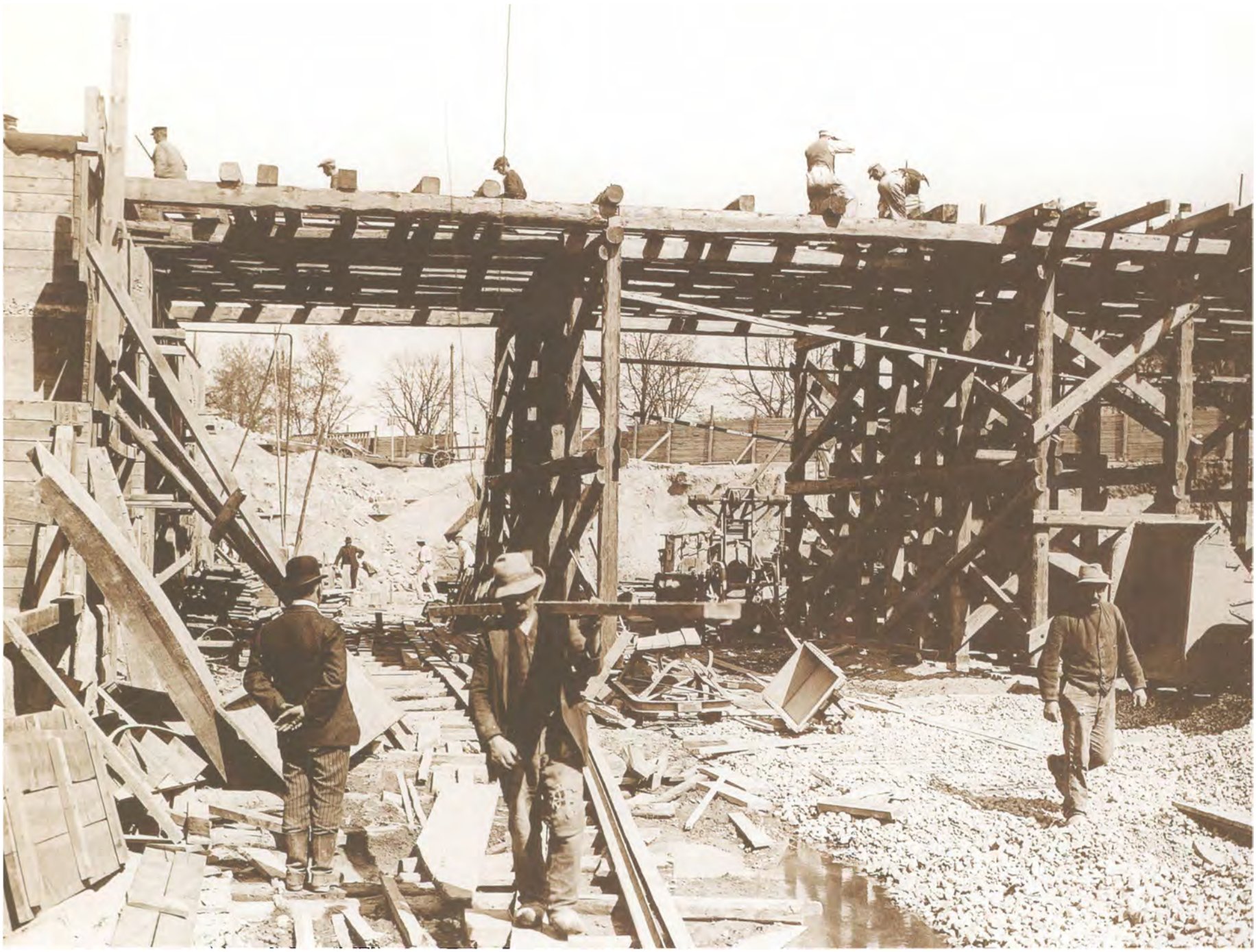
In 1581, when Christoffer Valkendorf began his renovation of the fortification, he began with "the redoubt, the vault and the wall of Nørreport". This section evidently badly needed repair, but we do not know what material it was built of. The supports for the Nørreport bridge are mentioned in 1508, however, so it must date from before then.

The medieval gate at Nørreport was originally situated at the end of Nørregade, but in 1654 it was moved a little so that it then lay between two bastions beside where Frederiksborggade today crosses Nørrevoldgade. The old medieval gate was absorbed into the rebuilding of the fortification, and it was not found again until 1854. As late as in 1915 it was investigated by staff of the National Museum before it finally had to be demolished to make room for the major earthwork necessary to create the stretch of underground railway line from Østerport through Nørreport to Copenhagen's main station.

Anlæggelsen af Boulevardbanen i 1915. I forgrunden ses broen, der førte trafikken fra Vester Voldgade over banegraven ved Jarmers Plads.

Construction of the covered railway in 1915. In the foreground is the bridge that carried traffic from Vester Voldgade across the railway line at Jarmers Plads.


CANADIAN-THE



➔ Anlæggelsen af Boulevardbanen 1915

Construction of the covered railway, 1915.



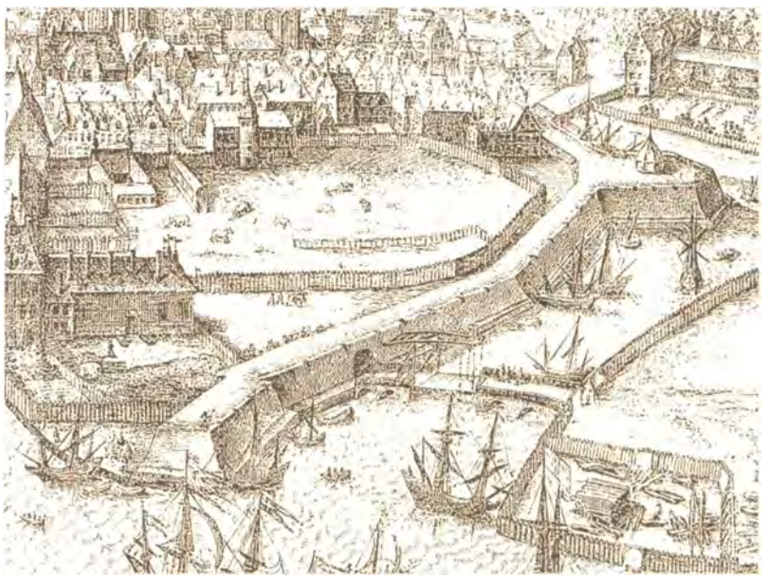
Et kig ned ad Nørre
Vold mod Nørreport.

View along Nørre
Vold towards Nørreport.

Den nye havn. Foran den nye vold lagde man en bred voldgrav omkring byen. På den første strækning i øst, hvor Kongens Nytorv senere blev udlagt, gravede man den tilstrækkelig dyb, til at den kunne besejles af skibe. Den blev gravet der, hvor gaden Holmens Kanal nu løber. Denne voldgrav lå uden for udgravningsfeltet ved Metrostationen på Kongens Nytorv, men ved de mange ledningsarbejder, der blev foretaget uden om stationen, dukkede der tilstrækkelig mange spor op, til at dens forløb og konstruktion kunne rekonstrueres. Det viste sig, at man langs voldgraven havde anlagt en kraftig stensat kaj, Skibbroen i den nye havn ved Østerport, som den omtales i regnskaberne.

Udsnit af van Wijk's stik fra 1611 med skibene i Christian 4.'s "nye havn".

Section of van Wijk's engraving from 1611, with the ships in Christian IV's "new harbour".



Vandporten. For at give adgang fra den nye havn til byen blev der bygget en mægtig port igennem volden i 1608-9. Ad denne vej er varerne, der blev losset fra skibene, blevet transporteret ind i byen. Det monumentale bygningsværk dukkede op ved udgravningen midt i den store stationsgrube.

Porten var bygget af kridtsten, teglsten og fundamentssten fra den gamle bymur. Dens portrum var betydeligt bredere, og den har været noget højere end nogen af byens øvrige porte, og de mure, der dannede portrummet, var så kraftige, at man fristes til at tro, at de må have båret en bygning på flere etager. Ind mod byen har den haft en stor monumental facade, mens vi ikke ved, om dens facade ud imod havnen har været skjult inde i voldfronten.

Kloak til spildevandet. Midt igennem portrummet var der enten samtidig med eller efter portens anlæggelse under dens gulv lagt en muret kloak, hvis spildevand har løbet ud i det nye havneareal. Det er langt fra sikkert, at dette afløb har skullet tjene byen og været beregnet til at føre overfladevand væk fra byens gader. Dette forsøgtes afgjort ved en undersøgelse af de lag, der var afsat i kloakkens bund.

En analyse af strukturen og indholdet af lagene viste, at kloakken i hvert fald i det meste af sin levetid havde ført vand med et overvejende indhold af husholdningaffald, latrin og brændsel ud i havnen. Der var indhold af nogle af de planter, der var blevet spist, blandt andet figen, sort sennep, dild, hindbær, jordbær og kål. Der blev også fundet fiskeskæl og stumper af knogler fra såvel fisk som pattedyr. Kloakrøret har altså med alt sandsynlighed været anlagt for at fungere som afløb for den bebyggelse, der lå lige inden for volden, eller måske blot den gård, der lå på Magasingrunden.

Befæstningen på Kongens Nytorv sløjfes. Christian 4.'s nye befæstning mod øst synes ifølge regnskaberne at stå færdig omkring 1617, men den skulle ikke få lov til at fungere længe. Den evigt foretagsomme konge var ikke tilfreds med sit værk. Byen skulle udvides. Efter først at have anlagt en ny by på amagersiden over for København, Christianshavn, efter hollandsk forbillede med kanaler mellem husrækkerne besluttede han at udvide Københavns byareal til mere end det tredobbelte ved at inddrage hele arealet fra Rosenborg ud til det område, der senere skulle blive Kastellet.

Udvidelsen, som siden er blevet kaldt Nykøbenhavn, afsluttedes ude ved Øresund med et fæstningsværk kaldet Skt. Annæ Skanse. Dette betød, at hele det store arbejde med fornyelsen af befæstningen havde været forgæves. Efter blot at have fungeret i 30 år påbegyndtes nedrivningen af befæstningen i 1647. Det gamle voldområde omkring Østerport blev udlagt til torv, mens man solgte grundene lidt syd for til bebyggelse.

Ved den arkæologiske udgravning fandt man her fundamenterne til to bygninger fra denne periode. Den endnu nye havn blev dog for størsteparten bevaret, idet man dog nogle årtier senere opfyldte den nordligste del af den for at opføre et gjethus, et kongeligt bronzestøberi til kanoner og kirkeklokker, mens resten stod som en ildelugtende kanal indtil den endelige sløjfning omkring 1860.

The new harbour. In front of the new rampart there was a wide moat encircling the town. When the first stretch to the east was dug, where Kongens Nytorv was later situated, the moat was made deep enough to allow ships to sail on it. It was placed where the street named Holmens Kanal now runs. This moat lay outside the excavation field for the Metro station at Kongens Nytorv, but during work on the many pipes and cables that had to be laid around the station, sufficient pieces of evidence came to light to make it possible to reconstruct its course and structure. It turned out that there had been a solidly built stone quay along the side of the moat towards the new harbour at Østerport; this quay, called Skibbroen, is mentioned in contemporary financial accounts.

The Water Gate. In order to provide access to the town from the harbour a massive gate in the rampart was built in 1608-9. Through this the goods that were unloaded from ships were transported into the town. This monumental construction came to light during the excavation in the centre of the large pit for the station.

The gate was built of limestone, brick and the foundation stones of the old town wall. The actual gateway was considerably broader and a





København ca. 1640 med Christian den 4.'s nye befæstning med bastioner (tv).

Christian 4.'s vandport set oppefra under udgravningen på Kongens Nytorv (th).

Copenhagen c.1640 with Christian IV's new fortification with bastions (left).

Christian IV's water-gate seen from above during the excavation at Kongens Nytorv (right).

little higher than any of the other town gates, and the walls that formed the gateway were so solid that one could be tempted to think that they must have carried a building of several storeys. Towards the town there was a large monumental façade, but we do not know whether the other side of the building, towards the harbour, was concealed inside the rampart.

Waste-water drain. In the middle of the gateway, either at the time of construction of the gate or later, a brick drain was laid under the surface, to take waste-water out to the new harbour area. It is doubtful that this drain was meant to serve the town by draining surface water off the streets. An attempt was made to clarify this by investigating the layers that had been deposited at the bottom of the drain.

Analysis of the structure and content of the layers showed that the drain, at any rate for most of its lifetime, had carried water with a predominant content of household waste, human waste material and firewood out to the harbour. There were remains of some of the plants that had been eaten, including figs, black mustard, dill, raspberries, strawberries and cabbage. Fish-scales were also found, and remains of bones from both fish and mammals. The drainpipe was therefore very probably constructed to function as a drain for the buildings just inside the rampart, or perhaps just to serve the town house that was situated on the site where Magasin is today.

Abandonment of the fortification at Kongens Nytorv. Christian IV's new fortification to the east seems from the accounts to have been completed around 1617, but it was not allowed to function very long. The perpetually dynamic king was not content with his work. The town was to be extended. First Christian had a new part of town, Christianshavn, built on Amager following the Dutch pattern with canals between rows of terraced houses; then he decided to more than treble the Copenhagen town area by taking in the whole district from Rosenborg out to what was later called Kastellet.

The extension, which has since then become known as New Copenhagen, was completed to the east towards Øresund by a fortification called the St Annæ redoubt. This meant that the whole major work on renovation of the earlier fortification had been in vain. After it had functioned for only 30 years, the demolition of the fortification began in 1647. The area where the old rampart had been around Østerport became a market-place, and plots of land to the south were sold for building on.

During this archaeological excavation the remains of the foundations of two buildings from this period were found. The still new harbour was for the most part preserved, however; some decades later the northern part of it was filled in so that a royal bronze-casting workshop for cannons and church bells could be built. The rest of the harbour remained as a malodorous canal until it was finally filled in around 1860.

➔ Udsigt fra Holmens Kanal mod Christiansborg ca. 1851. På dette tidspunkt var denne sidste rest af Christian 4.'s voldgrav endnu ikke fyldt op. (Tegning af H.G.F. Holm, Bymuseet).

➔ View from Holmens Kanal towards Christiansborg, c.1851. At that time the last part of Christian IV's moat had not yet been filled in. (Drawing by H.G.F. Holm, Copenhagen City Museum).



➔ Kongens Nytorv med Charlottenborg og Gjethuset, foto ca. 1860.

➔ Kongens Nytorv with Charlottenborg and the bronze-casting workshop, photo c.1860.

Christian 4.'s nye København
Christian IV's new Copenhagen

Udvidelsen. Christian 4. så sig nødsaget til at planlægge en massiv udvidelse af det befæstede areal for at få plads til sine storslåede planer for København. Han nåede dog ikke at se disse visioner blive til virkelighed. Først efter hans død i 1648 blev planerne virkeliggjort af hans søn Frederik 3. Det var nødvendigt at befæste det store nye byareal, Nykøbenhavn. Derfor blev den netop nyanlagte Østervold sløjfet, og en ny lagt i forlængelse af Nørrevold ud til Skt. Annæ Skanse, det senere Kastellet i 1656. Ved samme lejlighed flyttedes også Nørreport, idet man opgav den middelalderlige portbygning ud for Nørregade, som begravet i den nye vold efterhånden blev glemt.

Den nye port blev opført længere mod øst mellem to bastioner på det sted, hvor Frederiksborggade i dag krydser vore dages Nørrevoldgade. Allerede få år efter i 1671 blev denne byens største og mest trafikerede adgang erstattet af en større og fornemmere portbygning.

Uden for porten førte en bro over den brede voldgrav ud til en befæstet ø, en ravelin. Herfra gik vejen videre igen ad en bro over voldgraven til det faste land uden for byens befæstning.

Kontrol og afgifter. Fra slutningen af 1200-årene, da befæstningen lagdes omkring byen, havde adgangen til byen over land været begrænset til de tre porte. Fra søsiden var der, selvom en kontrol her var langt vanskeligere, også en streng kontrol af skibe, idet selve havnen kunne lukkes med en bom. Portene blev lukket og låst om aftenen, og adgang kunne kun ske gennem Nørreport, hvis man vel at mærke ville betale for det, ellers måtte man vente, til der blev åbnet igen næste morgen.

Denne kontrol af trafikken ind og ud af byen var ikke blot et forsøg på at øge sikkerheden. Der var tillige en kontrol af alle varer ind i byen, og der skulle betales afgift af de fleste typer, inden de fik lov til at blive transporteret ind gennem porten.

Til dette formål var der lagt accisseboder et stykke uden for byen. Her måtte enhver, der skulle ind i byen, betale accisse for sine varer. Ved den videre fart ind mod byen mødte man en vagtbod på ravelinen. Her blev det kontrolleret, om der var betalt behørigt for de varer, man havde i sinde at føre ind i byen. Denne kontrol skabte på torvedage trafikpropper. Onsdag og lørdag holdt der om morgenen lange køer af vogne på vejen ind mod broen over til såvel Nørreports som Vesterports ravelin.

Toilet. På området uden for Nørreport fandt arkæologerne jordlag, som tidligere, da befæstningen eksisterede, har været en del af skråningen på ydersiden af voldgraven. Dengang har stedet ligget åbent med naturlig bevoksning. Her fandt man en del latrinaffald. Det lå så spredt, at det ikke er meget sandsynligt, at man på dette sted har spredt natrenovation, det vil sige affald inde fra byens latriner. Der er snarere tale om, at man her har forrettet sin nødtørft, mens man ventede på at komme igennem porten. Tiden har åbenbart kunnet blive lang, mens man sad i sin vogn i den lange kø og ventede på at få at få lov til at komme ind i staden.

The extension. Christian IV found himself forced to plan a massive extension of the fortified area in order to find space for his grand-scale plans for Copenhagen. He never managed to see these visions become reality, however. It was only after his death in 1648 that the plans were carried through by his son, Frederik III. The large new town area, New Copenhagen, had to be fortified. The recently reconstructed eastern rampart was therefore demolished, and a new one was built in 1656 as an extension of the northern rampart eastwards to the St Annæ redoubt, later known as Kastellet. The northern gate, Nørreport, was also given up, since the medieval gateway at the end of Nørregade became absorbed into the new rampart and was gradually forgotten.

The new northern gateway was built slightly further to the east, between two bastions, at the point where today's Frederiksborggade crosses Nørrevoldgade. Just a few years later, in 1671, this gateway, the largest and most used of the access routes to the town, was replaced by a larger and more distinguished gateway.

Beyond the gate a bridge led over the broad moat to a fortified island, a ravelin. From there the road continued over another bridge, completing the crossing over the moat to the land outside the town fortification.

Controls and duties. From the end of the 13th century, when the fortifications were laid around the town, access to the town by land had been restricted to three gateways. As for access by sea, even though it was much more difficult to control, there was also strict monitoring of shipping, since the harbour itself could be shut with a boom-barrier. The gates were shut and locked in the evening, after which there was only access through Nørreport, and then only for those prepared to pay for it; otherwise one had to wait until the gate was opened again the next morning.

This control of the traffic in and out of the town was not just an attempt to increase security. It was also a means of controlling all the goods coming into the town, and on most types of products duty had to be paid before they were allowed to be transported in through the gate.

For this purpose excise-booths were placed just outside the town. All those going into town had to pay excise on goods transported. As the road continued towards town one would meet a sentry-post on the ravelin. Here the guard would check whether the payment made corresponded to the goods one was actually trying to take into town. On market days this check-point created traffic jams. On Wednesdays and Saturdays in the morning there were long queues of carts on the bridges over to the islands at both Nørreport and Vesterport.

Lavatory. In the area beyond Nørreport the archaeologists found earth-layers which, as before when the fortification existed, formed part of the slope on the outer side of the moat. At that time the area was open with natural growth. Here a quantity of human waste-material was found. It was so spread out that it is hardly likely that it came from spreading out night soil, i.e. from emptying out the town's latrines at this location. It is more likely that this was an area people used as an emergency lavatory while waiting to get through the gate. This could clearly take a long time, for those sitting in their carts waiting for permission to come into the town.

København ca. 1670. Byen var nu blevet udvidet med det store område mellem Middelalderbyen og Kastellet.

Copenhagen c.1670. The town had by this time been extended to include the large area between the medieval town and Kastellet.



Byen set udefra ind mod Nørreport i 1690'erne. (Udsnit, Wilcken Riboldt, Rosenborg).

The town seen from outside looking in towards Nørreport in the 1690s. (Section, Wilcken Riboldt, Rosenborg).



Tegning af Nørreport 1671-72. (Lauritz de Thura 1748).

Drawing of Nørreport 1671-72. (Lauritz de Thura 1748).



Vagtboden på Amagerports ravelin. (C.W. Eckersberg 1809).

The guard-house at the Amager gate ravelin. (C.W. Eckersberg 1809).





Det forventedes arkæologi.
Det er ikke altid, arkæologerne bliver overraskede over, hvad de finder. Ved udgravningerne til Nørreport Metrostation vidste man udmærket, at man ville finde spor af den bro, der havde ført over voldgraven uden for Nørreport.

Det at man vidste, at broen havde eksisteret, og havde en ide om, hvordan den havde set ud, betød imidlertid ikke, at den var uinteressant set fra et arkæologisk synspunkt. Der var stadig mange væsentlige detaljer, der burde undersøges, som for eksempel materialer, teknik og konstruktion.

Selvom et bygningsværk er kendt fra tegninger – måske mange tegninger – er det ikke givet, at man dermed har et præcist kendskab til, hvordan det har set ud. Kunstnere og illustratorer har til alle tider sørget for at arrangere deres motiver på en sådan måde, at de præsenterer sig bedst. Det betyder, at "ligegyldige" detaljer eller "grimme" elementer udelades, til tider ændres selve hovedmotivet endda, så det præsenterer sig bedst muligt. Dette er i høj grad tilfældet med dagligdags elementer i bybilledet som broer, fortove, gærder og så videre.

De ting, vi kun kender fra billeder eller fotografier, kendes desuden kun overfladisk. Hvordan tingene har været konstruerede, hvilke metoder der har været anvendt, og hvilke materialer man har brugt, kan vi kun komme til at vide gennem arkæologien. Derfor er det vigtigt til tider at udgrave ret nye og ellers bekendte ting, hvis en arkæologisk undersøgelse vurderes at kunne bidrage med væsentlige oplysninger, som ikke vil kunne erhverves på anden måde.

Det arkæologien blandt andet kan, er at fortælle om det dagligdags, det, der er så almindeligt, at man ikke tager billeder af det og ikke skriver om det. Det er her, arkæologien kan give oplysninger, som skrevne beretninger og billeder ikke kan.

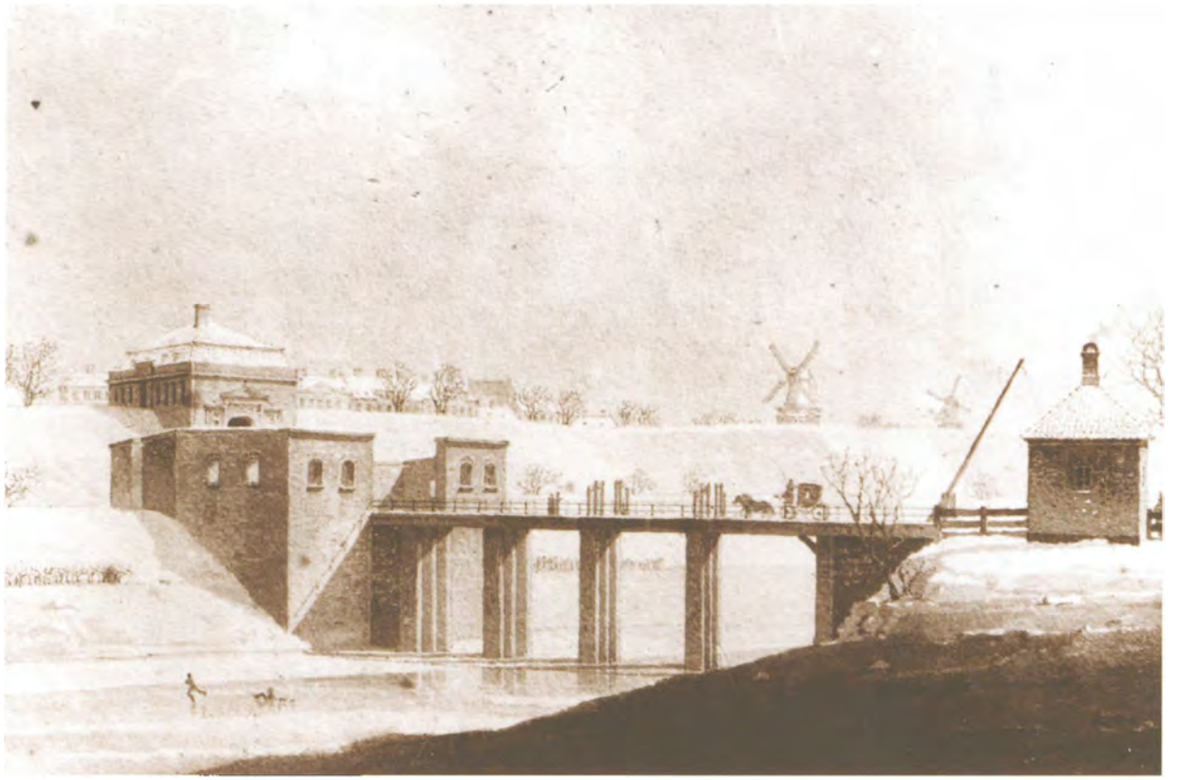
Predictable archaeology.
It is not always the case that archaeologists are surprised at what they find. During the excavations for the Metro station at Nørreport it was clearly known in advance that there would be traces of the bridge leading over the moat beyond Nørreport.

The fact that it was known that there was a bridge there, and that there was an idea about what it would have looked like, does not mean, however, that it was uninteresting from an archaeological point of view. There were still many important details that deserved investigation, such as materials, techniques and construction.

Even though a building may be known from drawings – possibly many drawings – it is not necessarily the case that we have precise knowledge about what it looked like. Artists and illustrators have always arranged their subjects in such a way that they would look their best. This means that "unimportant" details or "unfortunate" elements are eliminated, and sometimes even the main subject is altered so that it is presented in the best light. This applies to a considerable degree to everyday elements in townscapes such as bridges, pavements, fences, etc.

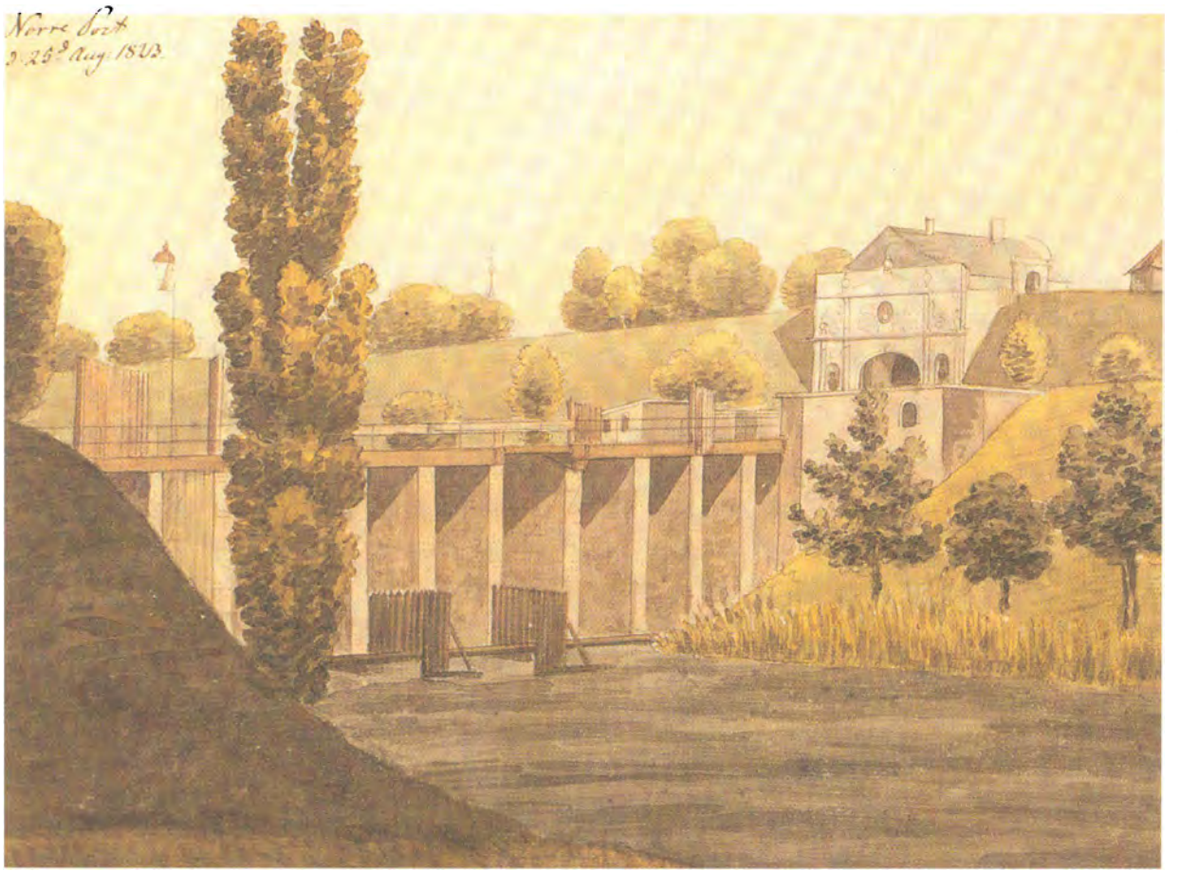
In addition, what we know only from pictures or photographs we only know superficially. How buildings were constructed, what methods were used and what materials chosen are questions that we can only answer through archaeology. It is therefore important at times to excavate relatively recent or otherwise well-known things if an archaeological investigation is thought to be able to produce important information that cannot be obtained by any other means.

What archaeology can do in particular is to tell us about the everyday things that are so ordinary that no-one takes pictures of them, and no-one writes about them. This is where archaeology can provide information that written accounts and pictures cannot match.



Nørreport med broen i 1830'erne. (H.G.F. Holm, Bymuseet).

Nørreport with the bridge in the 1830s. (H.G.F. Holm, Copenhagen City Museum).



Nørreport med broen i 1823. (O.J. Rawert, Det Kongelige Bibliotek).

Nørreport with the bridge in 1823. (O.J. Rawert, The Royal Library).

Broen uden for Nørreport
The bridge on the outer side of Nørreport

Intakte bropiller. Det blev i forbindelse med Christian 4.'s udvidelser af København nødvendigt at flytte Nørreport og dermed broen over voldgraven. Broen over den nye voldgrav uden for Nørreport var over 100 meter lang og blev båret af 14 bropiller. Ved gravningen af den store stationsgrube til Metroen ved Nørreport stødte entreprenørerne – stik imod hvad arkæologerne havde forventet – på de store murede piller til broen, der har ført trafikken fra Nørreport over voldgraven til ravelinen.

Den var ikke, som det formodedes, blevet revet ned, da man sløjfede volden og graven i 1874. Alle bropiller stod stadig helt intakte, som da de blev bygget i 1656; kun selve brobelægningen var fjernet. De bestod nederst af et flere meter højt fundament af kampesten. Derover var de beklædt med 3 rækker af tilhuggede granitsten – såkaldte kvadre – og over bestod de af murværk af gule sten, der var malet røde.

Det indvendige af pillerne bestod af en blanding af kampesten, mørtel og teglsten. Denne måde at bygge på kaldes en kassemur, fordi den synlige yderside danner en kasse uden om den blandede fyld, som giver styrken i konstruktionen. Det tillader, at man kan anvende billigere materialer som stumper af de byggesten, man alligevel arbejder med.

Et af de store problemer ved at bygge bropiller er, at de skal kunne holde til vandet. Der er tegn på, at man har tilsat stoffer til mørtelen, som har gjort, at den kunne hærde under vand. Man har ikke kendt den måde, disse stoffer virkede på, men man har erfaringsmæssigt vidst, at mørtel var bedre i stand til at modstå vand, når man tilsatte visse materialer.

Brodækket var, som nævnt, fjernet, men på tegninger kan man se, at det har været af træ. Det var forsynet med to broklapper, som kunne åbnes i tilfælde af angreb, og det har, som muren på pillerne under det, været malet rødt.

Selve porten blev ikke berørt af gravearbejdet, idet den har ligget længere inde under det, der i dag er Nørrevoldgade. Men den forsvarsmur, kaldet en tambur, der var blevet lagt beskyttende omkring portens munding ud mod voldgraven i 1700-årene, blev fundet og frilagt.

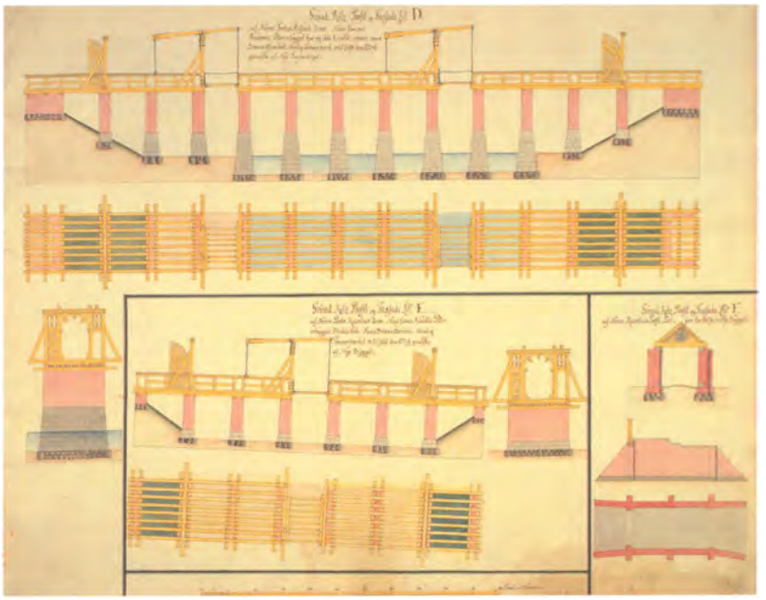
Ravelinen. Porten var et af de svage led i en befæstning, og derfor har man til alle tider forsøgt at gøre det vanskeligere at trænge sig vej ind i en by ad denne vej. Man anlagde derfor blandt andet såkaldte raveliner i voldgraven som en del af adgangsvejen til portene.

En ravelin er en lille befæstet ø i voldgraven, som vejen ind til en port føres over. Det betød, at man fra porten skulle over en bro over voldgraven for derefter at komme over på ravelinen. Her slog vejen et knæk, således at den næste bro, der skulle passeres fra ravelinen over til det faste land uden for byen, havde en anden retning end den første. Dette gjorde det nemmere at beskyde eventuelle angribere, hvis de skulle forsøge at entre byen ad denne vej.

Ravelinen blev kun ganske lidt berørt af udgravningerne til metroen, men nok til, at man kunne korrigere de skrevne oplysninger. Det nævnes i 1661, at man anlagde en ny ravelin ved Nørreport. Ved udgravningen kunne det konstateres, at man blot havde ændret de eksisterende forhold, idet man ellers ville have været nødt til at ændre bropillerne, og det kunne man se ikke var sket.

Intact bridge-piers. In connection with Christian IV's extension of Copenhagen it became necessary to move Nørreport and therefore also the bridge over the moat. The bridge over the new moat outside Nørreport was over 100 metres long and was supported by 14 piers. During the excavation of the large pit for the Metro station at Nørreport the constructors – quite contrary to what the archaeologists had expected – encountered the large masonry supports for the bridge that had taken





traffic from Nørreport over the moat to the ravelin.

They had not been demolished, as had been assumed, when the rampart and moat were abandoned in 1874. All the bridge-supports were still standing intact, just as when they were built in 1656; only the superstructure of the bridge had been removed. The structure was based on a foundation, several metres high, of boulders. The piers were clad with 3 rows of shaped granite – known as ashlars – and above that they consisted of yellow stone masonry, painted red.

Inside, the piers consisted of a mixture of boulders, mortar and brick. This method of building is known as cofferwork; the visible outer side creates a box around a mixed filling which provides added strength to the construction. It permits the use of cheaper materials, such as pieces of stones used elsewhere in the work.

One of the major problems in building bridge-piers is that they must be able to survive in the water. There are indications here that products have been added to the mortar to enable it to harden underwater. It would not have been known how these products worked, but experience would have shown that mortar could better withstand water when these products were added.

The bridge surface, as already mentioned, had been removed, but on the drawings one can see that it was made of wood. There were two drawbridges that could be pulled up in case of attack, and like the masonry on the piers below they were painted red.

The gate itself was not affected by the excavation work, since it lay further in towards what today is Nørrevoldgade. But the defence-wall that had been built in the 18th century as protection around the exit from the gateway out towards the moat was found and exposed.

The ravelin. The gate was one of the weak links in any fortification, and so constant attempts were made to render it more difficult to force a way into the town at that point. For example, a ravelin could be built in the moat, as part of the access route to the gate.

A ravelin is a small fortified island in the moat, and the road to the gate leads over it. This means that going out from the gate one had to cross a bridge over the moat and then cross the ravelin. There the road suddenly curved so that the next bridge, from the ravelin over to the land outside the town, went in a different direction from the first. This made it easier to fire at possible attackers trying to enter the town.

The Nørreport ravelin was only very slightly affected by the excavations for the Metro, but this was sufficient to enable some written information to be corrected. In 1661 it is mentioned that a new ravelin had been constructed at Nørreport. During the excavation it could be observed that this was merely an alteration to pre-existing structures; otherwise it would have been necessary to change the bridge-piers at that time, and it became apparent that that had not happened.

➔ Kampestensfundament til brofæstet foran Nørreport under udgravning (tv).

Tegning af Nørreport Hovedbro 1754 (th).

The boulder-foundation for the bridge outside Nørreport during excavation (left).

Drawing of the main bridge at Nørreport, 1754 (right).

Murankre. For at bropillerne i den lange bro kunne holde til det store tryk fra brodækket ovenfra, var der i hver bropille indsat såkaldte murankre. Det er jernankre, der består af en jernstang gennem hele pillen og på de to modstillede murflader er afsluttet med et tværstang eller et kryds, som skal holde muren på plads.

Det kunne konstateres, at murankrene var indsat, dengang pillerne i sin tid blev murede. De har altså siddet på deres plads, siden broen blev opført, og kan derfor dateres ret præcist til 1651-1656, hvor anlægget bygges. Det er vanskeligt at datere gammelt jern, og derfor var dette fund væsentligt, da man her stod over for en stor mængde jern, hvis alder var kendt.

Jernmalms indhold af forskellige stoffer varierer, alt efter hvor det er brudt. Ved at analysere indholdet af disse stoffer i det færdigsmedede jern kan man afgøre, hvor malmen i sin tid er brudt. Også den måde, hvorpå jernet er blevet produceret og bearbejdet, efterlader sig spor, der kan fortælle, hvor det er fra. Jernet i murankrene viste sig at være dels fra Norge, formodentlig Bærum Jernværk, dels fra Bergslagen i Sverige, hvor man havde produceret jern siden Middelalderen.

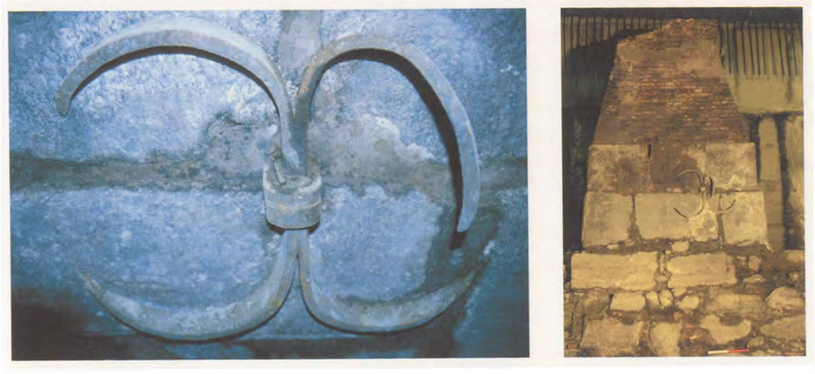
Jernet bar spor af at være blevet bearbejdet med maskinhamre, noget som på dette tidspunkt var helt nyt, idet vanddrevne hamre netop på dette tidspunkt omkring midten af 1600-årene begyndte at komme i anvendelse ved smedning.

Masonry ties. To enable the bridge-piers of the long bridge to withstand the heavy pressure of the bridge-covering above, in each pier masonry ties were inserted. These ties consist of an iron bar driven through the whole pier and terminating on each opposite surface with a crossbar or a cross, to hold the structure in place.

It could be seen that the ties had been inserted at the time when the piers were built. They had therefore being sitting in place since the bridge was built, and so can be dated quite precisely to 1651-1656. It is difficult to date old iron, and so this find was important, since here we have a large quantity of iron of a known date.

The content of different elements in iron ore varies according to where it has been extracted. By analysing the quantities of these elements in the forged iron one can establish where the ore was originally extracted. The way the iron has been produced and processed also leaves traces that can reveal where it comes from. The iron in these masonry ties turned out to come partly from Norway, probably from Bærum iron works, and partly from Bergslagen in Sweden, where iron had been produced since the Middle Ages.

The iron carried the marks of having been shaped with machine hammers, which was at that time a new development; water-driven hammers began to be taken into use in smithies just at this time, around the middle of the 17th century.



Et muranker på en af bropillerne (tv).

En af de udgravede bropiller fra Nørreports bro (th).

A masonry tie on one of the bridge-piers (left).

One of the excavated bridge-piers from Nørreport bridge (right).

Bropillerne under udgravning i stationsgruben.

The bridge-piers during excavation in the pit for the station.





Opmålingen af den udgravede Nørreports bro.

Surveying of the excavated bridge at Nørreport.

Vand til byen
Water for the town

"Springvand". Ferskvand af rimelig kvalitet var tidligere som nu en nødvendig forudsætning for byens eksistens. Af den grund er mange byer anlagt ved åer eller floder. En væsentlig mangel ved Københavns placering er dog, at der ikke var en vandrig å i området. Her har man fra den ældste tid måtte klare sig med brønde, men disse gav, da det meste af byen ligger meget lavt, ofte ikke ordentligt vand.

I det sene 1500-tal begyndte man derfor at føre vand ude fra Emdrup Sø ind til byen gennem trævandledninger lavede af udborede træstammer. Stammerne blev sat sammen ved hjælp af muffer af messing eller jern, mens forbindelsesrør blev lavet af bly. Strækningen fra Emdrup Sø på 5-6 km krævede et sted mellem 1000 og 1500 rør, men Emdrup ligger ca. 14 m højere end København, og derved kunne vandet føres under tryk ind til byen. Det "sprang" af sig selv, blot man åbnede hanen, og derfor gik det under navnet "springvand".

Pumpevand. Senere begyndte man også at føre vand ind fra Søerne umiddelbart uden for byen. Det måtte pumpes op og blev derfor benævnt "pumpevand". Der blev gennem tiden lagt adskillige vandledninger både af kongen og af private vandkompagnier. Mange af disse ledninger blev ført ind til byen over broen ved Nørreport. Vandets kvalitet var dog ikke god, hvilket et datidigt tilnavn som "ålesuppe" mere end antyder.

En af årsagerne til det dårlige vand var trævandledningerne, som ikke var tætte nok. Derfor diskuterede man allerede i 1788 anvendelsen af jernrør, men fandt dem i første omgang for dyre. Det var først efter koleraen i 1853, at man endelig fik anlagt Københavns første vandværk på det tidligere voldterræn ud for Studiestræde og påbegyndte det store arbejde med at lægge jernrør ud i byens gader. Det er dette ledningsnet, som i disse år efter mange reparationer bliver udskiftet med plastledninger.

Trævandledninger i voldgraven. Vandforsyning er en af de dagligdags ting, man kun sjældent ofrer opmærksomhed. Derfor ses vandledningerne over voldgraven ofte ikke på samtidige tegninger af Nørreport. På et kort over Københavns vandforsynings ledningsnet fra 1700-årene er der dog et større antal ledninger over voldgraven ved Nørreport. Ved den arkæologiske undersøgelse i forbindelse med anlæggelsen af metrostationen ved Nørreport fandt man fire ledninger, der har fungeret samtidig, men der lå også rester af gamle ledninger, som var blevet opgivet.

"Fountain water". Fresh water of reasonable quality was then as now a necessary precondition for a town's existence. Because of this many towns are built on rivers. A significant drawback about the situation of Copenhagen, however, was that there was no large river in the area. Here it was necessary from the earliest times to manage with wells, but since most of the town is very low-lying the wells often did not provide an adequate quality of water.

In the late 16th century a system was therefore devised to bring water from Emdrup Lake, north of Copenhagen, into the town through wooden pipes made of tree trunks with holes bored in them. The trunks were joined together with cuffs of brass or iron, while the connecting pipe was made of lead. The stretch from Emdrup Lake to Copenhagen, some 5-6 km, required something between 1,000 and 1,500 pipes, but Emdrup is about 14 m higher above sea level than Copenhagen, and so the water could be delivered under pressure to the town. When the tap was opened the water spouted out of its own accord, and so it was known as "fountain water".

Pump water. Later water was also brought in from the lakes immediately outside the town. It had to be pumped up and was therefore known





as "pump water". Over the course of time, various water pipelines were put down, both by the king and by private water companies. Many of these pipelines were taken into town across the bridge at Nørreport. The quality of the water was not good, however, as is more than hinted at by the nickname used at the time: "eel-soup".

One of the reasons for the poor quality of water was the wooden piping, which was not sufficiently watertight. As early as 1788 there was discussion of the use of iron piping, but on first consideration it was thought too expensive. It was not until after the cholera epidemic in 1853 that Copenhagen's first waterworks was finally built on what had previously been the rampart at the end of Studiestræde, and the major work of laying iron pipes in the town's streets was begun. It is the network of those same pipes that is currently, after many repairs, being renewed with plastic piping.

Wooden pipes in the moat. The water supply is one of those everyday things to which one seldom pays any attention. For this reason the water pipelines crossing the moat do not often feature on contemporary drawings of Nørreport. On a map of Copenhagen's water supply network from the 18th century, however, there are a large number of pipes that cross the moat at Nørreport. During the archaeological investigation arising from the building of the Metro station at Nørreport four pipelines that had functioned at the same time were found, and there were also remains of old pipes that had been abandoned.

➔ Indføringen af vandledningerne af træ gennem tamburen foran Nørreport (tv).

Kort over vandledningsnettet fra 1700-årene (th).

➔ Routing of the wooden water-pipes through the defence-wall in front of Nørreport (left).

Map of the water-pipe network from the 18th century (right).

Voldene falder
The fall of the ramparts

Gradvis sløjfning. Københavns befolkning voksede på grund af tilflytning støt i løbet af 17- og 1800-årene. Der var derfor et stigende behov for mere plads til såvel boliger som til de mange institutioner, byen nødvendigvis måtte have. Af forsvarsmæssige årsager var militæret og dermed statsmagten dog ikke tilbøjelig til at ville opgive befæstningen af hovedstaden. Først omkring midten af 1800-årene begyndte man at slippe taget.

Det indledtes med, at man besluttede at lade accisesen, afgiften, der skulle betales, før man fik adgang til byen, bortfalde i 1857. Dette betød, at man nedrev portene. Derefter indledtes en sløjfning af befæstningen bid for bid, en proces, som kom til at stå på i det næste halve århundrede.

Københavnernes dagligdag. For at forbinde jernbanen fra Helsingør med den vigtige linie til Roskilde besluttede man i begyndelsen af 1900-årene at lægge banen i en delvist overdækket grav i en linie der følger den gamle befæstning fra Østerport over Nørreport til Hovedbanen.

Ved det store gravearbejde til denne boulevardbane, som den kaldtes, fandt man i den gamle voldgravsfyld en mængde genstande, som i dag udgør en stor kilde til vores viden om dagliglivet i 15-1600-årene.

Da man ved udgravningen til Nørreport Metrostation fik mulighed for at undersøge fylden i den tidligere voldgrav, var det håbet, at man igen kunne gøre gode fund, som vi med vore dages metoder ville kunne få nye oplysninger fra. Det blev dog ikke tilfældet. Strømmen i voldgravens vand ved bropillerne har været så kraftig, at affald og dynd ikke har kunne aflejres. Der var derfor kun et tyndt sort lag på bunden af den oprindelige voldgrav og meget få genstande.

Ingen af genstandene er spektakulære, men de giver alligevel det glimt af dagligdagen, som arkæologien er så god til. For eksempel fandt arkæologerne et blækhus, i hvilket der lå en lille glasperle, på samme måde som der i dag er en metalkugle i en dåse spraymaling for lettere at kunne opløse blækket/malingen. En anden genstand er en lille fløjte lavet af den afbrækkede stilk fra en kridtpibe; vel en af de ydmygeste fløjter, man kan tænke sig. Der blev også fundet en fin lille sparebøsse af ler. Brækkede kridtpiber vidnede om den efterhånden udbredte rygning, men også om, at piberne var meget skrøbelige. Et bundt hvalbarder har fungeret som datidens piskeris, og en intakt arrakflaske var et vidnesbyrd om en af de populæreste alkoholtyper fremstillet af ris, palmesaft og sukkerrør i 1800-årene.

Gradual disuse. The population of Copenhagen grew rapidly as more people moved there in the course of the 18th and 19th centuries. There was therefore a growing need for more space both for houses and for the many institutions necessary for the town. For reasons of defence strategy the army and thus the state authorities were not willing to give up the fortification of the capital, however. It was not until around the middle of the 19th century that this position relaxed.

The first step was that it was decided in 1857 to allow elimination of the excise duty, the sum charged for access to the town. This resulted in the gates being abandoned. Then the rest of the fortification was demolished, piece-by-piece, in a process that continued over the next half century.

Everyday life in Copenhagen. In the early 20th century it was decided that the railway line from Elsinore should be connected up with the important line to Roskilde, and to this end a railway line should be constructed in a partially covered-over pit along a route which followed that of the old fortification from Østerport through Nørreport to the main station.













During the major digging work required by this covered railway line, large quantities of objects were found in the old infill of the moat, and these objects today form an important source for our knowledge about everyday life in the 16th and 17th centuries.

When the opportunity arose, during the excavation for Nørreport Metro station, to investigate the infill in the former moat, there was every reason to hope that good finds would again come to light and that with up-to-date methods new information could be obtained from them. This turned out not to be the case, however. Perhaps there had been a current here in the waters of the moat around the bridge supports, so that refuse and silt could not build up here, or perhaps when the moat was abandoned the deposit-layers were dug away so that the area would not later suffer subsidence. At any rate there was only a thin black layer at the bottom of the original moat and there were very few objects.

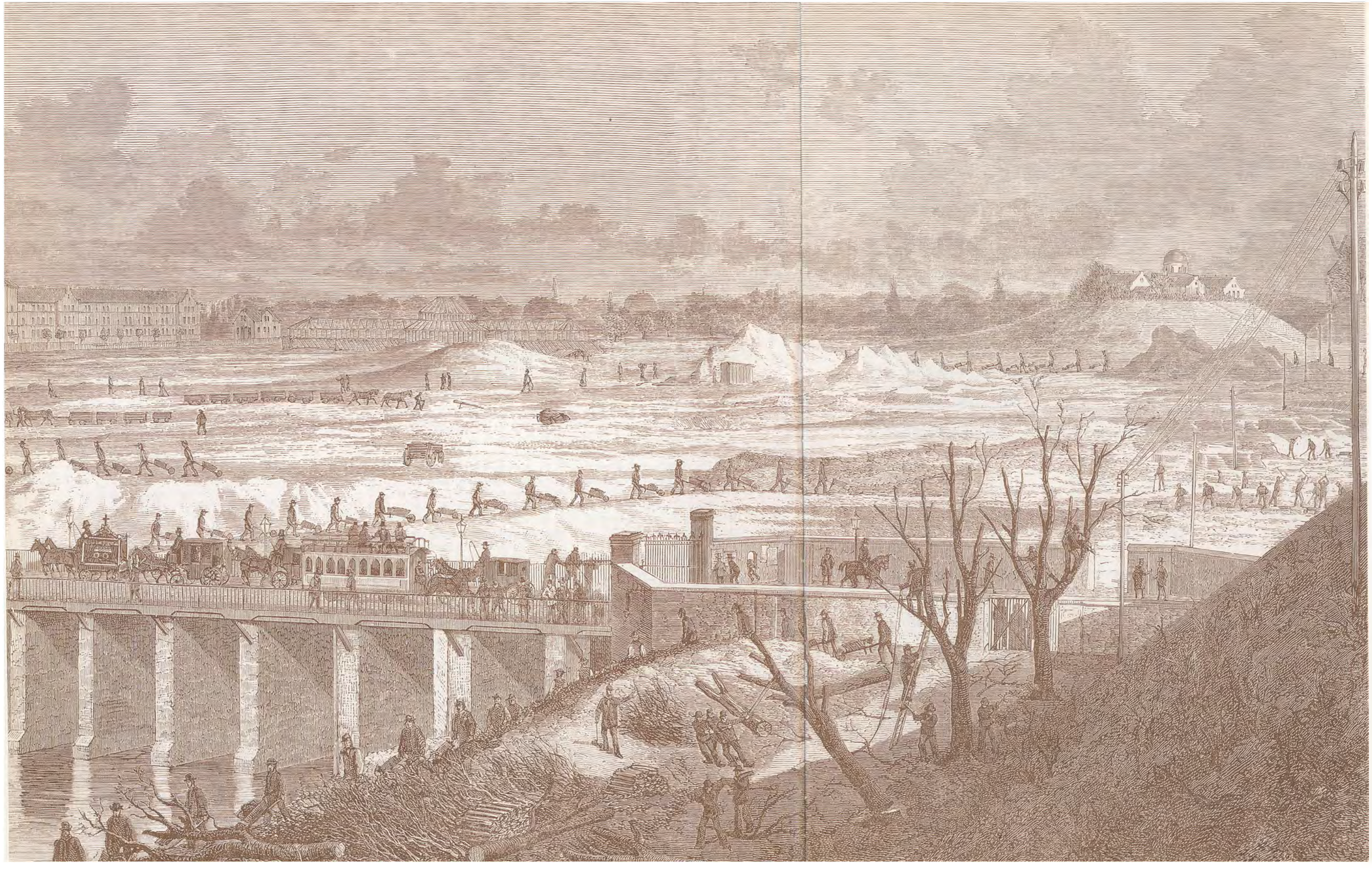
The objects are not in themselves spectacular, but they nevertheless give us a glimpse of everyday life, as can happen with archaeology. For example, the archaeologists found an inkwell in which there was a small glass bead, in the same way that today there is a metal ball in a tin of spray paint, in order to mix the ink/paint more easily. Another object found was a little whistle made out of the broken-off stem of a clay pipe – one of the most modest kinds of whistle one could think of. Another find was a neat little "piggy bank" of clay. Broken clay pipes were evidence of what gradually became widespread smoking, but they also showed how fragile the pipes were. A bunch of baleen had served as a whisk, and an intact bottle of arrack was testimony to one of the most popular types of alcohol in the 19th century, produced from rice, palm juice and cane sugar.

➔ Fund fra dyndet på bunden af voldgraven ved Nørreport:

- Fløjte af kridtpibestilk
- Sparebøsse
- Arrakflaske
- Piskeris af hvalbarder
- Kridtpibefragmenter
- Blækhus med kugle.

➔ Finds from the mud deposited at the bottom of the moat at Nørreport:

- Whistle made from the stem of a clay pipe
- Piggy bank
- Arrack bottle
- Whisk made of baleen
- Fragments of clay pipes
- Inkwell with ball.



➔ Nørreports bro ved sløjfningen af volden i 1871-74. Det store areal i baggrunden er i dag Botanisk Have. (Illustreret Tidende 1872-73).

➔ The bridge at Nørreport in 1871-74, when the rampart was demolished. The large area in the background is today the Botanical Garden. (Illustreret Tidende 1872-73).

Øresundslinien
The Øresund line

Telegrafen. Ikke kun mennesker og varer skal transporteres. Udveksling af informationer er også vigtigt, for at samfundet kan fungere. Til alle tider har man forsøgt at bringe informationer hurtigst muligt fra sted til sted. Christian 4. oprettede et postvæsen, og allerede omkring år 1800 blev der opstillet en optisk telegraflinie mellem København og Slesvig. Systemet var dog ikke videre stabilt eller hurtigt.

Med H.C. Ørsteds opdagelse af elektromagnetismen og Samuel Morses opfindelse af et modtageapparat blev det muligt at konstruere en elektrisk telegraf, baseret på det vi kender som morsealfabetet, altså prikker og streger, et system, der først er blevet endeligt opgivet for ganske få år siden.

Den første danske elektriske telegraflinie gik fra Helsingør over København, Korsør og Fredericia til Flensborg og videre til Hamborg. Linien kaldtes "Øresundslinien", dels fordi man mente, den ville få stor betydning for trafikken gennem Øresund, dels fordi indtægterne fra Øresundstolden, der eksisterede fra 1429-1857, blev brugt til at finansiere anlæggelsen. Linien blev indviet 2. februar 1854. I København kom telegrafstationen til at ligge i Niels Hemmingsensgade ved Helligåndskirken.

Dette system viste sig desværre heller ikke at være særlig stabilt. Isoleringen af ledningen var ikke holdbar nok, hvilket medførte stadig flere fejl. Ret hurtigt blev man nødt til at opgive linien og gik over til anlæg med overjordiske ledninger. I 1866 solgtes kablet til et konsortium, som optog det i løbet af 1866. Man har derfor kun kendt enkelte stumper af ledningen.

Kablerne. I forbindelse med udgravningerne til Nørreport Metrostation fandt man i ravelinens skråning den rende, hvori telegrafkablet var lagt. Det bestod af to kabler. Når der var to kabler, er det efter al sandsynlighed, fordi både ledningen nord fra og syd på er foregået over Nørreport. Det var lettere at lægge to ledninger i samme grøft end at skulle grave gennem hele byen.

The telegraph. People and goods are not all that has to be transported. Movement of information is also important to the functioning of society. In all ages people have tried to take information from place to place as fast as possible. Christian IV established a postal system, and as early as around 1800 an optical telegraph line between Copenhagen and Schleswig was set up. The system was not particularly reliable or fast, however.

With H.C. Ørsted's discovery of electro-magnetism and Samuel Morse's invention of a receiver, it became possible to construct an electric telegraph, based on what we know as the Morse code, i.e. dots and dashes, a system which stood the test of time and was only finally given up a few years ago.

The first Danish electric telegraph line went from Elsinore through Copenhagen, Korsør and Fredericia to Flensburg and on to Hamburg. The line was called "the Øresund line", partly because it was thought that it would have great significance for the traffic through Øresund, and partly because the revenue from the Øresund toll, which existed from 1429 to 1857, was used to finance its construction. The line was inaugurated on 2 February 1854. The telegraph station in Copenhagen was located in Niels Hemmingsensgade beside the Church of the Holy Spirit, Helligåndskirken.

This system also unfortunately proved not to be particularly reliable. The insulation of the cables was not sufficiently durable, and this meant an ever-increasing number of breakdowns. Very soon it became neces-







sary to give up the line and convert to systems with above-ground cables. In 1866 the cable was sold to a consortium which took it up the same year. Only a few pieces of the line are known.

The cables. During excavation for the Metro station at Nørreport, in the slope forming the side of the ravelin, the discovery was made of the ditch in which the telegraph cable had been laid. There were two cables. This is probably because both the line from the north and the line to the south passed through Nørreport. It was easier to lay two cables in the same ditch than to dig through the whole town.

➔ Hovedtelegrafstationen i Niels Hemmingsensgade i slutningen af 1800-årene.

The main Telegraph Station in Niels Hemmingsensgade at the end of the 19th century.

➔ Kort over telegrafens linieføring.

Et stykke af det første telegrafkabel fundet ved udgravningen ved Nørreport.

Map of the telegraph line.

A piece of the first telegraph cable, found during the excavation at Nørreport.

Arkæologien og byggeriet
Archaeology and building

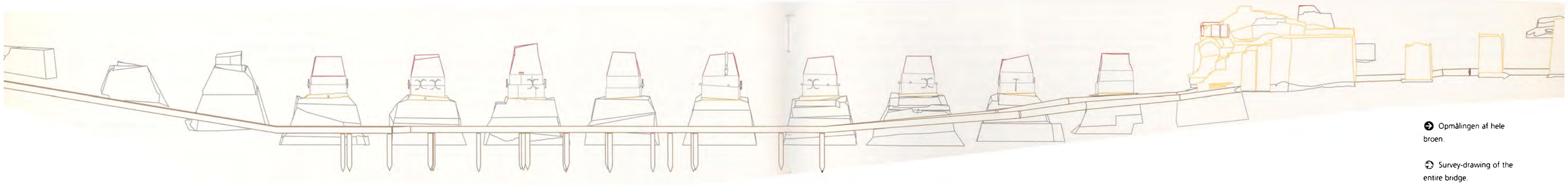
Deludgravninger. Da det i forbindelse med et så stort og kostbart projekt som metroen er meget vigtigt for arkæologerne ikke at sinke arbejdet mere end højst nødvendigt, måtte broen uden for Nørreport udgraves lidt ad gangen. På denne måde var der ikke noget enkelt tidspunkt, hvor hele den bevarede del af broen var synlig. For at spare tid, skabe overblik og bagefter have den bedst mulige opmåling af broen benyttede Bymuseets arkæologer i udstrakt grad landmålere til opmålingerne. Dette gav mulighed for nøjagtigt at sammensætte tegningerne af de enkelte dele af broen, så man derved kan få et samlet billede af konstruktionen.

Partial excavations. In relation to such a large-scale and costly project as the Metro it is very important that archaeologists do not delay the construction-work more than absolutely necessary; as a result the bridge on the outer side of Nørreport had to be excavated a little at a time. This meant that there was no single point of time when the whole preserved part of the bridge was visible. In order to save time, to gain a wider perspective and to secure the best possible recording of the details of the bridge for future use, the City Museum archaeologists called in the help of surveyors for the extensive measuring up. This made it possible to piece together the drawings of the individual parts of the bridge in a precise way, so that a total picture of the construction could emerge.

Piller til Nørreports bro under udgravning.

Supporting piers for Nørreport bridge, during excavation.





Opmålingen af hele broen.

Survey-drawing of the entire bridge.

Kanoner over Amager
Guns over Amager

Beskyttelse af indsejlingen. Amagers nordlige kystområder må betragtes oplagt til placering af anlæg til beskyttelse af indsejlingen fra Køge Bugt til Københavns havn. De tidligste efterretninger om sådan et anlæg stammer fra 1648, hvor Christian 4. opfører en skanse på Amagers nordvestlige kyst.

Skansen får navnet Amackburg og skulle angiveligt være et tømmerbygget anlæg, muligvis et blokhus eller et bolværk. Amackburg er indtegnet på det ældste kort over Amager, som er udarbejdet af kartografen Johan Meijer i 1656. Skansen kendes ikke fra andre samtidige kort, som medtager Amagers nordvestlige del, måske fordi den har en kort levetid. Den er tilsyneladende ikke længere i brug under svenskernes belejring af København 1658-59. Men senere i 1765 anlægges Faste Batteri under ledelse af Major Francois Jacques Xavier d'Aubert ude på det nordlige Amagers strandenge. I 1770 står batteriet færdigt.

Faste Batteri blev bygget som et øvelsesbatteri for indskydning af artilleri, og allerede fra starten var der store problemer, idet der gentagne gange blev klaget over, at kreaturer og røgterdrenge blev skudt af vildfarne kugler. Men hærens skyderier derfra fortsatte dog. Fra omkring 1860 blev batteriets funktion forandret til forsøg med artilleri. Dette arbejde fortsatte helt frem til 1973, hvor området blev overtaget af Justitsministeriet til brug for Statens Politiskole.

Faste batteri var dog allerede inden blevet fredet. Ørestadsselskabet fik på trods af dette tilladelse til at fjerne den vestre del af anlægget, da Metroenlinien her blev gravet ned, mod at man retablerede det gennem tiden noget ramponerede anlæg. Københavns Bymuseum fulgte anlægsarbejdet i forbindelse med Metroen for at fastlægge det oprindelige batteris udstrækning, bygninger m.m., blandt andet for at samle oplysninger, der kunne lette arbejdet med at genskabe anlægget.

Ved den arkæologiske undersøgelse blev det oprindelige voldforløb fastlagt. Derudover blev der registreret et antal bygninger på den centrale del af batteriet, blandt andet to kanonpendulhuse fra 1847, der blev brugt til afprøvning af krudt. I det ene hus stod rekylpendulet, hvor man ophængte kanonerne. Ved affyring af skud kunne rekylen måles, hvorved man kunne beregne kuglens udgangshastighed. I det andet hus stod det ballistiske pendul, eller recepteuren, som opfangede den affyrede kugle og målte kuglens hastighed ved anslaget.

Ved retableringen af Faste Batteri er der taget hensyn til de arkæologiske iagttagelser i området, og i dag kan man ved besøg på batteriet se det oprindelige voldgravsforløb og placeringen af de to kanonpendulhuse samt en betonkaponiere fra 1891, som ligeledes blev undersøgt.

Defence of the sea-access. The northern coastal area of Amager has to be considered an ideal location for mounting structures for the defence of the sea-access from the Køge Bay to Copenhagen's harbour. The earliest information about such a structure comes from 1648, when Christian IV built a redoubt on the northwest coast of Amager.

The redoubt was given the name Amackburg and was apparently a timber-built structure, possibly a gunhouse or a palisade. Amackburg is marked on the earliest map of Amager, which was drawn by the cartographer Johan Meijer in 1656. The redoubt is not known from any other contemporary maps that show the north-western part of Amager, perhaps because it had a short lifetime. It seems no longer to have been in use at the time of the Swedish siege of Copenhagen in 1658-59. But later in 1765 the Faste Batteri (the permanent gun battery) was constructed under the direction of Major Francois Jacques Xavier d'Aubert, out on the salt marsh of northern Amager. The battery was completed in 1770.

The Faste Batteri was built as a





Foto / photo: Harald Boem

practice range for artillery targeting, and from the very beginning there were serious problems because there were frequent complaints that cattle and cattleherds had been shot by stray bullets. But the army continued to shoot from there. From around 1860 the battery's function was changed to experimenting with artillery. This work continued right up to 1973, when the area was taken over by the Ministry of Justice for use by the State Police College.

By then, however, the battery had been listed as a protected site. In spite of this the Ørestad Development Corporation was given permission to remove the western part of the structure, since the Metro line was to be dug down at this point, in exchange for agreeing subsequently to re-establish the structure, which had over the course of time suffered some damage. The Copenhagen City Museum followed the progress of the construction work for the Metro in order to determine the original extent of the battery, its buildings, etc. and to collect information that could assist the work of rebuilding the structure.

During the archaeological investigation the original course of the rampart was identified. In addition a number of buildings on the central part of the battery were registered, including two gun pendulum sheds from 1847 that were used for trials with gunpowder. In one of these there was a recoil pendulum, where the guns were hung up. When shots were fired the recoil could be measured, and from this one could calculate the exit-speed of the shell. In the other shed there was a ballistic pendulum, or receiver, which caught the fired shell and measured its speed on impact.

During the re-establishment of the Faste Batteri, account was taken of the archaeological observations in the area, and today on visiting the battery one can see the original course of the moat and the placing of the two gun-pendulum sheds, together with a concrete caponier from 1891 that was also investigated.

➔ Det gennemgravede Faste Batteri set ovenfra (tv).

Det genskabte Faste Batteri med Metroen mod Ørestaden i baggrunden (th).

➔ Excavation cutting through the Faste Batteri, seen from above (left).

The reconstructed Faste Batteri, with the Metro in the background, looking towards Ørestad (right).

Deltagere i udgravningerne
Participants in the excavations

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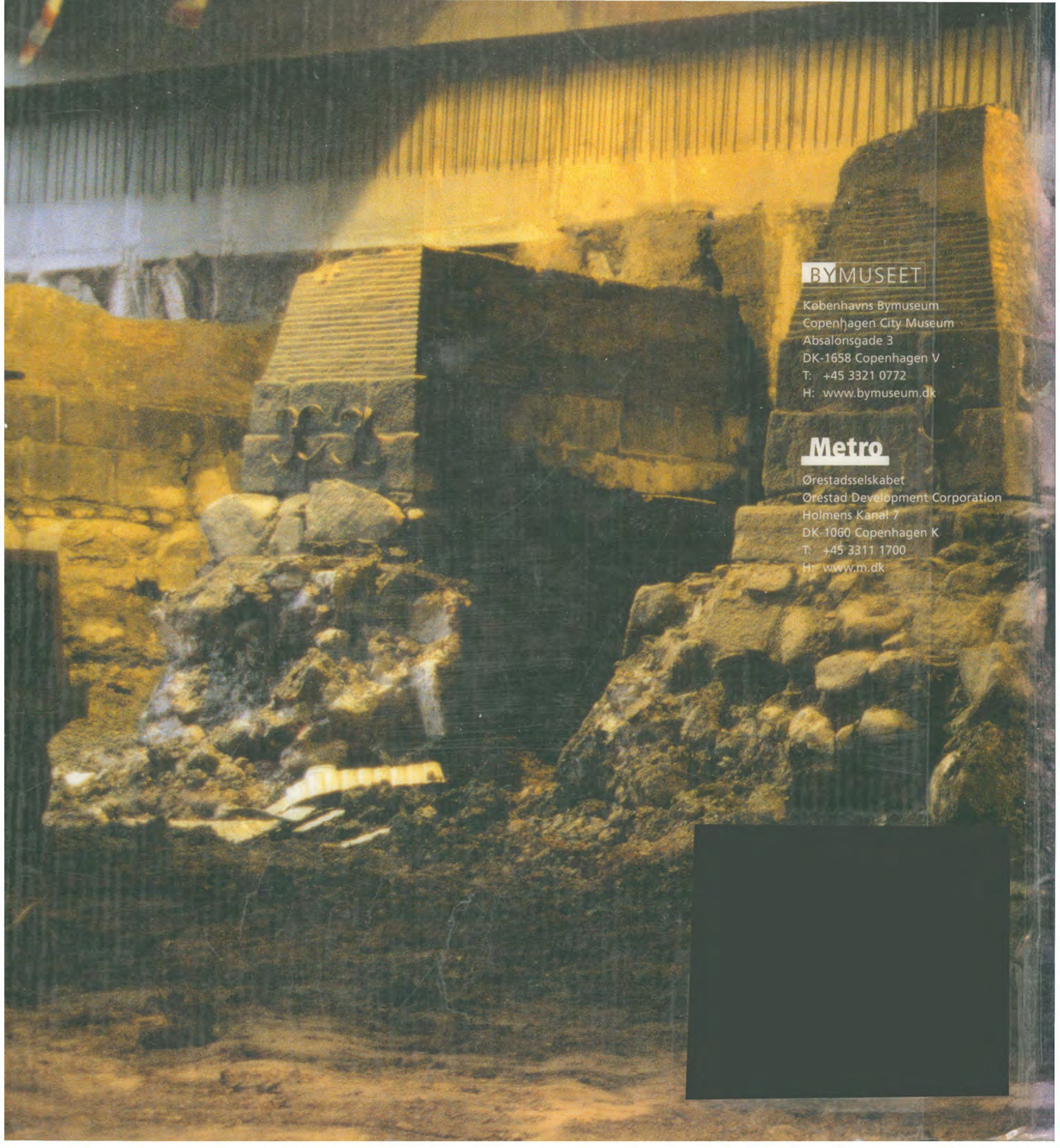

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