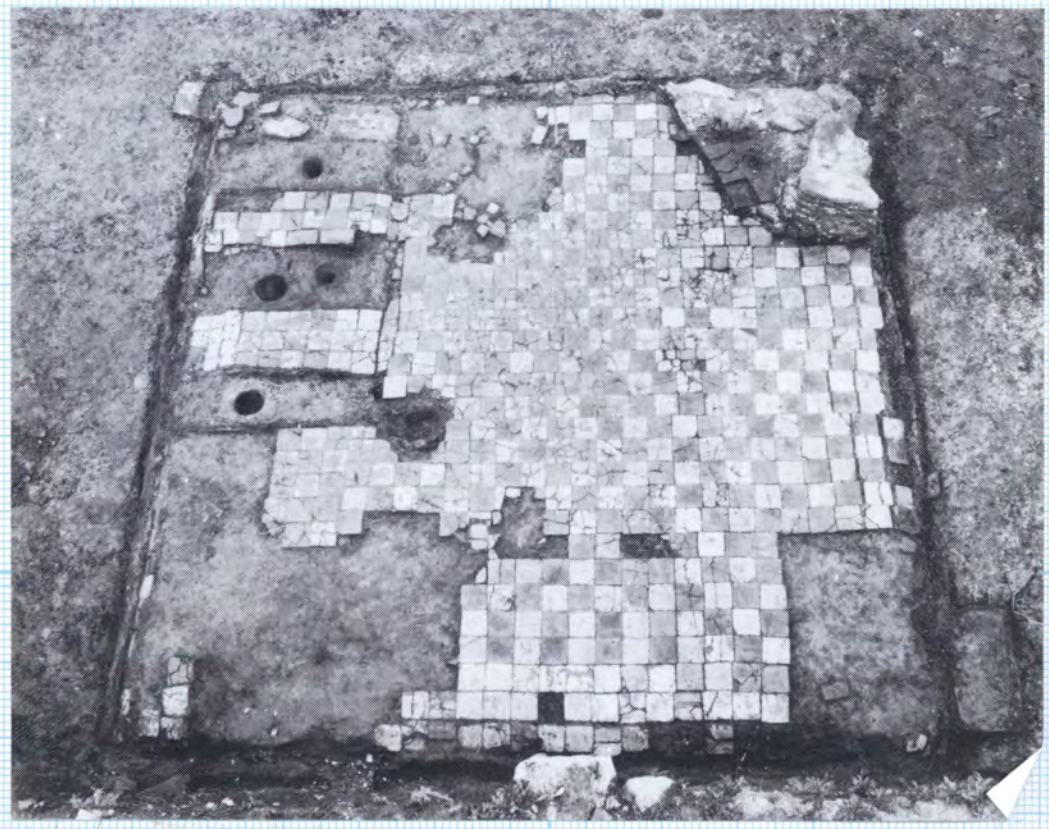
ARKEOLOGISKE UNDERSØKELSER I TRONDHEIM NO. 7



Robert Bazely, Christopher McLees og
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EXCAVATIONS IN ERKEBISPEGÅRDEN 1991

Areas 1A and 1B: Stratigraphy and phasing

ARKEOLOGISKE UNDERSØKELSER I TRONDHEIM NR. 7

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AREAS 1A AND 1B: STRATIGRAPHY AND PHASING

by

Robert Bazely, Christopher McLees og
Sæbjørg Walaker Nordeide

Riksantikvaren, Utgravningskontoret for Trondheim

Trondheim 1993

FORORD

Utgravningene i Erkebispegården blir gjennomført for å kunne gjenreise bygninger på tomten etter en brann i 1983. Byggearbeidet og utgravningene finansieres av byggherren, som i dette tilfelle er Staten ved Kirke-, utdannings- og forskningsdepartementet.

Den ca. 2400m^2 store tomten er planlagt undersøkt over 4 sesonger, i årene 1991-94. Dette er de arkeologiske rapportene fra det første undersøkelsesåret, og i tillegg utgis en rapport om de botaniske analysene v. P.U.Sandvik i samme serie. Det er planlagt mer sammenfattende kulturhistoriske publikasjoner etter at feltarbeidet er avsluttet.

Ettersom det sjelden er utført større arkeolgiske undersøkelser i en slottskontekst av denne type, var det mange aspekter som fortonte seg som relativt fremmede og utfordrende før gravestart: det var forventet rester av aktiviteter og en materiell kultur av en annen karakter enn vanlig. Det var også forventet materiale fra til dels yngre perioder enn de vi vanligvis befatter oss med, og dessuten visste vi fra en prøvegravning i 1985 v.Ø.Lunde at bevaringsforhold og lagenes beskaffenhet var annerledes enn det som er vanlig i Trondheim. Til alt overmål var det mange år siden det fant sted en større utgravning i Trondheim, og organisasjon og personale måtte tildels bygges opp igjen fra starten av. Det første året i prosjektets historie anså vi derfor på mange måter som et prøveår, og dette ble velsignet av værgudene med umåtelige nedbørsmengder som til tider gjorde gravningsarbeidet umulig.

Resultatet av feltarbeidet ble ganske raskt tydelig: det var langt større funnmengder enn forventet; langt merkeligere og vanskelig tolkbare konstruksjoner i tillegg til vanskelig stratigrafi hvor nyanser i farge på leire skulle lede oss gjennom den relative kronologien. Når vi likevel kom vel i land til slutt skyldtes det en iherdig innsats fra et idealistisk og tålmodig personale. I denne sammenheng skal det særlig nevnes feltlederene Chris McLees og Robert Bazely som ledet det praktiske arbeidet i felt; Marit Longva som har tatt hånd om alt kontorarbeid inklusive redigering av rapportene; Ole Bjørn Pedersen som har bistått med en solid oversikt over funnbehandling; Paula Utigard Sandvik som har deltatt som feltarbeider, botaniker og til dels koordinator for ulike naturviteres rolle i prosjektet, og sist, men ikke minst, Mary Storrø som har ført regnskapet og til enhver tid har hatt oversikt over hvilke midler som står til disposisjon.
Takk for en fin innsats!

Sæbjørg Walaker Nordeide
prosjektleder

"Arkeologiske undersøkelser i Trondheim" ("Archaeological Excavations in Trondheim") is a series of reports from medieval archaeological excavations in Trondheim after 1970. Reports from both large and small excavations will be published. The main aim of the series is to create a tool for further work with the Trondheim material in the form of a databank. The reports are therefore duplicated in restricted numbers and in basic form.

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150 eks.

Front page: Building A: the northern room in the oldest mint workshop.

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FOREWORD

Excavations at the Archbishop's Palace are taking place in advance of rebuilding on the areas devastated by fire in 1983. Both the building work and excavations are financed by the State, through the Department of Church, Education and Research.

It is estimated that the c. 2,400m^2 area will take 4 seasons to excavate, during the years 1991-1994. This is the archaeological report for the first excavation season; an additional report by Paula U. Sandvik on the botanical analyses will also produced in the same series. More integrated cultural-historical publications will be produced following the end of fieldwork.

Since large excavations in palatial complexes of this type are a rarity, it was anticipated prior to excavation that many challenging and unusual aspects would arise. The remains of activities and a material culture of a different character to those which have normally concerned us were expected, as was a a more modern range of material. In addition, a series of trial trenches undertaken by Ø. Lunde in 1985 revealed that the preservation conditions and the character of the deposits were likely to be different to those normally experienced in Trondheim. Furthermore, a number of years have passed since the last large-scale excavation in the city, and the necessary organizational structure and personnel had to be partly built up again from the ground up. The project's first year was therefore in many ways seen as a trial year, and this was blessed by the weather gods with a colossal amount of rainfall which often made excavation impossible.

The results of the excavation soon became apparent: there was a far greater amount of finds than expected, a number of structures of an intriguing and enigmatic nature were uncovered, and the site comprised a complex stratigraphy wherein interrelationships could often be determined by only slight colour changes in clay deposits, for example. That we nonetheless managed to come in to land safely, so to speak, is due to the energetic efforts of an idealistc and patient staff. In this regard particular mention should be made of the site supervisors Chris McLees and Robert Bazely who led the practical work on site; Marit Longva who has taken charge of all office work and report editing; Ole Bjørn Pedersen who has maintained a firm overview of the finds processing; Paula Utigard Sandvik who has taken part as a site worker, botanist and partial coordinator of the various natural-scientific contributors to the project; and last, but not least, Mary Storrø, who has been in charge of the accounting and kept an overview of the financial resources we have at our disposal. Thankyou for a fine effort!

Sæbjørg Walaker Nordeide
Project Leader.

CONTENTS

RB = Robert Bazely
CM = Chris McLees
SWN = Sæbjørg Walaker Nordeide

PHASE PLANS: PAGE NUMBERS

ABSTRACT

In 1991 Riksantikvaren undertook controlled excavations, TA 1991/1, on two adjoining sites (1991/1A and 1991/1B) in the east wing of the medieval Archbishop's Palace (Erkebispegården) in Trondheim, Norway. Ten main phases of activity were identified. Phase 1, the earliest phase, began with the complete levelling of the site followed by construction of what was apparently a stone building to the north, perhaps a part of the earliest Palace. Possibly much later, the Palace curtain wall was built, with a cobbled roadway running alongside it outside the Palace precinct. Inside the curtain wall a stone drain and sunken wood-lined cistern associated with the conjectured building to the north were constructed. This phase is dated broadly to the high-medieval period. Following this, phases 2, 3 and 4 related to structures associated with late-medieval mint workshops. In phase 2, a moneyer's workshop **Building A** was built, a cobbled pathway along the inside of the curtain wall was laid, and a wooden building of unknown function **Building B** built alongside it. The phase ended with the deliberate demolition of both buildings. In phase 3, the area was re-organised around a cobbled courtyard, with a new moneyer's workshop **Building D** built on its south side. This burnt down, probably before completion, and was replaced with a completed workshop, **Building F**, directly over it and incorporating the same ground walls. **Building C**, was built to the west of the workshop site, with an associated cobbled surface and open cistern or latrine to its immediate north. A wooden joisted building on the west side of the courtyard, **Building E**, was also constructed, re-using the wood-lined cistern constructed in phase 1 as a latrine. The phase ended with a catastrophic fire, correlated to a Palace fire of 1532. In phase 4 a final, smaller moneyer's workshop, **Building G**, was built more on the ruins of the previous one, but general reconstruction of the area did not take place. The phase ended with the abandonment of Building G, an event correlated to the Reformation of 1537. Phase 5 was a period of limited structural activity, characterized by postholes and stakeholes, and a small wooden structure around a hearth, **Building H**. Metalworking activity may have taken place in the area. The latter part of the phase consisted of widespread dumping over the whole site. Phase 6 consisted of the construction of **Building I**, identified as the "Herrehus", an ancillary building associated with the Danish governors residence, constructed in 1640. This underwent structural changes, possibly following an attack by the Swedish army in 1658. A large midden dump was found outside the curtain wall associated with the Herrehus. The building was demolished in 1672. Phase 7 related to a very badly preserved structure built directly on the ruins of the Herrehus, **Building J**. This was followed in phase 8 by a well-built 18th-century house with stone foundations and external cobbled surface, **Building K**, and the laying of an associated courtyard surface to its north. Associated with one or both of these buildings was a four-posted plank-lined pit outside the curtain wall. Phase 9 consisted of the deposition of soil over the whole site, possibly as a garden allotment associated with a building further south. Phase 10 related to the modern Eastern Storehouse (**Building L**), built in 1809, which was destroyed by fire in 1983.

1 INTRODUKSJON

1.1 Administrativ bakgrunn.

I august 1983 brant størstedelen av Erkebispegårdens øst- og sørfløy ned til grunnen. Magasinbygningene fra slutten av 1700- og begynnelsen av 1800-tallet var bygget i tre og ble et lett bytte for flammene. Det verste ved katastrofen var imidlertid at en rekke gjenstander med høy kulturhistorisk verdi gikk tapt og ble sterkt skadet i brannen, bl.a. originale skulpturdeler og gipsavstøpninger fra Domkirken, kirkeinventar m.m. Det ble også et gapende sår i et sterkt dominerende trekk i bybildet da to av veggene i et av Norges fremste kulturminnesmerker falt ut (se fig.1b, nr.14).

Trondheim skal feire sitt 1000-årsjubileum i 1997, og i den anledning er det et utbredt ønske om at dette viktige anlegget skal fremstå som et sluttet anlegg igjen. Anlegget er imidlertid et fredet kulturminne, jfr. Lov om kulturminner av 9.juni 1978. For å kunne starte nye byggearbeider må derfor byggegrunnen klargjøres ved arkeologiske utgravninger.

Allerede i 1985 ble det gjennomført en prøvegravning under ledelse av Øivind Lunde (TA 1985/10). Det ble åpnet 10 prøvegrøfter i det området som brente og som skal bebygges. Grøftene viste at det er ca.2-3m kulturlag som må fjernes i det aktuelle byggeområdet før byggearbeidene kan starte. Dessuten er en middelaldersk ringmur bevart i en høyde på ca.2,5 - 3,5m langs hele østfløyen. Den samme ringmuren er mer fragmentarisk bevart i østre del av sørfløyen. Ringmuren var ved gravestart antatt å være fra Aslak Bolts tid, og er fredet (Fischer 1977,s.27, Program for nordisk arkitektkonkuranse Erkebispegården i Trondheim kap.3.2)

I desember 1988 startet et forprosjekt for å forberede de arkeologiske utgravningene i Erkebispegården. En historiker, lektor Trygve Lysaker og en arkeolog, mag.art. Alf Tore Hommedal, ble engasjert for å forberede følgende oppgaver:

Historikeren skulle presentere en samlet fremstilling av det skriftlige materialet som angår Erkebispegården, med hovedvekt på etter-reformatorisk materiale. (Lysaker 1990, samt Lysaker upubl.) Arkeologen skulle utarbeide et budsjettforslag for utgravningsprosjektet (Hommedal upubl. arkivrapport, RA Trondheim). Deretter skulle han lage en samlet fremstilling av resultatene fra det tidligere arkeologiske arbeidet i Erkebispegården, med hovedvekt på materialet fra Gerhard Fischer (Hommedal in prep.).

I budsjettforslaget ble utgravningsutgiftene beregnet til ca.17 mill. for selve utgravningsarbeidet, og ca.4.4 mill. for etterarbeid og publisering; totalt kr.21.255.709,- i 1989-kr. Det var da beregnet 3 feltsesonger, med den største utgiften i etableringsåret, beregnet til kr.6.3 mill. -89-kr. Dette budsjettet var utarbeidet eksklusive innkvarteringsutgifter under den forutsetning at Trondheim kommune kunne stille gratis innkvartering til disposisjon.

Stortinget bevilget i 1990 totalt kr.5 mill. til gjenopbygging i Erkebispegården, fordelt med 1.5 mill. kr. til arkitektkonkurranse og 3.5 mill kr. til arkeologiske utgravninger (St.prp.nr.1 Tillegg nr.1 for 1991). Trondheim kommune kunne ikke stille gratis innkvartering til disposisjon, og en måtte inngå et samarbeid med Sør-Trøndelag fylke om rimelig innkvartering.

P.g.a. den sterkt reduserte bevilgningen kunne en ikke følge den tempoplanen som var foreslått i budsjettforslaget. Istedet ble det åpnet et felt lengst nord i østfløyen, ca.335m^2 (fig.2). Feltet ble inndelt i 2 delfelt som fikk betegnelsene 1991/1A (lengst nord og utenfor ringmuren) og 1991/1B. Utgravningsarbeidet i felt ble ledet av hhv. Robert Bazely og Chris McLees.

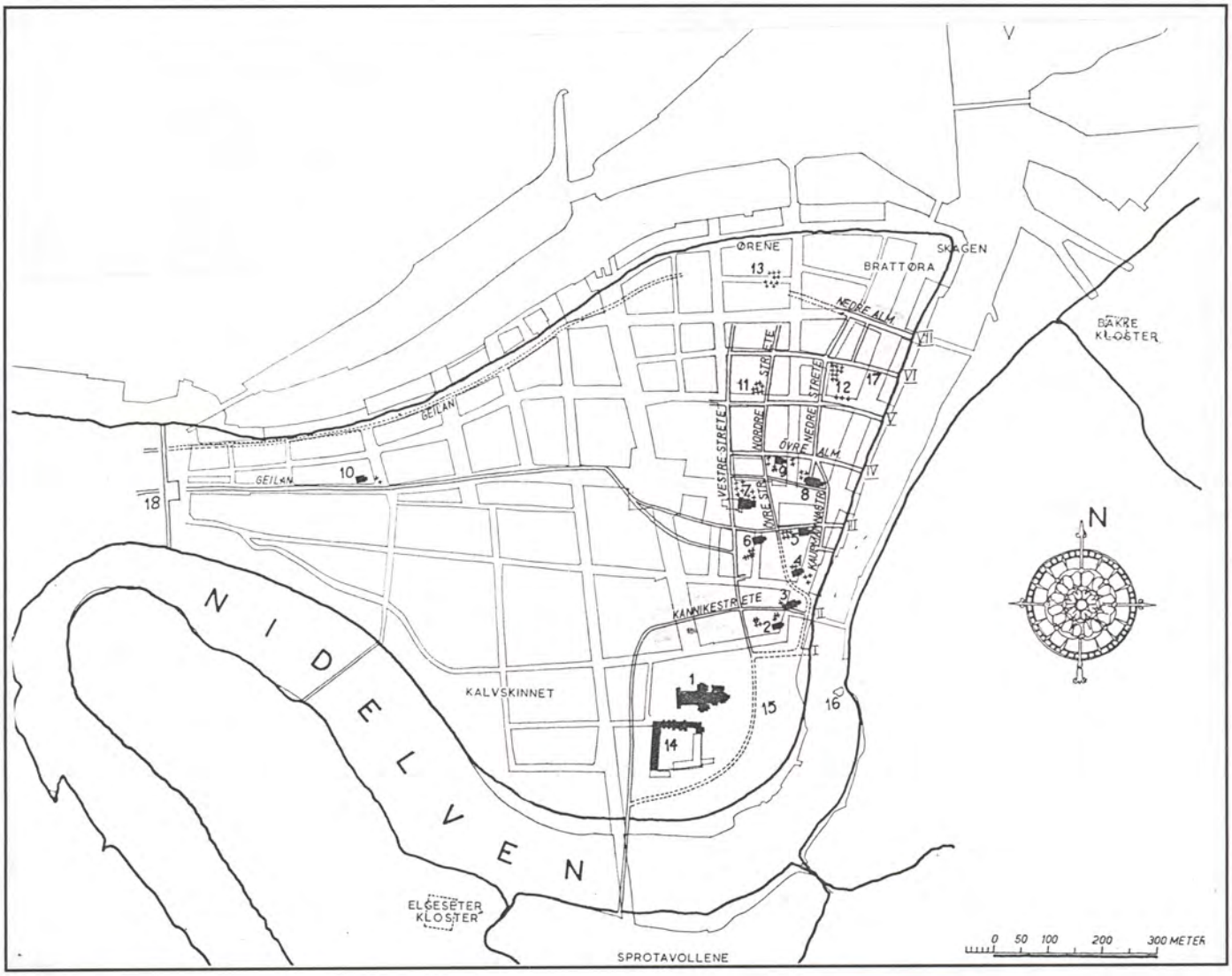


Fig. 1a *Trondheim ca. år 1300, etter Blom 1956. Erkebispegården =14*

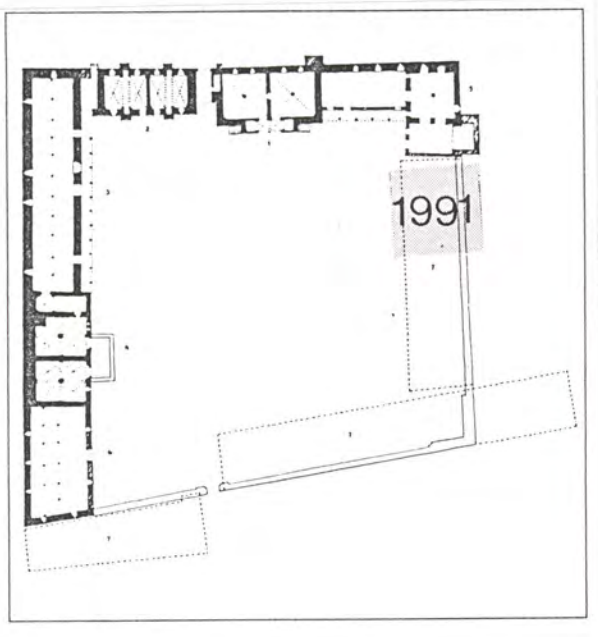


Fig. 1b *Erkebispegården med angjeldende gravefelt avmerket*

FRAMDRIFTSPLAN.

Det foreligger enda ikke klare planer for den endelige fremdrift og realisering av prosjektet. Det ble i første omgang kun bevilget penger for 1991, og en snakket om å kun realisere oppbygging av østfløyen til byjubiléet, mens sørfløyen måtte vente (U.Sverdrup Thygesson, pers. medd.). Det ble derfor planlagt å klarere kun østfløyen med utgravninger, og dette skulle foregå over en 3-årsperiode (Nordeide 1991).

I 1991 ble det utført en Nordisk arkitektkonkurranse, og det ble kåret 5 vinnere som skal gå videre i en lukket konkurranse. I de to etappene av arkitektkonkurranse har det ikke vært tale om å bygge ut i to etapper, og en snakker heller ikke lenger om å begrense utbyggingen til østfløyen.

I løpet av 1992 vil saken forelegges for Stortinget, for å få avgjort hvorvidt de brente delene av Erkebispegården skal gjenreises (Budsjett-innst. S.nr.12 - 1991-92, s.49). Budsjettkomitéen forutsetter her at utgravningsarbeidet blir fullført i løpet av 4 sesonger med siste sesong i 1994, slik at en har muligheter for å få gjenreist bygget til byjubiléet i 1997. Det er også bevilget 5 mill.kr. for 1992, og en arbeider for å fullføre den nye tempoplanen med siste gravesesong i 1994. Arkitektkonkurransens andre og siste del skal være avsluttet i løpet av 1992.

1.2 Historisk bakgrunn.

Trondheim skal ifølge sagaene være grunnlagt av Olav Tryggvasson i 997 e.Kr. (Snorre Kongesagaer). Byen ser ut til å ha hatt en relativt lite permanent bosetning i de første tiår, men fikk en rask vekst i bosetningen på 1000- og 1100-tallet. Det var Kirken på grunnlag av St.Olavskulten sammen med kongemakten som skapte vekstgrunnlag i de første århundrer av byens historie. Etter grunnleggelsen av erkebispesetet i 1152/53 ble Kirken etterhvert mer og mer dominerende i byens utvikling, og kongemakten trakk seg mer eller mindre tilbake fra 1200-tallet.

Fram til reformasjonen i 1536/37 hadde derfor Erkebispegården en sterk posisjon i byen, både som sosio-økonomisk og topografisk faktor. Etter reformasjonen overtok statsadministrasjonen anlegget, og det har derfor fortsatt en sentral posisjon i regionen helt fram til 20.årh.

Arkeologiske undersøkelser i Trondheim har vært konsentrert til de sentrale og nordlige delene av middelalderbyen. På det store feltet Folkebibliotekstomten er det avdekket rike rester etter bymessig bebyggelse fra byens grunnleggelse på slutten av 900-tallet til ca.1350. I dette området har det vært boliger, handel, håndverk m.m. (Fortiden i Trondheim bygrunn:
Folkebibliotekstomten. Meddelelser). I det nordligste området (Mellagerkvartalet) er det avdekket et område med utelukkende metallhåndverk fra perioden ca.1150-1350 (Espelund et al. 1989). I områdene lengst vest i middelalderbyen, f.eks. Televerkstomten (Jondell in prep.) og Britannia (Bjerck og Jansson 1988), er det avklart at åkrer og event. husdyrhold har vært lokalisert til området vest for byen, ca. mellom dagens Apotekerveita og Nordre gt.

Etter de siste tiårs undersøkelser (ca. fra 1970) har vi relativt god kunnskap om de sentrale bydeler, hvor håndverkere og kremmere har holdt til. Vi har derimot ikke hatt noen moderne undersøkelser i monumentale anlegg som Erkebispegården, og vi har derfor savnet et sammenligningsmaterial særskilt i forhold til tolkninger om sosiale forhold.

Området hvor Erkebispegården ligger er i dag det høyeste topografiske punkt på Nidarneset. Den eldste kulturelle aktivitet i området ved Erkebispegården er kun kjent fra kullstøv utenfor vestfløyen, datert til medio 300-tallet f.Kr. (Sandvik upubl. 1990). Dette er omtrent samme tidspunkt som dette

området har dukket opp over havets overflate. Ikke lenge etter ble området overflommet av leirras som forseglet denne situasjonen (se kap.3.2).
Bortsett fra kullstøvet som dateres før raset har vi ingen sikre holdepunkter for aktiviteter i området før erkebispesetet blir grunnlagt i 1152/53. Bispedømmene i Hamar, Oslo, Bergen, Stavanger, Orknøyene, (Færøyene), Island, Grønland, og Hebridene med Isle of Man ble lagt under erkesetet i Trondheim (RN 1 nr.57, DN VIII nr.1, Gunnes 1976, ss.368ff).

Ganske snart etter erkesetets grunnleggelse begynte en å bygge en erkebispegård i stein, og Østhuset, en hallbygning, skal stamme fra erkebiskop Øystein Erlendsson (erkebiskop 1161-1188) (Fischer 1977, ss.10ff). Etter denne tid bygde en suksessivt ut gården med bygninger i stein. Ifølge vår kunnskap hittil har disse arbeidene vært konsentrert primært til nordfløyen, dernest vestfløyen. I nordfløyen har hallbygnignen stått sentralt, med tilstøtende boligdel og kjøkken. I vestfløyen skal senere Aslak Bolt ha bygd en ny hallbygning, i dag kalt "Vekthuset", med Olav Engelbrektssons våpenskjold over døren. Ringmuren som har omsluttet anlegget og danner et firkantet, befestet anlegg har vært datert til Aslak Bolts tid (1430-1450) (Fischer 1977, s.27).

Vårt grunnlag for denne kunnskapen er begrenset av at det ikke har vært arkeologiske undersøkelser i øst- og sørfløyen. Det har derimot vært noen grøfter og sjakter inne på gårdsplassen som viser at det også her har ligget bebyggelse både av tre og stein. Hittil har ingen av de eldre undersøkelsene blitt bearbeidet slik at de kan brukes direkte. Ved prosjektets forprosjekt var det derfor en viktig oppgave å lage en oversikt over det arkeologiske dokumentasjonsmaterialet fra tidligere gravninger; særlig etter ekteparet Dorothea og Gerhard Fischers undersøkelser (Hommedal in prep.).

Så langt som dokumentasjonsmaterialet kan tolkes på det nåværende tidspunkt, er det særlig et par konstruksjoner som må nevnes:

1) Ved gravning nord for porthuset utenfor nordportalen fant Fischer det han kaller for et "hushjørne" som kan synes å være stratigrafisk eldre enn de stående steinbygningene. Det ble tatt 14C-prøve som gav følgende resultat:
T-204: 900+/- 100. Kalibrert (Stuiver): AD 890-1030.

2) På gårdsplassen sør for Vesthuset ble det funnet det nordvestre hjørnet av en bygning med en 1m bred mur. Det kan være fundamentet til en bygning med et lite forrom og et større boligrom med hjørneildsted av klassisk middelaldersk type, men i stein. Denne steinbygningen har klart avvikende orientering fra dagens Erkebispegård, og den kan godt være eldre enn den eksisterende gården. Den er derfor interessant vedrørende spørsmål om det skulle kunne ha vært en eldre bispegård med steinbygninger fra tiden føre erkebispesetets anleggelse. Imidlertid er denne bygningen foreløpig for usikkert plassert i tid.

Bortsett fra de arkeologiske undersøkelsene finnes det en hel del skriftlige kilder og kartmateriale med tilknytning til gården. Det var derfor også en viktig del av forprosjektet å få samlet skriftlige opplysninger, og dette ble gjort for tiden etter reformasjonen (Lysaker 1989, Lysaker upubl. arkivrapport 1989).

Fra de skriftlige kildene vet vi at erkebiskopen startet byggingen av en ny, mer funksjonell borg på Steinvikholmen lenger inn i fjorden fra ca.1525 (sjekk). Under stridighetene mellom erkebiskopen og hans fiender v.Eske Bille, ble Erkebispegården brent i 1532, og den ble stående utbrent i mange år. Erkebiskopen og hans etterfølgere lensherrene, bodde i denne perioden på Steinvikholmen (Lysaker 1989,s.20ff).

I april 1537 måtte den siste erkebiskopen, Olav Engelbrektsson, flykte fra landet, og Norge ble et lydrike under Danmark. Kong Christian III overtok erkebiskopens eiendommer, og lensherrene forvaltet hans interesser i de ulike regionene. Neste gang vi vet at Erkebispegården igjen har tjent som bolig, er det derfor for lensherrene. Den første er lensherre Evert Bild som fikk tillatelse til dette i 1556, og han bygget da en ny residens. Denne residensen ble reist i østfløyen, og har vært en stor trebygning med svalgang, karnapp mot gården, vinduer og skorstein (Lysaker 1989,s.20ff).

Lensherre Claus Daae setter omfattende byggearbeider i gang, og det var han som fikk satt istand nordfløyen til bolig igjen. Han bygget også stall m.m. Lensherre Oluf Parsberg fikk bygd en ny bygning for innlosjering, skatteinnkreving m.m. i østfløyen, det såkalte "Herrehuset", og i forbindelse med dette rives den eldste lensherreresidensen. Denne bygningen kan rekonstrueres nesten i detalj fra regnskaper og synfaringer. Parsberg får også bygget stall og fjøs (Lysaker 1989).

I 1660 fikk vi en ny forvaltningsstruktur i landet, og lensherrene ble skiftet ut med stiftsamtmenn. Fra nå av fikk Erkebispegården en mer og mer militær funksjon, med lagerbygninger for militæret, og dette har fortsatt opp til vår tid.

Fra 1658 er vårt eldste, bevarte kart over Trondheim, tegnet av Neucler, og det eldste, bevarte prospekt av byen er signert Maschius 1674. Fra slutten av 1600-tallet og fremover er det bevart en hel del kart over gården, men vi kjenner ikke påliteligheten til alle. I noen tilfeller vises bygninger som er planlagt og ikke realisert, og andre ganger ser vi at en har brukt eldre kartunderlag, og har derfor unngått å vise eksisterende bebyggelse i deler av kartet. Eckleffs kart fra 1758 er imidlertid regnet for å være det mest pålitelige (fig.2).

Både kart og skriftlige kilder fra 16- og 1700-tallet viser imidlertid at det sørøstre hjørnet av gården har vært brukt til driftsbygninger i tilknytning den agrare virksomheten i gården, samt til bolig for proviantforvalteren.

På slutten av 1700-tallet (etter 1777) ble så søndre magasin bygget, og i 1809 ble østre magasin bygget. Disse 2 bygningene var magasinbygninger for militæret inntil de brente i 1983, og det er disse branntuftene som nå skal graves ut og bebygges.

1.3 Problemstillinger

Med bakgrunn i den kunnskap vi har om Trondheim generelt og Erkebispegården spesielt, er følgende problemstillinger og problemområder særlig viktig å ta fatt i:

1) Topografi.
Erkebispegården og Domkirken ligger på det høyeste punktet på Nidarøhalvøya, og interessant nok, ligger Erkebispegården faktisk enda litt høyere enn Domkirken.
Imidlertid er det leire i undergrunnen, til forskjell fra det øvrige området på Nidarøhalvøya hvor det er sand i undergrunnen. Det har tidligere vært spekulert på hvordan leiren er tilkommet i dette området; hvorvidt den er brakt av natur eller kultur. Sandvik lanserte en teori om at leiren kunne ha kommet til området med rasmasser (Sandvik, arkivrapport 1988). Vi ønsket derfor å få klarlagt **hvordan leirmassene er tilkommet området ved Erkebispegården**. Det ble derfor gjennomført grunnboringer rundt øst- og sør-fløyen før gravningen startet (Sand, arkivrapport 1991) (se kap.3.2).

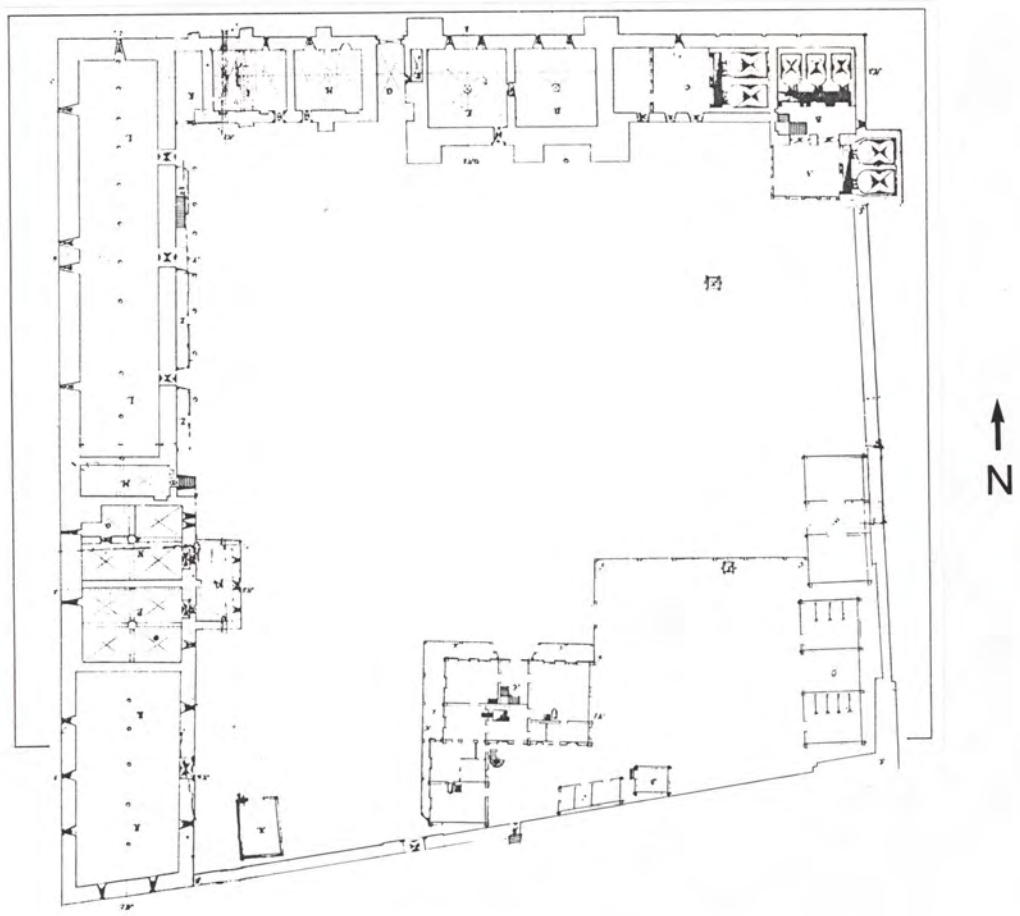


Fig. 2 *J.N. Eckleffs kart over Erkebispegården fra 1758. Konstruksjonene i sørøstre deler er brønner, gjerde, proviantforvalterbolig og bygninger knyttet til jord- og februk*

2) Aktivitet før Erkebispesetets stiftelse

P.g.a. stedets gunstige topografiske beliggenhet er det utpekt som en sannsynlig lokalisering for den eldste gården på Nidarøhalvøya, benevnt som Torgeir Avrådkolls einbølte gård i sagaene. Halland skrev i 1976: "Det er vanskelig å ha detaljerte forestillinger om hvordan det så ut på denne store sandøra på 900-tallet, men har man et klart blikk for de mest konstante og mest markante topografiske særdrag, kan man likevel komme fram til noen enkle og rimelige slutninger. Den opplendte jorda ligger i sør. Har det noensinne vært en egen gård på halvøya, og det må anses som sannsynlig, må

den ha ligget på det høyeste platået, dvs. der hvor domkirka og erkebispegården siden ble reist. På 1600-tallet er gårdsdrifta her fullt bevitnet. Erkebispegården, som da var lensherrens residens, ble drevet som et regulært gårdsbruk" (Halland 1976, s.27)

Halland var imidlertid uvitende om det faktum at akkurat i dette området er det leire i undergrunnen i motsetning til resten av halvøya hvor det er sand. Dette området var derfor det minst gunstige område på halvøya for jordbruk sett fra en vikingtidsbondes ståsted, som trolig ville unngå den tungdrevne leiren. 1600-tallets gårdsdrift var også i hovedsak basert på jord som lå tildels langt fra selve Erkebispegården; på Kalvskinnet, Tautra og ved Elgeseter kloster på Øya.

Det er viktig å vite mer om den generelle historien på stedet før erkesetets stiftelse for å kunne si noe mer om hvilke vilkår som lå til rette for at erkebiskopen kunne tillate seg å bygge sin gård akkurat på denne tomten. Kanskje Erkebispegården kunne bygges her nettopp fordi dette området ikke var brukt til gårdsdrift? Derfor er det også viktig å konstatere om det mot formodning har vært gårdsdrift i dette området før erkebispesetets stiftelse, samt å få rede på hvilken aktivitet som fantes i området generelt før Erkebispegården ble bygget. Denne problemstillingen er også viktig for forståelsen av byfremveksten generelt i Trondheim.

Hvis vi skal kunne finne ut hva området var brukt til før Erkebispegården ble bygget, må det grundige undersøkelser til - supplert med botaniske analyser. Det er erfaringsmessig ikke lett tolkbare konstruksjoner og heller ikke et rikholdig gjenstandsmateriale fra tilsvarende tidlige perioder fra andre steder i byen. Det bør derfor avsettes god tid til å avdekke lagene ned mot steril.

3) Erkesetets tid

Fra den tid erkebispesetet anlegges er det viktig å finne utviklingen av selve Erkebispegården, hvilke byginger som har eksistert, og hvilke funksjoner de har ivaretatt. Videre må det tas rede på den materielle kulturen generelt, for å kontrastere den til det øvrige bymaterialet: viser det sosiale forskjeller (fortrinnsvis høy sosial status)? Finnes det indikasjoner på kvinner og barn? Dette er viktig av flere årsaker:

a) for å undersøke Erkebispegårdens historie: hvilken sosial sammensetning har det vært i gården? Har det vært en rangering av ulike arbeidsfolk, fra straffanger dømt til å jobbe i Erkebispegården til erkebispen selv, eller er det kun høystatuspersonell som innlosjeres i gården?

b) for å støtte/svekke teorier som er fremsatt om det øvrige byarkeologiske materialet: er det mulig å si noe om f.eks. sosial status og demografisk sammensetning på grunnlag av det arkeologiske materialet? Hvis det er gjennomgående høyere sosial status på personell i Erkebispegården bør dette avspeiles også i den materielle kulturen. Hvis negativt resultat: skyldes det a) masseforflytninger, b) at posisjonene ikke gav seg utslag i materiell kultur (bortsett fra bygningene som jo er monumentale) eller c) at de personene som bebodde/virket i Østfløyen ikke hadde særlig høy status, og derfor ikke avviker fra den øvrige bybefolkning?

Det er viktig å prioritere undersøkelser fra Erkebispesetets sluttfase, ettersom det ellers er svært vanskelig med arkeologiske kilder fra seinmiddelalderen, særlig på overgangen til etterreformatorisk tid. Forhåpentligvis kan vi spore brannlag fra 1532 da Olav Engelbrektssons motstandere brenner gården. Dette brannlaget vil i så fall forsegle middelalderfasene og avhjelpe kronologien i seinmiddelalderen. Kan vi også i Erkebispegården merke virkninger av Svartedauen, eller får vi et annet bilde av forholdene her? I så fall hvorfor?

Det kan være grunn til å behandle området utenfor (øst for) ringmuren like grundig som området innenfor ringmuren. For det første er det interessant **hvilken aktivitet som kan ønske og tillates å**

gro opp rundt et anlegg av denne karakter. For det andre kan **hele østfløyen opprinnelig ha ligget lengre øst.** C.N.Schwach gjorde tidlig på 1800-tallet oppmålinger av noen "meget massive Grundmure" her, og disse tegningene er senere innlagt på tegning av H.Mathiesen tidlig på 1900-tallet (fig.3)(Mathiesen 1903-1905). Fischer har også påvist at nordmuren må ha fortsatt lengre østover, noe som støtter Schwachs teori om at disse murene må ha tilhørt Erkebispegården (ibid., s.10f). Kanskje har en måttet trekke hele østfløyen lengre mot vest p.g.a. rasing i den bratte skråningen? **Når skjedde i så fall dette?** I så fall er vi før flytningen inne på borggården der vi nå befinner oss utenfor gården.

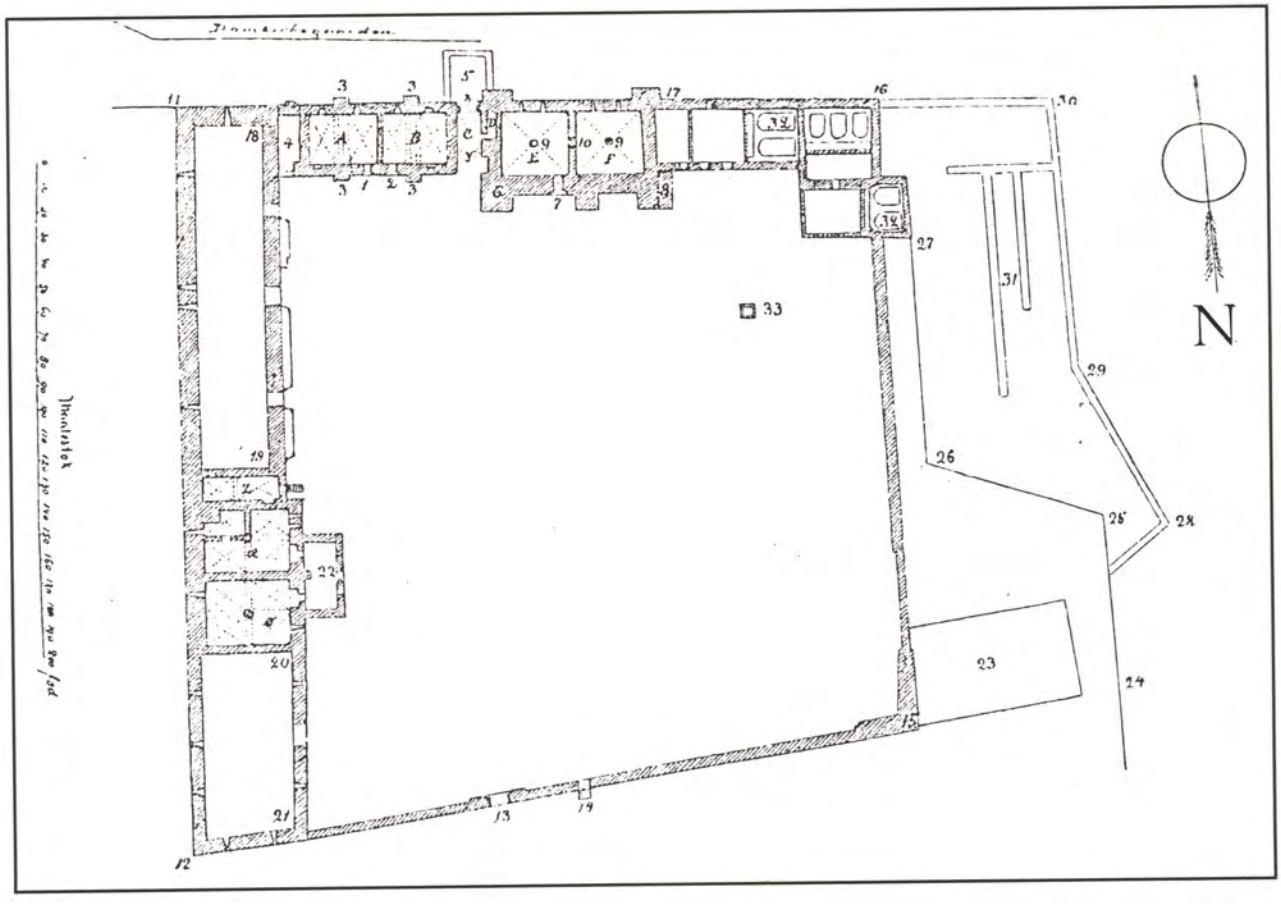


Fig. 3 *Erkebispegården. Kartet er basert på Eckleffs kart, med tillegg av murlevninger som er kartlagt av C.N. Schwach funnet i 1835, samt det Mathiesen tolker som naust (nr. 23), hvor sydveggen med murbue sto i 1903 (Mathiesen 1903-05, s. 54f).*

4) Erkebispegården i etterreformatorisk tid
De funksjoner Erkebispegården fyller etter reformasjonen er også viktige: som lensbestyrelse og militært anlegg har Erkebispegården fortsatt å være et administrativt sentrum, med høy anseelse hos samtiden. Dette gjør at også disse periodene er relevante for undersøkelser. "Herrehuset" - lensherrens store laftebygning fra 1640-72 - har ligget på tomten for østre magasinbygning innenfor 1991-feltet. Dette huset er viktig å identifisere for å skape et sikkert, datert skikt i stratigrafien slik at materiale fra seinmiddelalder og tidlig etter-reformatorisk tid kan behandles på en best, mulig måte.
"Herrehuset" er også viktig fordi det representerer en kort periode med en veldefinert funksjon og sosial status, og dette materialet blir derfor viktig som sammenligningsmateriale og kronologioppbygging for materiell kultur i denne perioden som fremdeles er relativt kildefattig på landsbygden.

5) Metodeutvikling
Ved utgravningene i Erkebispegården er det grunnlag for metodeutvikling på minst 4 områder:

a) Det blir gode muligheter for å kombinere arkeologiske og skriftlige kilder. Det er laget oversikt over det etterreformatoriske, skriftlige materialet v. Lysaker, og det finnes også en del kilder fra middelalder. Vi kan derfor få innblikk i de to kildegruppenes ulike verdi for et slikt prosjekt. Skriftlige kilder fra middelalderen bør også samles, i den grad dette ikke er gjort.

b) Det bør utvikles metoder for å karakterisere og tolke jordlagene bedre, i samarbeid med en botaniker. Ettersom det i utgangspunktet synes å være dårlige bevaringsforhold for tre, er det viktig å analysere jordlagene bedre for å analysere hvilke funksjoner de kan representere når organisk materiale mangler.

c) Det blir gode muligheter for å oppgradere etterreformatorisk materiale som kilde. Til dette kreves det en mental omskolering og økte kunnskaper. Dette kan hjelpe oss til å anlegge bedre angrepsmåter på dette materialet ved senere utgravninger.

d) Vi vet at ringmuren i Erkebispegården er bevaringsverdig, og det kan også dukke opp andre steinmurer som bør bevares. Dette er et område vi har lite konserveringsteknisk ekspertise på. I Trondheim har vi imidlertid unike muligheter til å utvikle metoder også på dette området, ved et samarbeid med Nidaros Domkirkes Restaureringsarbeider (NDR) som befinner seg i den umiddelbare nærhet.

PRIORITERING - NEDPRIORITERING?

Vi har allerede vært inne på at det er viktig å ta rede på forholdene før erkesetets opprettelse, samt Erkebispegårdens rolle i middelalderen for å studere dens egen utvikling, samt for å kontrastere dette materialet til det øvrige bymaterialet. Under denne problemstillingen er det viktig med god dokumentasjon av bygninger og jordlag, såvel som gjenstandsmateriale.

Også den etterreformatoriske perioden er viktig på dette feltet, både m.h.t. bygninger, jordlag og gjenstandsmateriale.

I Erkebispegården har vi en unik mulighet til å følge et nasjonalt sentrum - verdslig såvel som geistlig - gjennom 1000 år, fram til i dag.

Det er mot denne bakgrunn ikke i utgangspunktet mulig å prioritere deler av materialet i den forstand at vi kan grave bort andre deler av materialet udokumentert eller med redusert dokumentasjonsinnsats, hverken m.h.t. deler av tidsperioder eller deler av problemfelt. Utgravningen bør løpe med den samme intensitet og bredde hele veien, muligens med en viss tyngde på den tidligste tiden som erfaringsmessig er vanskeligst å ta rede på.

2 METHODOLOGY

2.1 The Site Coordinate System

The site coordinate system was based on the Trondheim Kommune coordinate system, which has its origin at the base of the Cathedral spire. However, since the Archbishop's Palace lies to the south of the Cathedral, the 91/1 sites have negative values for coordinates in the Kommune grid. To avoid using negative values on site, a site origin was located in the south-west of the Palace precinct (see **figure 4**). Eastings are therefore shown as increasing Y values and northings as increasing X values.

For the purposes of recording the rough position of finds, the area of the site was divided into *ruter*, rectangular areas 5m S-N by 6m W-E. These were uniquely coded, by letters from west to east (beginning with A at the origin), and by numbers from south to north (beginning with 1 at the origin). Ruter are identified by letter, then number. Thus, for example, the area from 72Y to 78Y and from 60X to 65X is identified by the code N13. To enable the closer location of finds closer within ruter, they were divided into quadrants, signified by a lower case letter, a, b, c or d. Quadrant **a** refers to the north west, **b** the north east, **c** the south west, and **d** the south east quarter of each rute. It will be seen that a quadrant has an area of 2.5m S-N by 3m W-E.

The 91/1 site consisted of ruter L12-15, M12-15, N12-15 and O12-15. The site boundaries are described in detail at 3.1; the site limits meant that the whole area of some of these ruter was not available for excavation.

2.2 Site Working Practices

The Relationship of Site A and Site B

The 91/1 site was divided into two independent areas, 91/1A and 91/1B, with separate excavation teams. Site A consisted of the area north of 65X and the whole area to the east of the Palace curtain wall, that is, ruter L14-15, M14-15, N14-15 and O12-15. Site B consisted of the area west of the Palace curtain wall south of 65X, that is ruter L12-13, M12-13 and N12-13. Each site had its own layer number sequence (see recording procedures, below). The result of this was that layers extending across the 65X boundary received both a site A layer number and a site B layer number, and were separately recorded. In interpretative terms however the site was treated as a single area, and the excavation was approached from this perspective.

Excavation Strategy

In order to assess the information available from the site, and gauge the possibility of using machine excavation of later levels in future seasons, it was decided to excavate the site down from clearance levels entirely by hand. This strategy provided useful information about the best way to approach the next seasons of excavation, in that it showed that it would be safe to use machine-stripping of the most recent layers.

Hand excavation was in general carried out by the use of *krafser*, a farm tool for digging up root crops resembling a strengthened draw hoe. This had the advantage of offering (in skilled hands) the possibility of swift excavation coupled with sensitivity to changes in the deposit. Finer work was undertaken with trowels.

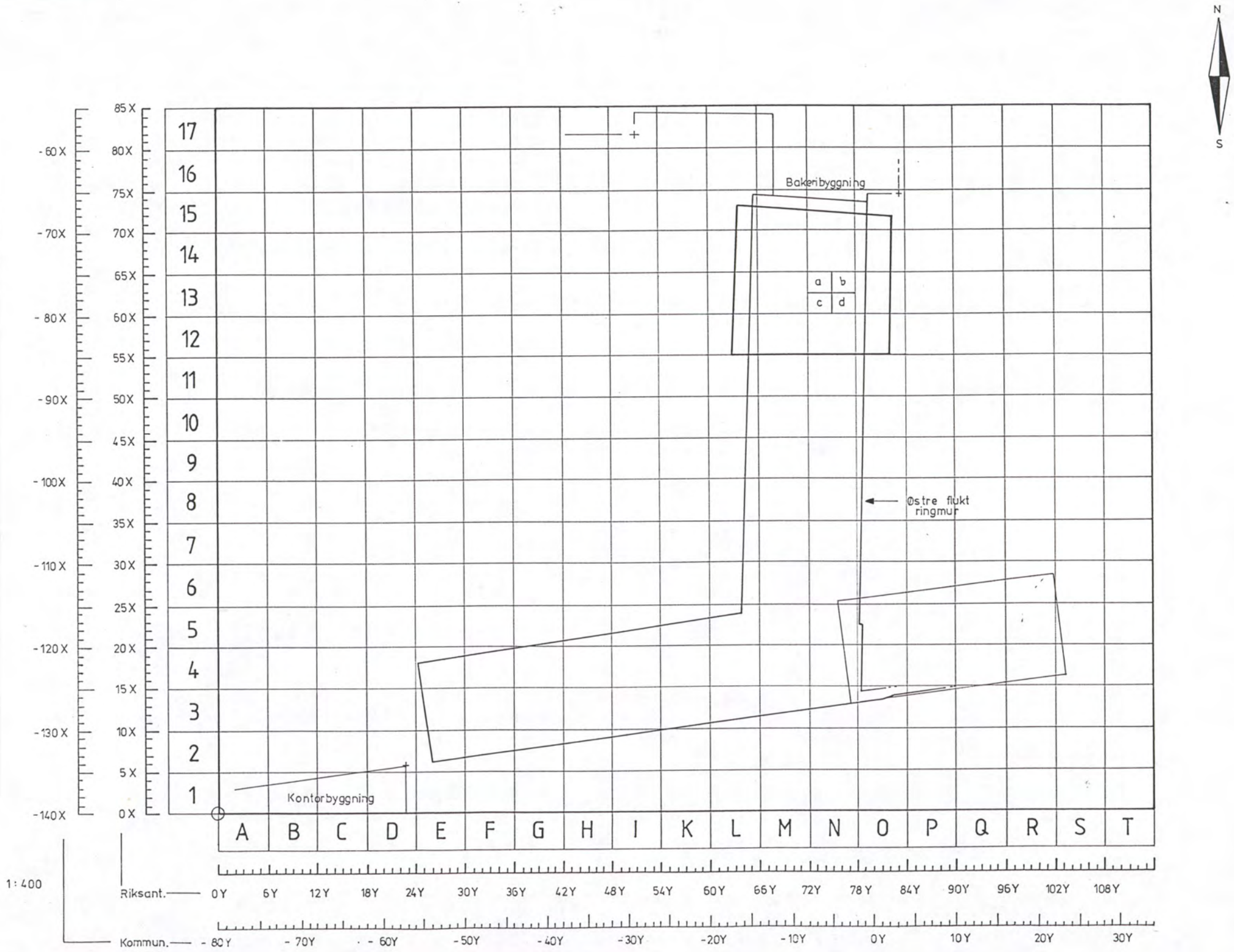


Fig. 4 The site coordinate system and town grid

The site was dug as an open area excavation (i.e. without baulks), carried out on stratigraphic principles, so that as far as possible the whole area was at the same stratigraphic level at any particular moment during excavation. This principle was extended across both site A and site B so that they remained in phase with each other. This often involved the concentration of excavation effort in stratigraphically dense areas, regardless of the site boundary (although the recording of course followed the numbering sequence of the particular site). The advantages of using such a strategy were that the interpretation of the site was simplified, allowing on-site excavation decisions to be made with more information, and it was potentially possible to recover all information, both stratigraphic and artefactual, from the site, allowing better post-excavation analysis. These advantages can be summarized by a comparison with looking through a window rather than peeking through a series of keyholes.

In line with the argument above, the use of sondages was avoided as far as possible. It was felt that an adequate timetable for an open area excavation timetable could be set out, based on the expected depth of archaeologically significant deposits and the available resources. The information allowing this was gained from historical documentary sources, previous excavation in the area (particularly Lunde, 1985) and a geotechnical survey carried out prior to excavation (Sand, 1991). Once excavation began, further information about the depth and nature of deposits was available from the emptying of deep modern intrusions. Sondages were however employed in some situations where time was limited and rapid information about deposits was necessary. Additionally, a sondage was machine-dug after the site had ended to investigate on a large scale the redeposited clay layers underlying the occupation deposits (see 3.2).

Recording Procedures

A log of weather, site-conditions, staffing and all activity on site was kept in the **site diaries**. These were also used to record on-site interpretations, correlations between layers in site A and site B and any other notes relating to the excavation.

As excavation proceeded, each archaeological context (layer, cut, fill or structural element) was uniquely identified with a **layer number**. Its physical characteristics were recorded on a **layer card**, together with a brief interpretation. The layer card cross-references to all other records relating to the context.

Plans were made at 1:20 of individual ruter (see 2.1, site coordinate system, above). Based on the nature of the features and layers revealed, and their association, the site was planned when it was felt that a significant horizon had been reached. Between these horizons, contexts were either planned as single contexts, or sketch-planned on the layer card or in the site diary. **Elevations** and **sections** were drawn at 1:10.

Photographs were taken of significant individual features, wherever possible both detailed and in context with their surroundings. Site photographs were taken on a regular basis to show work in progress and to record site-wide horizons.

A **video** record of work on site was made at weekly intervals as part of the site archive.

Finds Procedures

All finds were collected as layers were excavated; sieving of bulk samples was not carried out in general. Finds were labelled with their stratigraphic position (layer number) and their physical position recorded by ruter and quadrant, or for significant finds their exact X-Y coordinates (and in thick layers, their level). This was done as a means of plotting artefact densities. After processing, finds were registered individually with a unique accession number (**N-number**).

Sampling Procedures

Samples were taken under the following categories: botanical, zoological, metallurgical, mortar, dendrochronological, radiocarbon date and diverse. Samples received a N-number as with finds. Environmental sampling was done where possible with the guidance of the site archaeobotanist, and all sampling was done for specific and clearly defined reasons (dating, functional analysis based on residues, phasing of structural elements by comparison of chemical composition of mortar etc.). Bulk sampling was not undertaken.

Conservation of Structures

The terms of reference of the excavations included the possibility that significant architectural features might be conserved *in situ* or removed but displayed intact after conservation (see 1.1, introduction, above). This was certainly true of the Palace curtain wall, which from the outset was to be protected and displayed *in situ*. As excavation progressed, two other features were also judged to be worthy of display intact. The major feature was the tiled floor of a moneyer's workshop (see **Building A**, discussed in the stratigraphic sequence of site B, 3.4 Phase 2). It has remained under cover on site. The second feature was a sunken wood-lined latrine (see **AK14**, discussed in the stratigraphic sequence of site A, 3.3 Phase 3). This latter feature was removed from site for conservation by freeze-drying at Vitenskapsmuseet, Trondheim.

2.3 Conditions and Problems Encountered on Site

Introduction

The procedures and working practices described above are necessarily limited in the effectiveness of their aim - to provide as complete and objective a record of the site as possible - by the conditions they were carried out in, and of the site itself. A brief discussion of site conditions and their relation to the effectiveness of site procedures from a methodological viewpoint is given here. The character of the site from the point of view of its stratigraphic interpretation is discussed at 3.1.

Preservation Conditions

The height of the site (around 15 m.a.s.l. at clearance levels) suggested that water-logged deposits should not be expected and that anaerobic conditions were not likely to prevail on site. Thus preservation of soft organic material (textiles, wood, etc.) was in general poor. The exceptions to this rule came from deposits recovered from features cut into the thick clay natural below the occupation deposits. In particular, two latrines (**AK5** and **AK14** provided large quantities of well-preserved organic matter. The preservation of hard organic material such as bone or horn is very difficult to

predict, but the clayey nature of many of the sediments on site appeared to provide conditions which were not too acidic, and bone survival was generally good.

Because of the poor preservation of most of the wood, the use of dendrochronological sampling was rather limited, with dating relying on artefactual material. In one case only, remains of planking from what was potentially the earliest feature on site were sampled for radiocarbon dating.

Working Conditions

The excavation took place in the spring, summer and early autumn. Excavation conditions were generally favourable in the early part of the season, although towards the end prolonged periods of heavy rain caused some problems. A few working days were lost completely, and even when excavation was possible, conditions were difficult, with surfaces becoming damaged by water action and, despite care being taken, inevitable trampling. This undoubtedly had a detrimental effect on the interpretation of the site, although obviously an attempt was made to minimise it.

Artefact recovery

As noted above, bulk sampling and sieving for the recovery of artefacts or biological material was not carried out. This undoubtedly introduces a bias into the artefact densities, particularly for coins and other small objects. On the other hand the character of sediments was almost always evident from the artefacts that were recovered, and it can be argued that the gap between recovered and lost artefacts is likely to be largely quantitative rather than qualitative. It seems unlikely that any crucial evidence was lost.

2.4 The Site Archive

The 91/1 site archive consists of **layer cards**, **site diaries**, **site drawings**, and **photographs** in 35mm slide and large format black and white media. A number of **video recordings** were also made. Records are specific to site A or site B, and are annotated 91/1A or 91/1B accordingly. **Indices** of samples, finds, photographs and drawings, cross-referred to layer number form a part of the site archive. The components of the archive are described functionally at section 2.2 below.

The site archive and finds are stored at Riksantikvaren, Utgravningskontoret for Trondheim, Kongensgate 85, 7012 Trondheim, Norway.

3 THE STRATIGRAPHIC SEQUENCE

3.1 Introduction

The character of the site

The 1991 season of excavation at the Archbishop's Palace site involved the excavation of the area between the Palace curtain wall and the extant western wall foundations of the 1809 Eastern Storehouse, plus a strip 2m wide to the west of the western wall and 3m wide to the east of the curtain wall. The site abutted the standing Bakery building to the north, and for health and safety reasons it was necessary to leave a 1.5m baulk between it and the trench. In the area outside the Palace curtain wall however, a trench 2m wide was driven up to the foundations of the standing building after the completion of the rest of the area, and after recording immediately backfilled to avoid causing subsidence problems.

As has been noted the splitting of the site into two excavation areas, site A and site B, did not interfere with the approach to the excavation as a single site at an interpretive level (see 2.2, the relationship of the sites, above). However, some physical characteristics of the site did raise problems.

The foundations of the western wall of the Eastern Storehouse reached to natural clay, that is they were of sufficient depth to effectively isolate the stratigraphy of the area to the west of it from the area to the east. Thus two areas of the site with complex stratigraphic sequences were physically divided by an intrusion 1.2m wide. The standing curtain wall presented a different problem in that it divided two areas of the site with essentially different stratigraphies. In both cases, the need to attempt to understand the site as a whole demanded that the areas be assimilated into a single site-wide scheme.

The phasing of the site provides a framework into which the various excavation areas fit, and certain horizons can be traced across the whole site. The construction of the Palace curtain wall (Phase 1) provides the only stratigraphically demonstrable link between the areas inside and outside the Palace precinct, but the construction and occupation associated with the *Herrehus* (Phase 6) provides a reasonably firm link between the areas on documentary grounds, together with the finds evidence. The final modern phase of the site can also be linked using finds evidence. Between these linked phases, the deposits outside the curtain wall can "float" between a number of phases. In such cases they have been described once (in the earliest phase they could belong to) with the warning that the description could apply to another, or possibly more than one other phases. "Floating" layers outside the curtain wall are not sub-divided into phases as such, but are grouped together under the headings "Phase 2-5" and "Phase 7-9". Since the area outside the curtain wall was all part of site A, this applies to the site A stratigraphic sequence only.

Ten phases of occupation were identified in the excavated area. Obviously the same phase numbering is used in both the site A and site B stratigraphic sequences. The excavations as a whole also identified a total of 12 buildings, some entirely within one site or another, many spanning the site boundary. These buildings are often made up of a number of structural elements, each of which receives a separate construction number. In order to simplify the discussion, the buildings have been lettered from "A" to "L". Again, the buildings have the same designations in both site A and B.

The stratigraphy of the area excavated in the 1991 season can therefore be approached by cross referring between the same phase number in the stratigraphic sequence of site A (see 3.3), and of site B (see 3.4).

Definitions

In keeping with the usage "layer number" (see 1.4 above), **layer** can be used to refer to any archaeological context recorded on site, i.e. a general deposit, a cut, a fill, or a structural element (although it is usually reserved for deposits). It is shown in the text in bold, e.g. **654**. Within the site A stratigraphic sequence at 3.3, layers from site B which need to be discussed are prefixed with a "B" e.g. **B327**. The converse of course applies in the site B stratigraphic discussion at 3.4.

A **construction group**, or simply **construction**, refers to a physically associated group of layers, e.g. a sand make-up layer, the overlying mortar bedding layer and the tiles lying on it constitute a tiled floor construction. A posthole, and possibly the fill(s) within it (if they belong in the same phase as the cut) likewise form a posthole construction. All constructions are numbered uniquely in each site, and are referred to with a "K" prefix (from Norwegian "konstruksjon"), and shown in bold, e.g. **K99**. As with layers, constructions from site B discussed in site A are prefixed with a "B", e.g. **BK32**, and vice versa.

A **use-layer group** refers to a physically associated group of occupation or use layers. They have only been used within site A to group together the fills of the two latrines **AK5** and **AK14**. As with constructions they are numbered uniquely, but are prefaced with a "B" prefix (from Norwegian "brukslag"). There is a potential for misunderstanding here, since this is the same convention used for discussing site B layers in the site A stratigraphic sequence. However the use of "B" groups is an existing convention, as with "K" groups, and it seems needless to invent a new convention - there seems little likelihood of actual misunderstanding since there are only two "B" groups, both in site A, i.e. **B1** and **B2**.

A **layer type** refers to its interpreted function; **K** for a layer belonging to a construction stage of a phase, **B** for a layer belonging to an occupation or use stage, **D** for a layer belonging to a disuse/demolition or destruction stage of a phase. The layer type is used as a quick reference in the layer lists.

The **stratigraphic sequence** is the archaeological history of the site as represented by the layers present. It is determined wholly by the physical stratigraphy as recorded during excavation and is open to interpretation only in as far as the boundaries of deposits may have been uncertain on excavation. It can be represented diagrammatically as a **Harris matrix**, which is simply a diagram in which "up" represents movement forward in time (and of course the converse). Hence if one layer overlays another it appears above it in the matrix. The precise principles and conventions used are noted below.

The **phasing** of the stratigraphic sequence is the grouping together of layers (which may not be directly related physically or stratigraphically) to represent a stratigraphic interval in which **occupation** occurs; that is *construction layers* followed by *use layers*, and ending with *disuse/demolition/destruction layers*. In many cases not all these elements of a phase may be present (for example if construction in a succeeding phase involves removal of existing demolition layers). It may also occur that a feature remains in use over many phases (a re-used structural feature such as wall foundations for example). A phase is therefore an interpretive unit which often has rather uncertain boundaries, and in which recourse must be made to associational evidence such as finds material, alignment of structural elements and so on. The arguments for setting particular phase boundaries appear in the individual discussions below.

Principles and conventions

The following principles are employed in the construction of the matrix and in the phasing of the stratigraphic sequence.

(i) unless there is reason to do otherwise, a layer must be placed as high in the matrix as it can go.

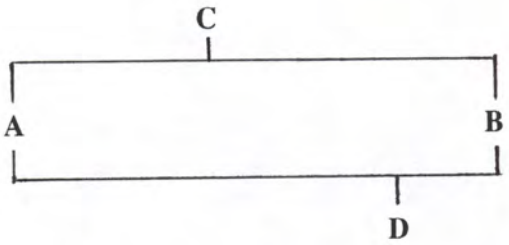
(ii) a phase should as far as possible encompass the whole excavated area, i.e. both site A and site B. This means that some phases may appear either "empty" or "crowded" in one site or the other, e.g. in a case where a particular structure may be built, destroyed and rebuilt while the general occupation of the area continues without interruption, this event is included in the wider phase (this principle is used particularly in placing both Building D and Building F in phase 3, see below).

The following conventions are employed in the matrix:

(i) a layer **A** has a direct stratigraphic relationship with a layer **B** if and only if there is path along a line connecting them whose direction is either consistently downwards or consistently upwards (sideways movement being disregarded). In the case where the direction of the path connecting **A** to **B** is downwards then **A postdates B**; conversely if the path has an upwards direction then **A predates B**.

A postdates B **A predates B**

(ii) layers **A** and **B** have an indirect stratigraphic relationship if the path connecting them includes both upwards and downwards components to its direction. In this case no strict relative chronology can be imposed on the layers. If it is possible to find layers **C** and **D** however such that **C** postdates both **A** and **B**, and **D** predates both **A** and **B**, then it is possible to say that at some point in time **A may be contemporary with B**



A and B possibly contemporary

(iii) where no stratigraphic relationship exists between two layers then it may still be possible to associate them by other means, e.g. the relationship between structural elements. An effort has been made where possible to show layers interpreted as being roughly contemporary at the same vertical height on the matrix. This is obviously not always possible, and conversely the need to keep the matrix to a manageable size can cause non-contemporary layers to be placed at the same height. In particular the requirement to place the layers outside the curtain wall on the same matrix as those within it means that the relationship of site A layers outside the curtain wall in Phase 2-5 and Phase 7-9 to those inside the wall in Phases 2, 3, 4 and 5 and Phases 7, 8 and 9 should be viewed with caution.

(iv) an attempt has been made to preserve spatial relationships on site by placing features from the west side of the site on the left side of the matrix, and features from the eastern side of the site on the right. However this has not been done when it would have involved distorting the matrix to the extent that it became confusing.

3.2 Brief Environmental/Geological Background

The Archbishop's Palace lies, with the Cathedral, on the highest ground in what is now the mid-town area of Trondheim, within the loop made by the River Nid just before it joins the fjord. The 91/1 sites were at a level of around 15 m.a.s.l.. Below the existing occupation layers in the area of the site is a layer of firm clay, with inclusions of sand and silt. This layer is upto 6m thick. Geotechnical investigations[1] prior to the excavations demonstrated that this clay was "quick-clay" deposited by landslips. Test bores in the area showed at least two or three distinct clay layers, separated by water-washed sediments deposited and then eroded by river or possibly sea action. This indicates that a number of landslip events occurred over a reasonably long period. The clay as it exists today was probably in place by the beginning of the first millennium. Below these land-slip clay layers were sediments relating to the original shore deposits predating the landslip events. Pollen analysis of these underlying deposits suggests agricultural activity in the area dating to the Iron Age (Sandvik, forthcoming). These lower deposits in turn overlie ancient deposits of clay and silt formed in a relatively deep marine environment.

The period since the deposition of the most recent land-slip clay layer has seen steady marine regression, which combined with silting from the Nid has provided a steady increase in land area. In broad terms climate has not changed dramatically in the period since the deposition of the land-slip clay layer, and has certainly been suitable for supporting a farming economy.

3.2.1 Natural ground

As noted above (1.2) it was known prior to excavation that a clay layer resulting from an ancient landslip formed an archaeologically sterile layer over 5m thick. For the purposes of the 1991 excavation this constituted "natural" since excavation through it was unfeasible. Test sections by Øivind Lunde in 1985 demonstrated that the Palace curtain wall was founded on clean, compact clay (Lunde, 1985). It appeared from the 1985 sections that the construction layers directly overlay this clay; no construction cut for the wall through the clay was identifiable however. During the 1991 season the 1985 trial trenches were reopened and extended outside the Palace curtain wall. The

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[1] This is a summary of the report by Kåre Sand of the Geoteknisk Seksjon of Trondheim Kommune, Teknisk Avdeling, R.832.

sections were examined by Kåre Sand of the Geoteknisk Seksjon, Trondheim Kommune. In his view stones of any appreciable size could not have been transported in the clay by the same mechanism responsible for its original movement, and should not be present in undisturbed landslip clay. Such stones were however present in the test sections to a depth of around 0.5m below the top of the clay layer. Sand did not regard frost action or biological action as satisfactory mechanisms for transporting the stones down from the surface of the clay to such a depth within it. The conclusion must therefore be that they are there as a result of human activity, and the easiest interpretation is that a layer of clay upto 0.5m thick has been manually redeposited on top of the landslip clay. However such action would be expected to seal the existing soil horizon on the landslip clay. This is supported by observations elsewhere in the area of Erkebispegården during recent digging work for lighting installation (Ian Reed, pers. comm.). It is not supported by the excavations in Erkebispegården however; there is no distinct boundary between clean landslip clay and the overlying "stony" clay.

Hand excavation was stopped when this layer of "stony" clay was reached. However at the end of the season a mechanical excavator was used to dig a trench 1m wide from east to west across the site to gain an estimate of the actual level of undisturbed landslip clay. The results showed a gentle slope from west to east, with the layer of stony clay becoming slightly thicker from west to east. The exposed level of stony clay (corresponding to **A612/A675**) on site was c. 14.6 m.a.s.l. at the 68X line the sondage was cut along. The sondage extended from about 65Y in the west to 75Y in the east; three sets of levels were taken at the ends of the sondage and in the middle - i.e. at approximately 5m intervals. In the west, uncontaminated clay was exposed at a depth of 14.36 m.a.s.l., in the middle at 14.17 m.a.s.l. and in the east at 14.07 m.a.s.l..

While allowing for some inaccuracy in judging the exact level of natural, the presence of a slope seems undeniable and reflects the natural contours of the site. In other words the stony clay layer to some extent seems to be making up ground to the east where the land drops away. The implications are discussed further at 3.3, Phase 1.

3.3 Phasing in Site 1991/1A

ACKNOWLEDGEMENTS

Site A

I should like to express my gratitude to all my friends and colleagues at Riksantikvaren for their help during the '91 season. Firstly I must thank Chris McLees, Sæbjørg Nordeide and Marit Longva, not only for their professional help but for their great personal kindness: I remain indebted to them. Edwin Baker braved all sorts of bad weather and bad-tempered site leaders to produce a fine photographic archive; Lyn Blackmore and Erna Stene led a busy finds office; and Snorre Bjerck controlled the drawing office with a sure touch and good humour. Ian Reed cast a specialist eye over the pottery, and made a number of pertinent observations. My thanks also to Kåre Sand, who visited the site during excavation and made some useful comments concerning "natural".

It was my pleasure to work with a fine excavation staff, to all of whom my thanks are due. In particular, Kristin Prestvold did a very competent job as site assistant; my thanks also to Anders Olsson and Stig Møller for their excellent work in the difficult area outside the curtain wall; to Morten Steineke, who dug with gusto; to Dorte Boldsen Lund, who dug with patience; to Elise Roll-Lund and Kenan Fulks, who spent the wettest part of the season down the deepest, smelliest features on site without complaint; and my very best thanks to Jette Linaa and Paula Sandvik, who stayed on for the final two week extension of the season and worked long and hard to get the site finished.

Bob Bazely
March 1992

NB! FOR RELEVANT PHASE PLANS SEE CORRESPONDING SECTIONS IN SITE B REPORT: relevant page numbers listed in "Contents".

PHASE 1

General Characterization

The entire area appears to have been cleared of topsoil to expose firm natural clay. A layer of clay was then deposited over this surface. This clay layer is interpreted as the levelled upcast from the foundation trenches of the earliest Cathedral building. Feature **K1** was then constructed within a pit apparently cutting the surface of this redeposited clay. The feature appears to have been the foundation of a buttress of the original stone-built Archbishop's Palace, or more likely a later annex to it, located to the north of the area of excavation. At a possibly much later date, the Palace curtain wall **K2** was constructed. The upcast from the construction trench for the wall was initially mounded to the west of the wall, that is within the Palace precinct, and subsequently levelled when the construction of the wall was finished. The buttress feature seems to have undergone structural modification at about this time, and possibly as part of the same process a sunken wood-lined cistern **K5** was constructed with an associated stone-laid drain **K6**, which presumably channelled rainwater run-off from the building associated with the buttress. Outside the curtain wall a cobbled roadway **K8** was laid, running parallel to it.

Stratigraphic Sequence

Earliest layers (level a)

The phase began with the removal of any existing topsoil over the entire area to expose firm natural clay. A layer of stony clay, **675**, was then deposited over this surface. This layer was not excavated and was recognized in test sections only. Inside the curtain wall it seems reasonable to associate clay **612** (=**B583**?) with the same depositional process as **675**, regarding it as the contaminated upper portion of it. **612** contained bone and wood chips. Outside the curtain wall, clay layer **109** is the stratigraphic equivalent of **612** but was a much more contaminated deposit, probably due to its having been exposed to a higher level of trampling during the construction of the curtain wall (see discussion below).

Buttress feature

Feature **K1** occupied a shallow rectangular pit apparently cut from the level of **612**. The presumed cut could not be identified in the field despite painstaking excavation and was thus not originally assigned a number. For the purposes of discussion however it has been assigned the number **676**. The difficulty in recognizing the cut may have arisen from the tendency of clay to exhibit plastic flow over long periods of time, filling any gaps between the stones filling the pit and the side of the cut. Additionally, clay **608** was rammed down between the stones and is texturally indistinguishable from **612**, presumably being the upcast from the digging of the pit. Because of subsequent truncation and reconstruction (represented by **K4**) it is difficult to be certain that the presumed cut was actually from the level of **612**; however, the superimposition of **K4** over a clay dump **593** which itself overlay **612** suggests that it was the true level of construction. The feature extended beyond the northern limit of excavation.

Curtain wall and later layers

Also cutting the earliest clay layers was the construction trench for the Palace curtain wall **K2**. This was not fully excavated inside (i.e. to the west of) the curtain wall, but could be recognized as a wide gently sloping depression. Outside the curtain wall the trench edge **346=320** could definitely be seen to have cut **109**. At the base of the wide, gently sloping cut was a vertically sided trench **660** within which the wall foundations were laid flush. The upcast from the digging of the construction trench appears to have been mounded to the west of the line of the wall, and levelled out when construction (at least of the footings) was complete. This levelled out clay formed layer **654=B542**, and partly infilled the construction trench inside the wall.

The only evidence for scaffolding or lifting equipment associated with the construction of the wall was a posthole **K3** cut into **109** within the construction trench **346**.

Apparently the wall footings were in need of attention for repair or strengthening before the wall itself was completed. A small, narrow cut **K7** against the outside of the wall postdated the cutting of the original construction trench **346** but was itself sealed by the primary backfill of the trench. This was mortar deposit **186**, which filled the construction trench outside the wall along the entire length of the area of excavation, covering the foundation plinth (see description of **K2** below). In contrast to this, inside the curtain wall a dump of soft brown clay **655=B575** was deposited against the wall footings. Mortar spread **656=B573** may relate to the construction of the wall, but overlay **655**.

After the levelling of **654** a number of local dumps of clay were deposited over it. They do not appear to have been related to specific construction activity. They are clay dumps **653**, **650**, **642**, **626** (=**622**?), and sand dump **652**. The variation in the colour/texture of the clay dumps probably reflects the fact that they were dumped over a period of time and exposed to the weather to varying degrees.

Layer **622** directly overlay **612**, but in textural terms it appears reasonable to associate it with **626** (which had the site B equivalent **B532**). The two layers were numbered separately since they originally appeared to be separated in the area near **K1** by a thin linear deposit of clayey silt with patches of decayed bark, **627**. This was subsequently interpreted as a possible wooden plank associated with construction activity which was then abandoned and left to completely rot away. To the south, overlying **626** was a semicircular group of cobbles **629** on a patch of silt **630**. These were originally thought to form a construction feature, possibly the remains of a stone-packed posthole. It seems more likely that they were simply a random dump however.

Outside the curtain wall, thin local deposits of contaminated clay **355**, **302** and **301** may simply represent areas of particularly heavy trampling on **109**. Clay dump **355** (through which **K7** cuts) appears to have been a deliberate dump against the wall footings. It may have represented a first attempt to remedy local subsidence prior to the more serious action suggested by the cutting of **K7**.

A spread of charcoal **341** outside the curtain wall was perhaps debris from a site bonfire. It may not have been the remains of *in situ* burning since the underlying surface of **109** did not appear scorched.

Later features (level b)

In the north of the area outside the curtain wall, traces were found of a well-made cobbled roadway or path **K8** running parallel to the curtain wall N-S.

In the west of the site, beyond the edge of layer **654**, a wood-lined sunken cistern **K5** was dug into **622**. Clay layer **593** which spread from the limit of **K5** northwards to the edge of excavation may have represented the levelled out upcast from the pit, although this is speculative. Overlying **593** were the remains of wooden beams associated with major modification **K4** to buttress feature **K1**, and a stone-lain drain **K6** feeding into the cistern **K5** which presumably channelled rainwater run-off from the conjectural building associated with **K1/K4** beyond the northern limit of excavation. There may have been some form of rough surface associated with the cistern and drain, consisting of floor tiles and bricks bedded in sandy clay **658**. The tiles were randomly set and did not form a coherent surface however, with many of them being broken when laid, and some having been laid upside down. It may simply have been a temporary construction surface. The deposit was badly truncated and was only really recognizable as a surface in the western section of the area of excavation.

Feature **K5** was later used as a latrine (see phase 3) but it seems apparent that it was constructed and used in phase 1 as a freshwater cistern.

Late in the phase a number of dumps were deposited against the inside of the wall, probably as a means of infilling the depression left by the incomplete backfilling of the construction trench. Notably, **646** and **647** seem to relate to industrial activity, in particular iron working. **647** contained a large amount of iron working waste, consisting of both whole and broken plano-convex furnace-bottom slags. These were approximately 0.2m in diameter, and reasonably shallow (around 0.1m deep). Around twenty or so whole or nearly whole slags were recovered, and sampled for metallurgical analysis.

Descriptions of Constructions

K1 Buttress foundation: 608, 617, 648, 676.

The feature consisted of two courses of large rounded stones **617** (possibly beach cobbles) packed with clay **608**, lying on planking **648** within pit **676** (see **figure 5**). The pit appeared to be cut from the surface of **612**, while the planking rested on **675**. The northern boundary of the feature lay beyond the limit of excavation. The orientation of the pit was slightly skew to N-S, being closer to NNE-SSW. Its greatest extent NNE-SSW was about 1.5m, while it was 2m across ENE-WSW. The feature was truncated, and partially disturbed by a later intrusion to the west. Environmental analysis of the planking suggests that it was unlikely to have been exposed for very long before being sealed by the stones and clay. It was in a poor state of preservation and unsuitable for dendrochronological analysis, however a sample was submitted for radiocarbon dating: T-10086 N118534, **648** AD1320-1415. Clay **608** is texturally indistinguishable from **612** and is presumably the upcast packed back down between the stones to consolidate the foundations.

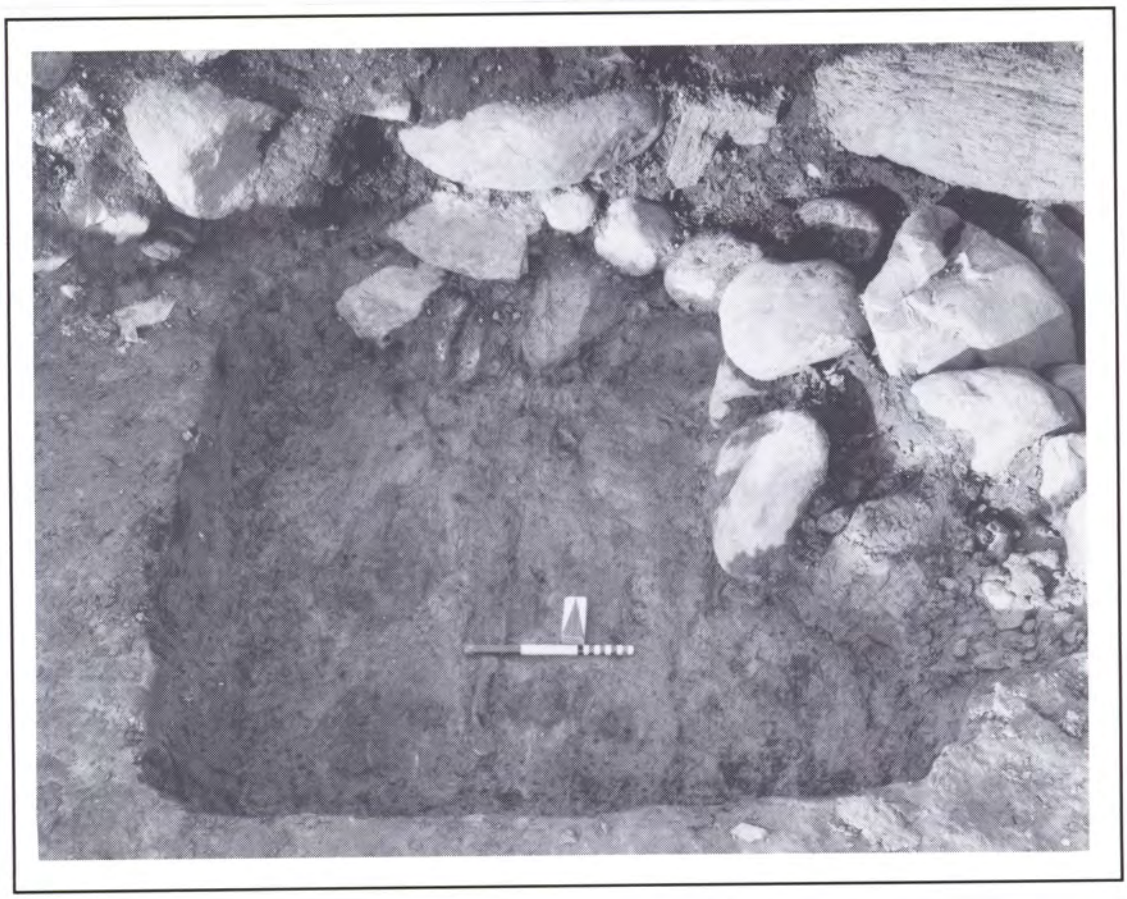


Fig. 5 K1 partially excavated, showing planking 648 (looking N.)

K2 Palace curtain wall: 3, 258, 320, 346, 369, 659, 660.

A broad linear trench **346** orientated N-S with a gently sloping cross-section forms the primary construction trench, about 4m wide E-W. It extended beyond the northern and southern limits of excavation. It was observed as a sharp change of slope in overlying clay layers both inside and outside the wall, and as a true cut through layer **109** outside. The cut was numbered **346** in the north of the area outside the wall where it showed a very uniform straight edge. South of later intrusions it was numbered **320**, where it was much more irregular and appeared to have a distinct fill **258**. It is possible that **320** was actually a secondary trench, cut against the wall foundation when it was already standing, in order to allow strengthening of the footings (compare **K7**). At the base of **346** a linear, vertically sided foundation trench **660=B582**, c. 2m wide, was cut to hold the wall foundations. Trial trenches showed it to be at least 1m deep (see **figure 6** and **figure 7**). The wall foundation consisted of large rounded stones laid 44 flush to the sides of **660** and apparently packed with clay (though this may have been an effect of the surrounding clay flowing into voids between the stones over time). The foundations appear to have been piled, at least in some areas, perhaps as a response to local soft spots threatening to undermine them[1] (see **figure 8**).

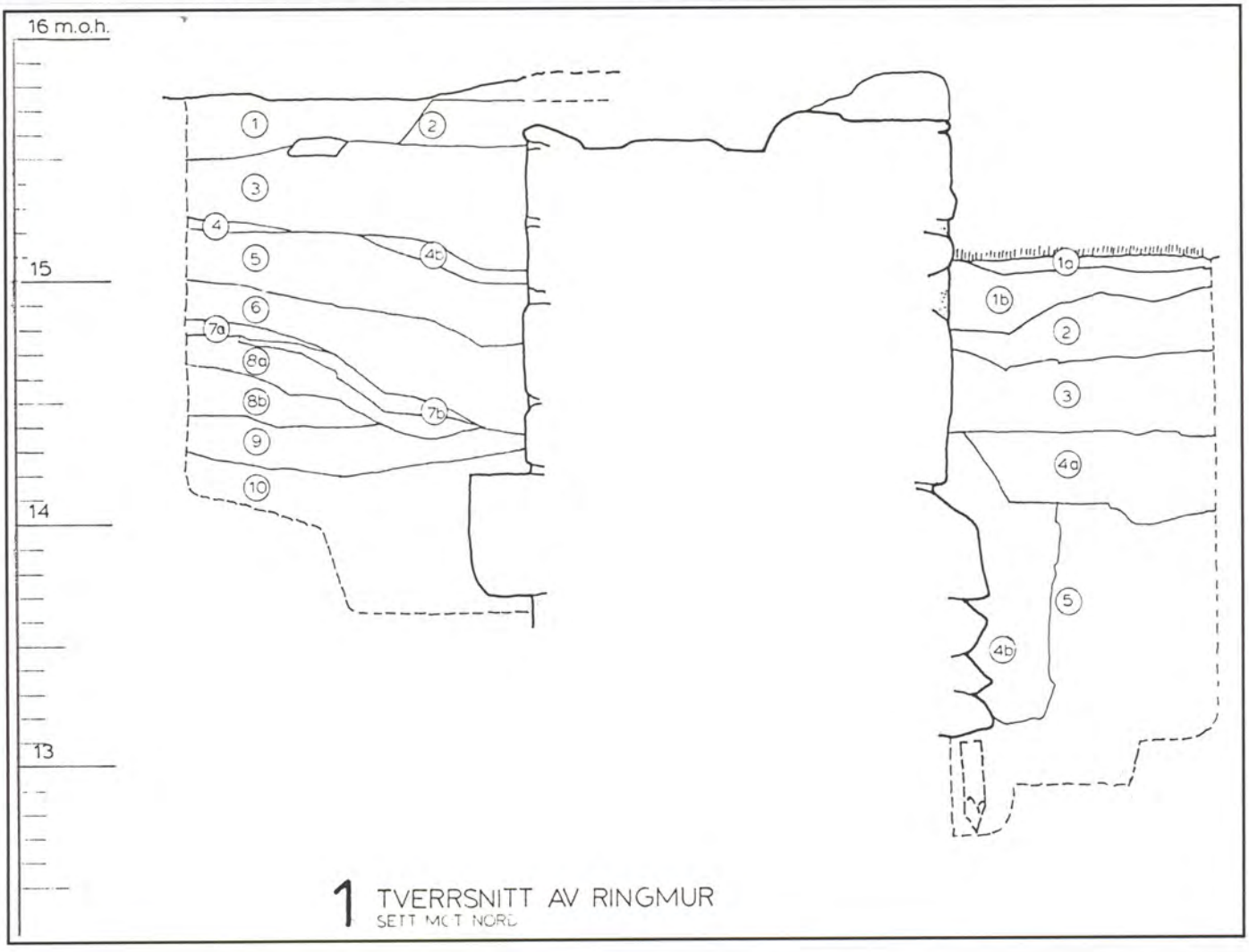


Fig. 6 1985 trial trench 1, section drawing (looking N.)

[1] No piles were found in the 91 excavations, however a trial trench dug by Øivind Lunde in 1985 clearly showed the presence of a wooden pile underlying the wall foundations: photograph B/W I/11 of the Lunde archive is reproduced as figure 8.

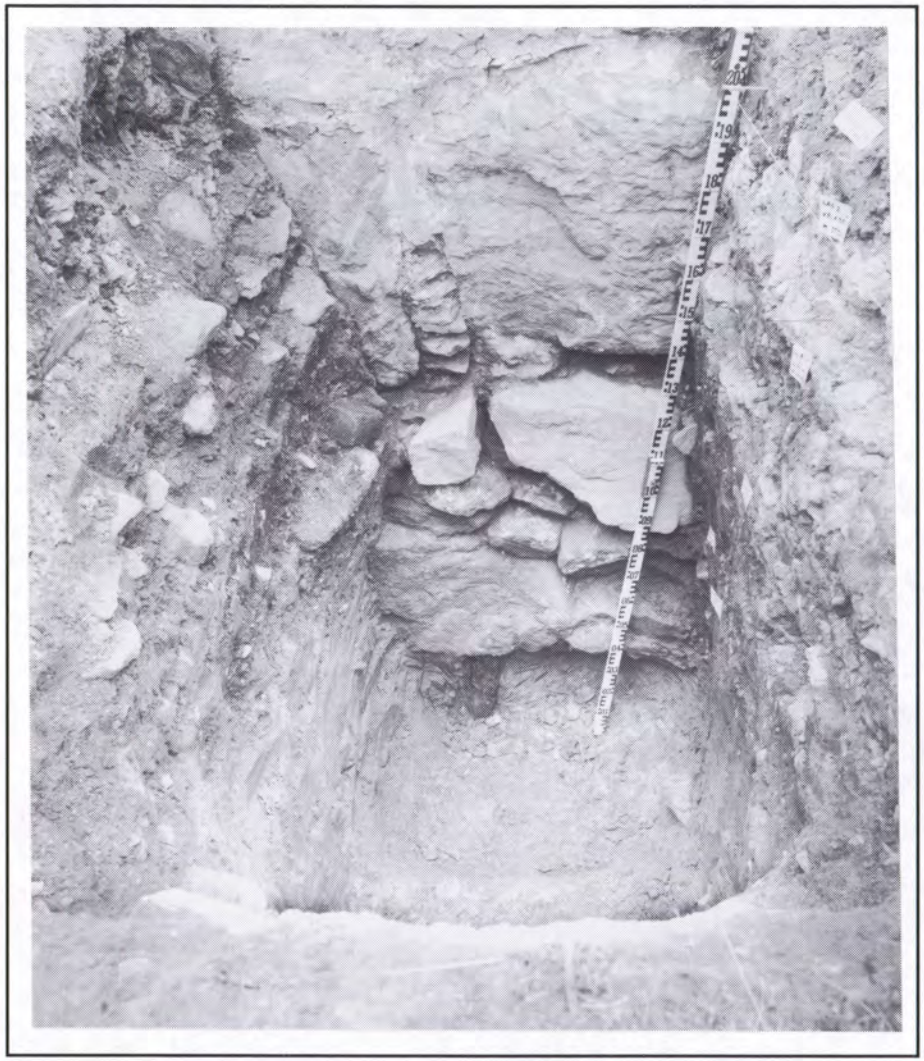


Fig. 8 *1985 trial trench 1 (E. of curtain wall), as excavated originally (looking W.)*

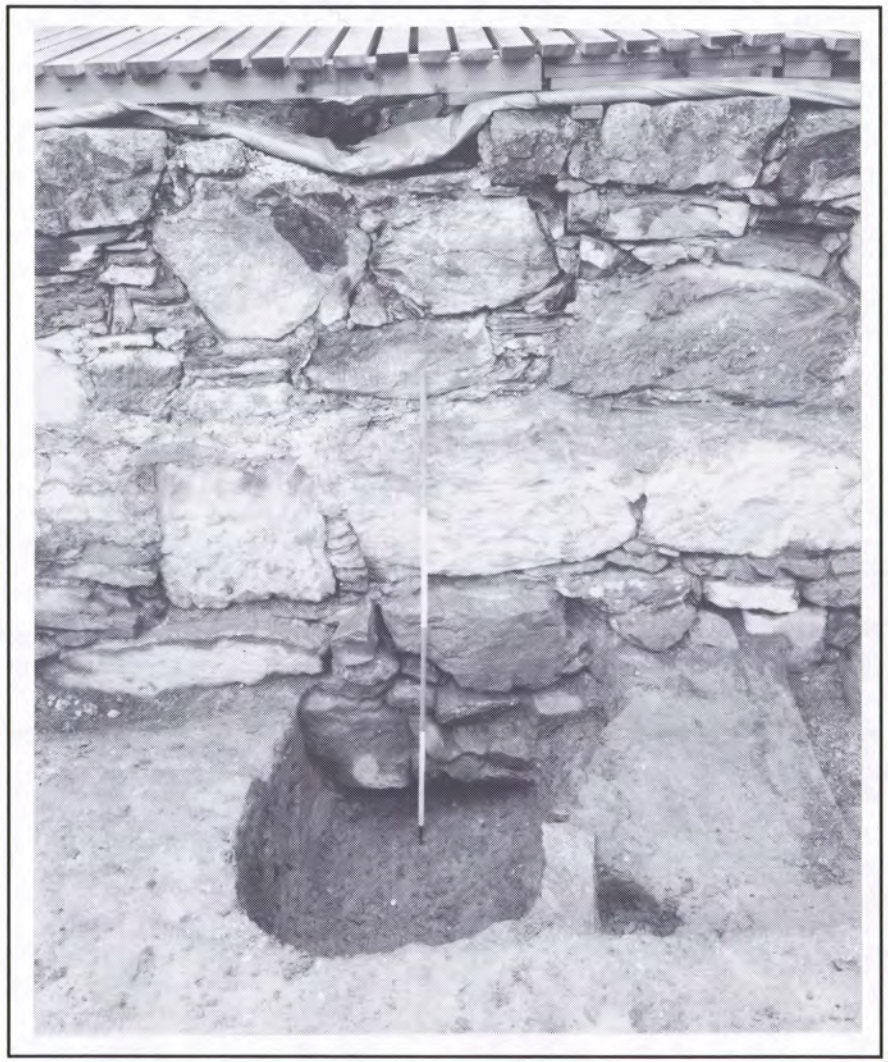


Fig. 7 *1985 trial trench 1 (E. of curtain wall), as re-excavated in 1991 (looking W.)*

On top of the unmortared foundation stones filling **660** was a plinth upto 0.5m thick, jutting out very unevenly with a maximum width of c. 2.5m E-W. The plinth was predominantly made up of flat-sided sub-rectangular pieces in cases over 1m long. It included re-used architectural pieces. It was consolidated to the wall **3=B580** above and the foundations below with mortar, numbered **369** outside the wall and **659** inside. There is a divergence in the character of the wall at this level, with **659** forming a thick, consolidated deposit covering the plinth almost completely, while **369** tends to be much more patchy, with the stones of the plinth being completely exposed in many areas outside the wall. This is perhaps counter-balanced by the thick mortar deposit **186** which was subsequently lain alongside the outside of the wall.

The function of the plinth was presumably to provide a level surface for the faced portion of the wall **3** above ground to stand on. This was made up of very large polygonal blocks, on average between 0.5m and 1.0m long, randomly coursed, with smaller flat stones, brick and tiles used as fillers, all set in a hard concrete (see **figure 9**). The larger stones appear to have been roughly faced, with some on the internal (western) side showing signs of working, perhaps to key in wooden structures such as stairs which may have led to an original rampart (see the site B description of construction **BK1** for details). Alternatively, and perhaps more simply, the stones showing such working were simply re-used from elsewhere (**figure 10**). The wall above the plinth is 2m wide. Its extant height is c. 1.5m but it is known from documentary sources that the wall was partly demolished and levelled prior to the construction of the Herrehus in 1640 (see phase 6). Much of the pointing and exterior mortar facing no doubt postdates the original construction. It is not possible to comment on the core of the wall with certainty, but rubble packing seems most likely.

K3 Posthole: 365, 366.

A circular posthole **365** with a diameter of 0.3m and a depth of 0.18m, cut into **109**. It was backfilled with **366**, a loose sandy gravel with mortar fragments which was possibly the same as **355**, a contemporary deposit associated with the construction of the curtain wall **K2**. It lay within the construction trench for the wall **346** and was possibly a posthole for a scaffold/derrick used during construction (compare **BK2**, inside the wall).

K4 Structural modification of buttress K1: 330, 331, 588, 596.

Burnt wooden beams **331** and **588** appear to have bound a structural modification of the buttress feature **K1** within which large unworked stones **330** were packed with sandy silt **596**. The feature was disturbed by a modern intrusion to the west and extended beyond the northern limit of excavation. It seems likely that the original buttress must have been completely levelled for the modification to be made. That it was a modification and not part of a two stage construction seems to follow from the imposition of clay **593** between the level of the original cut and the wooden beam **331**. The construction followed the same orientation as **K1** and had similar dimensions.

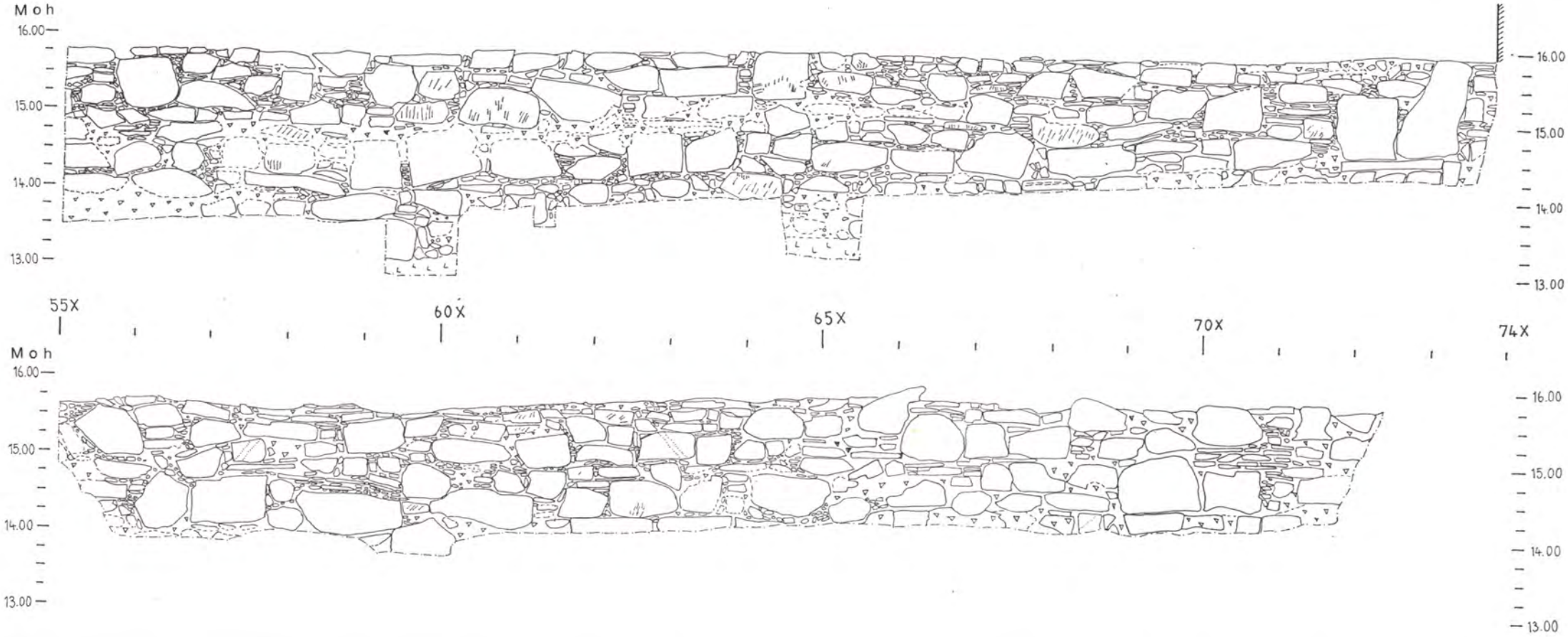


Fig. 9 *Curtain wall AK2=BK1: east-facing elevation (above); west-facing elevation (below)*

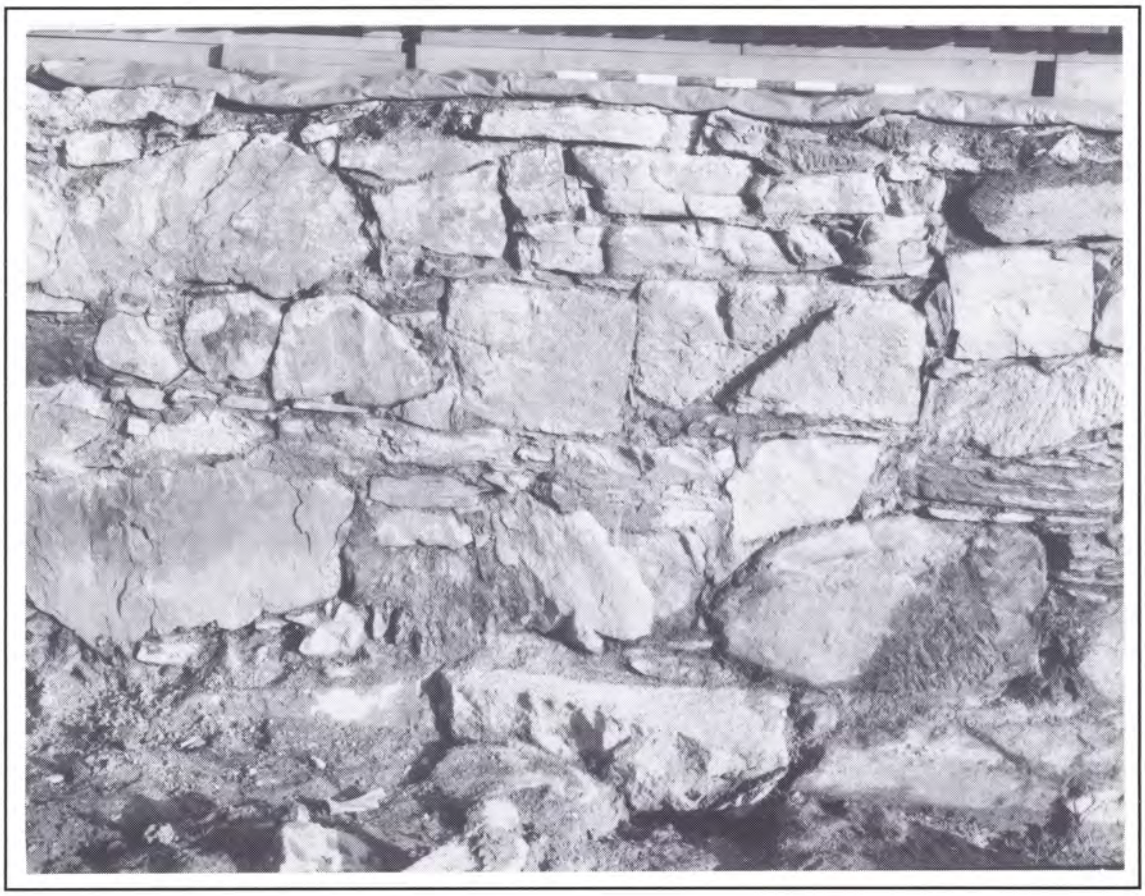


Fig. 10 Curtain wall AK2=BK1: detail of west facing showing oblique slot (cf. fig. 9).

K5 Sunken wood-lined cistern: 401, 494, 495, 496, 497, 498, 532.

Construction pit **401** appeared to be roughly oval, with its longest diameter aligned roughly E-W, its western edge actually lying beyond the limit of excavation. It was c. 1.5m wide N-S and at least 2m wide E-W. Collapse of the pit sides and the overhanging section made excavation unsafe and the feature was therefore not properly excavated, however it appeared to cut the surface of layer **622**, with surface **658** contemporary. The bottom of the pit was cut to a depth of 1.4m below **622**, with a bottom level of 13.3 m.a.s.l.. The pit contained an asymmetric wooden box-structure, with the eastern face aligned very closely to the orientation of drain **K6**, that is NNE-SSW, while the other faces were more or less aligned N-S and E-W (see **figure 11**). Corner posts **494**, **495**, **496** and **497** were cut from round timbers with traces of bark still present on them. They varied in diameter between 0.33m for **495** to 0.2m for **497**. All were sawn flat, with **495** having additionally a chamfered edge. They were anchored in clay, with **495** again standing alone in that it rested on a flat stone. They revetted planking **498**, which consisted of planks 0.06m thick, between 0.25 and 0.30m wide and of varying length: the northern face being 1.4m long, the southern 1.2m, the western 1.1m and the eastern 1.2m. The gap between the wooden lining and the construction pit was packed with rammed down clay and stones **532**. None of the planks appears to have been re-used from elsewhere. Dendrochronological samples were taken from the planking and one of the posts.

K6 Stone-lain drain: 358, 373.

The construction consisted of flat slate stones set in a line on which two parallel lines of cobbles had been laid, collectively numbered **358**. The cobbles were packed with clay **373**, presumably as a means of waterproofing the channel formed by the rows of stones. The construction was skewed to a similar orientation as buttress feature **K1/K4**, that is NNE-SSW (see **figure 12**). It lay on clay **593**, which may possibly have been the upcast from the digging of pit **401** for cistern **K5**. The drain extended north beyond the limit of excavation, but presumably was linked in some way to the building to the north of the excavation area implied by buttress foundation **K1/K4**. To the south the drain fed into cistern **K5**, but due to later truncation the way in which it did so is not known. The drain was just over 0.5m wide, with the central channel between 0.1m and 0.2m wide. The drain had a very gentle slope, dropping from a height of 14.95 m.a.s.l. by the northern limit of excavation to a height of c. 14.8m by the cistern **K5**.

K7 Pit against wall K2: 363, 364.

A small, narrow pit **364** dug against the footings of wall **K2** presumably to allow strengthening of the footings or to pack down an area of subsidence with backfill **363**. Less than 2m long N-S and c. 0.3m wide E-W.

K8 Cobbled roadway: 250, 252, 318, 319.

The feature consisted of large cobbles **252** bedded in coarse sand **250**. This lay on a thin sandy gravel **318** which overlay a thick consolidated mortar deposit **319**. The surface was only present in the very north of the site, extending beyond the northern and eastern limits of excavation. It ran parallel to the wall at a distance of 1.8m from it. It was truncated to the south, having a ragged and incomplete southern limit. The size of the cobbles and the thickness and strength of the underlying make up layers suggest that the path was intended to sustain heavy traffic. Traces of it extending to the north of the area excavated in the 91 season may have been located during previous excavations, but this is unclear[1].

[1] Excavations by E. Dahlin in 1987 during cable laying in the area immediately east of the Archbishop's Palace located a number of areas of cobbling, but they are described as being small in comparison to the large cobbles forming **252** (Dahlin, 1987).

Fig. 11 Wood-lined pit K5 (looking S.)

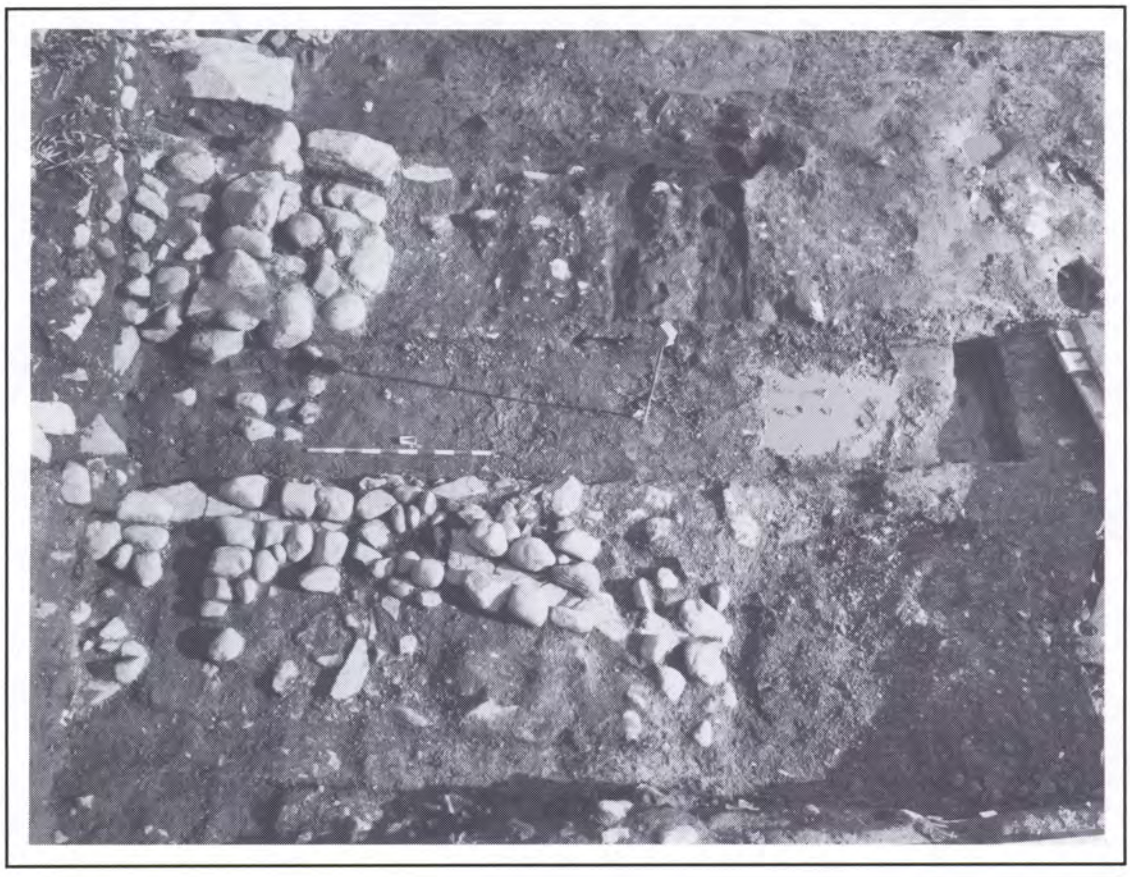


Fig. 12 K4 buttress modification(?) and K6 stone drain(?) (looking E.)

Layers not included in constructions

Layer	Equivalents	Type	Brief Description
109		K	construction surface
186		K	mortar layer by wall **3**
301		K	clay make up
302		K	make up
321		K	clay dump against wall **3**
341		B	bonfire debris
355		D	mortar/clay dump
593		K	clay make up
612		K	construction surface
615		D	mortar dump
622		K	clay make up
626	**B532**	K	clay make up
627		K	clay make up
629		D	clayey sand dump
630		D	Dump of stones
642		D	clay dump
646		D	Dump against wall **3**
647		D	Dump against wall **3**
650		D	clay dump
652		D	sand dump
653		D	clay dump
654	**B542**	D	levelled clay dump
655	**B575**	D	Dump against wall **3**
656	**B573**	D	mortar dump
658		K	surface
675	**B583**	D	clay layer

Dating

No satisfactory artefactual dating is available from any of the earliest clay layers or the major constructions. A sherd of German redware pottery was identified in layer **653** immediately overlying the upcast from the curtain wall construction trench. This possibly suggests quite a late date (C16th?), but the type has a wide date range. A sherd of Dutch common redware pottery identified in mortar **186** against the outside of the curtain wall has a similarly wide date range. (A piece of late local lead-glazed ware in **186** appears to be intrusive). Sample N118534 of planking **648** at the base of feature **K1** was submitted for radiocarbon dating to Laboratoriet for Radiologisk Datering, NTH. This gave the result: T-10086 555±40 BP, AD 1320-1414. The dating of the wall is very loosely tied down, with a *terminus ante quem* from stratigraphically higher deposits around the later 1400s - Raeren pottery sherds were present in dumps against the wall both inside and outside fitting well with this. A coin from layer **302** outside the wall (acc. no. N116686) dates to Christian I (1448 - 1481) which also fits fairly well with a late 1400s date for the end of the phase. It is possible to argue that the wall probably postdates feature **K1** (see discussion below), in which case a *terminus post quem* can be supplied from the radiocarbon dating. Dendrochronological dating of feature **K5**, which is evidently associated with drain **K6** and therefore contemporary with or later than the construction of the curtain wall, might also supply a tighter *t.a.q.* for the completion of the wall.

Discussion

This first phase is something of a catch-all in that it incorporates all activity upto the completion of the curtain wall **K2**, which bounded the Palace precinct. It is known that a stone-built Palace was standing in the 1100s (see for example Fischer, 1977, p. 10), which possibly predates the construction of the wall by several centuries. (The radiocarbon dating of the buttress feature **K1** is of much interest in this context). The discussion of this phase therefore falls into two main halves; what was there before the construction of the curtain wall, and what was contemporary with its completion. An understanding of the stratigraphy of the earliest redeposited clay layers is central to reconstructing the pre-wall period of the phase, and this is examined first, followed by an argument suggesting that the raising of the wall **K2** was part of a general construction program in which the conjectural building associated with **K1** beyond the northern limit of excavation underwent structural modification, with **K4**, **K5** and **K6** also as part of this program.

To recap 3.2: above what can be considered beyond any doubt to be naturally deposited clay is a layer of contaminated clay, **675**, upto 0.5m thick. On sedimentological grounds this clay must be redeposited. Above this layer are much more contaminated clays (**109** east of the curtain wall and **612** west of it) which are best interpreted as trample surfaces of **675**, associated with the construction of the curtain wall.

A human agency for the deposition of **675**, even in the quantity involved, is not in itself problematical. The digging of the Cathedral foundations would have required the excavation of many thousands of tonnes of clay and this mass would presumably have been levelled out over the surrounding area. It might be expected that this dumped clay would seal the existing soil. That this has occurred in some places is supported by observations of recent ground work in the Cathedral graveyard: trenches cut to allow the installation of lamp posts revealed a thick clay deposit overlying a sealed soil horizon which in turn overlay a lower clay (I. Reed, pers. comm.). The absence of such a soil horizon in the area of the current excavations implies that it was completely stripped of soil and subsoil before dumping began. The motivation behind this is not immediately obvious, but a number of possibilities arise. Perhaps the most persuasive explanation is that the soil was removed and mounded for use in landscaping of the area around the Cathedral environs after completion of the building. Alternatively it is possible that the soil was sufficiently fertile to be valuable enough to remove for use elsewhere - according to saga references a Viking-age farmstead stood on the site (Snorre, p. 4). Probably least persuasive is the notion thatl some natural phenomenon such as severe erosion following storms literally scoured the locality clean of soil in the area investigated. It should be said however that the areas examined were very small and may have produced atypical results. Further excavation in succeeding seasons should produce a more representative sample.

Following the deposition of **675**, and allowing **612** and **109** to be simply the contaminated upper portion of it, the situation arises in which features **K1** and **K2** follow on without any gap in the stratigraphy. However it seems almost certain that **K1** predates **K2**, and that it is the modification of the feature, **K4**, which is contemporary with the wall. The reasoning behind this is that **K1** seems almost certainly to relate to a building further north, beyond the limit of excavation. It is open to question whether this conjectural building dates from the 1100s. It is perhaps more likely that it is a later addition to the original Palace building: certainly it postdates the construction period of the Cathedral since it cuts through the redeposited clay **675**. It seems reasonable to suppose that the building associated with **K1** was in use for long enough to allow some sort of deposit to form on top of the surface of **675**, and yet the surface of the clay in that area (**612**) is remarkably clean. There is certainly no sign whatsoever of the soil one might have expected to have formed if the surface was open for a number of decades. It therefore seems that the area was cleared again, truncating the ground surface contemporary with **K1**, prior to the construction of the curtain wall. The construction

trench for the wall was then dug and the upcast mounded to the west. This seems clear from the much heavier contamination of **109** (i.e. the surface of **675** to the east of the construction trench) than **612** (the surface to the west), which is most easily explained as a result of the surface to the west being protected by the mounded upcast. The mounded material was subsequently levelled out forming layer **654**.

After the levelling of **654**, further clay dumps were deposited, and partly overlying these was clay layer **593**. This was possibly itself levelled upcast from the digging of the construction pit for cistern **K5**. Overlying **593** were both the drain **K6** and the modification to feature **K1**, that is, **K4**. These three features therefore seem to be connected, and if the postulated general truncation of the area is associated with the construction of the curtain wall **K2** as seems most obvious, then the whole sequence of construction can be seen as an integrated development. In this light the cobbled roadway or path **K8** outside the curtain wall can also be seen as part of this construction program, its make-up layers resting directly on **109**.

It should be stated that it is stratigraphically possible that the cistern **K5** and drain **K6** were not constructed until the next phase, however it is felt that they are better explained as part of an integrated construction program in this phase.

There is some evidence that industrial activity was taking place at a fairly early stage (possibly on a very small scale) after the completion of the curtain wall. In particular dump **647** seems to indicate that iron working was taking place inside the Palace precinct. Although there is no structural evidence for industrial activity on the site in phase 1, given that the dump was relatively small it is unlikely that the slags originated outside the Palace precinct. In fact there is no reason to suppose that they did not derive from iron working activity quite close to their dump location. With regard to this it is worth noting that a broken "firestone" or furnace blowhole (acc. nr. N120826) was found nearby in layer **642**, a stratigraphically early layer. It is also worth noting evidence for possible glass making in site B at a very early stage (see further the site B phase discussion).

It is possible that this activity may have been associated with reconstruction of the main Palace building or an annex to it as part of the construction program discussed above.

PHASE 2

General Characterization

The phase consisted of the construction, use and demolition of **Building B**, which was probably contemporary with the use of a moneyer's workshop, **Building A**, in site B. The building was constructed from wood, incorporating a massive clay-packed stone platform **K10** of unknown function, and possibly incorporating a circular stone feature **BK10** in site B. A strip of cobbling **K11** alongside the inside of the curtain wall was probably associated with it.

Outside the curtain wall the disuse of cobbled roadway **K8**, followed by dumping over the whole area and the digging of pit **K66** may date to this phase. Note that the stratigraphy of the area outside the curtain wall cannot be satisfactorily divided between phases 2-5, and though it is described and discussed in detail for this period in this phase, it may relate to these later phases also.

Stratigraphic Sequence

The phase began with general dumping of clay deposits **567=B533**, **645=B532**, **651** and **592=B529** as make up, presumably as a means of levelling the area in advance of construction work. These deposits included brick fragments and stone chips largely absent from the dumps associated with phase 1. Layer **592** formed the final make up for Building B, in the south east of the site close to the curtain wall. It was notable in that it was heavily charcoal-flecked, suggesting that it possibly originated as rake-out from a hearth mixed with underlying clay through trampling, weathering etc. before being dumped, or simply levelled out, as make-up. A possible origin for such rake-out was from the circular stone feature **BK10** which lay just beyond the southern limit of excavation, and was possibly a hearth foundation (see site B phase discussion).

Building B

Lying immediately on **592** was a rectangular plan building apparently extending across the site A and B boundary, although the evidence in site B is extremely fragmentary. In site A it consisted of a number of badly rotted wooden joists with traces of planking **K9**. The joists partly lay on a hard clay surface **581** deposited over **592** presumably as local levelling (no site B equivalent). To the immediate south of **K9** was a massive clay packed stone platform **K10** of unknown function. Immediately south east of **K10** in site B was the circular stone feature **BK10** mentioned above, and possibly incorporated into the building (see **figure 13**). Further south in site B were impressions of rotted or robbed out wooden beams on the correct alignment to form part of the building.

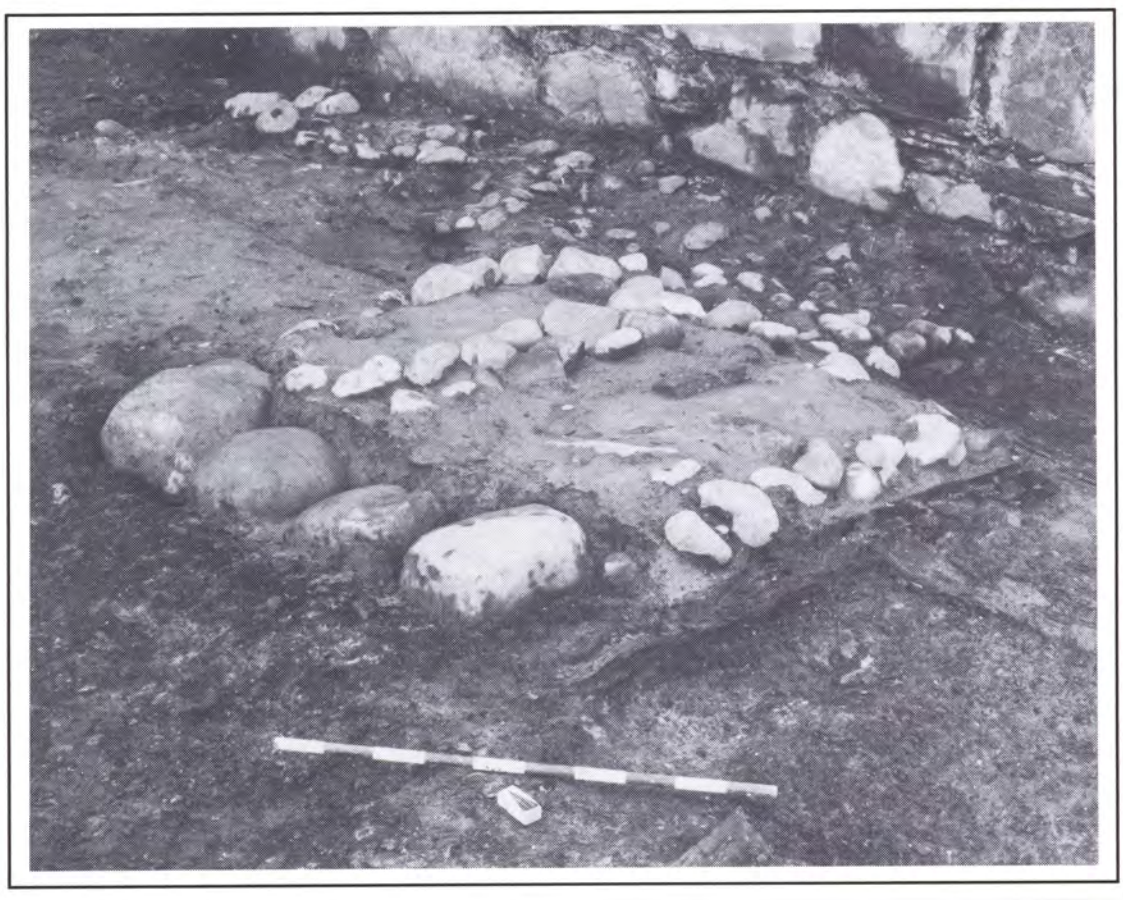


Fig. 13 K10 clay-packed stone platform, timbers K9 and cobbles K11 (looking NE.)

Between Building B and the curtain wall was a thin strip of cobbling **K11**. It may have originally extended right the way along the inside of the curtain wall to the north of the precinct (perhaps suggesting an entrance to the conjectured building beyond the northern limit of the site). This construction lay on top of dumps **614** and **643**, which were presumably deposited to level up the depression left in the construction trench for the curtain wall.

To the north and west of Building B a series of dumps **556**, **620**, **635** and **636** were laid down, probably as general make up prior to the construction of the building. (Note that **636**, which may be equivalent to **B532**, could alternatively have been deposited in phase 1). Layer **624** may have formed a construction surface to the north of the building, containing many fragments of shale stone bedded in clay, presumably an attempt at rough metalling. Over it was **625**, a patchy, very thin, laminated layer of wood chips in clay, possibly an accumulation deposit from building work. Further west, **623** and **620** were dumped during the construction of Building B. Overlying these dumps to the north and west of the building was a roughly metalled surface **603**, consisting like **624** of shale stones set flat in clay. These two surfaces are best interpreted as having formed exterior surfaces during the use of the building.

The cobbling **K11** went out of use at some point during the phase (this may have been associated with the disuse and demolition of Building B, although there is no direct evidence for this). It was partly robbed out, both in the north of the site and on the southern boundary with site B. In the north the robbing was overlain by a charcoal rich deposit **589**, which possibly represented a destruction event. This in turn was overlain by dumps **562**, **563**, and **573**. On top of these dumps and also partly covering **581**, **603** and **624/625** was an area of charcoal **541=554**. The charcoal deposit was upto 0.05m thick and covering a rectangular area aligned more or less N-S and E-W, around 3m wide E-W, and extending beyond the northern limit of excavation. It seems to be best interpreted as having been a charcoal store, since it was almost certainly not a destruction deposit, there being no signs of scorching on the underlying surfaces.

Outside the curtain wall

As noted in the general introduction (see above, 3.1) the stratigraphic sequence in the area outside the curtain wall cannot be satisfactorily subdivided in between phase 1 and phase 6. The following description therefore encompasses this whole period, i.e. phases 2-5.

At some point the cobbled roadway **K8** went out of use and was almost completely robbed out except for the small area near the northern limit of excavation. The underlying make-up layers were also completely truncated in the south (if indeed they originally stretched that far). In the northern part of the site, a fairly haphazard sequence of deposition sealed the remains of the cobbles: **253**, **232**, **478**, **254**, **472**, **187**. These deposits, mostly relatively small, local patches, can partly be seen as a continuation of the process of dumping against the curtain wall **K2** both inside and outside the Palace precinct to infill the depression left after the backfilling of the construction trench. In this regard, **254** and **172** probably have this as the main motivation behind their deposition. They also appear to imply however that the area had become a general dumping ground, and that whatever purpose the roadway **K8** served had been lost at a relatively early stage.

Possibly after the robbing out of the cobbled roadway in the southern area of the site, and certainly following the deposition of dump **244**, a pit **K68** was dug. This feature was barely visible in the area of excavation, extending only a few centimetres beyond the limits of excavation, and indeed was only

identified when the trench sides were being cut back in preparation for drawing. It was of unknown function.

Over the dump deposits in the northern area of the site was what might have constituted a more general dump layer **188** (possibly equivalent to **211** in the southern area of the site). This again was dumped on by further localized deposits: **148**, **175**, **165**, **172** and **174** in the northern area of the site, and **213** and **245** in the south. Following the dumping of **148** a sub-rectangular pit **K66** was dug through it, but then, possibly quite rapidly, backfilled again. Its purpose is unclear, but some possibilities are discussed below.

Descriptions of Constructions

Building B: K9 and K10.

Building B was a very badly preserved structure, possibly originally extending into site B. Its extant remains suggested a rectangular plan wooden building aligned N-S, c. 4m wide E-W and at least 4.5m long N-S (see **figure 14**). Poor preservation of the timbers made it difficult to be sure of the construction technique used but the joint between beams **610** and **613** in **K10** suggested that it was lafted. This would conform to known practice. It incorporated a massive stone and clay platform **K10**, of unknown purpose, but most persuasively interpreted as having some industrial function.

K9 Wooden joisted floor 574, 576, 577, 578, 579, 580, 581, 611.

Hard packed clay **581** was laid over the general make-up for the building, **592**. It appeared to butt around joist **576**, and may have been internal make-up. Joist **576** possibly represented an internal wall beam. It was aligned N-S. At its widest it was just under 0.3m wide, and it was 1.7m long. Joists **578** and **579** were also aligned N-S and had similar dimensions, although they were less well preserved and far more fragmentary. These three joists were equidistantly spaced, with a gap of 1.2m between them. A fourth very fragmentary beam **580** lay just over 0.6m east of **579** and appeared to be the remains of an external wall bounding the cobbles **K11**. The remains of two E-W beams were found, **574** and **611**. They were extremely fragmentary. Traces of what seemed to be planking, **577**, were aligned E-W. The preservation of the material was too poor to allow dendrochronological samples to be taken.

K10 Clay-packed stone platform: 484, 486, 500, 607, 609, 610, 613, 662.

The platform was aligned N-S, E-W and had a length of 2.4m E-W and a width of 1.9m N-S. It was c. 0.4m high. The construction was of large unworked round stones **607**, upto 0.4m long, laid in a dense rectangular pile (see **figure 15**). This was then packed with clay **500**. On top of this was a fragmentary cobbled surface **484** (see **figure 16**). The platform appeared to have been contained by, and abutted, wooden beams: **486** to the north, **609** to the east (bounding the cobbles **K11**), and **613** to the south. Two further beams appeared to be connected to the structure. **662**, although skewed slightly to the alignment of the other N-S beams, may have been the disturbed remnants of the external western wall of Building B. **610** abutted **613** but survived very badly: it was perhaps comparable to the joists in **K9**.

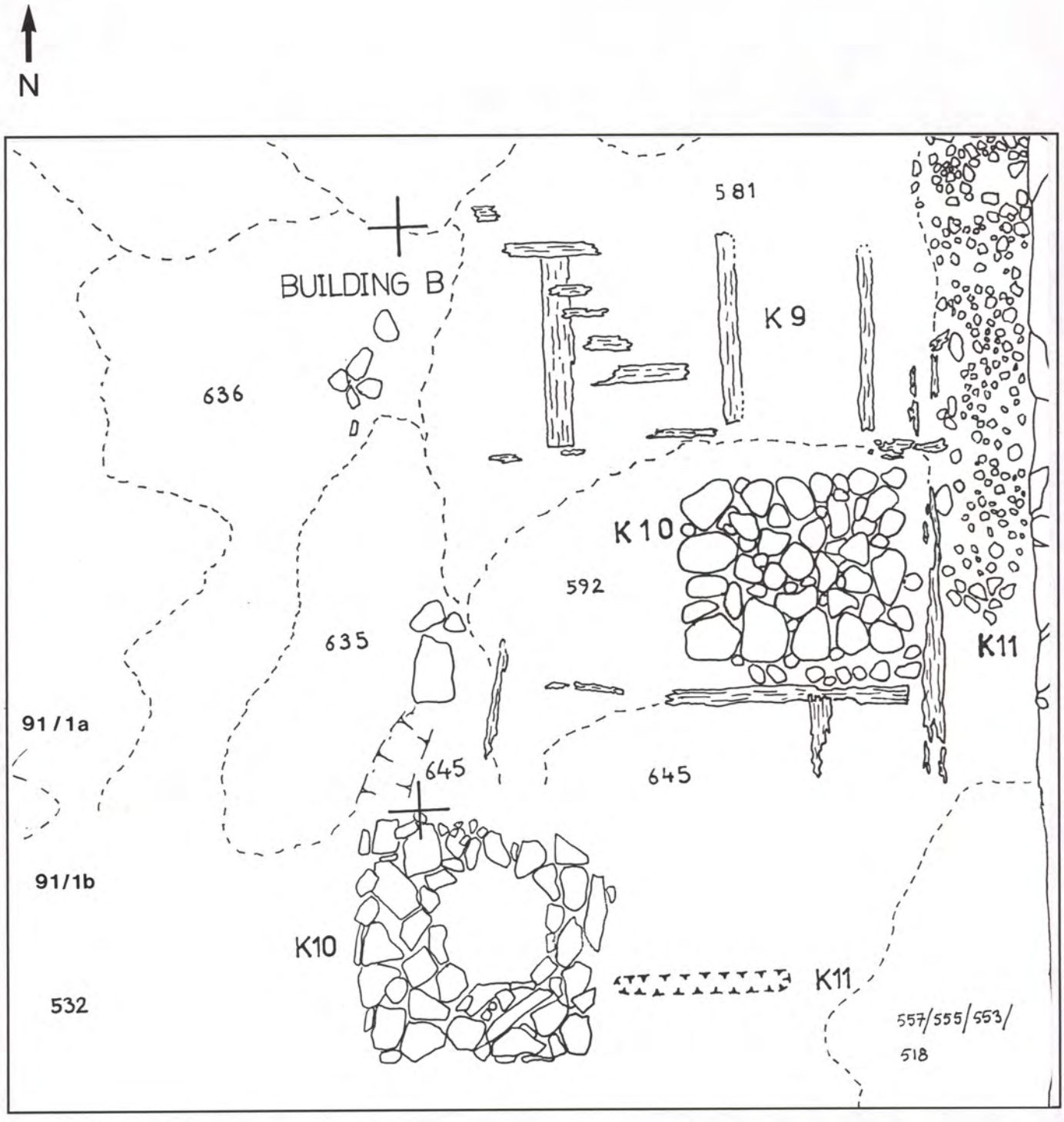


Fig. 14 BUILDING B 1:50

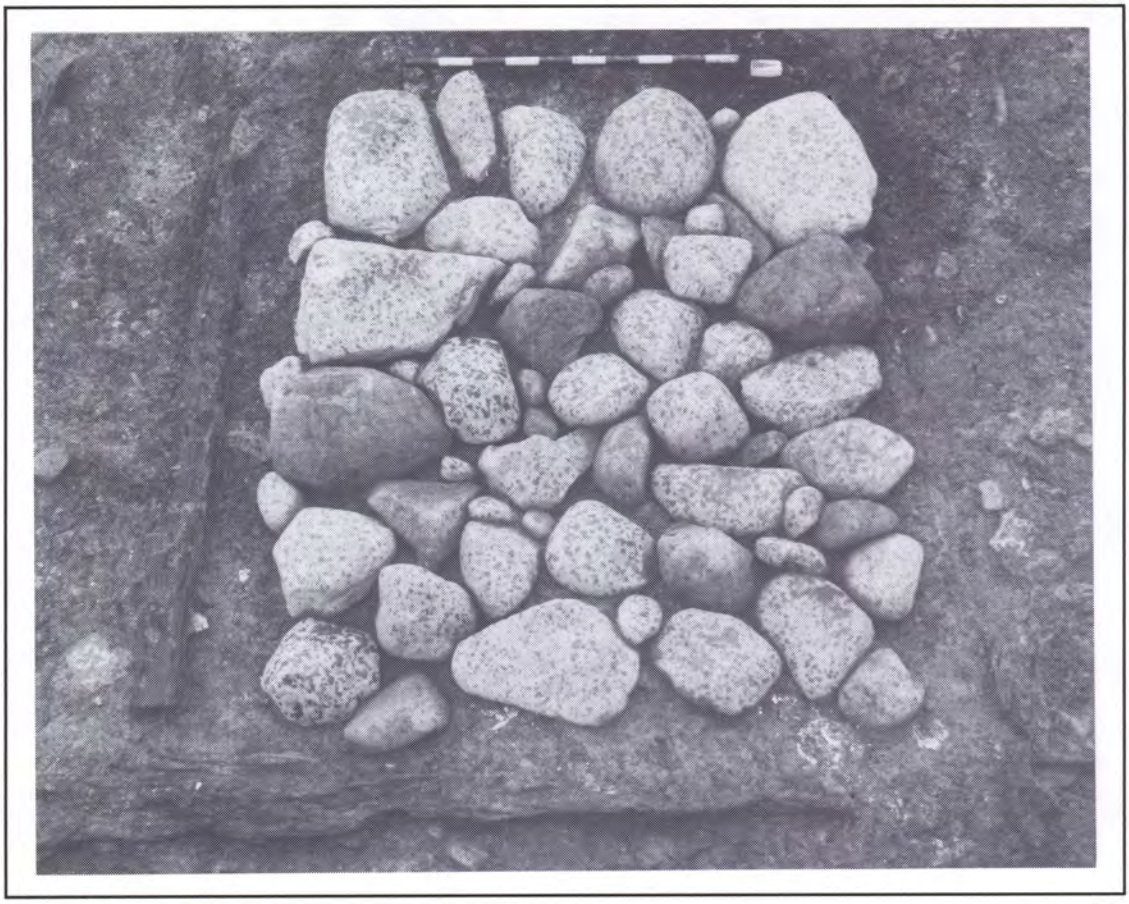


Fig. 15 *K10 clay-packed stone platform partly excavated ie. clay removed (looking W.)*

Fig. 16 *K10 clay-packed stone platform exposed (looking W.)*

K11 Cobbled area: 572, 583.

Cobbles **572** were bedded in sand **583**. The cobbles were small, typically around 0.1m in diameter. The area of cobbling was no more than 0.8m wide, and ran between the eastern limit of Building B and the curtain wall. Its southern portion was robbed out, and its ragged edge to the north suggests that it was also partly robbed there. The cobbling was presumably associated with the use of Building B.

K66 Rectangular pit: 150, 194, 195.

See **figure 17**. Pit **194** was sub-rectangular, just over 2m long E-W, and 0.6m wide N-S. It was vertically sided, with an irregular bottom. The deeper area in its middle had a depth of 0.46m, while the "shelves" at the northern and southern ends had a depth of around 0.3m. It had some traces of charcoal at its base. It had two fills; the primary fill **195** being rather more clayey than the secondary fill **150**, a clayey silt. The function of the pit is unknown. Its dimensions and orientation suggest a grave-cut.

Fig. 17 Pit K66 (looking E.)

K68 Pit: 417, 418.

Cut **417** was visible at the south eastern corner of the trench, extending only a few centimetres inside the eastern limit of excavation. It appeared to be a linear cut, the side exposed in the site running N-S for a distance of 2.2m. It was truncated by a modern intrusion in the south. It had a steeply sloping side, its true depth was not possible to find out. The fill **418** was almost indistinguishable from the overlying layer **211**.

Layers not included in constructions

Layer	Equivalents	Type	Brief Description
148		D	rubble/silt dump +
165		D	gritty silt/charcoal +
172		K	mortar make up +
174		D	silt deposit +
175		D	silt deposit +
187		D	mortar/charcoal/silt +
188		D	silt +
211		D	clay dump +
213		D	rubble/clay dump +
232		D	sand/silt dump +
244		D	clay/rubble dump +
245		D	spread of mortar +
253		D	rubble/silt dump +
254		D	gritty silt/charcoal +
472		D	clayey silt dump +
478		D	clay silt dump +
541	**554**	D	clay/charcoal
567	**B533**	K	clay make up
573		D	clay dump
582	**B497**	D	clay dump
589		D	charcoal
592	**B529**	D	charcoal/clay dump
603		K	metalled surface
614		K	make up
620		K	clay make up
623		K	clay make up
624		K	clay make up
625		K	construction surface
635		K	gritty clay make up
636	**B532**	K	clay make up
645	**B532**	K	clay make up
651		K	construction surface

Note: + following the brief description indicates a layer outside the curtain wall assigned to phase 2-5.

Dating

No occupation deposits from Building B were present, although the general assemblage supports a date around the late 15th century and early 16th century, with sherds of Langewehe pottery from **581** below Building B, and Raeren pottery fragments from the contemporary cobbles **K11**. Some dating should become available from the dendrochronological analyses of material from structures **K5** (phase 1) and **K14** (phase 3), respectively providing a *t.p.q.* and *t.a.q.* for this phase.

Outside the wall the situation is rather unsatisfactory, with no clear stratigraphic definition between phase 1 and phase 6. A number of interesting finds were recovered however. A piece of abraded and burnt glazed blue on white (Montelupo?) pottery possibly dating from the C16th in **254** suggests that the cobbled roadway **K8** may have persisted in use into this and even later phases before going out of use, but is not really a satisfactory basis for an argument. Two coins were also recovered from **254**, one (acc. no. N116686) dating to Christian I (1448 - 1481), the other (acc. no. N116323) dating from 1483 - 1513, which also suggests a date towards the middle 1500s. The pottery assemblage from layers outside the wall in phases 2 -5 was, as with layers inside, not closely datable. Dutch and Low Country redwares, Raeren and Langewehe stonewares were present, and one piece of Frechen stoneware from layer **174**. An example of Lincoln type 1 ware from **244** suggests that it may be a rather early deposit, and could perhaps be placed in phase 1, with the corollary that pit **K68** might also be placed earlier rather than later. On the whole it seems safer to place them late however, given the evident disturbance in the south of the site outside the curtain wall.

Discussion

This phase is associated with Building A in site B, a moneyer's workshop. In stratigraphic terms, Building B is a little later than or contemporary with it, but see the site B phase discussion for a suggestion that Building A may overlie elements possible to associate with Building B. The circular stone feature **BK10** may predate Building B as an isolated feature, but could well have been incorporated into it, perhaps as a hearth. This provides a hint that some form of occupation in the area filled a gap between the completion of the curtain wall (phase 1) and the construction of Building B (and in site B, Building A). Almost all the evidence for such a gap comes from site B, e.g. the feature **BK10** and the possibility of some sort of structural remains underlying Building A. However the dump of iron-working waste **647** discussed in phase 1 may also be associated with such activity.

The function of Building B is obscure; no occupation deposits associated with it were recovered and only the badly rotted joists and very fragmentary planking of **K9**, and the massive stone and clay platform **K10** survived to offer a clue as to function. The rôle of **K10** is particularly mysterious. No industrial debris or waste was found associated with it, and yet its solidly built character suggests some sort of smithing bench or the like. It may be that the construction forms the foundations of a staircase to a higher storey of Building B, and the casing of wooden beams around it perhaps supported a wooden superstructure. This is purely speculative.

There is no reason to doubt that the cistern **K5** (and its associated drain **K6**) were still in use throughout the phase. Indeed, as pointed out in the phase 1 discussion, it is stratigraphically possible for the constructions **K5** and **K6** to date to this phase rather than to phase 1.

The end of the phase was marked stratigraphically by the disuse, partial robbing and dumping over of the cobbled strip **K11**. This presumably occurred contemporarily with the demolition of Building B, since the deposits sealing the robbed areas of the cobbles encroach over the clay make-up for the wooden floor, **581**, which might be expected to have been exposed only after the demolition of the

building. Beyond this, and the possible destruction layer **589** associated with the disuse of the cobbles **K11** which butts to the east of the building, there is little direct evidence for the actual demolition of Building B. The surviving joists show no signs of burning, and it seems that the building must have been deliberately demolished, not destroyed in an accidental fire. The fact that so little demolition debris was left - just the bare bones of the foundations - is very significant. In this respect the method of demolishing Building A is relevant. Here, the building was completely dismantled to floor level and deliberately covered over with a thick layer of clay. In comparison, Building B was completely gutted and all traces of the structure above foundation level removed. This similarity in the way that the buildings were not just demolished but virtually "erased" perhaps offers a clue that the buildings may have been related by more than proximity. The nature of the demolition would have been swift - only the relatively easily demolished superstructure was removed. A picture perhaps emerges of a precipitant decision (forced by external authority?), to entirely eradicate the minting activity going on within the Palace bounds, together with whatever (possibly related) activity was taking place in Building B.

That the very next phase sees the re-establishment of minting activity makes this apparently punitive demolition activity even more remarkable.

The area outside the curtain wall has been mentioned in the stratigraphic sequence. It will be discussed here, but it should be borne in mind that the inability to satisfactorily subdivide its stratigraphy between phases 2 to 5 makes the following discussion applicable to the phase discussion of phases 3, 4 and 5 also.

The disuse of the cobbled roadway **K8** is rather strange. The surviving portion showed no obvious signs of disrepair, and the heavy stones and solid bedding of the road would have made it extremely durable. It is possible that it was deliberately removed to the south of the site at the end of phase 2, perhaps as part of the general eradication of structures that seems to have taken place. It was not replaced, and instead the area was dumped on apparently haphazardly (although deliberate dumps against the curtain wall imply that there was an attempt to raise the level of the ground right up against the wall, presumably to protect its foundations). Pit **K68** was mentioned in the dating section as possibly being quite early. So little of it was exposed however that it seems safer to place it in phases 2-5, since it lies on the line of the cobbles **K8** extended south, presumably being cut after their removal.

Amongst the various dump layers outside the wall, **187** is notable for the number of coins recovered from it. They included a Christian I coin (acc. no. N117338) dating from 1455-1480, and others dating to the early C16th (acc. no.s N116305, N116309). Two blanks (acc. no.s N119015, N119016) were also recovered, suggesting association with minting activity. The deposit contained a range of domestic pottery and a number of fragments of sheet copper or bronze. Although not a burnt layer or even containing a high proportion of charcoal, it was perhaps deposited as dump from clearance of one of the fires which destroyed the mints in phase 3 (which see).

The pit **K66** postdates the disuse of the cobbles possibly by some time, and also deposit **187**. It therefore seems to be a fairly late feature, possibly phase 4 or 5. Its shape, size and orientation all point to it being a grave cut. Against this is the fact that it contained no identifiable skeletal remains, and preservation of bone in the general conditions was good. It also lay in an unconsecrated area (the present day church yard dating from recent times). Nonetheless, no other interpretation is particularly obvious, and it is suggested that it may have been an unused grave cut. In this light, its location immediately outside the Palace and within sight of the Cathedral is intriguing.

PHASE 3

General Characterization

The phase encompasses the construction of two successive moneyer's workshops, **Building D** and **Building F**, at the very southern edge of site A, within a complex of buildings and structures. This complex consisted of a centrally placed cobbled courtyard **K21**, an open cistern/latrine **K14** to the west, surrounded by cobbles **K13** associated with **Building C** at the south west corner of the site, a wooden building of unknown function, **Building E**, incorporating cistern **K5** as a latrine in the north west of the site, and a stone-flagged gangway **K33** against the curtain wall in the east of the site. The two mints were separated in time by a fire which appears to have interrupted the construction of **Building D** and possibly destroyed **Building C**. The mint was completely rebuilt as **Building F**; it is not clear whether **Building C**, if it was affected by fire, was subsequently rebuilt. The courtyard, **Building E** and the stone-flagged gangway appear to have been contemporary with this later mint. The phase ultimately ended in a catastrophic fire which destroyed the entire complex. This fire can be tentatively linked to the Palace fire of 1532.

Outside the curtain wall the disuse of cobbled roadway **K8**, followed by dumping over the whole area and the digging of pit **K66** may date to this phase. Note that the stratigraphy of the area outside the curtain wall cannot satisfactorily be divided between phases 2-5, and the description and discussion of the area at phase 2 should be referred to for this phase also.

The phase is stratigraphically complex, and the stratigraphic sequence has been divided into two parts to provide a means of differentiating structures and layers probably associated with **Building D** (phase 3a) from those probably associated with **Building F** (phase 3b). The stratigraphic sequence as set out is necessarily the result of a certain amount of interpretation, sometimes on fairly tenuous evidence. The discussion argues the case for this chosen interpretation, but also sets out an alternative view.

Stratigraphic Sequence: Phase 3a

In the centre and north east of the site a series of mostly small, localised dumps were deposited with the apparent intention of making up the area. None are particularly noteworthy, although one was a reasonably widespread very clean sand deposit **555=B516**. The culminating layer was a general construction surface **493=570=B508**, which covered much of the site. The underlying dumps are shown on the matrix and listed in the brief description of other layers, below. To the north west of the site clay layer **368=386** was deposited, again probably as a means of levelling up the area. It at least partly covers over the drain **K6** and must mark its disuse. The buttress feature **K4** is presumably demolished at this stage too, perhaps implying that the conjectural building to the north of the site is also demolished, or radically restructured at this stage. Layer **567** may have been partly truncated at this time to level it down (spot heights between **567** and **493** agree to within centimetres, around 14.70 m.a.s.l.. To the south east of the site, against the curtain wall, a dump of silty clay **582** was deposited over the robbed out cobbling **K11**.

Building C

In the far west of the site a series of clay make ups **649**, **639** and **638** were dumped prior to the laying of the northern wall beam of Building C, **B409**. This was not numbered separately in site A, but does have a construction number, **K12**. Deposit **639** contained a patch of ash which probably represented

in situ burning, and which contained a number of fragments of a pottery vessel apparently broken and discarded in the ashes of the fire.

K12 was abutted by a cobbled surface **K13**. This appeared to be contemporary with the construction of **K14**, a sunken wood-lined cistern/latrine. The bedding sand **480** of the cobbling certainly appeared to seal the construction cut, but not the latrine itself. The pit was probably cut after the deposition of **638**, but as with sunken feature **K5**, excavation conditions became dangerous and the level from which it was actually cut is not certain. It may be that **K14** existed in phase 2 or even phase 1 as a cistern before being used as a latrine; however the preferred interpretation is that it was built as a latrine, with associated latrine fills **B1**, described below. The argument for placing it in phase 3 is set out in the general phase discussion below.

Both **K12** and **K13** are overlain by a destruction deposit, and show signs of being badly burnt; wooden beam **B409** is completely burnt through, while the cobbles **K13** appear to have been scorched. It is unclear whether these features were exposed to fire once or twice; however the cobbles appear to have been partly robbed out prior to the deposition of the destruction deposit, implying that they may have been in the process of being replaced after one fire when another fire occurred. This is discussed further below.

Building D

To the south west of the site a construction pit **637** was cut through **567**. This bedded a massive stone which formed the cornerstone of wall **B524**. This forms **K15**, the western wall of Building D. Local deposit **616** of mortar-contaminated clay may relate to construction work on the building at this period. The northern wall was composed of wooden beams (as with Building C), forming construction **K17**. This partly overlay a thin mortar dump **568**. This may have been designed to bed the wooden beam **528=531**. It contained a small seal-like lead object impressed with a bishop motif (acc. nr. N119430). This has been interpreted as a trial piece for minting, possibly dating from the late 1200s (Brita Nyquist, pers. comm.). This is discussed further in the dating section below. The wall **K17** bounded **530=B460**, a thick consolidated mortar forming a floor base, **K16**. West of **530** was a mortar deposit **587=B507**; it is not clear whether this was part of the same floor make-up as **530**.

To the north east of the building, an area of cobbling **K18** had been laid. It abutted feature **K10** and possibly represented an attempt to incorporate this feature (which would have been time-consuming to actually dig out and remove) into a cobbled area outside the building.

The construction of Building D was apparently interrupted before the building was completed by a fire. The extent and severity of this fire is not completely clear, and much of the evidence came from site B; however some deposits do confirm the fire in site A. Just to the west of the wall **K15** is a destruction deposit **571** cut into by construction pits associated with Building F; this possibly relates to the scorching of **K13**. Pushed down into the top of the construction pit for the western wall, **K15**, is **631**, a charcoal rich deposit containing broken floor tile. Over mortar **587** is a charcoal deposit **599**. To the east, rubble and brick deposit **501** may represent building material thrown down after the fire interrupted construction (although this is the most tenuous of the destruction deposits).

This fire event ended phase 3a.

Stratigraphic Sequence: phase 3b

Widespread dumping over **493** occurred at the beginning of phase 3b, culminating in an extensive sand layer **315=309**, upto 0.2m thick in places, and bedding a cobbled surface **436** making up courtyard **K21** (subsequently almost completely robbed out). As with the dumps in phase 3a these are not described in detail here, and can be referred to on the matrix and in the brief description of layers below. It is noticeable however that these deposits included a mortar dump **505** almost certainly related to general construction activity, and that many of the dumps were charcoal contaminated, presumably as a result of admixing with destruction deposits from the end of phase 3a. In the north east of the site, against the curtain wall, a small deposit of clean sand **566** was overlain by **553**, a soft but consolidated mortar which had a very uncertain boundary with mortar layer **256**, which with **304** made up the foundation of the gangway alongside the curtain wall, **K33**. In the south east of the site, over the area of cobbling **K18** and the exposed remains of **K10**, a clean, gritty sand **479** was dumped. This does not appear to have been the make up for a surface since it was itself covered by **510**, a charcoal contaminated sand, **604** rubble in clay, and **477**, a confused deposit of hard-packed clay with lenses of silty sand. This dump sequence was partly beneath the cobbled courtyard **K21**.

Courtyard **K21** was bounded to the south by the northern limit of Building F, to the east by the gangway **K33** and to the west by Building E. It extended beyond the northern limit of excavation. In the east of the site by the curtain wall were two postholes which possibly supported a covering extending to the wall (covering gangway **K33**). The cobbles which had not been robbed out showed signs of scorching.

Building E

The building was constructed on wooden joists, **K19**. Two divisions of the building were discernable, separated by a massive wall beam, **370**. To the west of **370** was a floor **442**, the planks very badly burnt but appearing to run parallel to the beam. No underlying joists were present but a stony clay layer **594** underlay the planking. To the east were a number of joists running at right angles to the beam, running into the courtyard. Because of a later intrusion it is not clear exactly how the courtyard abutted Building E, but it may be that the building was constructed after the courtyard had been built. One wooden sill beam of the building, **458**, overlay sand **315**, suggesting that it was either part of a later extension or that the ground-plan of the building was not in place when the courtyard construction was begun. It is notable however that this portion of Building E jutted out into the courtyard rather strangely in comparison to the rest of the building, and was additionally very narrow (see description below).

The building appeared to incorporate the old cistern **K5** as a latrine. There was evidence in the section of the excavation area that a wattle "lid", **507**, had been used as part of the new function of **K5**. The remaining traces were badly burned and rather fragmentary however. The latrine deposits associated with the re-use of **K5** form group **B2**, described below.

Building F

Above **599** a series of mortar dumps **597**, **598**, and **539** were laid. These were then cut through by a pit, **534=B504**, interpreted as a site hearth, **K25**. Outside the western wall of Building D pits apparently relating to the construction of Building F were cut, **K22**. To the east, a pit was cut which also appears to relate to the construction of Building F, **K32**. This was subsequently overlain by the foundations of the gangway alongside the curtain wall **K33**.

Above the western wall foundations of Building D a new phase of walling was built. The stone ground wall was overlain by a wooden sill beam **569**; together with **564** they formed **K23**, the western external wall of Building F. To the east, beam **536=B472** overlay the cobbles **K18** associated with Building D. A new hearth **K28** was built extending over the line of the old northern wall beams **K17** of Building D, while a tiled floor set on a mortar base **K27** was laid on the old mortar surface **K16** from Building D, also extending over **K17**. The northern boundary of the tiled floor **K27** was marked by a new beam **K29**. This survived only very fragmentarily, and is the most unsatisfactory piece of evidence associated with the new mint building. The western boundary of the tiled floor was marked by a wooden beam **B437** (no separate number assigned in site A) To the east of hearth **K28** a wooden beam **537=B470** was laid to form **K30**, the northern limit of what seems to have been an external but covered annexe to the new mint not extending into site A. To the north of the tiled floor **K27** and the eastern and western annexes was a planked area **K29**. It was bounded to the west by **K23**, to the east by **K30**, and to the north by another wooden beam, **K26**.

Destruction deposits

The phase ended with a catastrophic fire which destroyed the entire complex. All the wooden elements are very badly burnt and often fragmentary. Most stone structures exhibit clear signs of scorching. In the west of the site charcoal layer **450** sealed the cobbled area and the southern portion of Building E including the latrine. The destruction deposit in the latrine included fragments of a copper bucket. Intermixed with **450** to the north was **369**, a burnt clay layer containing burnt strips of bark, and interpreted as being a turf roof to Building F. Overlying **450** was **375=434**, a mottled orange burnt clay with much charcoal, which extended partly over the cobbled courtyard area **K21**. **375** sealed **464**, originally recorded as a cut, but subsequently interpreted as subsidence due to the burning out of beams **590** and **448**. Burnt timbers **421** and **422** together with charcoal and mortar mix **399** may have represented a collapsed portion of the roofed area the postholes **466** and **467** in **K21** are presumed to have supported. Charcoal rich deposit **400** may also have been related to this.

Charcoal layer **471** seals the construction feature **K22** immediately west of Building F. It contained loose cobbles and lenses of sand possibly related to **K13**, and hence perhaps equivalent to **450**, although a modern intrusion separated the layers. Inside and around Building F the destruction deposits were extremely confused, and appear to be a mix of strict destruction deposits and dumps of clay evidently thrown onto the burning or smouldering remains to smother the fire. Subsequent trample over the ruins served to produce a complex stratigraphic sequence. Directly overlying the planked area **K24** is an almost pure charcoal **504**. To the east this may in fact have been two separate layers, with the lower one part of the charcoal store present in site B to the east of hearth. **523** and **453** were intimately mingled, and proved impossible to excavate separately, despite the colour difference (**523** a green clay appearing unburnt and **453** a burnt orange clay). They appear to have been a mixture of genuine destruction material and dumped clay, subsequently mixed by trampling; both contain fragments of burnt bark, suggesting a turf roof existed over the planked area. **474** perhaps also related to a collapsed turf roof, **499** was a burnt timber apparently randomly lying on an east-west alignment outside the building, and **526** was a mottled orange burnt clay which again seems to be best interpreted as burnt soil. Overlying these were still further destruction deposits; **460**, a burnt clay, **423,** a seemingly unburnt clay (but compare **523**), and **473**, another fire affected deposit. Deposit **402**, a clay and charcoal mixture, may be associated with the destruction of beam **K27**. **419=B361** represents a line of subsidence associated with the burning out of beam **K31**. It was partly infilled with **378=B353**, a burnt clay/soil. **428**, a charcoal and rubble deposit, lay just north of Building F. **425** and **385** also lay beyond the bounds of Building F to the north west. They were burnt clay deposits which presumably belong to the same sequence as the other destruction deposits.

Many of the destruction deposits contained burnt glass and tile/brick; one interesting piece was a very well-made candelabra (acc. nr. N119443) found in layer **453**, inside Building F.

In the west of the site, it seems possible that the latrine **K14** went out of use fairly early, after the fire ending phase 3a. This is supported by the final deposits in the feature underneath destruction layer **450**. The final deposit associated with the use of the feature as a latrine seems to have been **435**, which was a gritty sand presumably used (as with other sand layers in **B1** and **B2**) to seal the stench of the effluent. It was however contaminated with charcoal, which possibly related to the fire ending phase 3a. Above this was a compact clay layer, also contaminated with charcoal, **411**. Above this was **490**, a dump of brick rubble. This in turn was sealed by the destruction deposit **450**. It therefore appears that the latrine was already out of use and partly backfilled when the fire ending phase 3b occurred.

Descriptions of Constructions

Building C: K12.

Only the northern wall beam of Building C extended into site A, and the building itself is fully described in 3.4, in the site B description of phase 3. The wall is described here because of its seemingly contemporary relationship with cobbling **K13** and latrine **K14** (which see).

K12 Northern wall beam: B409.

The beam was partly within the southern limit of excavation but was not numbered separately in site A. It lay skewed slightly clockwise from E-W, on a similar alignment to **K17**, the northern wall beam of Building D. It was completely burnt out, but appeared to have been laid on layer **638**. It extended beyond the western and southern limits of excavation, and was at least 1.4m long.

K13 Cobbled area: 449, 480, 481.

See **figure 18**. Sand **480** overlay clay **638**. It bedded cobbles **449** and a gutter **481**, composed partly of large bricks and partly of rectangular stones. The gutter was aligned NW-SE, which was not orthogonal to any features or building boundaries. The cobbles abutted **K12** to the south, and appeared to have been contemporary with the use of latrine **K14**: they bounded it to the south and west and perhaps originally completely surrounded it. The northern edge of the cobbling was ragged and ill-defined, and its original extent uncertain. The cobbling extends beyond the western limit of excavation and is interrupted to the east by a modern intrusion. The gutter was likewise interrupted by the modern intrusion to the east and extended beyond the limit of excavation to the west. Later slump in the area around latrine **K14** made it impossible to say in which direction it was intended to channel water, but its south eastern terminus would have been very close to the north east corner of Building C, and it may have been intended to carry away water from a gutter running parallel to the eastern wall of the building below its drip line. Evidence for whether any such gutter existed alongside Building C was destroyed by the modern intrusion in the area. The cobbles **449** had been partly robbed out. Those remaining were scorched. The sand left in areas of robbing also appeared scorched. The area was sealed by destruction deposit **450**.

Fig. 18 Cobbles/bricks K13 and BUILDING C (looking S.)

K14 Wood-lined sunken cistern/latrine: 395, 487, 488, 489, 491, 492, 514, 515, 516, 517, 565, and 663 to 674 inclusive.

See **figure 19**. The construction pit **395** apparently cut layer **638** but may have cut an earlier layer, specifically **622**. Full excavation of the pit was not possible because of collapse, but it had a roughly square shaped plan, aligned N-S, with a maximum width of around 1.6m. The depth of the cut below **638** was also around 1.6m, the bottom having a height of 13.1 m.a.s.l.. The construction pit appeared to have almost vertical sides.

Fig. 19 Wood-lined pit K14 (looking E.)

Inside the pit was a box-construction of timber planks, the gap between it and the side of the pit being filled with a hard packed clay and stone fill **565**. The wooden lining was very stoutly constructed, forming a rectangle aligned orthogonally to Building C, its southern edge being 1.2m north of **K12**. Its internal dimensions were 1.15m E-W by 0.9m N-S. It was made up of four posts, **487**, **488**, **489** and **491**, cut from round timbers c. 0.2m in diameter. These were flat-bottomed and rested on natural clay at the bottom of the construction pit. Apart from their sawn ends, none showed working except **489**, which was slightly wider than the other three posts and had been worked around its base (with an axe or adze?) to produce a narrower diameter. None of the posts survived more than 0.8m high, their tops having completely rotted away. They were braced at their bases by horizontal props **514**, **515**, **516** and **517** which were halved round timbers with their ends worked to produce concave faces which fitted flush to the posts. **514** and **516** were split halves of the same timber, as were **515** and **517**. **514** and **516** were the southern and northern props and were 0.70m and 0.75m long respectively. **515** and **517** were the western and eastern props and were 0.60m and 0.55m long. It is therefore apparent that the ends had been worked after the timbers were split, presumably being cut to fit as the final elements of the construction. On constructional grounds it seems highly likely that these base props were matched by props at the top of the structure, but any trace of these had been lost.

The actual lining of the pit was made up of planks which all conformed closely to the same physical dimensions, 0.05m thick and 0.30m wide, while their length varied slightly according to which face of the pit they lined. **663**, **664** and **665** lined the northern face and were just under 1.2m in length; **666**, **667** and **668** lined the eastern face and were 1.0m long; **669**, **670** and **671** lined the southern face and were 1.0m long, and **672**, **673** and **674** lined the western face and were also 1.0m long. Vestigial planking above the level of these complete planks was assigned the single number **492**. The planking was revetted at its ends by the posts, and the clay packing behind them was very compact; this was an extremely robust construction. Most if not all of the planks had been re-used, and it was evident that they had been cut to fit on site since all exhibited a chamfer on their inner vertical edge in order to form a closely fitting join. All showed tool-marks, often on both faces. Three had pairs of peg holes set vertically above one another 0.08m apart at one end, **670** having simple holes, **671** and **666** having holes recessed within a rectangular tenon on one side. A fourth plank, **669**, had two triangular notches set vertically above one another at one end 0.15m apart. Very small traces of what might have been blue paint were present on at least two of the planks, **669** and **670**. It seems evident that the planking used in this construction derived from an earlier single construction (perhaps a boat or domestic fittings).

The final function of the feature is in no doubt; an extensive sequence of latrine fills was excavated from the pit and formed group **B1**, described below. Whether the feature was originally built as a latrine is open to question, and is discussed further below.

Building D: K15, K16, K17.

Building D was a mint workshop which may not have been completed before its destruction by fire. It extended only partly into site A and is fully described and discussed in 3.4, the site B phase 3 description. The constructions described here relate to the northern boundary of the building.

K15 North west corner stone: 632, 633, 637, B524.

Pit **637** was cut through clay **567** to a depth of 0.4m; its bottom had a height of 14.40 m.a.s.l.. It was sub-circular in shape with a diameter of c. 1m. It held a massive partly shaped stone nearly 0.8m long, forming part of wall **B524**. The bottom of the pit was packed with wood chips and moss, **633**. Above this, and sealing the pit was a fill of soft brown clay **632** which was also used as a bedding material for stones along the rest of wall **B534**. The pit was not completely filled by **632**; the depression was filled inside the wall by a destruction deposit **631**.

K16 Mortar floor base: 530=B460.

A thick, consolidated mortar base extending beyond the southern limit of excavation. See the description of **BK15** for full details.

K17 Northern wall: 518, 527, 528, 531, 568.

Wooden sleeper beams **528** and **531** formed northern wall beams for Building D. They rested on make up layer **493**, although beam **528** partly rested on make-up **568**, and beam **531** on sand **527**. In the area east of **531** brick rubble **518** may have been make up for a continuation of the beam subsequently removed. The beams were very badly burnt and fragmentary, but they had a total length of at least 6m. Their alignment was parallel to the northern wall beam of Building C.

K18 Cobbled area: 591, 640, 641, 644.

This cobbling to the north east of Building D possibly represents an external surface associated with it, perhaps marking an entrance. Cobbles **591** were bedded on two distinct layers **640** and **641** which lay to the west and east respectively of beam **610** from Building B (see above, phase 2). **640** was a compact sandy clay with wood chip and charcoal inclusions; it overlay another clay with very frequent wood chip inclusions **644**, which was very similar top and perhaps the same as layer **641**. The cobbling overlay the remains of **K10**, and seems to have incorporated it into the surface. The cobbles showed signs of scorching (underlying beam **610** did not) and were partly robbed out.

Building E: K19, K20.

Building E was a wooden joisted building in the north west corner of the site. Its alignment was similar to that of Building C, i.e. skewed slightly clockwise of N-S (see **figure 20**). It was apparently orientated with respect to Building C, rather than the converse, since Building C was stratigraphically earlier. It extended beyond the western and northern limits of excavation, so that its dimensions are unknown (see **figure 21**). It may well have been a fairly substantial building. Its destruction by fire was so thorough that it is impossible to comment conclusively on its method of construction; it would be rather unusual if it had not been a lafted construction, however. It probably had a turfed roof. It re-used cistern **K5** as an enclosed latrine within its structure, perhaps suggesting a domestic rôle. It is described under a single construction, see below.

K19: Wooden joists and flooring: 370, 440, 441, 442, 439, 448, 458, 507, 590, 594, 619.

Although treated as a single construction, it is possible to identify two elements to the structure as revealed. A central beam **370** divided a series of parallel joists to the east from a plank floor to the west. These two elements are discussed in detail below.

Large wooden beam **370** ran slightly skewed of N-S as noted above, with wooden beams **439**, **440**, **441**, **448** and **619** aligned at right angles to it and extending to the east. **441** and **448** extended further than the other joists to a distance of 3.7m. A later intrusion had interrupted the middle section of their length and destroyed the ends of the other joists, but their length could not have been more than 2m at the maximum. **441** and **448** butted to a short beam **590** c. 0.8m long and parallel to **370**. A small, fragmentary beam **458** lay at right angles to **590** and extended further into the courtyard **K21** along the same line as **448**. It was very badly preserved and may not actually have been structural, but the coincidence of it lying on the same line as **448** seems too great for it to be a random piece of debris.

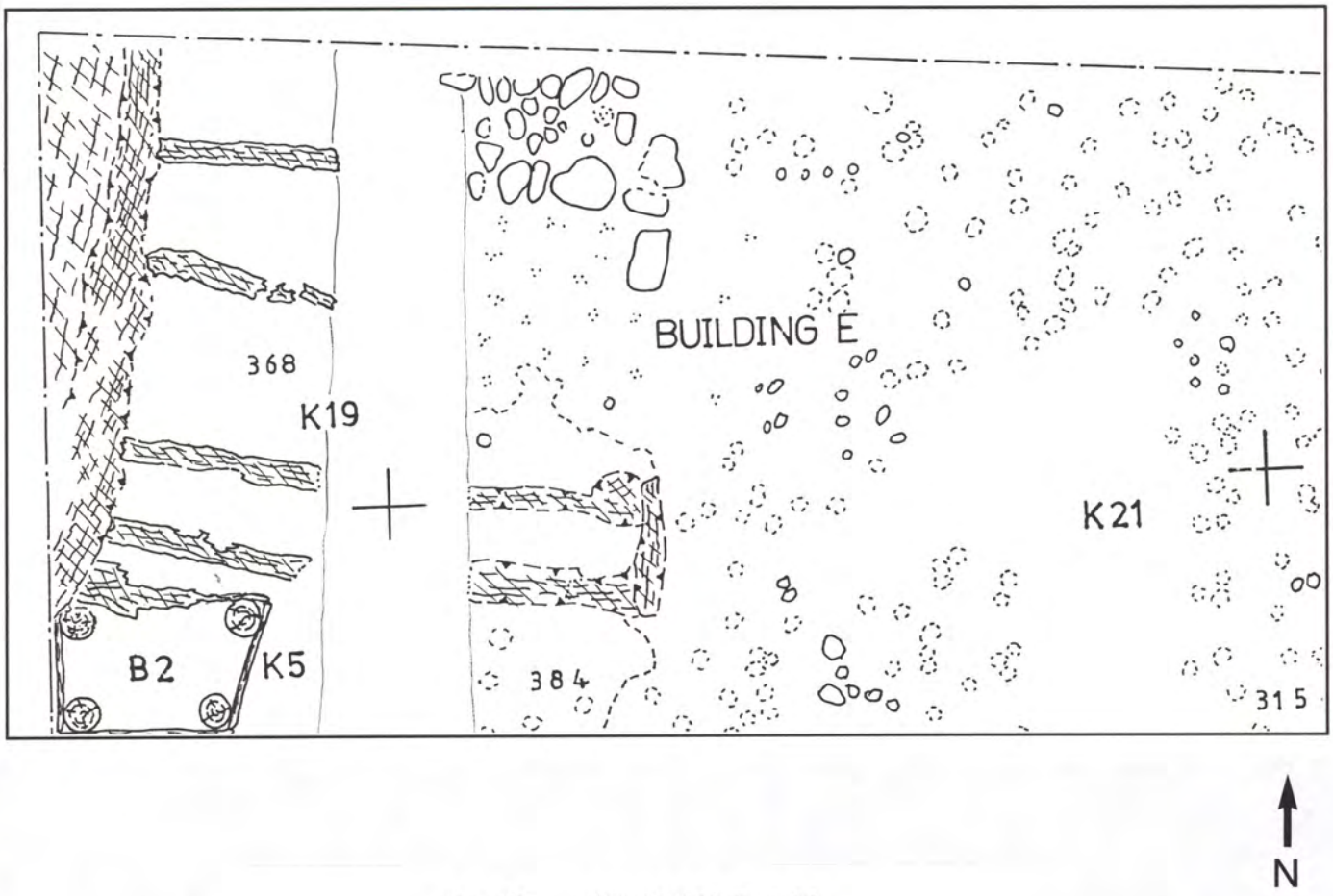


Fig. 20 BUILDING E 1:50

To the west of the central beam **370** was a plank floor **442** resting on clay make-up **594**. The planks were badly burnt and fragmentary but preserved enough structure to show that they were aligned parallel to the beam **370**. There were no underlying joists, although it is possible that they were beyond the limits of excavation. The joists appeared to have been set in slots cut into clay **368=384** but this may simply have been due to pressure pushing them down. The extremely bad level of preservation made identification of the way in which the joists attached to the central beam **370** impossible, but there is no reason to doubt that they were lafted.

Beam **370** and joist **619** overlay the north west corner of feature **K5** and appeared to mark its incorporation into the structure. There is evidence from the section that a wattle "lid" **507** may have been used to cover the latrine when not in use. Part of a beam lying approximately N-S was found within the destruction debris in the latrine, and presumably was also part of the superstructure of the building.

The whole building was covered by a thick charcoal deposit **450** mixed with **369**, which appeared to be the heat-affected collapsed turf roof of the building. No obvious plank floor remains were found to the east of **370**. It is possible that the fire was so intense that any such remains were indistinguishable from the destruction **450**, but this seems odd given the fact that the wooden floor to the west of **370** survived.

The function of the building is unknown, but the presence of a latrine and the absence of debris related to industrial use perhaps suggests a domestic rôle.

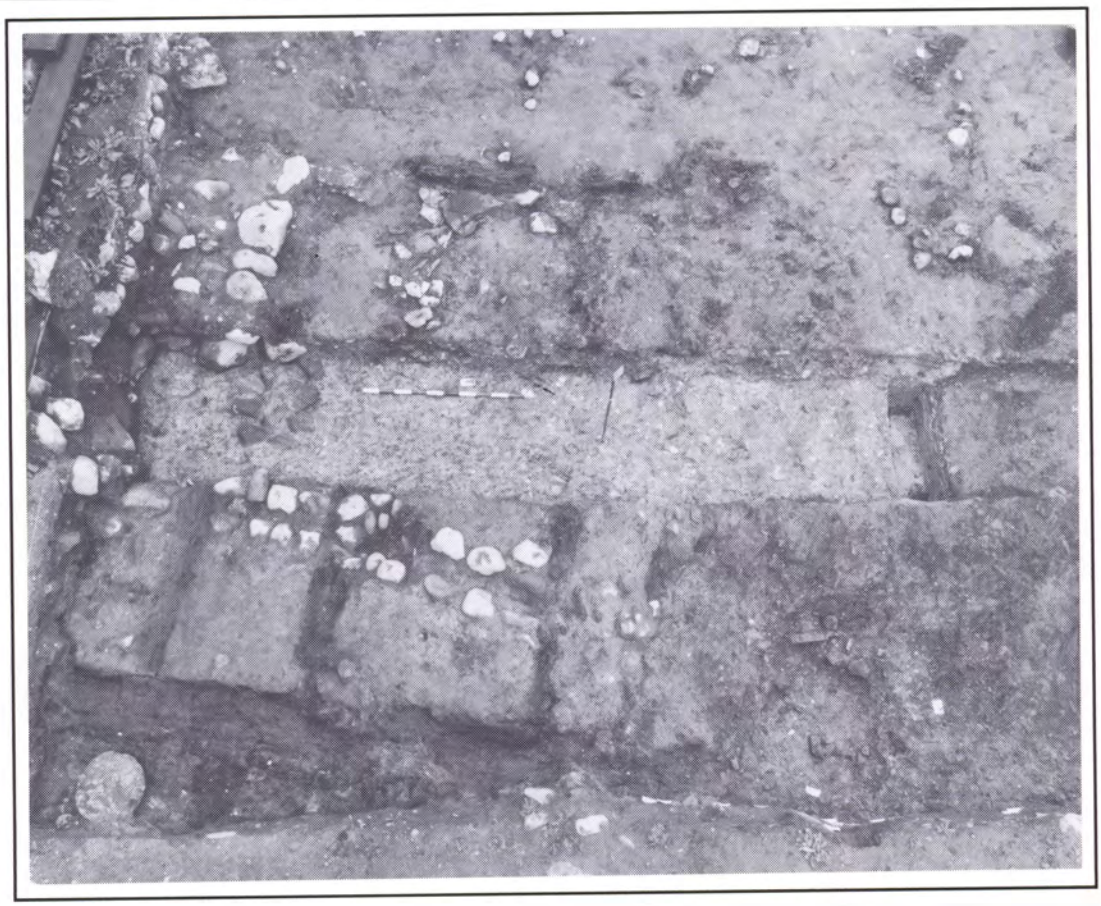


Fig. 21 BUILDING E (looking E.)

K20 Construction pit: 605, 606.

Pit **606** was cut through **K6**. It was circular, with a diameter of c. 0.5m and a depth of 0.37m. It was probably associated with the construction of Building E, perhaps for scaffolding or as a derrick base. It was back-filled with **605**, a silty clay containing a number of cobbles, presumably deriving from **K6**.

K21 Cobbled courtyard: 309=315, 436, 466, 467.

Cobbles **436** were bedded on sand **309=315**. The remaining cobbles nearly all showed signs of scorching, but almost all were robbed out. They formed a roughly rectangular courtyard, its eastern edge aligned to gangway **K33** parallel to the curtain wall, its southern edge bounded by the northern limit of Building F, its western edge interrupted by a modern intrusion but presumably bounded by Building E to the north, and perhaps merging with cobbled area **K13** to the south. The south western edge of the bedding sand **309** was rather ragged, and it appeared that cobble impressions existed in the clay **384** which **K13** partly overlay. Its northern boundary lay beyond the limit of excavation. The courtyard appeared to incorporate the remains of the demolished feature **K4**, levelled flat.

Two postholes, **466** and **467** spaced just under 3m apart, centre to centre, and each just under 3m from the curtain wall, may have held posts supporting a roof over the eastern part of the courtyard and the gangway **K33**. **466** had a diameter of 0.4m and an extant depth of 0.13m; **467** a diameter of 0.5m and a depth of 0.2m.

Building F: K22, K23, K24, K25, K26, K27, K28, K30, K31.

Building F was constructed immediately over the cleared demolition of Building D and followed a similar (though not identical) ground plan. It was somewhat larger, and although it lay mostly within site B, it extended a good deal further into site A than did Building D (compare **figures 11 and 12, 1991/1B report**). This northwards extension was made up of a planked area **K24** which abutted courtyard **K21**. It may not have been completely enclosed, perhaps forming a verandah to the front of the main building. It probably had a turfed roof. The building also extended further to the east, virtually to the curtain wall **K2**, although separated from it, perhaps by a continuation of the narrow gangway **K33**. This extension eastward is referred to as the Eastern annexe in the site B discussion and is represented in site A by **K30** and **K31**.

K22 Construction pits: 575, 584, 585, 586.

Pits **575** and **585** cut layer **571** immediately west of wall **K23**, with which they appear to be associated, perhaps as scaffold pits. **575** was a sub-circular pit with a diameter of c. 0.3m and a depth of 0.17m; **585** was a curving cut shaped like a peanut, with a long axis of 0.4m and a width of 0.3m. It also had a depth of 0.17m. The pits were back-filled with **584** and **586** respectively, fills of destruction material similar to **471** which sealed the pits. This suggests that the area was not cobbled over after the digging of the pits.

K23 Western wall: 564, 569.

The two wooden beams **564** and **569** mark the western boundary of Building F. **569** overlay stone wall foundations **B411** (not numbered separately in site A) and extended a maximum of 1.4m; it was badly burnt and very fragmentary. It may not have extended into site B. **564** was aligned SW-NE and connects the western wall proper with the northern boundary of Building F, **K26**. It was also very fragmentary and had a maximum length of 0.8m. It did not appear to be load-bearing. The beam lay on layer **567**.

K24 Planked area to north: 525.

Planking **525** was orientated E-W and appeared to lie directly on the underlying layers (**567** to the west, **493= 570** in the centre and over the cobbling **K18** to the east). It occupied the area to the north of the main part of Building F, bounded by **K23** to the west, **K26** to the north, **K29** and **K30** to the south and **K31** to the east. It was very badly burnt and extremely fragmentary, and large parts of the area showed no sign of planking having been present. It must be said that the area was very badly disturbed, presumably by post-destruction activity, and the completely burnt planking may have become confused with the overlying destruction deposit **504**.

K25 Construction-site hearth: 529, 534, 535.

534 was a circular pit c. 0.5m in diameter with a depth of 0.07m. It was lined with stones, with a layer of hard mortar at its base. Fills of burnt sand and charcoal formed a series of very thin layers (under 5mm thick) within it. The numbered backfills are **529** and **535**, which are hard packed clay deposits (**529** containing broken floor tile) presumably designed to firm up what would otherwise be a soft spot liable to subsidence. It is most obviously interpreted as an on-site hearth during construction of Building F.

K26 Northern boundary wall beam: 415, 547, 561.

Ground beam **547** overlay clay surface **567** and make-up **493**. It supported another beam **415** which bounded the northern extent of Building F and the southern boundary of the courtyard **K21**. **415** was revetted to the north by wooden pegs driven into **493** at irregular intervals, probably just to secure it until bedding sand **315** had been laid. On its south side, **415** was packed with brick rubble, some at least of it set in mortar **561**. Planking **K24** abutted the southern side of **415**.

K27 Tiled floor: B368, B433.

This floor extended less than 0.5m into the southern area of site A and the constituent layers were not numbered separately, although a construction number was assigned for completeness. The floor extends further north than the earlier floor of Building D (see **K16**) and is bounded to the north by **K29**. This seems to have been done to bring it into line with the extended hearth, **K28**. Together with hearth **K28** it seals beams **K17**, demonstrating that they cannot belong with this phase of construction. See the description of **BK28** for full details of the floor.

K28 Hearth: 538, 544, 545.

The hearth **544** represents rebuilding of the Building D hearth base. It was extended northwards over **K17** by the addition of **545**, which rested partly on mortar/rubble make up **538**. It consisted of a slate stone base in a consolidated mortar with brickwork over it. The hearth was bounded to the north by **K29**. It was 1.4m E-W, and extended beyond the southern limit of excavation into site B; see further the description for **BK27**.

K29 Northern wall foundations: 483, 520.

As noted above, this is the most tenuous of the features associated with Building F. The presumptive wooden beam had either been robbed out prior to the construction of Building G (see phase 4) or so badly burnt that very little trace was left. **483** was a clay make up containing a lot of charcoal fragments. It overlay **520**, a deposit of brick rubble in mortar. The two deposits together presumably represent make up for the lost sleeper beam.

K30 Northern wall beam of Eastern annexe: 537=B470.

The beam was very badly burnt and fragmentary. It was originally associated with beams **528** and **531** and the physical alignment is compelling, however it seems best placed with Building F; see the discussion below. It rested on top of the make-up deposit **640** from **K18**, associated with Building D. It appears to divide the planked area in the north of Building F, **K24**, from the planked area in the annexe (see further **BK36**).

K31 Eastern wall beam of Eastern annexe: 536=B472.

The beam was very badly burnt and fragmentary. It rested on the cobbled area **K18** associated with Building D. It appeared to butt to beam **K26** to the north but **K26** was so badly preserved in the east that this must be supposition. It bounded the planked area **K24** in the north of Building F.

K32 Construction pit: 600, 601.

The small circular pit **600**, diameter 0.15m and depth 0.1m seems too small to have been anything more than a scaffold hole. It has been interpreted as having been associated with Building F since its backfill, **601**, appeared indistinguishable from the overlying mortar layer **256**, forming gangway foundations **K33**, implying that little time passed between the disuse of the pit and the construction of **K33**. Stratigraphically however, the feature can as easily be related to the construction of Building D.

K33 Foundations of gangway alongside curtain wall: 256, 304.

All that remained of this construction, which bounded courtyard **K21**, running between it and the curtain wall, was the mortar foundation level, **256**, and in the north of the site, **304**. The feature had a very regular linear boundary at a distance of 0.8m parallel to the curtain wall. It was extremely unclear where the southern limit of the gangway was. There was no direct

evidence that it extended as far as the southern limit of excavation or even beyond the northern extent of Building F. The only direct evidence that the feature formed a gangway is a stone impression (including flakes of soapstone) in the north of the site, implying that the strip alongside the wall was flagged. Certainly there would have had to have been some sort of boundary to the courtyard: whether it was stone flags or not, it was robbed out after the destruction of the courtyard, presumably at the same time the cobbles **436** were robbed from **K21**.

Descriptions of Use-layer Groups

B1 Latrine fills associated with K14: 435, 437, 443, 475, 508, 509, 513.

The lowest fill of the group was a compact, blue-grey gleyed clay **513** which contained a number of wood fragments; these possibly related to construction trample from **K14**. Above it was **509**, a smelly organic fill. This was only partly sealed by **508**, a sand layer possibly designed to trap the stench of the latrine. This was overlain by **475**, a compact organic layer nearly 0.5m thick, presumably relating to an extended period of use. Amongst the material in **475** were a number of fragments of fabric (acc. numbers N118254/58/62/63) which may have been used as sanitary towels (P. Sandvik, pers. comm.). This layer again was sealed by a sand dump, **443**. Above this second sand trap was a mixed layer of contaminated silt with clay lenses, containing much general rubbish, **437**. The character of the rubbish indicated a domestic origin, including butchered bone, oyster shell, and organic material as well as some broken pottery, glass, and some brick rubble. The final layer in the sequence was possibly another stench trap, **435**. It was not a clean sand as for instance **443** was, but its predominant component was a gritty sand tending to silt. It was contaminated with charcoal and inclusions of wood chips, mortar and brick fragments. The sequence was sealed by deliberate backfills **411** and **490** marking its disuse as a latrine.

B2 Latrine fills associated with re-use of K5 in Building E: 506, 511, 512, 522, 521, 533, 657.

The lowest fill was **533**, a blue clay layer. It possibly relates to the construction of **K5** and in that case predates its use as a latrine in Building E. Above it lay **521**, another dark blue clay containing twigs and a branch from a tree or bush. Above this was **522**, a pale brown-grey organic deposit. On top of this was **511**, a brown organic deposit with a fibrous texture, containing the broken shells of seagull eggs. Above it, **512**, a similar deposit, also included egg shell. It also contained an amber bead (N118296) and pieces of leather including a shoe sole (N119425). Sealing this was **506**, a compact sand, presumably used to trap the stench of the latrine fills. Above this, **657**, a deposit heavily contaminated with destruction layer **450** contained fragments of textile (N119424) and fragments of a copper bucket (N119423). The sequence was sealed by destruction layer **450**.

	Layer	N-nr	Fruit	Moss	Pupæ	Insect	Eggs	Notes
B1	411	118298	x					clay + charcoal
	435	118302	x	x				gritty sand/silt
	437	118305	x			x		grapestone, raspberry, strawberry, type A
	443	118305						sand
	475	118310	xx	xx		xx		raspberry, strawberry, type A
		118312	x	xxx	N/A	N/A	N/A	
		118314	xx	xxx		x		grapestone, pearstone raspberry, strawberry (many), cloudberry, type A
	508	118321	x					grapestone, applepip
	509	118319	xx			x		strawberry (many), indeterminate variety, type A
	513	118521	xx			x		strawberry (many), cloudberry, type A and B
B2	657	118315	xx	xxx	x	x		strawberry, raspberry, cloudberry, type A
	506	118323		x				sand
	512	118328	x				x	raspberry, strawberry, type A
	511	118325	xx	xxx	x	x		grapestone, raspberry, strawberry, type A
	522	118526	x	x		x		sand *N.B.* raspberry, strawberry
	521	118524	xx	xx	x		x	grapestone raspberry, strawberry, nuts, hops, poppy (P. somnifera) blueberry
	533	118531	xx	x		x		raspberry, strawberry, hops, blueberry

Table 1. Comparison of latrine fills (after Sandvik).
Key: x - present, xx - common, xxx - frequent, N/A - results not available

Layers not included in groups

Layer	Equivalents	Type	Brief Description
148		D	rubble/silt dump +
165		D	gritty silt/charcoal +
172		K	mortar make up +
174		D	silt deposit +
175		D	silt deposit +
187		D	mortar/charcoal/silt +
188		D	silt +
211		D	clay dump +
213		D	rubble/clay dump +
232		D	sand/silt dump +
244		D	clay/rubble dump +
245		D	spread of mortar +
253		D	rubble/silt dump +
254		D	gritty silt/charcoal +
367		K	mortar make up
368	**384**	K	clay make up
369		D	destruction deposit
375	**434**	D	destruction layer
378	**B353**	D	destruction deposit
384	**368**	K	clay make up
385		D	clay/charcoal/rubble
399		K	burnt timber beam
400		D	demolition deposit
402		D	clay/charcoal
404	**B355**	D	destruction deposit
411		D	infill of **K14**
419	**B361**	D	subsidence
421		K	burnt wooden beam
422		K	burnt plank/mortar
423		D	clay deposit
425		D	burnt clay deposit
426		K	silt make up
427		K	silt make up
428		D	destruction deposit
434	**375**	D	destruction layer
441		K	burnt timber joist
450	**B407**	D	destruction layer
453	**B410**	D	burnt clay/sand
460		D	destruction deposit
464		D	subsidence
471		D	burnt clay
472		D	clayey silt dump +
473		D	destruction deposit
474		D	destruction deposit
477		K	make up
478		D	clay silt dump +
479	**B495**	D	sand dump

Layer	Equivalents	Type	Brief Description
490		D	backfill in **K14**
493	**B508, 570**	K	make up layer
499		D	destruction deposit
501		D	destruction deposit
503		K	construction dump
504		D	charcoal layer
505		K	construction dump
510	**B475**	K	construction dump
519		K	construction dump
523		D	destruction deposit
524		K	construction dump
526		D	destruction deposit
539		K	sand make up
540		K	clay make up
542		K	construction surface
543		K	clay make up
546		K	construction surface
548		K	sand/clay dump
549		K	clay/rubble dump
550		K	construction dump
551		K	construction dump
552		K	surface
553		K	construction dump
554	**541**	D	charcoal/clay
555	**516**	K	sand make up
556		K	construction dump
557	**558**	K	construction dump
558	**557**	K	construction dump
559		K	clay make up
560		K	construction dump
562		D	sand dump
563		D	brick rubble dump
566		K	construction dump
568		K	mortar make up
570	**493**	K	construction layer
571		D	destruction deposit
587	**B507**	K	consolidated mortar
595		K	construction surface
597		K	mortar deposit
598		K	construction dump
599		D	charcoal deposit
602		K	construction dump
604		D	demolition dump
616		K	clay make up
618		K	mortar dump
621		K	silty clay make up
628		K	silt deposit
631		D	destruction deposit
634		K	construction dump

Layer	Equivalents	Type	Brief Description
638	**B543**	K	clay make up
639		K	clay make up
643		D	clay dump
649		K	clay make up

Note: + following the brief description indicates a layer outside the curtain wall assigned to phase 2-5.

Dating

Coins, which are present in a number of layers, can provide a loose *t.p.q.* for the phase; for example coin N117344 from layer **375**, a destruction deposit associated with the end of the phase, is a King Hans coin dating from 1483-1513. The pottery assemblage supports a date of late 1400s, early 1500s, with Raeren, Dutch and Low Country Redwares well represented, and some Langwehe pottery, in both construction and destruction deposits. Dating of the floor tiles used in the construction of Building G in phase 4 (which see) provide a *t.a.q.* for the phase of around 1525-1537. The identification of the final catastrophic fire as the Palace fire of 1532 is based on documentary sources which describe the Archbishop's Palace as having been burnt by the Danish army (e.g. Blom, 1956, p. 488) and the acceptance that the phase must lie within that general period from the nature of the ceramic material. If this is a good correlation then it is possible to talk about the phase in terms of the first third of the C16th. A dendrochronological date from latrine feature **K14**, particularly if the posts can be dated, should provide a *t.p.q.* for the construction of the feature and suggest whether it has been placed at its correct stratigraphic position (see discussion below).

Discussion

This is probably the most stratigraphically complex phase, and requires justification of the interpretation set out above. The problem arises from the fact that most of the site appears to have been devastated by a single fire episode, not two. There are however two mint buildings, one on top of the other, both destroyed by fire. Which of these fires is the one related to the rest of the site?

It will be seen from the matrix that the buildings and structures associated with phase 3 are able to "float" to a certain extent, so that for instance it is conceivable that it was **Building D** (or a version of it somewhat different from that described above) that was associated with the completed complex of buildings and courtyard, and that **Building F** was constructed after the catastrophic fire which destroyed the complex (in which case of course it should really be placed in a separate phase).

Building D consists definitively of western wall **K15**, floor base **K16**, and northern wall **K17**. The further association of the use of cobbled area **K18** with Building D is vital to the interpretation of the stratigraphy set out in the stratigraphic sequence. The weight of evidence seems to indicate that the cobbling post-dates the demolition of Building B. The make-up layers are certainly bounded by structural elements of the building (beams **609**, **610** and **613**), but the cobbles cover the structural elements and spread haphazardly to the west without any real boundary. It seems unlikely that a wooden joist would be laid and then cobbled over. This is not an incontestable argument however, and it is possible that the cobbles simply survived (as did the partly cobbled surface **484**) into the succeeding phase, and were sufficiently disturbed to appear to have been laid covering the wooden beam.

In this case the stratigraphic sequence would have to be radically revised from the account given above. The consequences are as follows:

The eastern wall beam **536=B472** (**K31**) overlay the cobbles directly, as did part of the planked area **K24**. Beam **537=B470** (**K30**) also overlay the make-up layer for the cobbles **K18**. Both of these were structurally associated with beam **K26**, and thus with courtyard **K21** (and also with beams **K23**). It is just conceivable that the courtyard was not contemporary with beam **K26**, but highly unlikely; on structural grounds they are very closely connected in time. Therefore if the cobbles were not in use with Building D then the northern planked area **K24** and its associated bounding beams **K23**, **K26**, **K30** and **K31** all belonged with Building D, as did the courtyard **K21**, (and by extension gangway **K33**).

However, the courtyard appears to have been contemporary with or later than Building E for the same reasons that it was contemporary with or later than beam **K26**. The wooden joists of Building E (and its plank floor) were set directly on clay make up layers laid over the pre-existing surfaces, which in the case of drain **K6** did not even completely cover it. Yet if Building E post-dates the courtyard **K21** then the cobbles and sand bedding were completely removed between joists **441**, **448** and **590**. This appears to be at variance with the method of construction to the west where the cobbles of drain **K6** were dumped over. On the strength of this, the courtyard **K21** and Building E should have been constructed contemporarily. This argument would place Building E as a contemporary of Building D, and would imply that Building E was destroyed in the first fire.

We have now reached a view of the phase in which Building F has become redundant to phase 3 and should be pushed into its own succeeding phase. Although bearing in mind that this alternative view is stratigraphically sustainable, it is rejected. The reasoning, and justification for the preferred stratigraphic sequence is set out below.

There is good evidence, described in the site B phase discussion, that Building D was never completed. This argues against it being part of a complex of buildings and structures some of which evidently supported extended occupation activity (the latrine accumulations in Building E for example).

If Building D had comprised the northern planked area **K24** and the beams **K23**, **K26**, **K30** and **K31** then they were either not replaced in Building F (although for example **K17** was), which does not appear to make structural sense; or they were replaced and subsequently burnt again leaving no trace of the original burnt beams, which appears unlikely.

The cobbles **449** showed signs of scorching; they were partially robbed out, presumably as a result of this, and in the areas where this robbing occurred, the underlying bedding sand **480** was exposed. Both cobbles and sand are sealed by destruction layer **450**. It therefore seems most reasonable that the cobbled area **K13** was exposed to two fire episodes, the second of which was responsible for the destruction of the complex. In support of this view is the evidence that the latrine **K14** was sealed and partly backfilled when **450** was deposited, as if the area was undergoing reconstruction (possibly related to reconstruction of Building C).

Given that **450** related to the second fire, and since it sealed Building E occupation deposits (i.e. the latrine fills **B2**) it suggests that Building E dates to the later part of the phase, with Building F. The further implication is that it was not built before the first fire, since the remains show no signs of two fire episodes.

It seems to be the case that the first fire occurred at a stage when only the southern part of the area had begun construction. There is no evidence that Building C was ever reconstructed after the first fire

(see the site B phase discussion). It may be the case, as has been hinted at above, that the south western part of the site related to an early plan for the use of the area and that the plan changed after the first fire. In support of this perhaps is the very narrow access available to the courtyard **K21** if latrine **K14** continued in use. It may be that the area was undergoing clearance and preparation for further construction work when the devastating fire which ended the phase put paid to further work.

The linking of this fire to the Palace fire of 1532 has been mentioned. One slightly anomalous fact, given the evident intensity of the fire, is that the curtain wall does not appear to show any signs of fire effects (as for example the walls of Vår Frue church do from exposure to town fires). It might imply that the wall had a facing of mortar or plaster which protected the stones themselves. Some trace of this might have been expected to survive, however.

PHASE 4

General Characterization

The area around the ruins of Building F was partly cleared and levelled, and a new mint, **Building G**, built directly on top of the levelled building. None of the surrounding area appears to have been rebuilt on or even completely cleared of the destruction material from the fire which ended phase 3. The phase ended with the deliberate demolition of the mint building, an event associated with the Reformation of 1537.

Outside the curtain wall the disuse of cobbled roadway **K8**, followed by dumping over the whole area and the digging of pit **K66** may date to this phase. Note that the stratigraphy of the area outside the curtain wall cannot satisfactorily be divided between phases 2-5, and the description and discussion of the area at phase 2 should be referred to for this phase also.

Stratigraphic Sequence

The general approach in the aftermath of the fire ending phase 3 appeared to be simply to level out the destruction debris, and no construction activity anywhere else on the site except in the area of the destroyed Building F could be discerned. In this area, work began with the clearance of at least some of the debris from the ruins of Building F; the floor tiles from floor **K27** appear to have been systematically robbed. In the planked area **K24** of Building F, the destruction layers were flattened out and some local dumps of material deposited (**233**, **394**, **407**, **459**, **462**, **463**, **482**). These may all represent construction dumps associated with the erection of Building G; there is however a rather grey area between what can be considered to have been post-destruction trample and what was deliberate dumping to provide make up for a firm surface. Certainly **463**, a loose sandy mortar, and **462**, brick rubble, seem to be legitimate make up deposits below **380**, which formed a surface proper (see below). However **394** and **407** may represent dumping after the fire to smother the remains rather than a deliberate construction dump (compare **523** which has been placed in phase 3). Further, **233** may well be the levelling of the burnt residue of the charcoal stored in the eastern part of Building F (see the site B discussion of Building F).

As with the mint buildings of phase 3, Building G extends beyond the southern limit of excavation in site A and a full description should be sought in the site B phase description. In site A, the building consisted of a new floor **K37** set directly over the previous one, a new northern wall beam, **K38**, again set directly on the line of the old one, and a new western stone wall foundation **K36** considerably further east than that of the previous mint buildings.

Possibly associated with the construction of Building G was a small, shallow pit **K34** to the west of the new western wall but east of the old one. It was extremely shallow, and may have been simply a scoop into the underlying clay designed to stop a prop slipping. An alternative interpretation is that it was actually associated with the demolition of Building G, since no deposit appears to have accumulated over it in the lifespan of the Building. Since it has a deliberate backfill (**454**) distinct from the overlying layer however, it is more likely to be a construction feature, the pit having been backfilled to level the surface immediately west of Building G.

The hearth-base from Building F appeared to be re-used, presumably cleared of destruction debris and rebuilt on. In this sense, construction **K28** can be thought of as persisting in use from Building F to Building G. In the area to the north of building G where the dumping mentioned above took place, there is some evidence that a more substantial surface was laid down, perhaps consisting of brick and tile recovered from the ruins of the surrounding buildings. The surface, **K35**, consisted of a small area of apparently deliberately laid brick and tile, bedded in sand **414=416**.

To the north east of Building G, the void left from the burning out of the wall beams **K30** and **K31** belonging to Building F was filled with **377=B358**. In site A this was a very similar deposit to **378**, the destruction material in void **419** which marked the burning out of beam **K30**. It was markedly more mortary however, and is interpreted as a deliberate levelling deposit (although quite probably derived from destruction material from Building G). A similar interpretation is given to layer **380**, which extended across the north eastern part of the former planked area of Building F, **K24**. It may have been a contemporary, although rougher, surface with **K35**.

The end of the phase was to some extent difficult to pin down. It is clear that the building was abandoned, and possibly dismantled to floor level. It definitely did not burn down. But the implication of feature **K45**, placed in phase 5 (which see) is that the building was probably still standing, perhaps as a gutted shell, in the early part of phase 5. Hence demolition layer **388=B389**, a mass of brick rubble and mortar sealing the tiled floor **K37** has been placed in phase 5. Likewise, **456**, a rubble layer which overlay the hearth base **K28**, and also related to the demolition of the building, has been placed in phase 5. Inevitably the distinction between phases for these deposits is somewhat debatable and their inclusion in phase 4 could also be argued. To the west of Building G, deposit **452** was a silty layer with frequent inclusions of charcoal which may have related to the disuse or demolition of the building. It is even conceivable that it may have been an accumulation deposit from the lifetime of Building G. For this reason it has been placed in phase 4.

Descriptions of Constructions

Building G: K34, K35, K36, K37, K38

Building G was the final mint workshop to be built. It was constructed in almost exactly the same place as the previous one, Building F. It re-used elements of Building F's groundplan, for instance the hearth foundations **K28** originally laid down for Building D and re-used in Building F. However it also differed in several respects, most obviously in that it was smaller overall. For example, its external western wall was further to the east than Building F; and it appeared to lack a covered area to its immediate north between it and the courtyard area (which presumably was still usable, even if fire-affected). There is some evidence for a surface of some kind being laid in the area though (see **K35** below). As with Building D and Building F, the major part of the building lay in site B, and the descriptions here deal with its northern boundary.

K34 Oval construction pit: 454, 455.

The wide, shallow posthole **455** appeared to relate to the construction of Building G (although it may conceivably have related to the demolition of building G, and hence properly belong in phase 5). It was a little over 0.5m wide at its maximum, and very shallow; no more than 0.1m deep. It may have been designed simply to prevent a large prop slipping. The backfill **454** was deliberate and quite distinctive from the surrounding burnt layers and the sealing layer **452**; it was a soft, grey clay.

K35 External surface to north: 414, 416.

Sand **414=416** overlay layer **460** which was a destruction deposit from Building F. The sand formed a fairly small area (a maximum of 2m E-W and about 2m N-S) and contained a patch of broken tile and brick which appeared to be the *in situ* remains of what may originally have been a laid surface to the immediate north of Building G.

K36 Western wall foundation: 431=B324.

Stone **431** was c. 0.8m long N-S, and 0.2m wide E-W. It formed the exterior western wall of Building G, and extended beyond the southern limit of site A. It lay directly on the destruction deposit **423** associated with the burning of Building F. See further **BK38**.

K37 Tiled floor: 457=B400, 470=B401, 502=B402.

This floor overlay the robbed out floor **K27** associated with Building F. Its northern limit follows exactly that of **K27**, although its western limit is marked by wall **K36**. It extends around 0.5m into site A, the rest lying in site B to the south. Bedding sand **502** was overlain by mortar **470**, which set tiles **457**. See further **BK39**.

K38 Northern wall beam: 420.

The beam **420** formed the northern boundary of tiled floor **K37** and the exterior wall foundation of Building G. The beam was badly rotted but not burnt. Its width was a maximum of 0.2m N-S, while it ran E-W for a total of 2m.

Layers not included in constructions

Layer Equivalents	Type	Brief Description
148	D	rubble/silt dump +
165	D	gritty silt/charcoal +
172	K	mortar make up +
174	D	silt deposit +
175	D	silt deposit +
187	D	mortar/charcoal/silt +
188	D	silt +

Layer	Equivalents	Type	Brief Description
211		D	clay dump +
213		D	clay/rubble dump +
232		D	sand/silt dump +
233		D	charcoal/silt/clay
244		D	clay/rubble dump +
245		D	spread of mortar +
253		D	rubble/silt dump +
254		D	gritty silt/charcoal +
377	**B358**	K	burnt clay/mortar
380		K	brick rubble make up
394		K	clay make up
407		K	clay make up
452	**B397**	D	silty clay dump
459		K	treflis surface
462		K	clay make up
463		K	sand/mortar make up
472		D	clayey silt dump +
478		D	clay silt dump +
482		K	make up

Note: + following the brief description indicates a layer outside the curtain wall assigned to phase 2-5.

Dating

The preceding phase ended with a catastrophic fire which can be associated with the town fire of 1532 (see phase 3 dating). The floor tiles of **K37** in Building G are identical to those from Olav Engelbrektsson's castle at Steinvikholmen (S. Nordeide, pers. comm.), dating from 1525 to c. 1537. The deliberate demolition of the final mint, Building G, can be related to the Reformation of 1537 and the flight of Archbishop Engelbrektsson from Norway. If this is a true association then the phase has a very tight dating. On artefactual grounds there is nothing to suggest that the phase lasted long enough to be distinguishable from the preceding one.

Discussion

Stratigraphically, the beginnings of the phase are rather uncertain. This is because there is very often no clear distinction between the flattened destruction layers of phase 3 and the deliberately dumped construction layers (consisting of destruction debris!) of phase 4. This is not a very important problem, reflecting as it does the situation in which construction work was almost certainly taking place in the middle of a burnt out wasteland. Further, the gap between the destruction of the buildings of phase 3 and the commencement of Building G may have been very short indeed; it is quite possible that some of the clay layers thrown onto the smouldering ruins of Building F were dumped immediately prior to the construction of Building G.

There is no evidence of any other construction activity in this phase beyond the rebuilding of the mint. The cobbled courtyard **K21** will almost certainly have formed a viable surface, once cleared, and the ruins of building E were just trampled down level.

It has been suggested in the phase 3 description that **K33** may have been stone-flagged. However no stone impressions were preserved in the bedding-mortar **256** except in the very north of the site, and it may be that the stone flagging did not extend right to the south. The area alongside the curtain wall in the southern part of the site was covered by charcoal contaminated deposits which may have related to the presumed charcoal store in the east of the later mint buildings (see the site B phase 3 and 4 descriptions). These deposits were **233** and **485**. Since **485** directly overlay **256**, implying that it could not have been deposited until after the robbing out of the stone flags, it has been placed in phase 5. It should be borne in mind that it may be a phase 4 levelling deposit however.

It is not clear whether the latrines were completely backfilled at this stage. As proposed in phase 3, **K14**, the southern latrine, may already have been out of use and partly backfilled before the final fire. The latrine forming part of Building E may or may not have been filled in contemporarily with the construction of Building G. In one sense this is a fairly unimportant question, since the proposed time span for phase 4 is so very short. However it would signal that work was not just confined to the rebuilding of the mint, but that refurbishment of the entire complex was under consideration. There is really no way of knowing, although the lack of a layer of accumulated rubbish above the fire layer in the latrine and below the deliberate backfills might suggest a very short space of time between destruction and backfilling. As pointed out above however, the whole time span of the period is so short that an archaeologically visible deposit might not have had time to form. Following the convention that layers should take their highest possible place on the matrix, other considerations aside, the deliberate backfills of the latrine associated with Building E have been placed in phase 5. It should be borne in mind however that these fills (**446**, **497**, **498**) may rightfully belong in this phase.

Elsewhere, the end of the phase is equally unclear stratigraphically, although it is obvious from the construction of feature **K45** (see phase 5) cutting through the floor **K37** and surface **K35** that Building G had lost its function. In this sense, the end of the phase is not in argument.

PHASE 5

General Characterization

The phase started with the shell of Building G probably still standing. A circular feature **K45** was partly cut through tiled floor **K37** of Building G, partly through the external surface **K35** to the immediate north. The function of the feature is not known. Contemporary with or very soon after **K45** was cut, the cobbles making up the surface of the courtyard **K21** were robbed out almost completely. A simple hearth **K40** was built in the north west of the courtyard after this robbing; it may have been in the open air, but the remains of two parallel wooden beams **K39** either side of it seem to have formed some sort of structure, **Building H**, enclosing it. The beams were burnt, suggesting **Building H** was destroyed by fire.

Various pits and postholes were dug very soon after the robbing of the cobbles, and Building G was demolished, the circular feature **K45** having gone out of use. In the later part of the phase extensive dumping occurred. Some of this dumping can be seen as make up, for instance in the depressions left by the destroyed latrines **K5** and **K14**. Most of it however appears to be simple dumping of silts and clayey silts contaminated with metal working (including smithing) waste. The area therefore appears to have formed an unoccupied dumping ground in the latter part of the phase.

Outside the curtain wall the disuse of cobbled roadway **K8**, followed by dumping over the whole area

and the digging of pit **K66** may date to this phase. Note that the stratigraphy of the area outside the curtain wall cannot satisfactorily be divided between phases 2-5, and though it is described and discussed in detail for this period within phase 2, it relates to this phase also.

Stratigraphic Sequence

Level a

The cutting of feature **K45** appears to have been one of the earliest events of the phase. It is described fully below. It may well have gone out of use very quickly, and certainly seems not to have outlasted the eventual demolition (or collapse) of Building G. Its function is unknown.

The robbing out of cobbles **436** from **K21** was also amongst the first events to take place in this phase, presumably along with the removal of the stone flagging from **K33**; the reasons underlying this robbing are far from clear (see discussion below). The surface of the sand **315** underlying the cobbling retained the impressions of the cobbles across its full extent. It seems therefore that the dumping of layers onto the sand surface must have begun very soon after the removal of the cobbles, thus preserving the robbing marks. As noted in the phase 4 discussion, flagstone impressions in mortar **256** of gangway **K33** were not evident except in the north of the site. It may therefore be that the mortar **256** was exposed for longer than the sand surface **315**, or perhaps that it was more badly trampled. It was not consolidated except in the north. It was partly covered by a series of charcoal-contaminated deposits, the first of which, **485**, may have originated as the residue of the charcoal store in the east of Building G.

A number of pits were cut into the sand **315**, presumably dug after the general removal of the cobbles **436**. Only one, **K41**, is of any size. It perhaps represents nothing more than sand extraction on a very small scale from a convenient source. **K42** was a small posthole which together with **K43** may possibly have formed the western supports of a structure with a roof keyed into the curtain wall. This is extremely tenuous and not really supported by their alignment. They have no immediate purpose otherwise, however.

K44 in the west of the courtyard area was small and somewhat irregular. It did not have a fill distinct from the overlying deposit **354** (a burnt patch of silty sand with much charcoal), and contained a number of cobbles at its base, while the surrounding area had been robbed of cobbles. It perhaps was a hole scooped out in the sand to provide a sheltered place for a site fire while the courtyard was being robbed out.

It is conceivable that postholes **K46**, **K47** and **K48** were associated with the demolition of the remains of Building G, all of them lying within a metre or so of its northern wall. (**K46** however cuts a charcoal rich layer **379** which may postdate the demolition of Building G). **K48** is of note since it appears to be infilled with a brick rubble dump **361** originally felt to represent make-up associated with the construction of Building G. It was located on the very north eastern corner of the hearth foundation **K28**, and possibly represented an attempt to shore the standing building. It should be mentioned here that posthole **K34**, described in phase 4, may actually belong in this phase and be associated with these other postholes. For the reasons given it was felt safer to associate it with the construction of Building G, however.

Layers **456** and **388** were mortar and rubble layers respectively overlying the hearth foundation **K28** and the tiled floor **K37** of Building G, and represent its final demolition.

Building H

In the north west of the site, construction **K39** consisted of burnt beams **357** and **332**. These formed a parallel alignment almost N-S, enclosing a hearth feature **335**, construction **K40**. These fairly tenuous remains formed the evidence for Building H. Beam **332** overlay sand **315** indicating that it was placed after the robbing out of the cobbles **426**. No floor was identified, and no cross beam joining the southern end of **332** and **357**, although both were extremely fragmentary. No occupation deposits were found inside the limits of Building H except the burnt clay deposit **661** associated with **K40**. The building was evidently destroyed by fire towards the end of the phase, since it was not covered over by the dump deposits which characterized the later part of the phase elsewhere on site. Its destruction may therefore be associated with the end of the phase. Very little destruction material remained however; **333** covered **332**, marking its line, and was a burnt deposit with frequent charcoal inclusions. It was covered in turn by **311**, a brick and mortar dump also stained by charcoal and possibly also destruction material from Building H. Layer **310** possibly also related to the destruction of Building H; see below.

Later dump layers (level b)

In the south west of the site a complex series of dump deposits was laid in the area around the destroyed latrines **K5** and **K14** over destruction layer **450**. **424=B360** was a spread of compact clayey silt with broken floor tile and brick fragments, **405** overlay it, a cleanish clay. In turn it was overlain by **410**, a gritty clay with brick fragments; **391=B354**, a loose brown silt with brick fragments; **392**, an almost identical deposit differentiated by having a larger proportion of brick fragment inclusions; and above that **349=374=B345**, another compact silt with brick fragments. Nearby, **406** clay/rubble, **393** clay, **382** silty rubble and **352** grey clay filled the depression in **K14**. Over it, and also overlying **349=374** was layer **350=351**, a compact silt with frequent charcoal and brick fragments. In the same dump series were **326** over **350=351**, a gritty silt with sand, and **327** over **326**, a mottled, compact clay. **328** and **329** overlay all these deposits, **328** being a clayey silt, **329** a clayey silt too but with large brick fragments. The whole dump series can be categorised as make-up over soft spots.

A similar explanation probably holds good for a series of dumps over destruction layer **375=434** covering Building E (including **K5**). **447** was a gritty clay with brick fragments; **451** a sandy clay with floor tile and bone inclusions. This layer contained hammerscale, a waste from blacksmithing. **334** was a clayey silt.

Over layers **447** and **451** were **398**, a compact clay filling a depression above **401**; **446**, a clayey silt with brick fragments; and over these **397**, also a silty clay with brick and charcoal inclusions. **371**, which lay over this series of dumps, appeared to be a burnt clay. Together with **372**, a dump of crushed brick overlying collapsed roof **369** from Building E, it was overlain by **325**, a layer with much charcoal and burnt stone fragments. This was overlain by **324**, apparently also a layer of burnt material, with charcoal and scorched wood, and **282**, a gritty black silt. These layers contained occasional crucible fragments, and as with layers further east, had inclusions of charcoal, and occasionally appeared scorched. They were not regarded as *in situ* burnt layers however.

Further north, covering the levelled stones **330** of **K4** (which had been incorporated into courtyard **K21** and then presumably into Building H) was deposit **310**, a gritty clay with brick fragments and charcoal inclusions. It was a very local deposit, possibly related to the destruction of Building H.

390 was a charcoal rich deposit with an organic component, possibly burnt soil. It partly overlay surviving cobbles and destruction layers from courtyard **K21** in the east of the courtyard area. These

deposits were in turn overlain by **359**, which itself was a heat-affected deposit and may have represented debris from a bonfire in the area.

In the south of the site, overlying circular feature **K45**, were a series of dump deposits which also contained crucible fragments and evidence of burning; **452** was a compact silty clay with frequent charcoal and many crucible fragments, **412** a dirty grey clay with lumps of clean blue clay within it. Over these deposits were **343**, a patch of burnt clay, and **342**, a silty sand with organic material and wood chips in it. **379** was a charcoal deposit overlying demolition from Building G; it was cut through by **K46**, an isolated, small post hole, in turn overlain by **347**, a burnt clayey silt.

Over **452**, the crucible containing deposit around feature **K45**, were **336**, a charcoal rich silt, and **386** a clayey organic deposit with frequent inclusions of wood chips. **348** overlay **386** and was a charcoal rich sandy silt also with an organic component. They may represent dumps of wood-working construction waste.

340 was an isolated deposit, possibly simply a heat-affected area of **334**.

356 lay above bedding sand **315** of courtyard **K21**, exposed when the cobbles were robbed out. It was a gritty charcoal rich silt perhaps, like **340**, also related to a fire. Above it was **314** (which also overlay burnt deposit **354**). **314** was a deposit of gritty silt with brick fragments, in turn overlain by **316**, a hard packed silty clay with demolition debris such as mortar fragments, charcoal and brick fragments. These highest (i.e. latest) layers in phase 5 share the possibility of perhaps being associated with construction activity in the succeeding phase (as make up dumps). The upper boundary of this phase has been taken to be those layers immediately below the first widespread dumps in phase 6; see the discussion below.

Descriptions of Constructions

Building H: K39, K40

As noted above the evidence for Building H is rather sketchy; this can be explained by its destruction and levelling prior to the construction of the *Herrehus* in phase 6. The remains indicate a very simply constructed wooden building, with sleeper beams supporting the walls (no associated postholes were located), and a clay floor. The building was very small, with a narrow rectangular plan, at least 4m long N-S and c. 2.2m wide E-W. The function of the building appears to have been industrial, with the enclosed hearth perhaps suggesting smithing.

K39 Wall beams: 332, 357.

Parallel burnt wooden beams **357** and **332** are fragmentary and their original dimensions lost; the length of **357** is not much more than 1m; while **332** extends for nearly 4m. They are aligned north-south and extend beyond the northern limit of excavation. They are a distance of 2.2m apart, and contain between them hearth feature **K40**. **357** overlies destruction deposit **369** from Building E in phase 3; **332** overlies sand **315** and must postdate the robbing of cobbles **436**.

K40 Hearth: 335, 661.

335 comprises an incomplete semi-circle of slate stones flatly set on sand **315**. Its original diameter (if it ever was a complete circle) would have been around 2m, that is almost the whole width of Building H. The stones show signs of scorching and were overlain by a deposit of scorched clay **661**. The feature was truncated to the west by a later intrusion.

K41 Oval pit: 387, 389.

Cut **389** had a long axis N-S of 1.4m and a short axis E-W of just under 0.6m. It had a depth of 0.7m. It was dug up against the eastern boundary of the courtyard area **K21**, presumably after the general robbing out of the cobbles **436**, but conceivably was originally cut through the cobbles since a patch of intact cobbling remains to its immediate east. It was infilled at its base with **387**, a charcoal rich silt. The function of the pit and the origin of the primary infill **387** are obscure; but perhaps the pit was dug literally just to obtain a few barrow loads of sand for use elsewhere within the palace (but why in that case was it situated to the very east of the possible area for extracting sand?).

K42 Small pit/posthole: 469.

469 was a circular pit of diameter 0.4m and a depth of 0.09m; it had no associated backfill. It is not obviously associated with any other features, and its function is unknown. The possibility that it was a posthole derives from its size.

K43 Small pit/posthole: 476.

476 lies below cut **312** in phase 6 (see construction **K56**), and its original level is therefore truncated. There was no separate backfill associated with the cut, suggesting either that it was very late and still open when **312** was dug, or that the post (if indeed it was a posthole) was removed only when **312** was dug. It has a diameter of 0.5m, and a depth of at least 0.14m. As with **K42** its function is not known.

K44 Pit: 465.

465 was a somewhat irregular pit c. 0.4m by 0.2m and only 0.08m deep. **354**, which filled it, was a charcoal rich deposit, possibly bonfire debris, in which case the pit possibly served as a wind-free hollow to start the fire in. This is a very tenuous interpretation and not completely satisfactory, since **354** extends beyond its limits.

K45 Circular Feature: 413, 429, 461.

Circular cut feature **361**. The cut was an incomplete, slightly irregular circle with a diameter of c. 1.8m (see **figure 22**). It was partly cut through the tiled floor of Building G. The "open" part of the circle was in the north west, outside the northern limit of Building G, and the depth to the bottom of the cut from the surface increased to a maximum in the south east (from a level of 14.81 m.a.s.l. on its bottom in the north west to one of 14.62 m.a.s.l. in the

south east. The edges of the cut were very neat; where it cut through tiled floor **K26** of Building G the tiles were not badly disturbed, simply broken along the line of the cut. The backfill of the feature, **429=413** was a is a clayey silt with wood chips perhaps related to the disuse of the feature. It was suggestive of a waterlain deposit. The function of the feature is unknown (but see discussion below).

Fig. 22 Circular feature K45 (looking S.)

K46 Posthole: 408, 409.

Cut **409** was circular with a diameter at its top of about 0.2m. This wide cut was less than 0.05m deep, very shallow. It contained a smaller hole, offset from the middle, with a diameter of under 0.15m and a depth from the surface of around 0.08m. It was filled with a distinct clay **408**. The function of the posthole is obscure. Its proximity to Building G (less than 1m to the north of its northern wall beam **K38**) perhaps suggests a scaffold pole set into the ground. Compare **K47**.

K47 Posthole: 468.

Cut **468** had a diameter of 0.15m and a depth of 0.14m. It had no distinct fill. It lay c. 0.5m to the east of **K46**, but was earlier, being sealed by layers which **K46** cut (viz. **438**, **379**). Otherwise, in position and size, it was very similar to **K46**. A possible scaffold hole for demolition work on Building G?

K48 Posthole: 403.

Cut **403** had a diameter of 0.6m and a depth of 0.12m. It was located on the north east corner of hearth base **K28** of Building G. It may possibly represent a prop rest, supporting a prop designed to strengthen the building, but arguing against this somewhat is its extreme shallowness. It has analogues in Site B however, at the southern corners of the building; see further the description of pits **B256** and **B302** (forming constructions **BK60** and **BK61**).

Layers not included in constructions

Layer	Equivalents	Type	Brief Description
148		D	rubble/silt dump +
165		D	gritty silt/charcoal +
172		K	mortar make up +
174		D	silt deposit +
175		D	silt deposit +
187		D	mortar/charcoal/silt +
188		D	silt +
211		D	clay dump +
213		D	clay/rubble dump +
232		D	sand/silt dump +
244		D	clay/rubble dump +
245		D	spread of mortar +
253		D	rubble/silt dump +
254		D	gritty silt/charcoal +
282		D	silt dump
310		D	rubble/clay dump
311		D	rubble/charcoal dump
314		D	sand/silt dump
316		D	silty clay dump
324		D	rubble/silt dump
325		D	charcoal/clay dump
326		D	grit/clay/silt dump
327		D	clay/silt dump
328		D	clay/silt dump
329	**B342**	D	clay/silt dump
333		D	sand/silt/charcoal
334	**340**	D	clay/silt dump
336	**B337**	D	charcoal/rubble dump
338		D	rubble/silt dump
340	**334**	D	burnt? Area of 334

Layer	Equivalents	Type	Brief Description
342	**B338**	D	accumulation layer
343		D	burnt clay/charcoal
347	**313**	D	burnt clay/charcoal
349	**B345, 374**	D	silt dump
350	**351**	D	silt dump
351	**350**	D	silt dump
352		D	backfill of 395
354		D	burnt silt/sand
356		D	silt/clay/charcoal
359		D	burnt sand/silt
360	**B295**	D	rubble/silt
361	**B358, B312**	K	brick rubble make up
362		D	clay/silt/charcoal
371		D	burnt clay surface
372		K	brick rubble layer
374	**B345, 349**	D	silt dump
379		D	charcoal/silt dump
381		D	silt/charcoal dump
382		D	backfill of 395
386		D	clay/treflis layer
390		D	clay/charcoal dump
391	**B354**	D	silt dump
392		D	silt/rubble dump
393		D	backfill of 395
397		D	backfill of 401
398		D	backfill of 401
405		D	clay dump
406		D	backfill of 395
410		D	clay/rubble dump
412	**B315**	D	clay dump
424	**B360**	K	levelled demolition
430		D	silt dump
438		D	sand dump
446		D	clay/silt/charcoal
447		D	backfill of pit 401
451		D	clayey sand/charcoal
472		D	clayey silt dump +
478		D	clay silt dump +

Note: + following the brief description indicates a layer outside the curtain wall assigned to phase 2-5.

Dating

The phase is characterized artefactually by crucible fragments and metal-working waste such as hammerscale. The pottery assemblage includes German, Dutch and other redwares and Low Countries whitewares, suggesting dates in the 1600s. It is not very closely datable material. However, if the demolition of the final mint is dated to near the time of the Reformation then the phase can be given a *t.p.q.* of around 1537. Since it is followed in phase 6 by construction layers for a building satisfactorily identified as the *Herrehus*, finished in 1640, a historical *t.a.q.* is also available.

Discussion

This phase can be divided into an earlier, possibly quite short-lived constructionally active part, and a later part apparently consisting of prolonged use of the area as a simple dumping ground.

It seems apparent that at least the shell of Building G was still standing when the circular feature **K45** was cut into its floor, since it did not cut through demolition layers. Why the feature was not placed completely inside the building is obscure, as indeed is its function. From the description it is apparent that the circular channel sloped to a deepest point more or less equidistant from the ends, and this perhaps suggests the feature was used for settling out heavier components (metal particles?) from water poured into it. This is a highly speculative interpretation however, and the final residue infilling the channel, **413=429**, does not really seem to support this.

The motivation behind the robbing of the cobbles **436** at the beginning of this phase is obscure. The most reasonable interpretation seems to be that they were removed for re-use elsewhere, rather than specifically to clear the area, since it appears to be used subsequently simply as a dumping ground. The surface of the sand **315** underlying the cobbling retained the impressions of the cobbles across its full extent. It seems therefore that the dumping of layers onto the sand surface must have begun very soon after the removal of the cobbles, thus preserving the robbing marks.

The postholes **466** and **467** have been placed in a previous phase (see above, construction **K21**, phase 3) but they just possibly represented a structure against the curtain wall belonging to this phase. It may be these postholes, rather than **K48** or **K42** and **K43**, which relate to similar postholes further south in site B (viz. **B256** and **B302**). In this case a reasonable interpretation might be that they supported some sort of structure against the curtain wall running the length of site A and site B. A version of this structure, restricted to the support of **466** and **467**, is felt to belong better with the general construction going on in phase 3. It may be that a more ramshackle but similar structure replaced and extended that of phase 3 in this phase however.

The various postholes and pits in the phase do not really lend themselves to a coherent view of activity on the site. The only evidence for building activity were the beams **K39** and hearth **K40** making up **Building H**. This was itself a rather ephemeral structure. There were no corner postholes as might be expected, nor was there any sign of the cross beam which might have been expected to link the two beams in the south. Against this, the preservation of the beams was extremely poor, especially **357**. The function of the structure seems to have been simply to enclose the hearth **K40**. The construction of **K40** suggests that it was probably not used for reaching very high temperatures, but it would presumably have been adequate for smithing processes, and there are traces of hammerscale in the area, albeit in stratigraphically later layers.

At some point Building H was destroyed by fire. The clearance of the destruction debris seems to have been quite thorough, although **310**, **311** and **333** are probably associated with the fire. This may mark the end of occupation activity in this phase, after which the area is used as a dumping ground. As described above, the nature of the dumped deposits indicates continuing metal working activity within the Palace precinct if not in this particular area.

The boundary of the phase with phase 6 is somewhat blurred, given that phase 6 began with a series of dump deposits across the whole site, and this phase ends with a series of dump deposits. The boundary has been set with regard to layers **308=307** and **223** which between them cover almost the whole site and seem to offer the best horizon of change in terms of the character of the deposits.

PHASE 6

General Characterization

This phase saw the construction, occupation, reconstruction and eventual demolition of **Building I**, the ***Herrehus*** or Governor's residence. It was completed in 1640. The building occupied the whole of site A and site B, incorporating the curtain wall **K2** as its external eastern wall. In site A it comprised: external cobbling **K52**, western wall **K53**, plank floor **K54**, with stone joist bases **K58**, cobbled floor with fireplace ramp **K55**, chimney **K56** and cobbled floor **K57**.

Later structural modification was evinced by new postholes **K60** replacing existing ones, apparently reflecting changes to the western *svalgang* or first storey gallery. These changes may relate to damage done to the building during a raid by the Swedish army in 1658.

Outside the curtain wall, there was evidence for the levelling of the curtain wall itself to enable it to be incorporated into the structure, various dump deposits, and an extensive kitchen midden deposit banked against the curtain wall in the north of the site.
The phase ended with the demolition of the building in 1672.

Stratigraphic sequence

Initial make up layers and western wall

The phase began with the laying of wall foundations **273=B182** running N-S to form the external western wall of Building I; this forms the basis of construction **K53**. Layers **342** and **348** may have been make up or construction debris partly below the wall foundations. Pits **K49**, **K50** and **K51** are interpreted as construction pits associated with this preliminary construction work. Contemporary with the completion of the lower stone foundations of wall **K53**, was the deposition of a dump deposit **223=B265** across almost the whole site east of it, providing a reasonably level surface for construction work inside the building to begin.

West of the wall foundations **273** there was also dumping, the dumps characterised mainly by brick rubble ("hard core"), particularly in the areas where the deep pits **K5** and **K14** were located (see above, phase 3) presumably because these were recognised as soft spots. The sequence in this area began with **307** and **275=B281** which were deposits of brick rubble in unconsolidated mortar and silt matrices. They appear to have postdated the laying of the wall foundations **273**. **306** was a deposit of brick rubble in clay which, with **295**, a sandy silt containing brick/tile rubble and stones, overlay **275** and underlay **274=B294**, a deposit of silty clay and sand. Dump deposits **265=B279**, **291**, **299** and **300** all overlay **275** too. All can be characterised as make-up layers. Dump **294** was a local deposit of sandy silt filling a depression caused by subsidence into pit **395**. Dump **284** was another brick rubble make-up layer.

Overlying all of these dumps was layer **263=B200**, a sandy silt with charcoal inclusions. Over **263** was **264** (also included in **B200**) which bedded cobbles **23=58** (equal to **B143=B136**). The cobbles include two parallel gutters **138** and **139**. Contemporary with the laying of the cobbles, postholes **60** and **129** were driven. Documentary evidence suggests that these supported an external balcony (see discussion below). The cobbling with its features forms construction **K52**. The cobbling **23=58** actually seals what might be a construction feature associated with the building of wall **K53**, pit **K51**.

Right against the inside of the curtain wall in the east the dumping sequence was also fairly complicated; one of the lowest (i.e. earliest) dumps was **376** which contained butchered bone and oyster shells in a silt matrix which also contained wood chips. This was presumably a midden dump associated with the construction workers. Over this was a dump of brick rubble in a sandy silt matrix, **298**, which partially underlay general dump layer **223**. Over **298** was a local dump of material **289**, supporting mortared stone foundations **278** for construction **K57** (q.v.). Right up against the curtain wall a sequence of dirt and mortar dumps were used to partly fill the depression by the wall: **297** was a loose black silt containing brick rubble; over it was **296**, a dump of brick, stone and mortar in a silt matrix, **215** a dump of mortar, separated from **216** (an almost identical deposit) by **255**, a dump of brick rubble and wood chips in a gravel matrix. This seems to have represented a first phase of dumping against the curtain wall; later ones followed (see below).

Internal features

More or less contemporary with this dumping against the curtain wall was the deposition of large flat-topped stone assemblies **206** and **217** as joist supports, **K58**. Their equivalent in site B is **BK66**. In the middle of the area between the western wall foundations **273** and the curtain wall, a cut **312** was dug for chimney **K56**. This was contemporary with or just later than the deposition of a layer of wood chips **99=111=151=B216** across this whole area. This wood chip layer represents the first construction layer proper for Building I.

Above the wood chip layer **99** was a series of dump deposits underlying the floor surfaces of Building I. They can be characterised as construction waste (mortar dumps, brick rubble etc.) or make-ups (silt, sand and gravel dumps) and form two main groups. The first group of dumps underlay the wooden joists of plank floor **K54**. The second group, to the east of the site, formed make-up layers for internal features such as the chimney **K56**, and cobbled floors **K55** and **K57**.

The first group of dumps comprised **267**, a loose clay with mortar inclusions; **227**, an unconsolidated mortar with brick rubble and stones; **242**, a fine gritty sand; **228**, a consolidated mortar dump, and contemporary with this **224**, a sandy silt with mortar fragments, charcoal and brick rubble, **225**, a gravelly sand with charcoal and brick fragments, **226**, a patchy sand deposit and **243**, a layer of brick rubble. These last dumps all underlay the plank floor **K54**. In the south of the site where the plank floor **K54** had not survived, dump **121** directly overlay **99**.

The second group of dump deposits mentioned above can be further broken down into general make-ups, and those specific to a particular construction. Those dumps that related purely to a single feature have been included in the descriptions of constructions.

Construction **K56** was the northern chimney of Building I, and its individual make up dumps are treated in the descriptions of constructions below, as are those of the cobbling to its east, **K57**.

To the west of chimney **K56** was another cobbled area with a stone-laid ramp upto it, **K55**. This construction rested on part of the general make-up series. deposit **266**, a silt with brick fragments overlay wood chip layer **99**. Deposit **293**, mortar fragments in a compact silt, partly overlay the foundations of chimney **K56**. Overlying these was **260**, a dump of loose, soft mortar, and above this was **257**, a bedding sand for cobbles **62**. The cobbles were bounded to the south by a wall beam **83** which also overlay **257** and was consolidated to them (and apparently to the chimney **64** as well) with mortar **259**. To the east of the cobbling, between it and the chimney was stone-laid ramp **159** (which had subsequently had a layer of clay **89** laid on it). This also rested on part of the general make-up

series; layer **251**, a gritty silt with charcoal fragments, was overlain by **241**, a soft crumbly mortar; in turn this was overlain by **240**, silt, which was overlain by **162**, a sandy silt which bedded the stones **159**. (These stones were also consolidated to the cobbles and the chimney by mortar **259**).

In the north east of the site, where the planking did not survive so well, the underlying general dump series began with layer **289**, a gritty silt Overlying this was **286**, a sandy silt, and over that silt was **292**, a sandier silt with inclusions of brick fragments which at least partly overlaid the retaining stones **278** for construction **K57**. Over this lay **287**, a loose sandy mortar; above this was a sandy silt **285**, as well as part of the make up for the chimney **K56**. The original surface (presumably planking **168**) overlying this dump had not survived, and it was overlain by a gravel dump forming part of **K61**; this is described in phase 7.

Area outside the curtain wall

The area outside the curtain wall contains layers which can be tied in to phase 6 with confidence. **157** was possibly a cut or an area of subsidence into a soft spot near the curtain wall. It may have been a constructional feature of some kind associated with building work for Building I. It contained within its boundary rotted timber which may have been scaffolding (?). It also contained an area of massive tumbled stones **153** in a matrix of loose soil **154**. This was almost exactly equivalent to layer **445** (large stones in a loose soil matrix) which overlay sand dump **444**, possibly a constructional feature. These layers of large stones can be tied in because of documentary evidence that the curtain wall was levelled when Building I was built (see discussion below). Layers **167** (sandy silt) and **208** (unconsolidated mortar) which lay against the curtain wall were probably also constructional deposits belonging in phase 6. Layer **170** was probably equivalent to **167**, and was overlain by **164** which was probably the same as **154**.

Overlying **153** and **154** was a dump of brick and tile rubble against the curtain wall, presumably construction waste, and this was in turn overlain by **146**, an area of burning, possibly a construction site fire.

Occupation layers

No definite occupation layers were identified belonging to Building I inside the curtain wall. This may relate to a very thorough demolition of the building. Interstitial matter between the stones of the cobbled surfaces **K55** and **K57** was numbered (**234** over **K57**, and **235** over **K55**), but this was very small in quantity and possibly a demolition or post-demolition deposit anyway. However outside the curtain wall there was some evidence of occupation deposits from Building I. Layer **102=135** was a midden deposit against the curtain wall in the north of the site. It directly overlay the tumbled stone/soil layers noted above. It was very rich in oyster shell, butchered bone, and fish bone, and contained proportionately large amounts of high status domestic waste such as fine broken pottery vessels and toasting glass fragments (see **figure 23**). The best interpretation is that it was a kitchen midden associated with life in the Herrehus. It was overlain by **134**, a clean soil, which may have been thrown over the midden to contain the smell of rotting food, discourage scavengers etc..

Later structural alterations

To the west of the external western wall **K53**, the postholes **60** and **129** in **K52** appear to have gone out of use at some stage, with fills **61** and **130** being very uncompacted and suggesting accumulation

rather than deliberate back-filling. Three new postholes **272**, **127** and **131=432** (double numbered) were cut into the cobbles **58=23**; presumably this represents a reconstruction of the first storey balcony or svalgang, and forms construction **K60**.

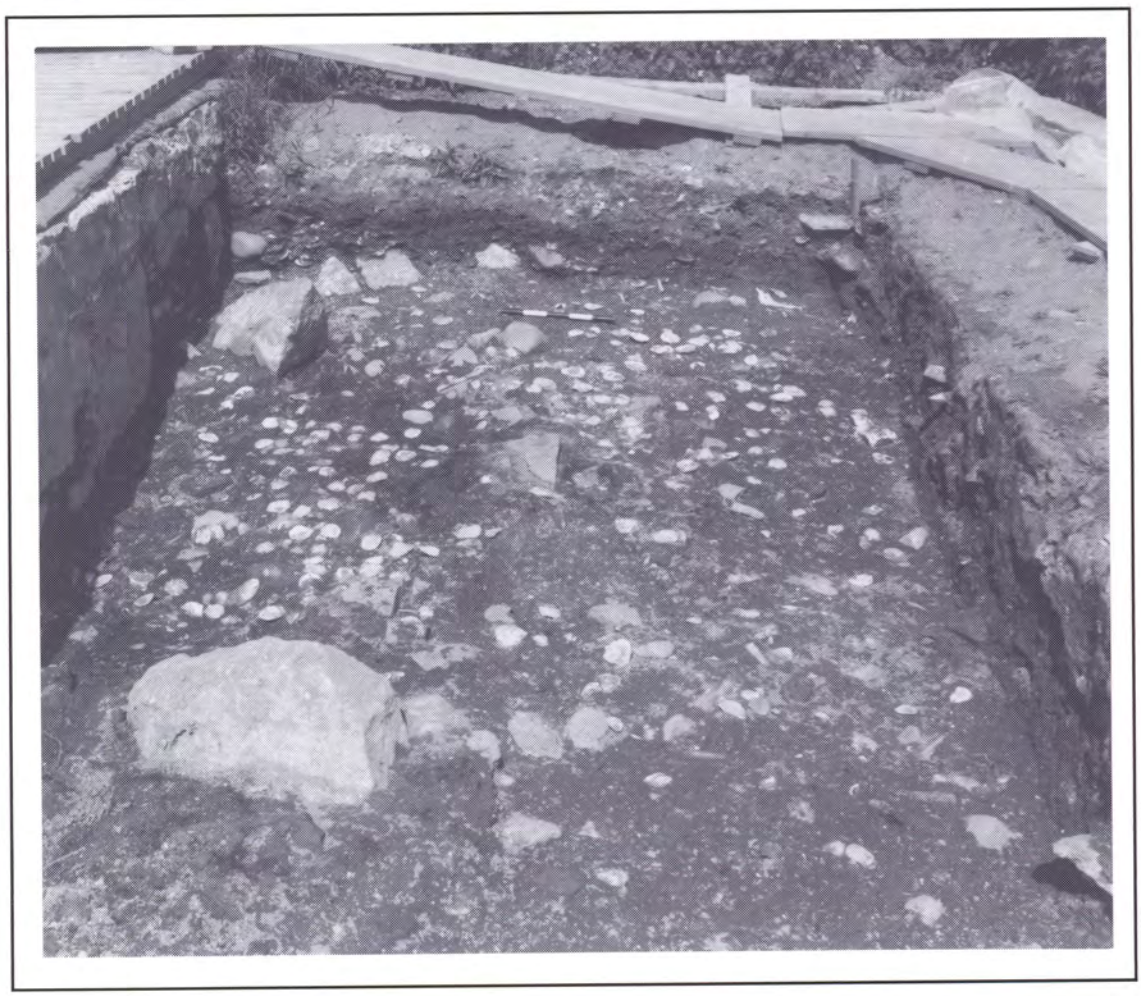


Fig. 23 Midden deposit 102=135 (looking N.)

Demolition layers

One layer outside Building I possibly related to its demolition although it is also possible however that this layer refers to the period of structural alterations to the Herrehus. Dump **133** was a layer of rubble in a soil matrix which directly overlay the midden and soil layers **135** and **134**.

Inside Building I, the above ground elements of the building appear to have been dismantled with some care and the material removed; the succeeding phase appears actually to have respected some

elements of the building, and in site A the building levels were not covered with a thick layer of levelled demolition material from Building I. However some demolition deposits are recognisable against the curtain wall, where material appears to have been dumped to fill in the slope down to the wall which had persisted throughout all the preceding phases. Over sand **204** was a dump of silt with mortar and brick/tile rubble, **200**, while mortar **216** was overlain by a sand and charcoal dump. Above these was a confused and interleaved set of dumps against the curtain wall; **202**, a deposit of sand possibly marking a robbed out joist; **193**, brick rubble and charcoal; **199**, gritty brown sand; and **197**,sand with charcoal.

As was mentioned above, material from between the cobble-stones of **K55** and **K57** has been regarded as occupation accumulation, but may actually be demolition deposits. Overlying **234** was a patch of charcoal **207** which appeared to be the debris from a fire lit on them - presumably a demolition deposit.

Description of Constructions

Building I: K49, K50, K51, K52, K53, K54, K55, K56, K57, K58, K60.

Building I was securely identified as the *Herrehus* or Governor's Residence constructed in 1640. The building extended beyond the northern limit of excavation of site A and the southern limit of excavation of site B; comparison with documentary sources suggests over half of the building was exposed by both sites together (see below). In site A the building consisted of a massive stone ground wall to the west **K53=BK67** on top of which wooden sleeper beams lay. To the east, the curtain wall was apparently levelled and used as the external wall. The survival of wooden elements was relatively poor, but the joint between the western sleeper beam **59** and internal joist **83** for example appears to confirm that the building had a lafted wooden superstructure. To the west of the building was a cobbled area **K52=BK79** which contained a number of regularly spaced large postholes, interpreted as holding supporting posts for an external upper storey balcony or *svalgang*. Later alteration to this feature was shown by **K60**. Within the building, a large chimney base in the north, **K56**, separated two areas of cobbling **K55** and **K56**. South of these was an area of planking **K54**. The width of the exposed building was very close to the dimensions given in documentary sources (c. 8.75m), which give an overall length for the complete building of c. 35m (of which c. 18m was exposed by excavation). The identification of internal elements of the building is discussed further below.

K49 Construction pit: 337.

Circular pit **337** was cut into dump layer **334** (from phase 5), and appears to have been associated with the construction of wall **K53** of Building I. It had a diameter of 0.4m and a depth of 0.35m. Possibly a scaffold or derrick pit. It had no distinct fill.

K50 Construction pit: 383.

Sub-circular pit **383** was cut into dump layer **338** (from phase 5). It was very shallow, with a depth of 0.14m, and had a diameter of 0.45m. It presumably relates to construction activity of Building I, possibly the levelling of the curtain wall **K2**. It had no distinct fill.

K51 Construction pit: 261, 262.

262 was a sub-rectangular pit 0.5m by 0.6m, with a depth of c. 0.1m. It lay 4m west of the western wall **K53** of Building I, cutting the make up layer **264** for cobbled surface **K52** and being sealed by the cobbles, **23**. Its fill **261** contained a number of cobbles, which might imply that it is actually later than surface **23=58**, with the cobble surface made up over it, in which case it possibly relates to repair work to Building I rather than construction.

K52 External cobbled area with postholes: 23=58=B136=B143 , 60, 129, 138, 139, 263, 264=B200 .

External cobbled area to west of wall **K53**. The cobbled area was bounded by wall **K53** to the east and went beyond the limits of excavation to the north, west and south, so its true extent is unknown. Make-up layers **263** and **264** (both included within **B200**) support cobbles **23=58**. The cobbled area contained two parallel gutters **138** and **139** made up of rectangular cobbles angled together. They were set 1.4m apart and ran parallel to wall **K53** with the westernmost gutter just under 5m away from it. The cobbled area also contained two original postholes **60** and **129** with diameters of 0.5m and depths of around 0.4m. These were a distance of about 1m west of wall **K53** and were set 2.3m apart, centre to centre. They presumably supported posts for an external balcony or *svalgang*. See also **BK79**.

K53 Western wall: 273=B182, 290, 59=B253.

The wall consisted of large stones **273** apparently just lain on make-up layer **308=317** although subsequent pressure had forced them into the layer and made it appear as if they filled a shallow cut in places. They were inconsistently mortared together or just lain together, and supported wooden sleeper beams **59**. Between the stones and the beam was a layer of clayey silt with wood chips, **290**. This may have been a bedding layer for the wall beam. See also **BK67**.

K54 Plank flooring: 84, 89, 101, 168, 169=B202, 173, 190, 191, 209, 210, 214=B259, 219, 220, 221, 222, 229.

See **figure 24**. A total of ten joists were present beneath the plank floor. Nine in all ran north-south, with a longest surviving length of around 8m, but they had originally almost certainly continued further south. The joists were **173**, **214**, **220**, **221**, **222**, **229**, **313**, **209** and **210**. The tenth joist **191**, ran east-west from wall **K53** for a distance of about 3m. It overlay the north-south joists. The joists overlay a series of dump deposits over construction layer **99**. The gaps between the joists were filled with gravel **169**. The function of this gravel appears to have been to settle the beams and hold them in place. The joists supported planking **168**. The planks making up **168** ran east-west across the joists with an average width of around 0.3m and a length of around 3m. A consolidated mortar surface associated with chimney **K56** was also covered by planking **168.** Planking **168** extended east from the western external wall **K53** to the joist **209** just east of the chimney **K56**, and south from the sleeper beam bounding cobbled area **K55** to almost the southern limit of excavation.

Above **168** were four beams which can be interpreted as internal room dividers. They were **84**, **101** and **89** which ran north-south, and **190** which ran east west. All the wooden elements

of the construction were very badly preserved and meaningful dimensions for the breadth and width of the beams are not possible to give.

Some iron nails were recovered from the planking, but it appeared as if the majority of them might have been robbed out; it did not appear that wooden pegs had been used.

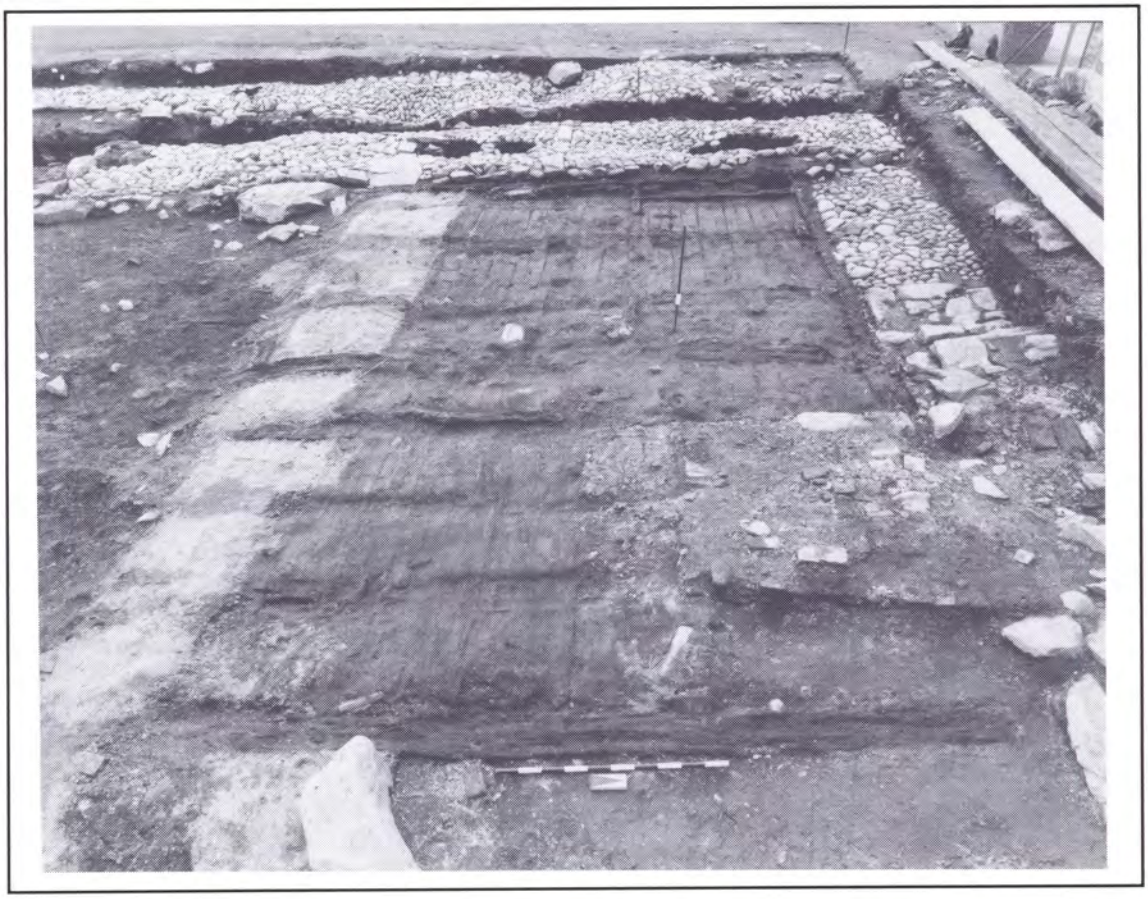


Fig. 24 Plank floor K54 (looking W.)

K55 Internal cobbled surface: 62, 83, 87, 159, 259.

An internal cobbled floor surface incorporating a ramp to a fireplace in the chimney **K56**. Cobbles **62** were bedded on sand **257**; they were bounded to the west by wall **K53**, to the south by wall beam **83** and to the east by stone-laid ramp **159**. Their northern limit was beyond the limit of excavation, but the surface was at least 1.5m wide north-south, and they were 2.5m long east-west. Ramp **159** was a similar width and 1.7m long. Ramp **159** comprised flat irregularly shaped paving stones set in a series of silt make-ups **162**, **240**, **241** and **251** which also overlay sand **257**. It was overlain by clay layer **189** though it was not clear whether this was an original feature. The ramp had a very gentle slope, rising no more than c. 0.3m from west to east.

K56 Chimney base: 64, 288, 303, 305, 312, 339, 344, 353.

Construction cut **312** appeared to be through make-up layer **223** but might possibly have been through construction layer **99**. The chimney base consisted of a main section, rectangular in shape, 1.6m east-west and at least 2.4m north-south, with its northern limit beyond the excavation boundary, and a subsidiary section. This subsidiary addition to the west met with ramp **159**, being bounded to the south by the wall beam **83**. Filling the main part of cut **312** were sand dumps **339**, **305** and **288** which can essentially be considered to be the same deposit. An internal wooden beam **353** divided the main part of the chimney **64** from the western portion of it. The foundations of the chimney consisted of massive stones, unworked boulders and re-used architectural pieces (see **figure 25**). On excavation most required at least two and on one occasion six men to lift them and carry them off site. To the west of the beam the main bedding material for these foundation stones was a loose mortar **303**, while in the main part of the chimney it was the sand dumps noted above. Above the sand and mortar dumps was a layer of silt **344**, above which was stonework set in mortar in the subsidiary western part, and brickwork over stonework set in mortar in the main part. The bricks consisted of a mix of a number of types of fabric and size. Compare **BK65**.

Fig. 25 Chimney base K56, foundation (looking N.)

K57 Internal cobbled surface: 205, 270, 276, 277, 278, 283.

The internal cobbled surface **205** to the east of chimney **K56**. It was bounded to west by chimney **K56** and to east by the curtain wall **K1**, but it had been partly robbed or disturbed near the wall and the original way in which the cobbled surface abutted it was lost; the northern section however implies that they abutted to a thick dump of mortar against the wall rather than the wall itself. As with **K55**, the northern limit of the surface lay beyond the excavation boundary; unlike **K55**, the southern boundary was made up of mortared kerb stones **278** rather than a wooden beam. The cobbles were bedded in sand **270** which overlay a series of silt dumps within the bounds of **278**, i.e. **283**, a loose sandy mortar, which was overlain by **277**, a gritty silt, in turn overlain by **276**, an unconsolidated sandy mortar. Kerb **278** itself lay over dump layer **289**. Unlike **K55**, the cobbles had no separate ramp up to the chimney **K56**; instead the whole cobble surface sloped up, by a height of around 0.4m in a distance of about 3m.

K58 Stone joist supports: 206, 207.

Stone joist supports **206** and **217** supported joist **210**, of floor **K54**. **206** lay in the north east corner of the site next to the curtain wall, while **217** lay to the south east of the site by the curtain wall. **206** was made up of a single huge stone, having a rough diameter of 0.8m and weighing too much to be moved by a team of four men. **217** was made up of a lower massive stone topped by a smaller stone with parallel flat sides, presumably added when it was found that the lower stone on its own was too low. Nonetheless, the top of joist support **217** is only 15.16 m.a.s.l. which compares to 15.35 m.a.s.l. for **206**, that is, a drop of 0.2m over a distance of around 7m, or a slope of less than 4%, which would probably not have been appreciable to people walking on the completed floor. See also **BK66**.

K60 External structural change to Building I: 61, 127, 130, 131, 272, 432.

See **figure 26**. Postholes **60** and **129** went out of use and accumulation deposits **61** and **130** of uncompacted soil filled them; there appears to have been no deliberate back-filling as such. New postholes **272**, **127**, and **131=432** (feature double numbered in error) were cut, with a slightly larger diameter (upto c. 0.6m) and slightly deeper (to a depth on average of 0.4m). They presumably relate to a change in the external structure of Building I.

Fig. 26 Postholes 129 and 131, cutting cobbles K52 (see K60) (looking E.)

Layers not included in constructions

Layer	Equivalents	Type	Brief Description
99	**B216, 111, 151**	K	treflis surface
102	**135**	B	midden deposit
111	**B216, 99, 151**	K	treflis surface
121	**187**	K	clay/silt make-up
133		D	dump of rubble/silt
134		D	dump of soil
135	**102**	B	midden deposit
143		D	mortar/rubble
145		D	brick/rubble dump
146		B	burnt patch
151	**B216, 99, 111**	K	treflis surface

Layer	Equivalents	Type	Brief Description
153		D	tumbled stone
154		D	silt/stones/timber
157		D	subsidence?
162		K	sand/silt bedding 159
164		D	silt/charcoal/stones
166		B	midden dump
167		D	sandy silt dump
170		D	sand dump
197		D	charcoal/sand
199		D	gritty sand
200		D	rubble/silt
201		D	sand/charcoal
202		D	sand
204		K	bedding sand
207		D	charcoal patch
208		D	mortar/silt
215		K	mortar dump
216		K	mortar/sand dump
223	**B265, B250, B311**	K	make up layer
224		K	construction dump
225		K	construction dump
226		K	construction dump
227		K	construction dump
228		K	construction dump
230		K	construction dump
234		D	gritty silt deposit
235		D	gritty silt deposit
240		K	silt make up
241		K	mortar bedding layer
242		K	construction dump
243		K	construction dump
251		K	construction dump
255		K	construction dump
257		K	bedding sand for **62**
260		K	mortar make up
265	**B279**	K	construction dump
266		K	construction dump
267		K	construction dump
274	**B294**	K	silt/clay make up
275	**B281**	K	make up
284		K	construction dump
285		K	construction dump
286		K	construction dump
287		K	sand/silt make up
289		K	gritty silt make up
291		K	mortar/silt make up
292		K	sand/silt make up
293		K	mortar/silt make up
294		K	silt make up

Layer	Equivalents	Type	Brief Description
295		K	rubble/silt make up
296		K	construction dump
297		K	construction dump
298		K	rubble/silt make up
299		K	rubble/silt make up
300		K	silt/sand make up
306		K	clay make up
307		K	rubble/silt make up
308	**B329, 317**	K	silty clay make up
317	**B329, 308**	K	silty clay make up
348		K	silt/timber traces
376		K	midden waste make up
444		D	sand dump
445		D	tumbled stones/silt

Dating

From documentary evidence (see Lysaker 1990, p. 46 *ff*) it is known that the Herrehus was constructed in 1640, and demolished in 1672. An attack on Trondheim by the Swedish army in 1658 (*op. cit.*, p.46 *ff*) may have been the cause of the reconstruction indicated by **K60**. This dating is generally well supported by the artefactual assemblage.

Inside the building, few obvious occupation deposits survived; and much of the pottery assemblage from the make-up dumps underlying the building is rather similar to that of the phase 5 dump layers, e.g. German and Low Countries redwares, Low Countries slipwares. In addition, local lead glazed earthenware and slipwares

The character of the pottery assemblage from the midden dump **133** and its covering layers **134** and **135** is mainly of German and Low Country redwares, and some Low Countries whitewares, with Jutish ware, Dutch slipware and other whitewares also present. One piece of Westewald stoneware and one of Frechen stoneware were also recovered from **135**.

Two tokens (acc. nr.s N116300 and N116303) were recovered from immediately beneath the plank floor **168**. They have been dated to 1618-1625 and 1618-1660 respectively. A coin (N116306) from a construction layer, **242**, is a Christian IV coin dated 1622. One from construction layer **251** (N116307) is a Christian IV coin dated 1644. A coin of Gustav Vasa (N116682) dated 1528 was recovered from **302=317**, one of the earliest extensive dump layers. Interestingly, two blanks (N116681 and N116685) also came from this layer. This suggests that the layer was ultimately derived from demolition material from the mint buildings in phase 4 and earlier, perhaps as part of the general levelling that preceded the construction of Building I.

Discussion

Building I was identifiable from extensive documentary sources as the *Herrehus* or Governor's residence completed in 1640 (see Lysaker, 1990). It was a large lafted wooden two-storey building, incorporating the levelled curtain wall as its external eastern wall, a massive stone ground wall to the west, a *svalgang* or external upper gallery, and three large chimneys (the northern and middle of which

were exposed in site A and B respectively). Documentary sources give it a length of c. 35m and a width of c. 8.75m. The excavated remains fitted very well with these measurements, and Maschius' (retrospective) engraving of the building fits with the archaeological evidence as far as can be tested, offering an impression of the external appearance.

The evidence for the internal organization of the building also seems to agree with documentary accounts, even given later alteration/replacement. In site A it is possible to identify **K55** as the *budeistue* or milkmaid's parlour, **K57** as the *melkekammer* or dairy, separated by **K56** the northernmost chimney. To the south of these was *gjestekammer* or guest accommodation. Some measure of the internal partitioning of the guest area can be gauged from the use of internal partition beams on top of the planked floor (see **K54** for details).

Comparisons of archaeological evidence with documentary sources can throw light on commercial transactions of the period. The wall foundations were supposed to have been dug to a depth much greater than that found to be the case on excavation for example, and a special order of imported bricks was supposed to have been placed for the chimneys, whilst a number of varying types of brick, some re-used, was actually found.

The documentary evidence also offers a chance to key in the stratigraphic sequence outside the curtain wall to that inside. The presence of large stones in layers abutting the wall fits well with references to the wall being levelled prior to the construction of the Herrehus. This event may also be the origin of the exceedingly heavy stones used as joist bases both in site A and in site B (see the description of **K58** above). The use of such bases would have obviated the need to fill in the depression against the curtain wall, presumably caused by subsidence of material into the original construction trench.

The lack of occupation surfaces associated with the Herrehus is perhaps not too surprising given the evident thoroughness of the demolition. Environmental samples were taken of layer **169** below the planking **168** of **K54**, but with little result. Some coins were found beneath the planking however, presumably lost through cracks (see dating, above). Outside the curtain wall, the deposit **135** was very obviously kitchen midden material. The lack of obvious stratification within the material may suggest that it was deposited more or less in a single stage, perhaps when arrangements for domestic refuse disposal broke down and led to it being thrown *en masse* outside the wall.

The structural modifications to the Herrehus may have been quite extensive, although only **K60**, suggesting reconstruction of the western facade, provides any real evidence. Whether the reconstruction in fact related to damage caused by the Swedish attack of 1658 is open to question; an alternative suggestion is simply the need to repair weather-weakened or damaged structural elements.

PHASE 7

General Characterization

This phase is associated with **Building J**. The relationship of this building to the preceding Building I is rather unclear; its structural elements seem to have respected the ground plan of Building I as if relating to internal reconstruction, but stratigraphic evidence (particularly in site B) requires that it post dates the demolition of Building I. In site A it apparently consisted of a tiled area **K59** and a possible plank floor **K61** lain in the eastern half of the internal area of Building I. In the western half of the area a series of generally clean gravel dumps were deposited which are most easily interpreted as an

external surface. Following this, or possibly contemporaneously, and in any event marking the disuse of tiled area **K59** and possible plank floor **K61**, was another series of dump deposits, again including clean gravels, in the western and central parts of internal area of Building I. This would have formed what was presumably an external surface across the whole of the area, which may have been associated with cobbling to the south in site B (**BK82**). The situation is unclear and the alternatives are examined in detail in the discussion, below.

Outside the curtain wall a four-posted revetted pit, **K67**, was constructed. Subsequently it was filled in, and the area truncated, then covered with further dump deposits. It may date to this phase. Note however that the stratigraphy of the area outside the curtain wall cannot be satisfactorily divided between periods 7 and 9, and that although it is described in detail in this phase, it may also relate to phase 8, and possibly 9.

Stratigraphic Sequence

The area inside the curtain wall

The phase appears to have begun with the removal of planking (but not the underlying joists) from floor **K54** of Building I, to the south and east of the site. This was followed by the laying of bedding sand **105** which presumably (judging from remaining tiles embedded in it) was the basis of a tiled area **K59** in the south east corner of the site, extending partly into site B. Largely contemporary with this was the laying of gravel **75** to the immediate north, which apparently was covered by planking **168** and presumed structural elements **104**, **196**, **198**, and **203** (see construction **K61**). The planking **168** was entirely rotted, but appeared to show signs of having suffered burning, as did other elements of **K61**, notably **203**.

Contemporary with **K59** and **K61** or possibly following their disuse was a series of gravel dumps to the west of them, which appeared to respect internal room boundaries belonging to the plank floor **K54** of Building I. Namely, gravel **85** was laid between **84** and **190** (from **K54**) and external wall **K53**. Gravel **86** was laid to the west of **84**. It is equally possible that these gravel dumps form an external surface contemporary with **K59** and **K61** or that they may postdate their use. See discussion below.

In the east, charcoal **185** overlay **105** bedding sand in floor **K59**, suggesting that the floor itself had been robbed out at this stage. **185** itself is possibly associated with the destruction of the floor **K61**. Over these was a series of dumps. **184** was a gritty silt, partly overlain by **178**, a clayey deposit with mortar inclusions. These were possibly levelling layers.

Contemporary with **178** were **176** brick rubble and **179** clay dump which overlay possible plank surface **198** from **K61**. These were all overlain by layer **78**, a clayey sand with charcoal inclusions. Gravel **100** was laid between **101**, **203** and **196** (burnt/destroyed structural elements from **K61**); gritty silt **95** was laid in the area around the levelled chimney base **K56**, partly bounded by **203** (from **K61**); and gritty sand **80** was laid over part of **78**. In turn these were overlain by brick rubble **94**, and silt with brick/tile **171**. Finally rubble in silt **103** was laid in a gap between gravels **84** and **100**, over silt **171**. Gravel **177** was laid over **180** (from **K61**). A series of dumps in the south west of the site consisted of **156**, a loose sandy silt overlying **121** from phase 6 (possibly exposed by the removal of the plank flooring in the area), then **152=B171**, then **122** charcoal stained silt, and finally **125**, a hard packed fine sand, possibly burnt.

This would have formed a consistent gravel surface over the greater part of what was the plank floor of Building I, and together with the still exposed cobbled areas of Building I **K52**, **K55**, **K57** and the flattened chimney base **K56**, may have been an external surface associated with the curious arrow-shaped cobbles in site B, **BK82**.

By the curtain wall in the east, **184** was also overlain by **192** brick rubble. Silt **183** was dumped over cobbles **K57** from Building I. Crumbly mortar **182** was dumped over demolition deposit **185** from phase 6, and **181** silt was then dumped over **182**. Over all these deposits against the curtain wall was **163** mortar, then **161**, another mortar, then **160**, a tumble of stones in a silty matrix. This possibly marked an attempt to fill the depression running alongside the inside of the curtain wall.

Outside the external western wall **K30**, postholes **272**, **127** and **131=432** were robbed and were infilled with **279** and **271**; **128**; and **433** and **132** respectively. These were all basically uncompacted silty fills probably relating to accumulation over time rather than deliberate back-filling. Over them, and largely indistinguishable from them was accumulation layer **49=B135**. In the north west of the site, just outside the western wall of Building I, was a tumble of stones **56**, which appeared to be a demolition deposit.

The area outside the curtain wall

Outside the curtain wall, in stark contrast to earlier phases, very little dumping seems to have occurred after the end of phase 6, marked by the deposition of **135**. A four-posted wooden-lined pit **K67** was dug up against the curtain wall. It was probably truncated at a later date, and the true level it was cut from was lost. In terms of function it was similar in size and form to other four-posted pits known from post-medieval sites in Trondheim which have been interpreted as rubbish pits (I. Reed, pers. comm.). Its backfills however do not seem to support this; although no other explanation of its function is immediately forthcoming (see description and discussion, below). After the backfilling and disuse of **K67** the surface outside the curtain wall was apparently truncated, then covered over by a general deposit of sandy silt **147**. Despite the stratigraphic continuity, because of truncation this may date from much later, perhaps phase 9.

Description of Constructions

Building J: K59, K61.

Building J appears to have partly re-used the ground plan of the demolished, cleared *Herrehus*, and subsequently itself undergone structural change. Speculatively, it can be suggested that in site A it consisted of an enclosed area by the curtain wall (which presumably formed its eastern boundary) and extended from it some 3m or so to the west.

K59 Tiled area: 105, 231.

The surface consisted of a (mostly robbed out) tiled surface bedded in sand **105**. It lay on construction layer **231**, which appeared to overlie a robbed out portion of plank flooring **K54**. It was bounded by curtain wall **K2** to the east, extending to joist **221** in the west (a total east-west distance of about 3m). Its southern boundary lay beyond the site A limit of excavation; it extended about 1.8m to the north. It overlay joist **209.**

K61 Planked area: 75, 104, 180, 196, 198, 203.

A re-use of internal structural elements of Building I east of beam **89**. A layer of gravel **75** was laid over planking **168** from Building I, and possible planking **198** was laid over **75**. Some possible internal room boundaries can also be identified; **104**, which is a rectangular patch of hard consolidated mortar, may have supported a structural element, and **203**, **196** and **180** may have been internal wall beams. The preservation of all these features was extremely bad however, and the interpretation is speculative.

K67 Four-posted plank-lined pit: 212, 218, 236, 237, 238, 239, 246, 247, 248, 249, 268, 269, 322, 323.

See **figure 27**. Cut **236** appeared to be through the surfaces of **148**, **208** and **211**, but it seems that its original level has been lost by truncation; see the following discussion. It abutted the curtain wall, with a length N-S of 3m and a width E-W of 1.5m. Its extant depth was 0.5m. It was disturbed to the south by a modern intrusion. The four postholes were **238** (SE), **239** (NW), **269** (NE) and **322** (SW). **238** bottomed onto a flat stone. The associated fills were respectively **246**, **247**, **268** and **323**. These did not appear to be deliberate backfills, but were loose accumulation deposits. It is reasonable to suppose that the pit was originally plank-lined even though no completed remains were present, since fill **212** of the cut extended around the sides of the cut with a fairly uniform width of 0.2m, with fragments of wood in places on its inner face; the obvious interpretation being that it formed packing between the plank lining of the pit and the sides of the cut. The primary fill of the pit was **249**, which was a clean gritty/silty clay. Above it were two further fills; **248**, a clayey layer with some brick rubble and mortar fragments, and **237**, a clayey silt also with some brick fragments and some stones. The bottom layers appeared to have some organic component, and analysis of **249** showed that it contained raspberry seeds (P. Sandvik, pers. comm.). The function of the pit is obscure.

Layers not included in constructions

Layer	Equivalents	Type	Brief Description
49	**B135**	D	accumulation on cobbles **58**
65	**B84**	K	mortar dump
78		K	sand/clay make up
80		K	gritty sand make up
85		K	gravel make up
86		K	gravel make up
94		K	brick/mortar make up
95		K	silt deposit
100		K	gravel/silt make up
103		K	silt/rubble deposit
110		K	gravel make up
121	**B187**	K	clay/silt make up
122		K	silt make up
125		K	sand
128		D	infill of posthole **127**
132		D	infill of posthole **131**
147		D	sandy silt dump *
152	**B171**	K	silt/clay make up
156	**B177**	K	sandy silt make up
160		D	tumbled stones/silt
161		D	mortar dump

Layer	Equivalents	Type	Brief Description
163		D	mortar dump
171		K	silt make up
176		K	rubble/silt make up
177		K	gravel surface
178		K	mortar/clay deposit
179		K	clay deposit
181		D	silt/rubble dump
182		D	mortar/brick dump
183		D	silt with charcoal
184	**B80**	D	gritty sand/silt
192		D	brick in silt/sand
271		D	infill in posthole **272**
279		D	infill in posthole **272**
433		D	infill of posthole **432=131**

Note: * following the brief description indicates a layer outside the curtain wall assigned to phase 7-9.

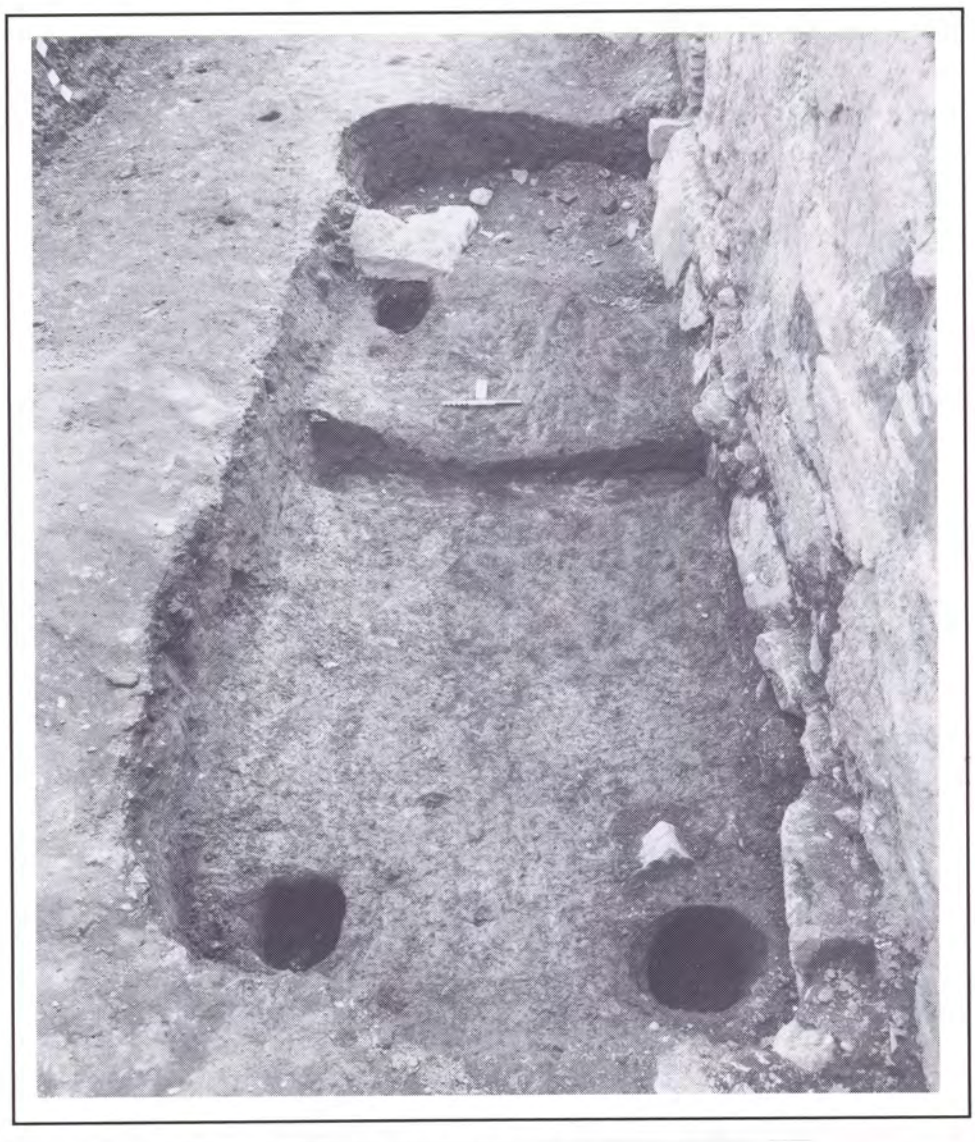


Fig. 27 Formerly plank-lined pit K67 (looking S.)

Dating

The phase has a *t.p.q.* of 1670 for the demolition of Building I (the *Herrehus*, see phase 6). A *t.a.q.* is given by the building in the succeeding phase (Building K, phase 8), which may appear on plans of the Archbishop's Palace from as early as 1708, and almost certainly by 1733 (see phase 8 dating). This gives a time range of around the last quarter of the C17th for the phase. The dump deposits in site A relating to this phase contain German and Low Countries redwares and whitewares, local lead-glazed earthenwares and slipwares, along with Raeren and Frechen stoneware. No very closely datable pieces were present, but in general the assemblage can fit into a late C17th early C18th range. A coin of Erik of Pommern (acc. nr. N116301) dating from 1396 to 1439 was present in layer **163** and forms something of a curiosity.

Outside the curtain wall, the secondary backfill in the four-posted pit **K67** contained sherds of local pottery and fragments of clay pipe, one of which was identifiable as being of Dutch origin and dating to between 1680 and 1700. In secondary context, and therefore liable to indicate too early a date on its own, this suggests that the pit possibly went out of use towards the end of phase 7 or during phase 8. Layer **147** contains a wide variety of pottery types, including late local pottery and clay pipe as well as some presumably derived from earlier layers, suggesting that it was redeposited from nearby.

Discussion

This phase must be considered in connection with the stratigraphic evidence from site B, which indicates that the arrow shaped cobbles **BK82** definitely postdated the complete levelling of the middle chimney stack of Building I, the *Herrehus*. However, the most striking thing about the phase in site A is the lack of a layer of demolition material overlying the floor levels of Building I: even the chimney **K56** was not surrounded by demolition material, but on the contrary had been more or less cleanly levelled, the demolished superstructure having been taken off site. The purpose of the dump deposits, many of which were clean gravels, appeared to be to level up the area. On excavation the deposits were actually lower than the level of the flattened chimney, but this is no doubt in part due to later rotting out of the underlying timber floor of Building I, causing subsidence.

A speculative interpretation of the stratigraphy is as follows; after demolition of the *Herrehus* to ground level, but with the floor levels mostly intact, the relatively small Building J was constructed against the curtain wall. In site A this building consisted of floors **K59** and **K61**. The curtain wall presumably formed its eastern boundary, whilst its western limit remains uncertain, but may have been along the line of floor joist **221**. To the west a simple gravel surface was laid over the remaining planking of Building I. Later, both **K59** and **K61** went out of use (the evidence from **K61** is of a fire) and the whole area north of the arrow-shaped cobbles **BK82** became an open gravelled area.

Outside the curtain wall, the only activity in this phase was probably the construction of pit **K67** (although it is just possible that it was not constructed until the next phase). The function of the pit is unclear; it did not contain rubbish deposits, although it might have been very thoroughly emptied during its lifetime. It is conceivable that it originally had a defensive function, perhaps as part of outer defense works of the Palace, but this must remain conjectural. The primary fill of the pit contained raspberry seeds, as noted above. This may indicate that the pit was not immediately backfilled after disuse, but remained open, allowing it to be colonised by wild raspberry plants.

The general overlying layer **147** outside the curtain wall was probably rather late; it certainly cannot have been deposited until after the disuse and truncation of pit **K67**.

PHASE 8

General Characterization

This phase is associated with **Building K** in site B. The phase apparently began with truncation of the external surface associated with Building J in the preceding phase along the southern edge of site A. This was presumably to allow solid footings to be inserted. Building K does not actually extend into site A, but the edge of the make-up for the exterior cobbled surface **K62** of Building K extends across the site A southern boundary. The main activity in site A is the deposition of an external surface associated with Building K over the rest of the site. The phase ended with demolition of Building K and the spreading of a thick layer of demolition material over the site.

Outside the curtain wall, the four-posted pit **K67** probably goes out of use in this phase. Note that because the stratigraphy of the area outside the curtain wall cannot be satisfactorily divided between phases 7 to 9, the account given at phase 7 should be referred to for this phase also.

Stratigraphic sequence

Construction layers

The phase apparently began with the truncation of the surface associated with Building J (see phase 7) to the very south of the site. This was presumably part of a levelling down to provide sure footings for Building K. In the east of the site dumping against the curtain wall took place.

The deposits against the curtain wall began with **155=B39**, a silt with rubble inclusions overlying mortar dump **65**. Deposit **155** was cut by a pit **K64** of unknown function, with a backfill of loose mortar. It was overlain by **76**, a burnt deposit with charcoal and scorched soil. Over **76** was **67**, a sandy silt with brick/tile rubble inclusions, and this deposit was also cut by a pit of unknown function, **K63**, which was backfilled with a charcoal stained sandy silt. It might possibly have formed a construction site fire.

The make-up dumps associated with cobbles **B25** partly overlay accumulation deposit **49** from phase 7. They have been included as a site A construction **K62** (which see) since the complete series involved deposits in site A.

Overlapping the cobbles **K62**, and also the external surface associated with Building J (phase 7) was a very extensive layer of gritty silt, **63=91** (possibly also equal to layer **115**, which lay over **49**). This seems to have been an external courtyard surface associated with Building K in site B. In the south of the site around the cobbles **K62** it overlay a series of local dumps. Immediately below **91=63** was a patch of sand **96**. This leads to a conflict with the site B stratigraphy since **96** was correlated on site with **B100** which overlay **B103=91=63**. This is a minor, if irritating discrepancy, which seems to have arisen from the confused nature of the stratigraphy in the area. The overall stratigraphic picture is not affected. Below **96** was gritty clay and sand **112**, and below that rubble in silt **114**. Probably contemporary was **98**, gritty clay, which overlay **116**. **114** overlay **107**, a patch of silt with burnt sand. This lay over **125** (from phase 7), exposed as part of the initial truncation process in the south noted above. To the east of the cobbles **K62** on the southern edge of the site, deposit **88**, a mixture of confused clay and silt with demolition debris, filled this area of truncation. To the west

of the site, subsidence of the cobbled surface **K52** (from phase 6) into the pits **K5** and **K14** had evidently become a problem, and these two areas of subsidence, **136** (associated with **K5**) and **137** (associated with **K14**), were infilled with rubble/silt **117** and stone rubble **119** respectively. Layer **113** possibly represents the equivalent of layer **115**, although it is texturally different; sandier with many more inclusions of brick fragments. It may be that **115** originally overlay **113** and was later truncated (see discussion at phase 9).

Also in the area of truncation was dump **106**, a mortar and charcoal patch; and **96** lay together with **106** under **92** sand. This probably predated **77**, a sand deposit lying in a depression in **63=91** which was laid to level the area.

Demolition layers

Deposits **92** and **77** lay under **66**, a disturbed area including a patch of burning and a sandy, loose, dirty clay. This in turn lay under dirty green clay **57**. With miscellaneous demolition dumps **158** and **189**, and surfaces **88**, **63=91** and **115**, **57** lay under general demolition layer **52**. It seems probable that **52** originally extended across the whole site, including over **113**, but that it was later truncated in that area (see phase 9 discussion).

Demolition layer **52** was cut by a pit **K65** against the curtain wall, filled with loose mortar and silt. The function of this pit is obscure, and its sealing layer uncertain. Layer **48** lay over demolition layer **52**, representing the weathered upper zone of transition between it and the garden soils of the next phase.

Description of constructions

K62 Make-up dumps for external cobbling of Building K: 116=B41, 120=B131, 123=B132, 124=B133, 126=B134, 140=B149, 141, 142, B36, B25.

Cobbled surface **B25** did not actually lie within site A, although its make-up layers did. They were: **116**, a pure green clay dumped onto **49** and **121**; over it was **142**, a stony clay, then **140=B149** silt, which contained oyster and mussel shells; above that was **141** gritty sand, then **126** gritty, pebbly clay; over that lay **124** sand, then **123** clayey silt, then **120** gritty sand, then **B36** bedding sand, and finally **B25** cobbles.

K63 Pit: 70, 71.

71 was a rectangular pit through surface **67**. It was 0.5m N-S by 0.8m E-W, and backfilled with a charcoal stained sandy silt **70**. It might possibly have formed a construction-site hearth.

K64 Pit: 72, 73.

Pit **72** was cut through **155**. It was circular, with a diameter c. 0.5m. It had a backfill of loose mortar, **73**. It was of unknown function.

K65 Pit: 53, 54.

Demolition layer **52** was cut by a sub-rectangular pit **54** against the curtain wall, *c.* 1.6m long N-S by 0.5m wide E-W. It was filled with loose mortar and silt **53**. This fill may be equivalent to **B34**. The sealing layer was uncertain. It was of unknown function.

Layers not included in constructions

Layer	Equivalents	Type	Brief Description
48	**B24**	D	demolition dump
57	**B35**	D	rubble/clay deposit
63	**B95, 91, 115, B103**	K	surface
66	**B88 (includes B99)**	D	demolition deposit
67		D	silt/sand/rubble
76		D	burnt deposit
77		D	sand dump
88	**B173, B178**	D	rubble deposit
91	**B103, 63, 115**	K	surface
92		D	sand dump
96	**B100**	K	sand make-up
98		K	gritty clay make-up
106		D	mortar/charcoal dump
107	**B121**	K	clayey silt make-up
112		K	gritty clay make-up
113	**B112**	K	silt surface
114		K	dump of silt/rubble
115	**B102**	K	surface
116	**B41**	K	clay dump
117		K	make-up in depr'n **136**
119		K	make-up in depr'n **137**
136		D	subsidence
137		D	subsidence
147		D	sandy silt dump *
155	**B39**	D	silt dump
158		D	silt/charcoal
189		D	mortar/rubble dump
193		D	charcoal/brick/silt

Note: * following the brief description indicates a layer outside the curtain wall assigned to phase 7-9.

Dating

The construction of Building K must date to some time in the C18th, after the demolition of Building J (see phase 7). It may be shown on Stockhoff's plan of 1708, and also on a map from 1733 (Supphellen 1981, pp. 89-90). The date of demolition remains open, but probably dates to somewhere around the middle of the C18th (see further the site B dating and discussion). The pottery assemblage shows a wide variety of types, including most of those from the preceding phases, indicating the re-use of dump material. There is a marked increase in the proportion of local wares however.

Discussion

The beginning of the phase is interesting in that it marks a clear attempt to level the site as far as possible, with infilling of areas of subsidence **136** and **137** to the east of the site, dumping against the curtain wall to the west, and truncation of layers on the south of the site to allow solidly based footings to be inserted for Building K. The impression therefore emerges of a building of some importance, with the surrounding area levelled up and specially covered with a new surface.

Having said this, the work goes only so far, and did not appear overly concerned with aesthetic considerations. For example, the flattened chimney base **K56** remained visible to the north of the site, as did part of cobbles **K55** and demolition deposit **56**. Pits **K63** and **K64** were dug into the surface against the curtain wall and then loosely backfilled, remaining as soft spots. It might have been thought that if the area was in regular use it might have been cobbled over, but instead only a small area immediately to the north of Building K was cobbled (**K62**) and a gritty silt lain over the rest of the area. While this would form an adequate surface it could hardly be described as heavy duty, and would have become sticky in bad weather.

It can perhaps be concluded that Building K was not part of any more wider scheme of rebuilding within the Palace.

In the area outside the curtain wall it is probable that the four-posted pit **K67** went out of use in this phase (see dating, phase 7). The truncation of the area, eventually followed by further dumping in the form of **147** may also belong in this phase.

PHASE 9

General Characterization

This phase saw the deposition of a single layer of "garden soil" over virtually the whole site inside the curtain wall, possibly bounded by a dry-stone wall **K71** to the west, and the curtain wall to the east. This layer extended from the north of site A to the south of site B. No building associated with this horizon was present.

Outside the curtain wall this phase probably saw the truncation of the area and the deposition of a general dump layer.

Stratigraphic Sequence

The phase probably began with the construction of a dry-stone wall **K71**. Between it and the curtain wall a thick layer was deposited of what appeared to be garden soil **17=31=39=45=B17=B19**, presumably as a garden plot for a house further to the south. The layer extended from N to S across the full length of sites A and B. The various numbers represent slightly different colours and textures and the fact that the layer was recognized in physically separate places before being shown to be a single layer.

An alternative view is that the layer originally extended further west, and that the dry-stone construction was actually the foundations of the western wall of Building L in phase 10; see the discussion below, and phase 10.

Descriptions of construction

K71 Dry-stone wall: 81, 149.

Foundation trench **149** was apparently cut through demolition layer **48** from phase 8. It was filled with unconsolidated, large unworked stones **81**. The wall was aligned almost exactly N-S, more or less parallel to the curtain wall, at a distance of 12m west of it (centre to centre). It was c. 0.5m deep, and a maximum of 1.2m wide.

Layers not included in construction

Layer	Equivalents		Type	Brief Description
17	**B17, B19, 31, 39, 46**	D		"garden soil"
31	**B17, B19, 17, 39, 46**	D		"garden soil"
39	**B17, B19, 17, 31, 46**	D		"garden soil"
46	**B17, B19, 17, 31, 39**	D		"garden soil"
147		D		sandy silt dump *

Note: * following the brief description indicates a layer outside the curtain wall assigned to phase 7-9.

Dating

The pottery assemblage from the "garden soil" layer is extremely diverse and does not offer any particularly close dating for the phase, beyond suggesting an C18th date. With the following phase known from documentary sources to date to 1809, and bearing in mind the cartographic evidence for Building K in the preceding phase, this phase probably dates to the final quarter of the C18th.

Discussion

The discussion of this phase centres on the rôle of the "garden soil", its relationship to the rest of the Palace, and to the dry-stone construction **K71**.

Environmental analysis of the layer shows it to be a typical soil, with humic material (P. Sandvik, pers. comm.). As a dump deposit it serves no real purpose since until the construction of Building L in the succeeding phase, no construction appears to have taken place on it. The most straight forward interpretation seems to be that it represents an allotment of land for vegetable growing, presumably associated with a building or buildings elsewhere in the precinct, possibly to the south. Further excavation to the south of site B should demonstrate whether the dry-stone construction is linked to a building to the south.

The alternative, that it formed the basis of the western wall of Building L in phase 10 is perfectly plausible stratigraphically. However the absence of any definite sign of a cut for the construction tends to suggest that the soil layer abutted it. The question also arises, if **K71** did not bound the soil layer, what did? The weight of the evidence therefore seems to suggest that **K71** belongs in phase 9.

PHASE 10

General Characterization

This final phase saw the construction of Building L, the Eastern Storehouse, in 1809. This involved either the re-use of dry-stone wall **K71** as wall foundations or the construction in this phase of **K71** specifically as wall foundations. The former interpretation has been preferred.

Outside the curtain wall a construction layer seems to have been put down, and further levelling of the wall may have taken place immediately prior to construction. Later, in the 1840s, the dumping of extensive make-up layers took place, in relation to the gift of part of the Cathedral grounds to Vår Frue church. Modern intrusions **K76** and **K77** relate to undocumented building work in the C20th.

The phase ended with the destruction by fire of the Eastern Storehouse in 1983.

Stratigraphic Sequence

The western wall and external features

At the time of construction of Building L, the dry-stone wall **K71** may or may not have been in existence (see phase 9); in either case the stratigraphic sequence is different only in as much as the levelling down in the area west of Building L is concerned.

Assuming first that **K71** was not in existence: wall foundation trench **149=B56** was cut through the "garden soil" layers of phase 9 (which see). Dry-stone foundations **81** were then put in place, and at more or less the same time the garden soil to the west of them were taken away as part of a levelling of the Palace courtyard prior to a cobbled surface being constructed. This levelling down appears to be responsible for the absence in the very north of the site of cobbles **23** (from phase 6) and the presence of layer **82**, which can be seen as a trample layer formed after the removal of the cobbling and during the construction of Building L. Further south, the levelling down truncated but did not remove layer **113** (from phase 8). Layer **19** was then deposited as make-up for the Palace courtyard area, which initially was perhaps simply grassed over and not cobbled or metalled. (Alternatively, layer **19** can be seen as a variant of **113**, i.e. material from phase 8, in which case it was **19** which was truncated and not the underlying **113**. (Stratigraphically the difference is invisible).

In the case where **K71** was in existence, the difference involved is simply that the removal of any "garden soil" west of it was unnecessary; although the absence of cobbles **23** in the north, and the presence of layers **82** and **5** likewise demands some amount of levelling.

Silt **74** was lain down over **81** and to the west of it in a strip presumably as a preliminary bed for cobbling **14**. Sand **13** was the bedding material proper for these cobbles (construction **K70**) which presumably were constructed at the same time as the upper portion of the western wall, **2**, was built (consolidated with mortar **79**). The western external wall of Building L forms construction **K72**.

Outside the western wall, the original cobble surface **14** went out of use at some point in the history of the structure, and again, presumably as a levelling process encompassing the whole Palace courtyard the northern portion of the cobbles was lost; and layer **5** is best seen as a trample layer deposited at this stage.

Posthole **280** may be a temporary construction feature dating to this time also, its hard-packed back-fill **281** containing a number of cobble stones, presumably from **14**. It forms construction **K69**. It was possibly associated with the work to the wall implied by cut **K73**. Layer **4**, clean sand overlying **5**, was make-up for the present day metalled surface, which was included in clearance layer **1**.

Internal features

Inside the building, a central partition wall **28** was constructed on bedding material **29**, in construction trench **30** through the "garden soil" layer. The central wall forms construction **K75**. Mortar spreads **8** to the east of it and **15** to the west of it may represent construction surfaces or simply dumped waste material; deposit **40** below **8** appeared to be the remains of a site bonfire. A deposit of mortar **41** against curtain wall **3** along its length was perhaps an attempt to block dampness rising up the stonework? This is turn was overlain by clayey silt **33** which was simply dump material.

The wooden floor of the Building was supported on stone piers, and some broad phasing of these is possible. In particular **35** appears to be the earliest stratigraphically, followed by **37** to the east of the central wall and **18** and **144** to the west. Piers **144** were numbered separately due their mortared construction, which structurally places them with **B6**. Piers **32** were the latest, overlying clay **16**. Stone tumble **24** represents displaced pier(s) belonging with **32**. The phasing of the stone piers may conceivably relate to internal room divisions of the Building, although it is just as easily explained as being due to the construction timetable, with piers to the north being placed later than in the south etc.. The piers together form construction **K74**.

At some point in the history of the building an internal trench **K73** was cut along wall **K72** to allow repair work/structural alteration. It was back-filled with **25** above which a local spread of greasy silt **43** lies. This in turn was sealed by **6**, a dirty silt which with **34** forms the latest deposit associated with construction work for this building.

Deposits outside the curtain wall

Layer **22** forms the construction level for phase 10, with a trample layer **69** above it. Occasional tumbled soapstone on its surface, particularly to the north, suggested that the curtain wall might have been levelled prior to construction. Above **22** come a series of clay and mortar/rubble dump layers from the mid 1840s, associated with levelling of the area when it was granted to Vår Frue Kirke (The Church of Our Lady). The sequence was **21** clay over **69**; above this, a deposit of slag **68** was contemporary with dump layer of mortar/rubble **20**. Above these was clay **27**, then mortar/rubble **51**, then clay **50**, then mortar/rubble **26**, then clay **10**.

This dump series was cut by a modern pit **K76** which itself was cut by an even more modern trench **K77**. The fills contain artefactual material from this century and presumably relate to undocumented building work.

Destruction layers

Deposit **11** marked the remains of a burnt joist sitting on the central wall **K75**, and layers **9**, **7** and **44** were also associated with the destruction of the building.

Descriptions of constructions

Building L: K69, K70, K71, K72, K73, K74, K75.

Building L, the Eastern Storehouse, was a well documented building and internal plans for it exist (see the Fischer archive for example). Cut **K73** is in the right position to have related to alteration work required to either put in or repair a staircase in the north west corner of the building.

K69 Construction pit: 280, 281.

Cut **381** through layer **5** was sub-circular with a diameter of c. 0.6m and a depth of 0.2m. It was backfilled with a hard-packed silt **281**, which contained a number of cobbles. Probably associated later structural work to Building L.

K70 External cobbling: 13, 14.

Cobbling **14** formed a strip c. 1m wide east of wall **K72**. It was bedded in sand **13** which lay in a shallow trench c. 0.1m deep. A feature of the cobbling was a gutter formed from two lines of sub-rectangular stones angled into each other, running parallel to the wall at a distance of c. 0.5m presumably under the drip line of the eaves. The slope of the cobbling from north to south was relatively gentle but probably sufficient to drain the water run-off quite effectively.

K71 Wall foundations (see description at phase 9).

K72 Western wall: 2, 74, 79.

Wall **2** was the western external wall base for the building, constructed from large (upto 1m wide) stones, externally faced (internally unfaced), consolidated with hard concrete **79**, and not coursed; the existing height of the wall formed a roughly level surface supporting a timber, or brick and timber, superstructure. The wall was c. 1m wide and a maximum of 0.5m high at time of excavation. The wall foundations **81** may date from an earlier phase and be re-used, see construction **K71**.

K73 Cut against wall K71: 25,42. Linear cut 42, with silty tackfill 25 may relate to construction or alteration of a staircase shown on plans of the building.

K74 Stone joist supports: 18, 24, 32, 35, 37, 144.

The stone piers **18, 24=32, 35, 37** and **144** can be phased as described above in the stratigraphic sequence, but functionally and structurally form a single construction. The piers were joist supports for the planked floor of Building L. They have an average level of around 15.6 m.a.s.l. but can vary over 0.1m from this value.

K75 Central partition wall: 11, 28, 29, 30.

Wall **28** was the central partition wall foundation of the building, running north-south almost exactly in the middle of the western wall **K72** and the curtain wall **3**. It was of dry-stone construction, bedded in a deposit of soil with wood-chip inclusions, **29**, more or less flush to the faces of construction trench **30**. It was c. 0.8m wide, and upto 0.3m deep, with the wall itself standing to a height of c. 0.1m above the surrounding surface, and evidently supporting timber joists. The remains of one burnt joist, **11**, overlay the wall foundations.

K76 Modern intrusion outside curtain wall: 45, 55, 93, 97, 90, 108, 118.

Cut **93** through layer **10** was in the southernmost part of the site and extended beyond the limit of excavation. It was cut against the curtain wall to a depth of at least 3m, its eastern edge extending beyond the limit of excavation. It was backfilled with a number of distinct layers of rubble and soil containing C20th artefacts. They are not described individually here. The pit may originally have been a soakaway connected with a drainage outlet from Building L.

K77 Modern intrusion outside curtain wall: 36, 38, 47.

Trench **47** was cut against the curtain wall, and ran alongside the wall a distance of about 3m in the south of the site, cutting through intrusion **K76**, and hence postdating it. It was of unknown function.

Layers not included in constructions

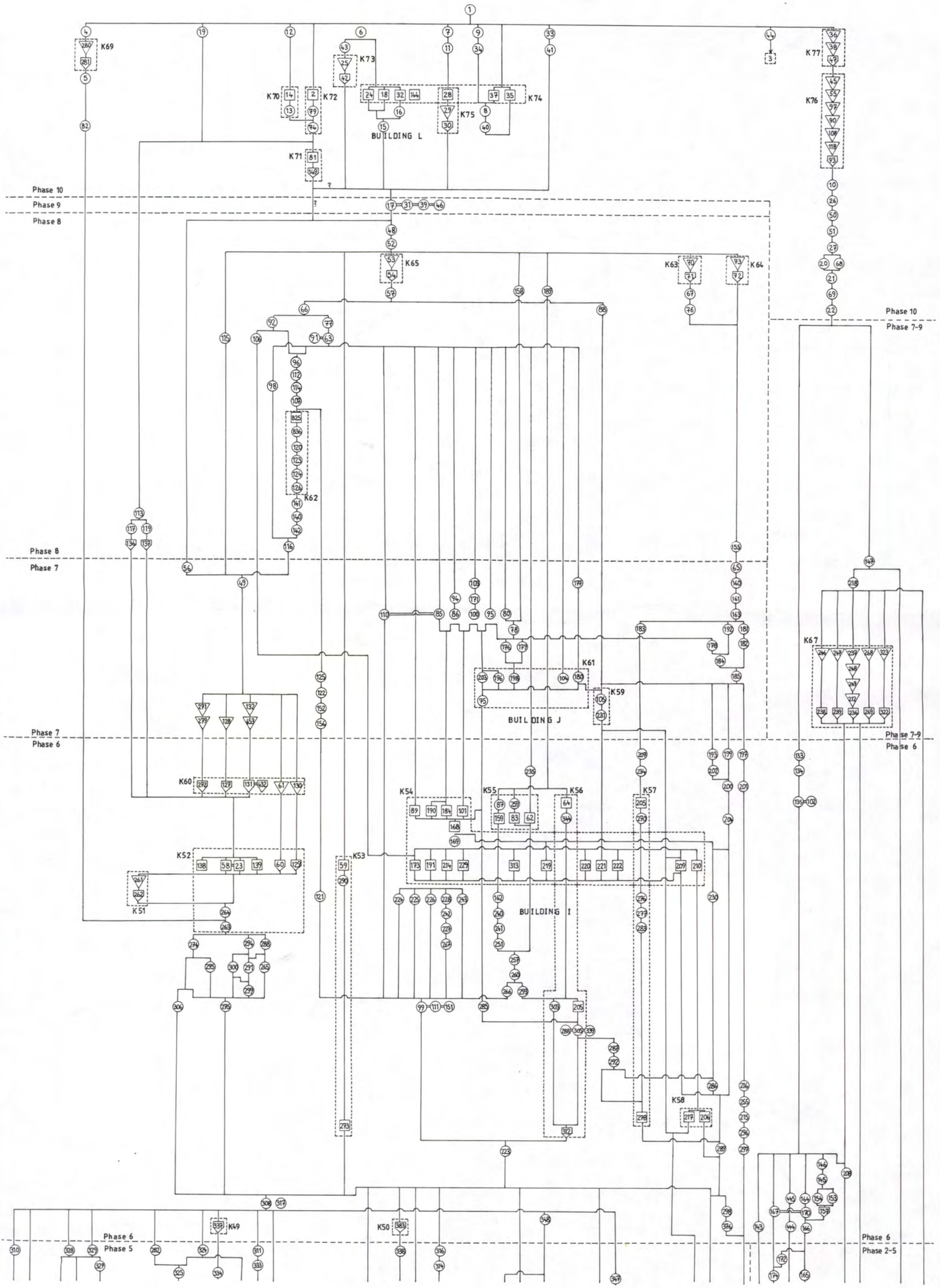
Layer	Equivalents	Type	Brief Description
1	**B1 (includes 4, 7)**	D	clearance
4	**1**	K	sand make-up
5		D	silt
6	**B7**	K	silt make-up
7	**1**	D	sand dump
8	**B8**	K	mortar layer
9		D	destruction
10		K	clay make-up
12	**B4**	D	silt
15	**B13**	K	mortar layer
16		K	clay dump
19	**B43 (includes B124)**	K	silt make-up
20		K	mortar/rubble dump
21		K	clay make-up
22		D	silt layer
26		K	mortar/rubble make-up
27		K	clay make-up
33		K	clayey silt dump
34		D	destruction
40		b	debris from bonfire
41	**B20**	K	mortar dump
43		K	silt dump
44		D	destruction
50		K	rubble/clay make-up
51		K	mortar/rubble make-up
68		D	slag/coke/clay dump
69		D	interface of **22**
82		K	construction trample

Dating

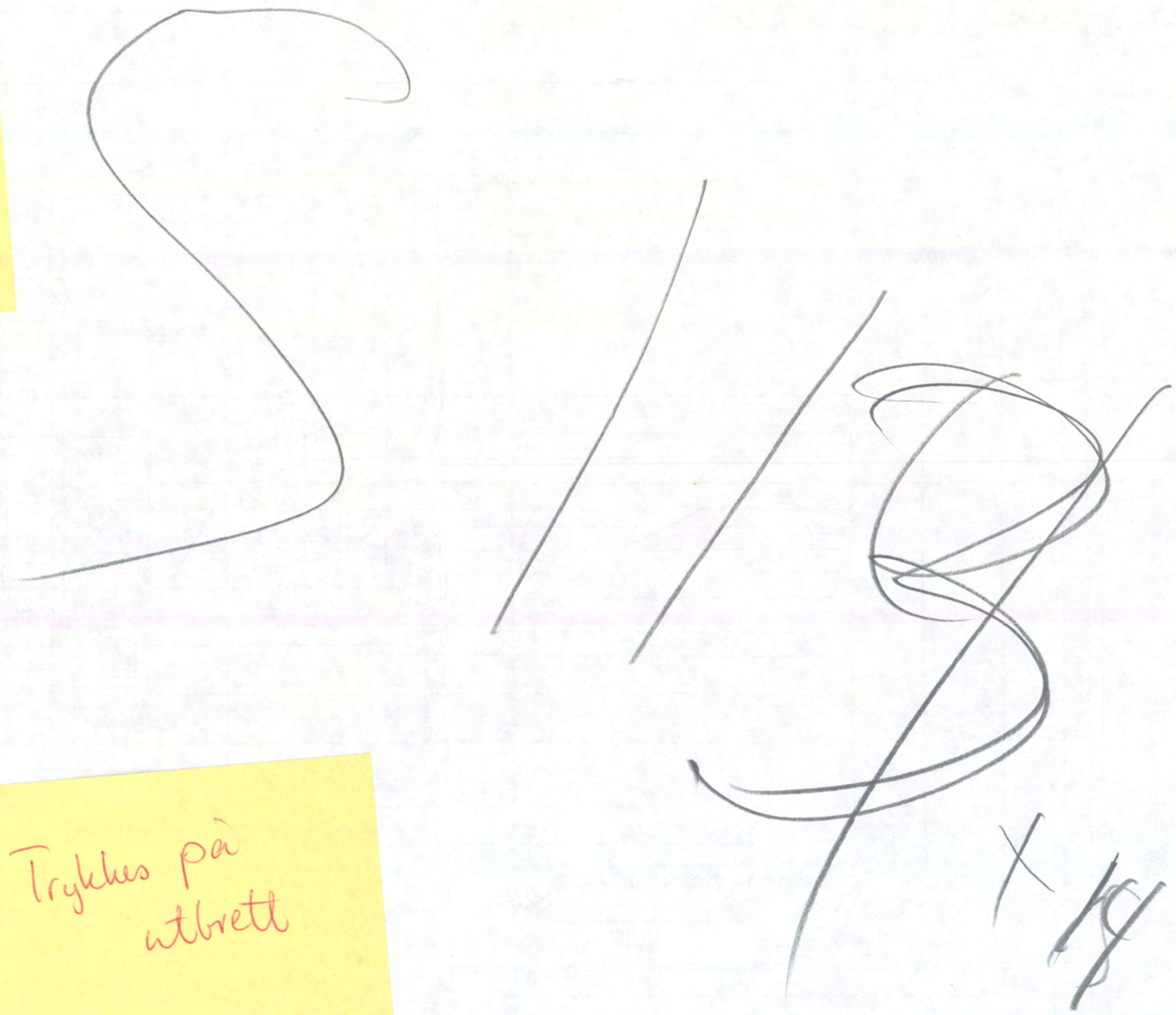
It is known from documentary evidence (Lysaker, 1989, p. 73) that the Eastern Storehouse was built in 1809, and it was destroyed by fire in 1983. The date of the levelling layers outside the curtain wall is around the mid 1840s, following the grant of that part of the Cathedral grounds to Vår Frue church as a cemetery.

Discussion

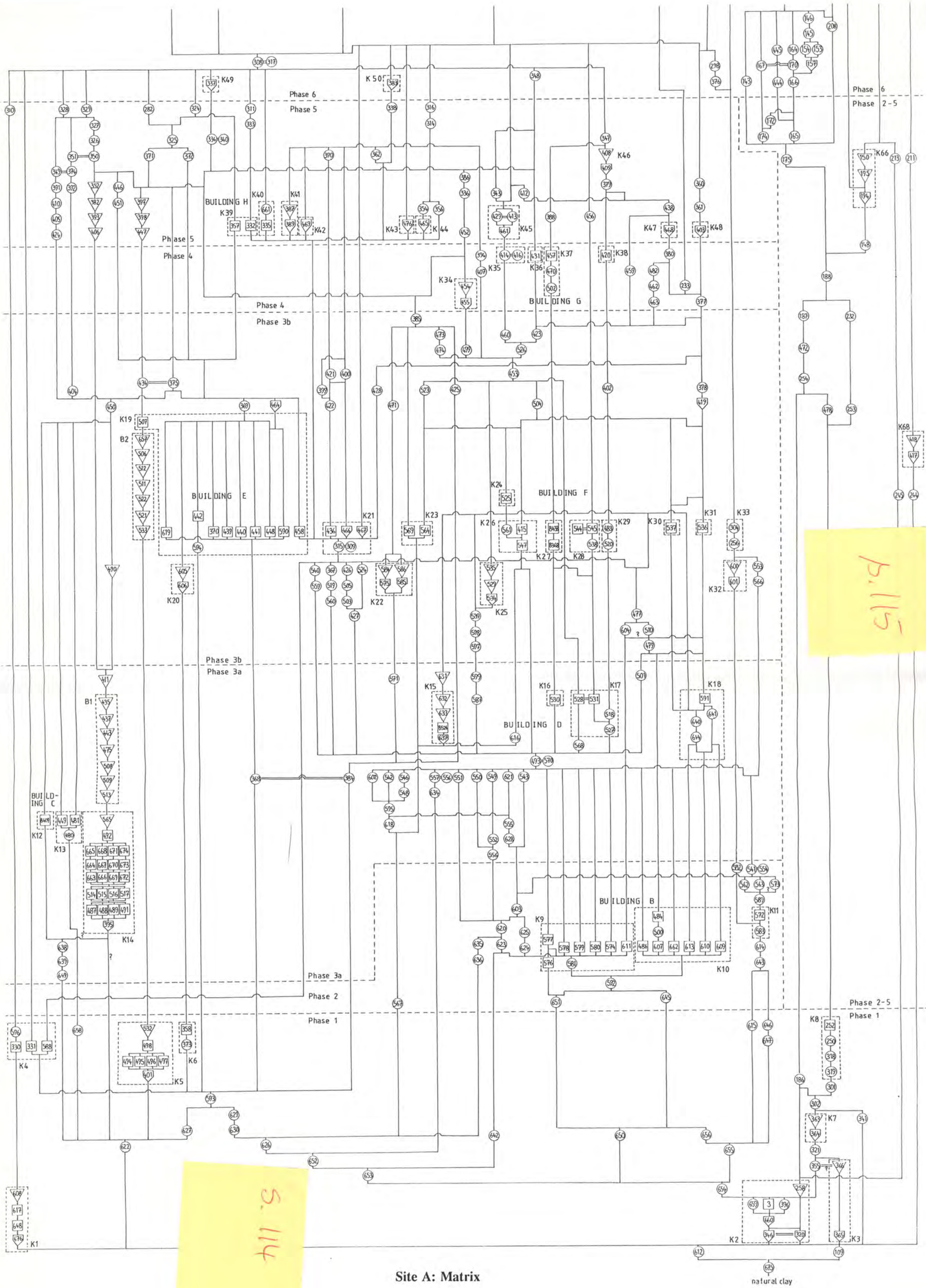
The main problem associated with this phase is whether the dry-stone construction **K71** was built in this phase or reused from an earlier one. As outlined in phase 9, the weight of evidence seems to favour it being a re-used feature. The main argument in favour of this is that no cut for a foundation trench was ever visible on either site A or B; however this could have been due to subsequent compression of the layers forming the garden soil phase. The later Building L wall **K72** also lies rather further east than **K71** (by about 0.2m), which would not be expected if they were constructed at the same time.


K69
K70
K72
K73
K74
K75
K71
BUILDING L
K77
K76
Phase 10
Phase 9
Phase 8
K65
K63
K64
Phase 10
Phase 7-9
K62
Phase 8
Phase 7
K61
K59
BUILDING J
K67
Phase 7
Phase 6
K60
K54
K55
K56
K57
K52
K53
K51
BUILDING I
K58
Phase 6
Phase 5
K49
K50
Phase 6
Phase 2-5

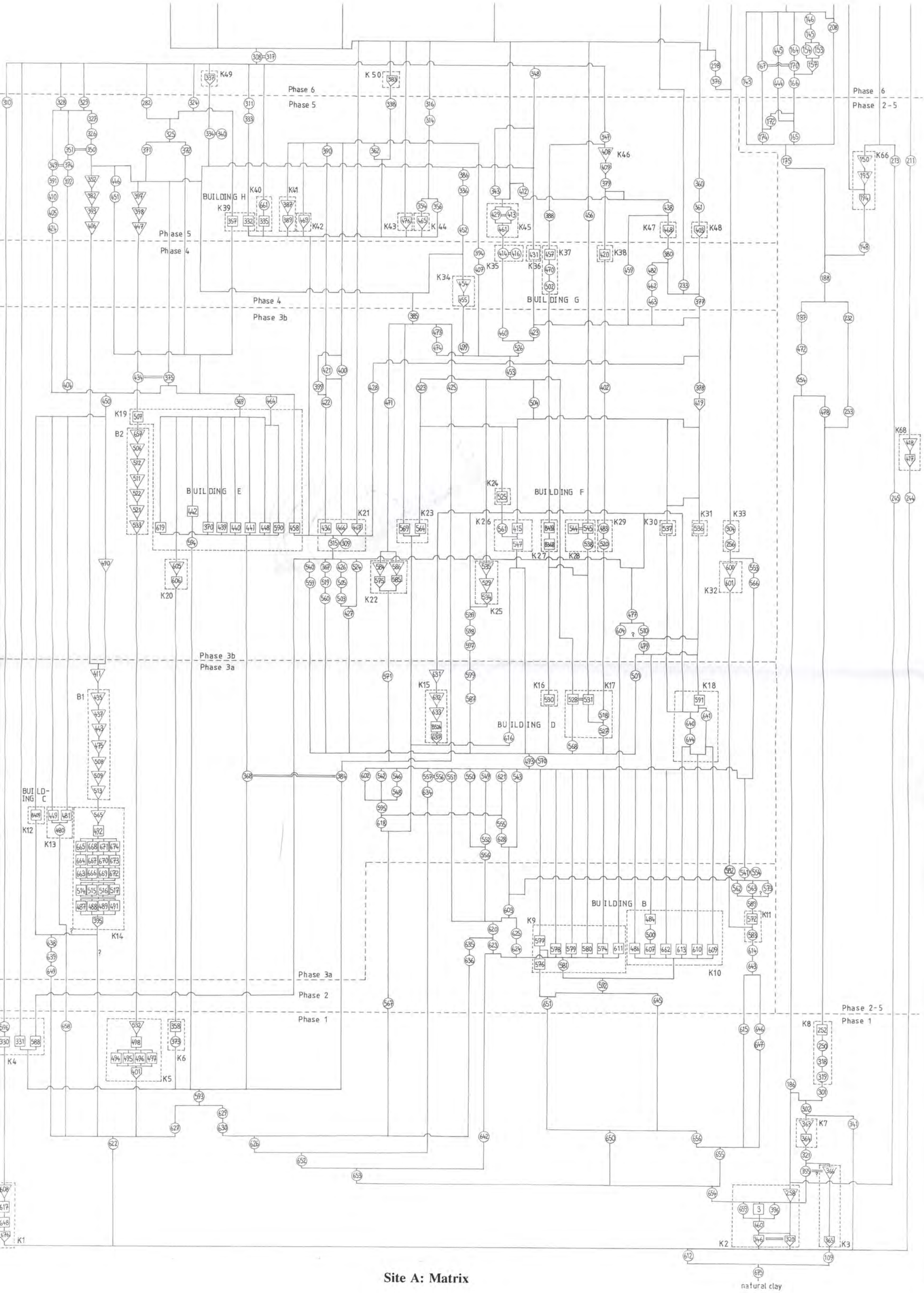
b. 113



Trykkes på utbrett



Site A: Matrix



Site A: Matrix

3.4 Phasing in Site 1991/1B

ACKNOWLEDGEMENTS

I would like firstly to extend my warmest thanks to all who contributed of their skills, enthusiasm and good humour on Site B: Bo Dock and Anna Petersén (site assistants), Nina Bergum, Trond Engen, Susanne Nissen Gram, Geir Grønnesby, Helga Hole, Kristina Jansson, Marie Foged Klemensen, Morten Steineke, and Ulf Svensson. Bob Bazely deserves my thanks, not only for being a good chum, but also for making the wrong choice and giving me the site which turned out to have all the workshops. The dreary process of site photography was unerringly enlivened by the unobtrusive (!) Edwin Baker. Lyn Blackmore supervised the Finds Office as commendably as ever, Snorre Bjerck the drawing office, and Sæbjørg Nordeide and Marit Longva steered the project safely through a hectic and demanding season. Marit Longva deserves particular praise for her work in preparing the lay-out for this report. Ian Reed dated the pottery and clay pipes and Kolbjørn Skaare the coins.

PHASE 1

General Characterization

This phase (Fig. 1) sees the cutting of a ditch and the insertion within it of the foundation of the massive stone perimeter or **curtain wall (K1)** to the E. of the site, as well as the deposition and levelling-down of the upcast clay from the ditch in the area to the W. of the curtain wall. The phase also encompasses the actual construction of the main body of the curtain wall above its foundation. The phase also includes a thick body of probably redeposited clay into which the curtain wall's foundation trench was dug. This lowest clay above natural is of unknown origin, though its redeposited nature and observed significant thickness suggest that it derived from major earth removal operations in the near vicinity at some point in time prior to the establishment of the curtain wall.

Stratigraphic Sequence

The curtain wall (CW) **580 K1** (=**AK2**) occupies foundation trench **582=A660**. No clear edge for the trench was discerned in Site A: over most of the site excavation stopped at the level of clay (redeposited) **542** which abutted tightly up against CW's foundation plinth. The trench may have been cut from this level or, more likely, from the level of **583**, which was the lowest clay encountered here (in trial trenches only) during excavation: given its clean compact nature, this may be undisturbed natural. However, it may alternatively be the S. extension of the thick redeposited clay observed in Site A (**A675**). Observations in Site A suggest that the CW was cut from the level of this lowest redeposited clay, and not from clean natural.

542 correlates with **A654**, abutting the CW's foundation. This clay, bearing scattered wood chips, stone and red-brick chips and charcoal is interpreted as levelled-down and trampled upcast from the digging of the CW's foundation trench. **542** and a lower cleaner clay, presumably **583**, pressed tightly up against the stone foundation for the CW, as observed in Lunde's trial trench (Fig. 2). Immediately to the W. of the CW, running N-S parallel with it, was a trough-like depression, c. 1.40m-1.80m wide, into which **542** fell. This trough probably represents the splaying out of the upper part of the CW's foundation trench, although since excavation stopped at the level of **542** and localized superimposed deposits here, it was not possible to confirm this. The localized band of deposits above **542** within andjust to the W. of this trough included two mortar- and stone-chip laden deposits **573** (=**A656**) and **576** separated by a clean silt **575** (=**A655**). These also abutted the plinth foundation (**573** covered it),

Fig. 1b PHASE 1, level b 1:100

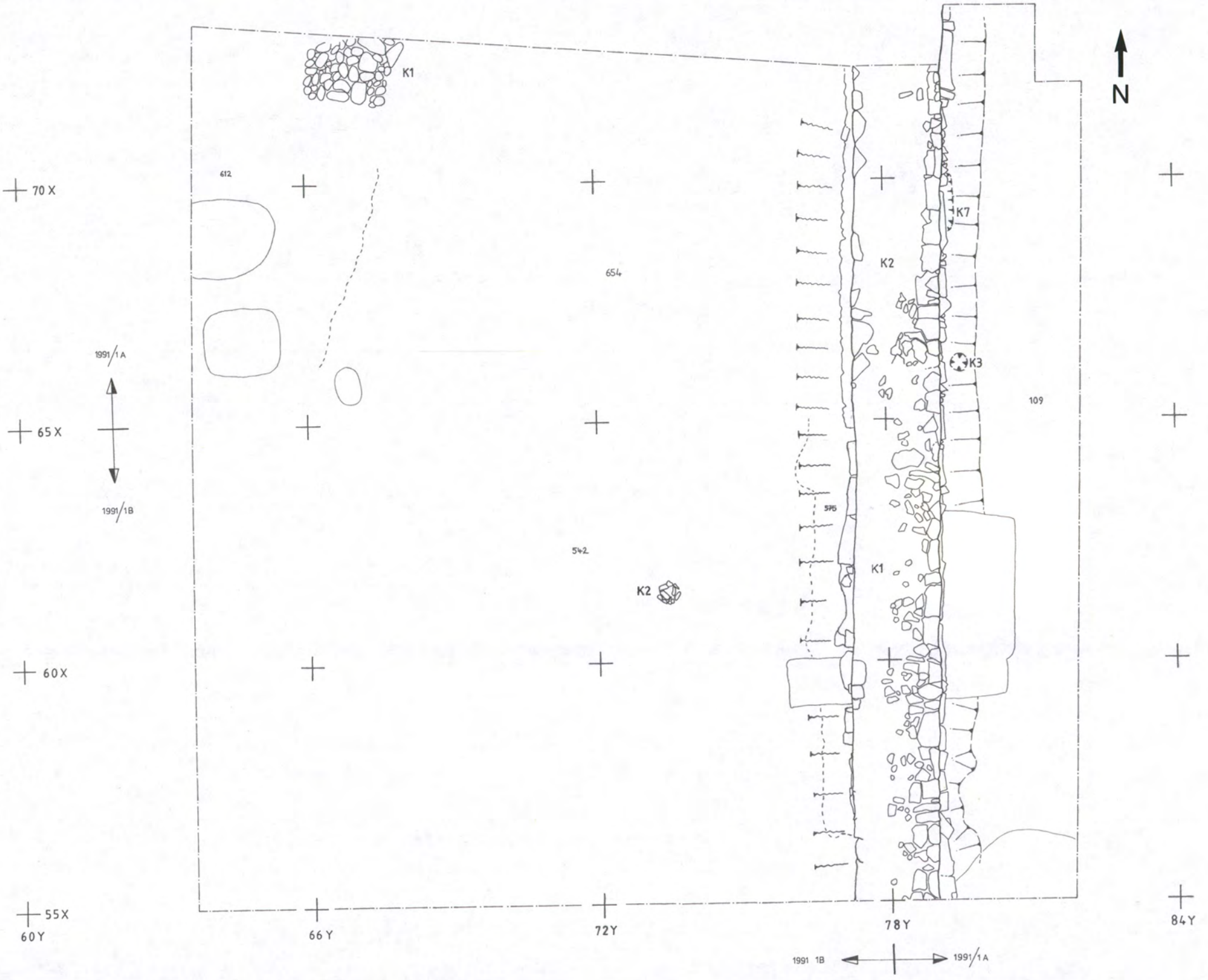


Fig. 1a PHASE 1, level a 1:100

and it seems reasonable, given their character and localization, to interpret the mortary/stony deposits as debris from the construction of the wall, while the intervening silt perhaps formed during an interval in the work: as mentioned, these deposits were not fully excavated this year.

Possibly associated with this construction work was the isolated stone-packed post-hole **577 K2**; it cut either **542** or **573**, and was apparently sealed by **532**, with the remains of a rotted post in its fill. This might have been a post for scaffolding or lifting equipment.

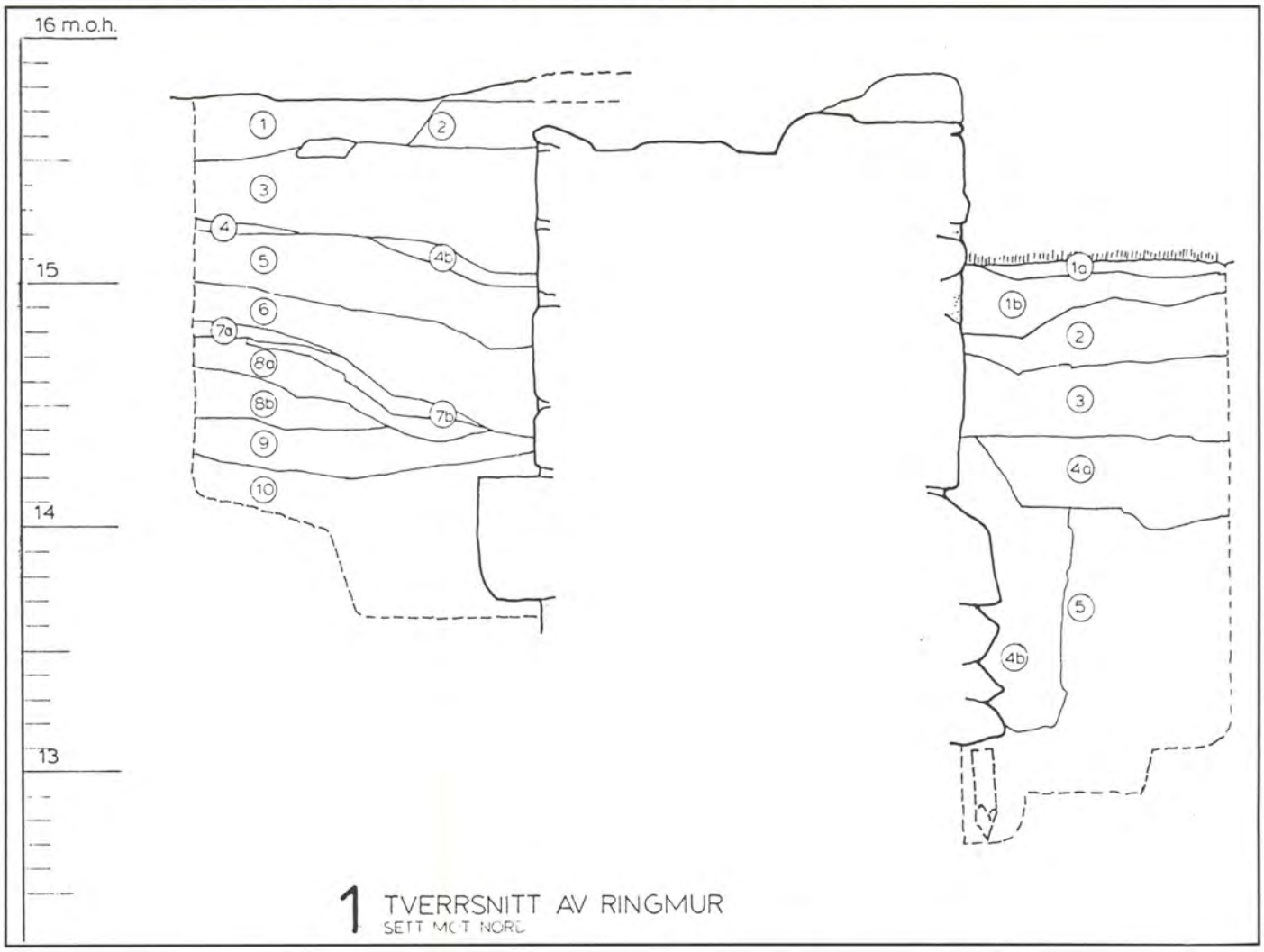


Fig. 2 1985 trial trench 1, section drawing (looking N.)

Descriptions of Constructions

K1 The Palace's perimeter or curtain wall: 582, 580 (=*AK2*)

(N.B. Only the E. face of this wall lay within Site B - see Fig. 3). The wall's linear foundation trench **582** was packed tightly with the massive rubble foundation, apparently unmortared. This was only partly observed in Site B in Lunde's trial trench (Fig. 2) which was deepened during excavation. Clay **583** closely abutted the foundation. The base was not observed in this trench; however, Lunde encountered the base on the E. side set at a height of c. 13.15 m.a.s.l. The foundation was 1.90m wide and 0.6m thick beneath a projecting plinth of mortared stones, c. 0.5m thick, and between c. 2.2 and 2.5m wide. In all, the foundation was c. 1m deep.

Set on the supporting plinth was the (originally) free-standing wall, comprising very randomly coursed stone, both crudely worked stone and re-used masonry (see elevation drawings and photographs in the site archive, and Fig. 3). The stone was of highly variable size, ranging from massive blocks of c. 1m in width, to small fragments used as interstitial pinning stones. Flat-laid slabs were combined with massive blocks to form a flush vertical facing. The wall above the plinth varied slightly in thickness between 1.8m and 2m and was preserved to a minimum height of c 1.5m and a maximum height of c. 1.7m.
The wall originally stood much higher (a possible indication preserved in the Bakery wall to N.) and was levelled down to its present height during antiquity (documentary sources suggest this was in 1640, the levelled-down surface of the wall being then used as the foundation for Herrehuset). The top of the wall sloped gently N-S., with a fall in height from c. 15.8masl to 15.6masl. The mortared rubble core of the wall was visible in the denuded surface.

On the W. face (Fig. 3) two stones bearing short diagonal grooves, or insets, were observed, midway up the wall some 5.5m apart at 63x and 52.50x respectively. These may be fortuitous re-used masonry fragments, or alternatively, deliberately worked to key in structural elements against the internal face of the wall (stairs servingo a wall-walk, for example?). These grooves appear to coincide well with the positions of two post-holes situated close into the wall in Phase 3 (see **K21** and **K37**), which might conceivably have supported a structure placed up against the wall at that time. Weathered mortar remained between the facing stones. At a very low level, just above the plinth, occasional fragments of mortar rendering were observed, suggesting that originally the internal face may have been plastered.

K2 Post-hole: 577

Round post-hole, stone-packed sides, cutting **542** or **573** (former more likely). Vertical post-pipe, triangular plan, filled with brown organic/humusy silt (unnumbered) - rotted post? 0.46m deep x 15cm x15cm diam. Not fully excavated, left *in situ*.

Insecure stratigraphical position. However, probably an isolated feature, possibly associated with construction work on the curtain wall ie. post supporting scaffolding or stone lifting equipment?

Dating

There are no known contemporary documentary references to the construction of the curtain wall. It has been inferred by the Fischers (1977, 27) that it was erected by Archbishop Aslak Bolt, at some point during the period 1430-50.

Excavation unfortunately provided no means of dating the wall absolutely. No wooden piles were located beneath the foundation as had been hoped. The construction technique is not closely datable, although it can be said to be of broadly *late medieval* character (Ø. Ekroll, pers. comm.). In addition no datable artefacts were recovered from the deposit through which the wall was cut or those deposited against it at this stage.

We are therefore provisionally dependent upon dating this phase by relating it to datable material subsequent to it. This must be treated with all due caution since any *terminus ante quem* inferred from overlying deposits dated by objects providing a *terminus post quem* is potentially insecure.

A tentative *terminus ante quem* for the construction of the curtain wall is provided by the layers deposited against its base in the next phase: the potsherds in those deposits are of late 15th-century date, possibly from c. 1480 and later. If this late 15th-century or later *t.p.q.* for their deposition within those layers is trustworthy, then the wall was in existence by that time. It could of course have been built at a much earlier juncture.

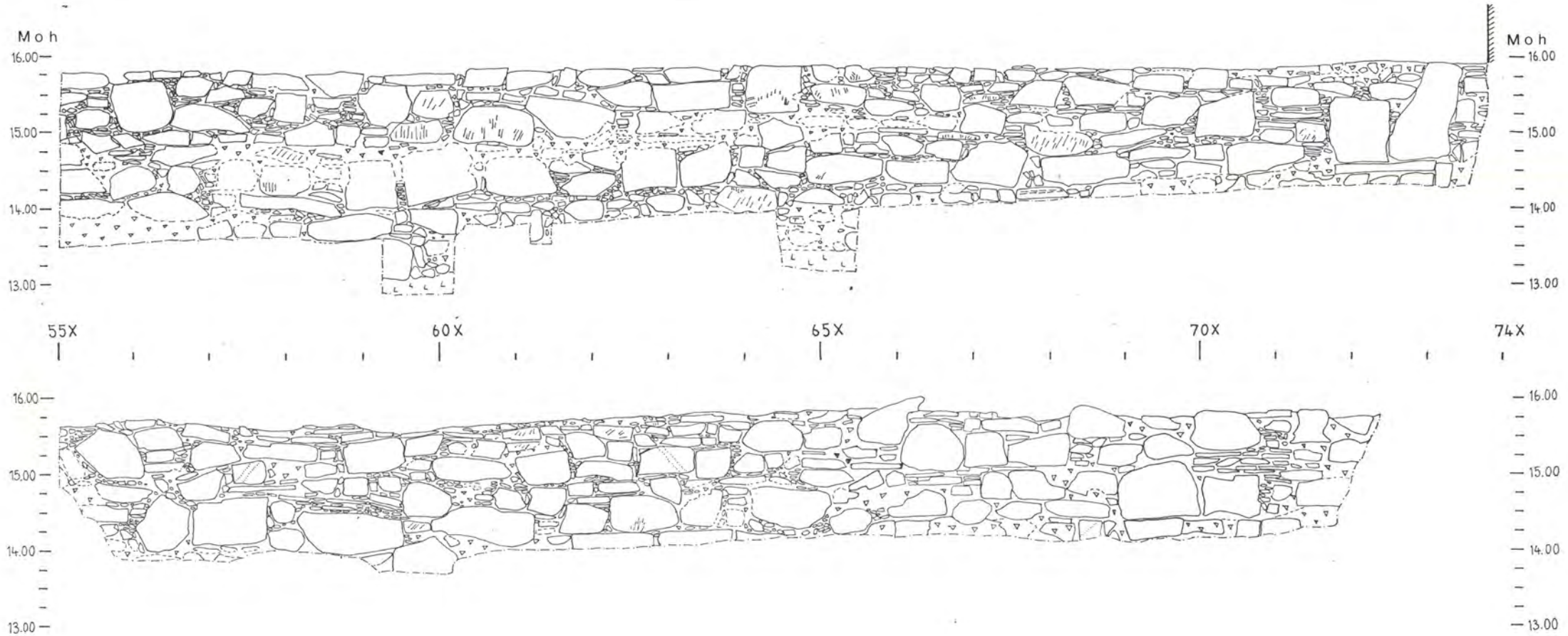


Fig. 3 *Curtain wall AK2=BK1: east-facing elevation (above); west-facing elevation (below)*

If a firm *absolute* date for the wall can eventually be established, it will provide a secure *terminus ante quem* for the thick redeposited clay **583** (in which no datable finds were found) which it apparently cuts. The theory (see below) that this deposit derives from the digging out of the foundation trenches for the medieval buildings to the N. is as yet unsupported by dating evidence.

Discussion

This phase is chiefly characterized by activity which can be reasonably associated with the construction of the curtain wall (CW). However, if our interpretation of the cutting level is correct, then this was not the first activity in the area: the thick redeposited clay **A675** (**?=583**) comprises a substantial body of upcast material, whose likeliest source is the foundation trenches for the cathedral and/or the Archbishop's Palace (for detail, see Site A Phase 1 Discussion). Consequently, the clay represents an earlier phase of activity, as well as possibly encompassing a subsequent structural hiatus of potentially considerable length, there being no evidence found for building activity associated with it prior to the deposition over it of the upcast clay **542=A654**. It may of course have been truncated at some point in time (the lack of any soil horizon, either under or above **A675=?=583** is somewhat puzzling).

The CW marks the first definite structural organization of the area. It is quite possible that this wall was not built in isolation and that simultaneous building work within the precinct was under way. The stratigraphical interval between the erection of the CW and that of buildings A, B and C and stone structure **K10** is short, these latter sitting on the upcast clay **542**. It should be borne in mind, however, that, although the upcast clay **542** was probably deposited *en masse* in a single event (during the digging of the CW's foundation trench), we cannot be certain how long a period of time elapsed before the first buildings were erected on it: the layer could just as easily represent a longer rather than shorter period of time. Stratigraphical continuity does not necessarily imply temporal continuity. The layer may even be truncated. Its content of occasional bone, brick, stone and charcoal may have resulted from activity on open trampled ground over a longer period of time prior to the first building activity within this part of the precinct. Hence the need to place the first buildings here in ensuing phases, although they are potentially contemporary with the construction of the CW.

See Site A for a discussion of the curtain wall, its foundation trench and the associated layers and features to E. and W. of it. The presence in Site B of the thick redosited clay pre-dating the CW will have to be confirmed during 1992's excavation.

PHASE 2

General Characterization

The phase (Fig. 4) encompasses the construction, use, demolition and deliberate sealing with clay of a small "lafted" tile-floored building: **Building A**, a moneyer's workshop (Figs. 5 and 6). In addition there occurred dumping up against the curtain wall of waste materials during this building's lifetime. A low stone structure **K10** (Fig. 7) of unknown function was present to the N. of Building A, a feature which may form a component in **Building B**, a very fragmentarily preserved wooden building lying mainly in Site A. Buildings A and B may be closely related in time, and are here treated as contemporary structures. However, there is some very slight evidence for structural elements which might pre-date Building A, elements which in character and alignment match Building B to the N. If so, then Building B, or a southern equivalent, may conceivably pre-date Building A. On stratigraphical grounds, it is further possible that the westernmost building, **Building C**, might also have been established at approximately the same time as **Building A**, although this is seen as unlikely, the building's alignment coinciding better with that of buildings in the ensuing phase.

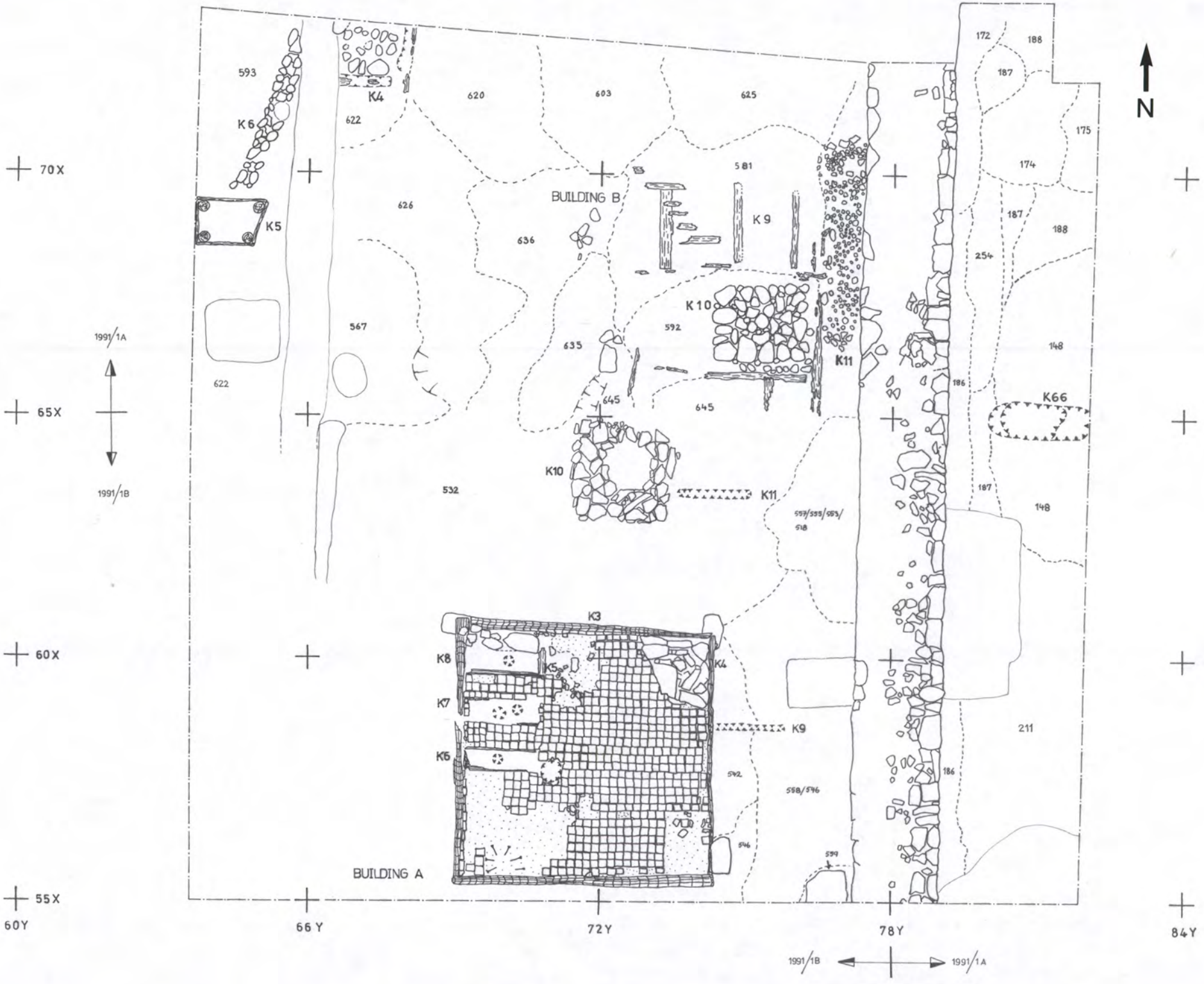


Fig. 4 PHASE 2 1:100

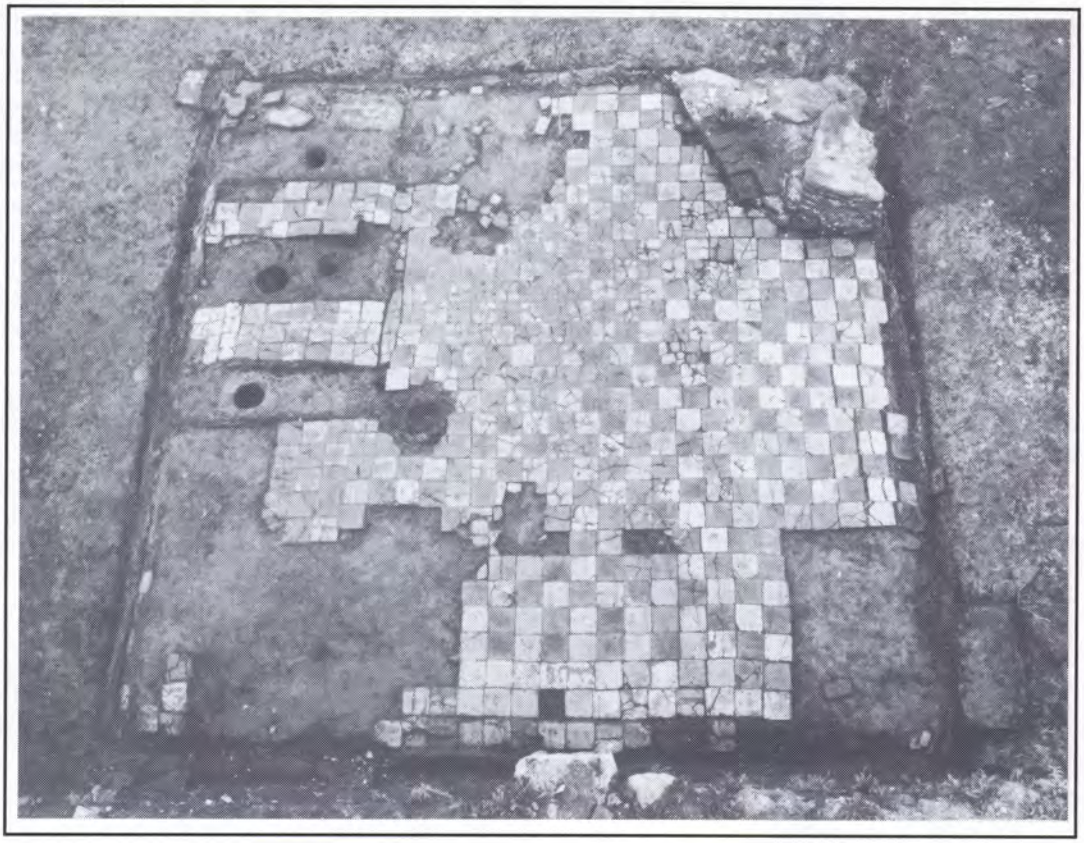


Fig. 5 BUILDING A (looking N.)

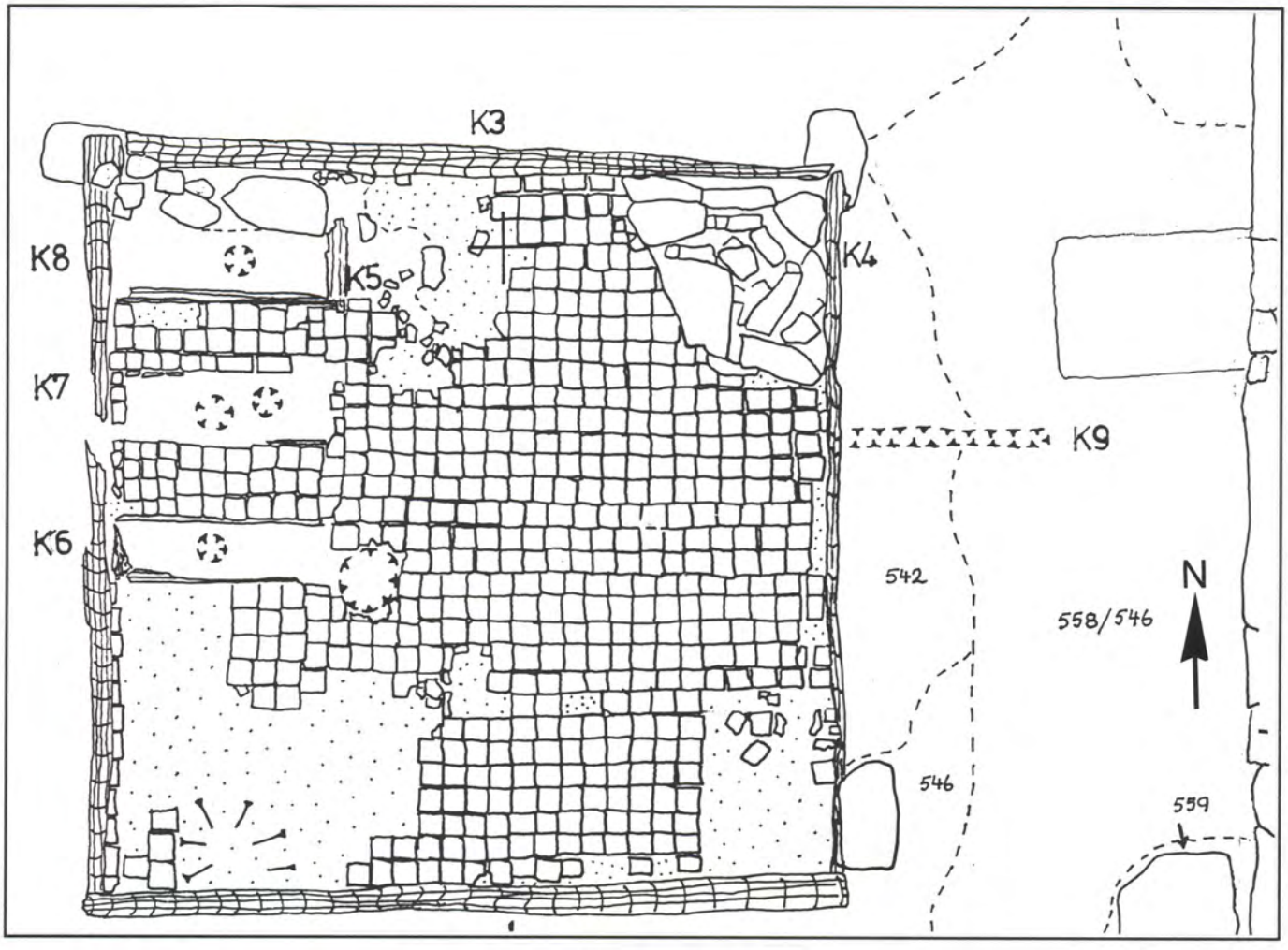


Fig. 6 BUILDING A 1:50

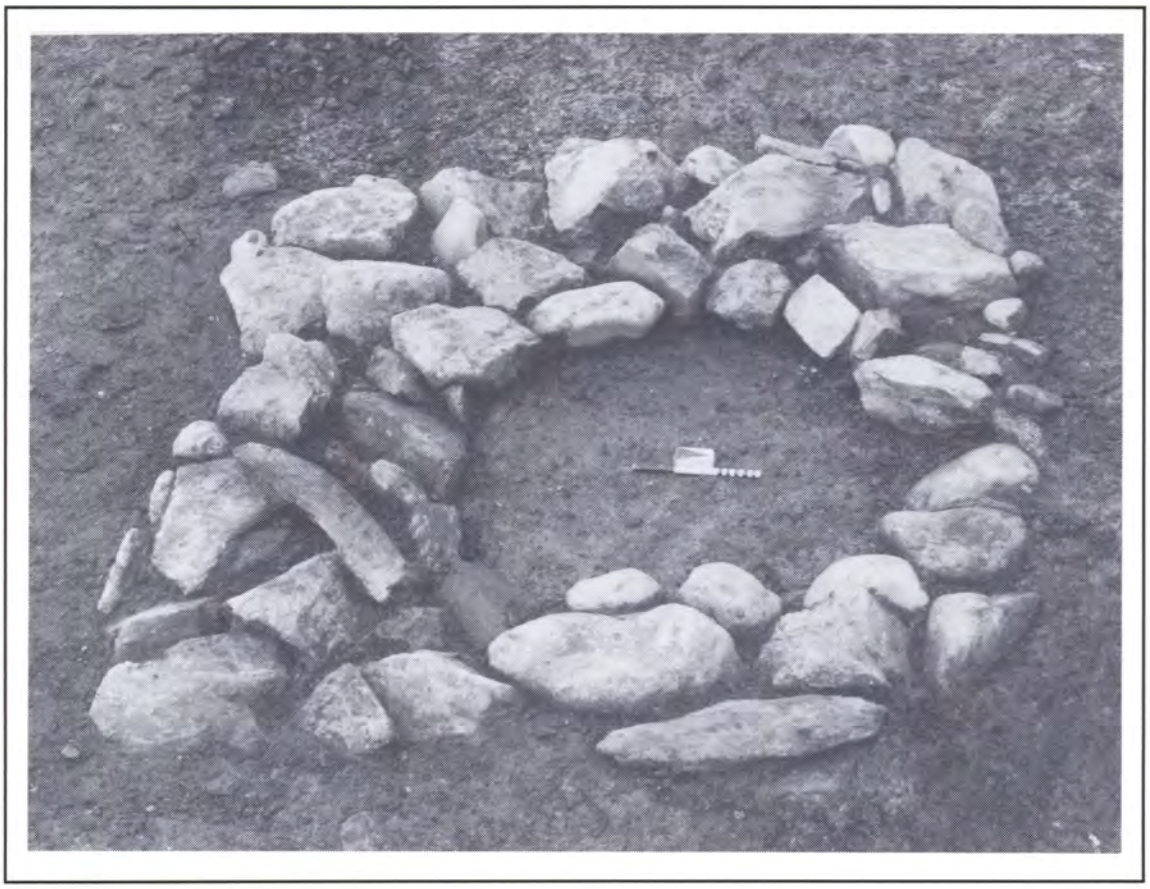


Fig. 7 K10 (looking W.)

Stratigraphic Sequence

Excavation stopped at the level of Building A's floor, so the precise level at which the floor's bedding sand **536** was laid is uncertain. The building's sill-beams lay in narrow troughs which appeared to be sunken into the surface of Phase 1's clay **542**. The similarity of this clay to the clay over it to the N. and W. of the building, namely **532**, caused problems of identification, and it cannot be ruled out that Building A was established on **532**. However, during excavation it was thought that **532** abutted the sill-beams to N. and W. This observation, allied with the presence of woodchips at **532's** interface with **542** and its finds content of scattered debris and crucibles, combine to suggest that this wooden building was erected on **542** (hence the woodchips), and that **532** formed either during the lifetime of the building or following its destruction (hence the building debris, including floor- and roof-tile and window glass?). A case can be made for this layer having formed an open (to the N. and W.) occupation surface during both the lifetime of Building A and its moment of destruction: To the E. and NE. of Building A, in the trough-like depression against the curtain wall, a number of successive deposits were dumped on a thin spread of wood chips in greasy clay, **558=557** (basal component, this being a multi-layer context). This correlates with the wood-chip horizon noted at the interface between **542** and **532**. The dumped deposits, **555=546** (charcoal with unburnt bone, floor-tile/brick fragments, potsherds, crucible and metal fragments, discarded tools), **553** (silt with red brick fragments, potsherds, metalwork), **534**, and **541** are all full of metalworking, domestic and building debris associated, it is

suggested, with the use of Building A. These were overlain ultimately by **494**, the dump of green clay which sealed the demolished building. Indirect stratigraphic connections therefore suggest that **532** is contemporary with the use of the building. Further deposits associated with this workshop phase to the E. and NE. are **544** and **518**, while **497, 509, 560** and **517** are probably to be associated with the demolition and sealing of the building, the latter in particular containing scattered mortar and broken red brick and glazed floor tile.

There is uncertainty about the precise relationship between **559**, a deposit of many fragments of window glass, and wood-chip layer **558**. The former may have been deposited prior to the latter; if the interpretation of **538** as relating to the construction of Building A is correct, then this particularly interesting deposit bearing much painted glass fragments may therefore actually pre-date this workshop. This corner was difficult to excavate, and a mistake may have been made in this relationship. This will be re-examined in 1992. However, given the known function of Building A, the presence of this heap of glass is in itself anomalous, and it may well be that it was dumped here from another source prior to the establishment of the moneyer's workshop.

Building A's structural details are discussed under Constructions below: no major alterations to its internal layout appear to have occurred during this building's apparently lengthy period of use (as implied by the noticeable wear on the surface of the tiled floor). The floor and walls uncovered this year in fact form what appears to be the N. room in a multi-roomed building: more floor tiles, belonging to an adjoining room, were observed in the S. section; this awaits excavation in 1992.

A particular factor which should be noted here is the orientation of Building A, whose E. and W. sill-beams lie N-S. This orientation conforms closely to that of the curtain wall to the E., as well as to that of Building B to the N. in Site A. However, it should also be noted that Building A's N. sill-beam lies at a slightly oblique angle i.e. approx. WNW-ESE. It is suggested below (Phase 3) that this beam may have played a determining role in the lay-out of the next phase's buildings which are orientated differently to those of the present phase.

Also resting on the surface of **542** to the N. lay **528 K10**. This is of uncertain function, although its character might hint at some industrial use, perhaps as the base of a hearth? Its orientation matches closely that of the curtain wall and Building A. Its stratigraphic position places it together with Building A with all the attendant uncertainty as to the temporal relationship with the construction of the curtain wall. Like Building A, **K10** was abutted by **532**. This deposit (as **535**'s lowest component) also appeared to lie within **K10**'s central circular void, which may suggest that **K10** was out of use prior to **532**'s deposition. It is perhaps possible to disregard this in favour of its continued existence, **532** comprising contemporary make-up rather than a sealing deposit. A clay with a high concentration of charcoal, **529/A592** rested on the surface of **532** against the NE. portion of **K10**. If this originated from **K10** (as rake-out from a hearth, for example?), it would suggest that **K10** was in use at this time, in this instance as an isolated feature, since these layers also lie beneath the structural timbers for Building B (**532** appeared to correlate with **A641/644/ 645**). That said, it is still possible to envisage **K10** as being in use in association with Building B: if **532** was dumped *en masse* during the construction of Building B, then it is conceivable that **K10** was established first and then **532** (and the charcoally clay **529**) laid soon afterwards as make-up. Alternatively, it is not impossible that **K10** stood originally as an isolated structure to the N. of Building A, but was then subsequently incorporated within Building B, which may have been built after Building A had been in use for some time (see Discussion, and below). It is clear that **K10** was subsequently covered with earth and stones and re-used as the basis of a later hearth foundation in a building constructed on a different orientation (Phase 3).

Just to the E. of **K10**, a shallow E-W slot **586 K11** was located, apparently within **532** (insecure), though clearly sealed by the next phase's **478**. In location, alignment and stratigraphical position, it compares favourably with the fragmentary timbers belonging to Building B. It is suggested that this marks the former position of a structural element within Building B. This was removed prior to the construction of Phase 3's Building D. This element extends Building B southwards, reinforcing the impression that the adjacent **K10** was incorporated within it.

The stratigraphical positions and the N-S orientation of buildings A and B appear to correspond favourably, and it is possible to assert that they are contemporary, or near-contemporary structures. However, there is some very slight evidence which prompts the question as to whether there might have been a structure which pre-dated Building A to the S., possibly contemporary with Building B, and perhaps even forming that building's S. extension? This question is prompted by the presence of two structural elements whose functions appear somewhat anomalous in association with Building A: an E-W orientated slot, **579 K9**, first observed in the surface of **542** (though possibly over **573** too), and **570** (see **K5**), a N-S orientated timber, lying in Building A's bedding sand **536**. The character and alignment of the former is very reminiscent of the slot **586 K11** to the N., while **570**'s function as a foundation element for Building A can be questioned, and it may be a survivor of a pre-existing structure immediately beneath Building A's bedding sand. However, given that cross-site and inter-site correlations are correct (not guaranteed at this level), it would appear that Building A's structural elements to the N. were laid above **532** whereas these latter appear to be stratigraphically lower. Unfortunately, the character and sequence of events is so unclear with regard to this, that the question must remain unresolved. However, as pointed out above, the dump of glass fragments **559** is potentially a pre-Building A deposit. In addition, although I have chosen to regard it as a phenomenon caused by the rotting and displacement of Building A's E. sill-beam **531**, it was noted under excavation that the charcoal dump **546** appeared to encroach under that timber. If so, then that might imply that there were some deposits in this area against the curtain wall which pre-date Building A, deposits which perhaps may relate to a pre-existing building here? This latter is so ambivalent that I have chosen to disregard it. The aforementioned features are just as likely to be integral parts of Building A (**579 K11** perhaps indicating the former presence of a sheltering wall, or a joist for a plank walkway to the proposed entrance to Building A?).

In the NW. corner of the site was a compact green clay, **533**. In Site A, as **A567**, this is interpreted as part of generalized dumping at the start of Phase 2. In Site B this intervenes between Phase 1's **542** and Phase 2's **532**, and therefore seems to qualify well as a pre-building make-up deposit. It was certainly cut into by Phase 3's Building D (wall **524**).

532's extension westwards was very hard to establish, the boundary between it and the similar clay **538** (Phase 3) being almost indistinguishable, although with the likelihood that **538** lay over **532**. **538** abutted Building C's E. groundwall **408** and Building D's W. groundwall **524**, whereas **532** lay under Building D's S. groundwall **520**. It seems that **532** did not extend as far W. as groundwall **524**.

Phase 2 concludes with the apparently clean and deliberate dismantling of the walls and roof of Building A. There was no sign that the building burned, and there was no great quantity of destruction debris in associated layers, although occasional scattered roof tiles may be indicative of the character of Building A's roof. A concentration of window glass to either side of the building's W. wall may have derived from windows placed within it.

Directly following the dismantling, the floor was sealed deliberately with a thick dump of greenish clay, **494** full of animal bone, domestic debris, and some building debris. **547** and **554** are equivalent, pockets of **494** sealing the workbenches. As stated **494** also partly extended over the charcoal and debris dumps towards the curtain wall. **509** and **497** are probably equatable, and were covered, in

common with **494**, with a thin spread of mortar, **487**, which marks the beginning of the next phase of building activity.

Building C, to the very W. of the site, could, on strictly stratigraphical grounds, be placed in this phase, its stratigraphical position being the same as that of Building A. Its E. groundwall **408** rested directly on **542**, as did the sill-beams of Building A. Consequently these buildings are potentially contemporary. However, other factors must be taken into account, and a case can be made for placing Building C in the next phase: see Discussion.

Descriptions of Constructions

Building A (K3-K8)

Character: The excavated portion comprised the N. part (a complete square room) of a more extensive building (extending S. into standing section) (Figs. 5 and 6). Features at floor and foundation level survived almost completely intact, and the building had the following characteristics: The remains of "lafted" wooden sill-beams resting on padstones at the NE. and NW. corners suggest that the building was of simple log-cabin type. The interior comprised a laid floor, almost completely intact, comprising sand bedding green and yellow-brown tiles set, with some exceptions, in a checquer-board pattern (differential wear apparent); to the NE. stood the intact base of a brick-lined stone hearth; to the W. lay a row of rectangular gaps in the flooring, earth-filled and with associated post-holes and traces of timber superstructures, interpreted as workbenches; to the SE. lay a regular rectangular gap in the floor, possibly marking the entrance (possibly also indicated by a flat stone, a possible step, set against the sill-beam at this point). The floor was slightly disturbed, though its survival was secured by the deposition of a sealing dump of clay following this building's thorough and deliberate demolition to floor level. Window glass fragments concentrated particularly to the W. may indicate the presence of glass windows in the W. wall, beside the workbenches. Occasional scattered roof tiles in surrounding contexts may have derived from the roof. The room was square, the walls being c. 5x5m in length providing a total floor area of $25m^2$.

Function: This room clearly constitutes part of a moneyer's workshop (or mint workshop). This interpretation has been made on the basis of contemporary wood-cuts of interiors (see Fig. 8) which show internal arrangements which can be equated directly with the excavated features within the interior. Likewise, associated artefacts (coin blanks and offcuts, a weight, crucible fragments, and in particular, an iron coin die) confirm the function. The structure has been preserved as revealed and recorded, awaiting future conservation.

K3 Walling: basal beams/sill-beams: 510, 530, 531, 545

4 timbers, poorly preserved and rotted, partly sunken and deformed, resting in localized troughs. Probably all formerly single rounded logs. All unburnt. Probable "lafted" joint observed at NE. corner at intersection of timbers **530** and **531**. Corner supported by padstone set in clay **532** at this point. Equivalent padstone at NW. corner supporting intersection of timbers **530** and **510**.

510 (5.4m long), **530** (c. 5m long) and **531** (5m long) formed the base of external walls, while **545** (5.4m long) formed the base of a probable partition dividing a N. room from a S. room. These framed the square floor area, abutting the sand bedding **536**.

E. and W. timbers aligned N-S, and S. timber E-W. However, the N. timber, **530**, was placed at slightly oblique angle off true E-W ie. WNW-ESE.

Fig. 8 *Woodcut showing mint workshop interior in 1577 (Raphael Hollingswood's Chronicles).*

K4 Hearth: 539, 540

Fig. 9. Placed in the NE. corner of the building. The base of a brick-lined stone hearth, demolished, though preserved to a height of c. 0.5m to E. Quasi-triangular plan. A large basal fire-cracked slab formed the actual fireplace, only c. 0.11m above floor level. The back wall was built up to N. and E. of mortared stone blocks and slabs (at least 5 courses preserved to E. above the basal slab, and two parallel courses abutting the basal slab to N.). The fireplace interior above the basal slab was lined with mortared brickwork, very friable and fire-cracked.

The fireplace interior was quite small, and its capacity cannot have been great. Might it have been the lowest fireplace in a two-tiered structure as shown in contemporary wood-cuts?

539 comprised a number of deposits associated with the fireplace interior, and probably represent the final hearth accumulations prior to the building's demolition. All were sampled. There were three superimposed deposits contained within this context; from the top: a spread of friable black gritty sand with charcoal, over;
reddish-brown burnt sand, magnetic reaction (hammerscale present), over;
pure charcoal, magnetic reaction, spilled out over tiles.

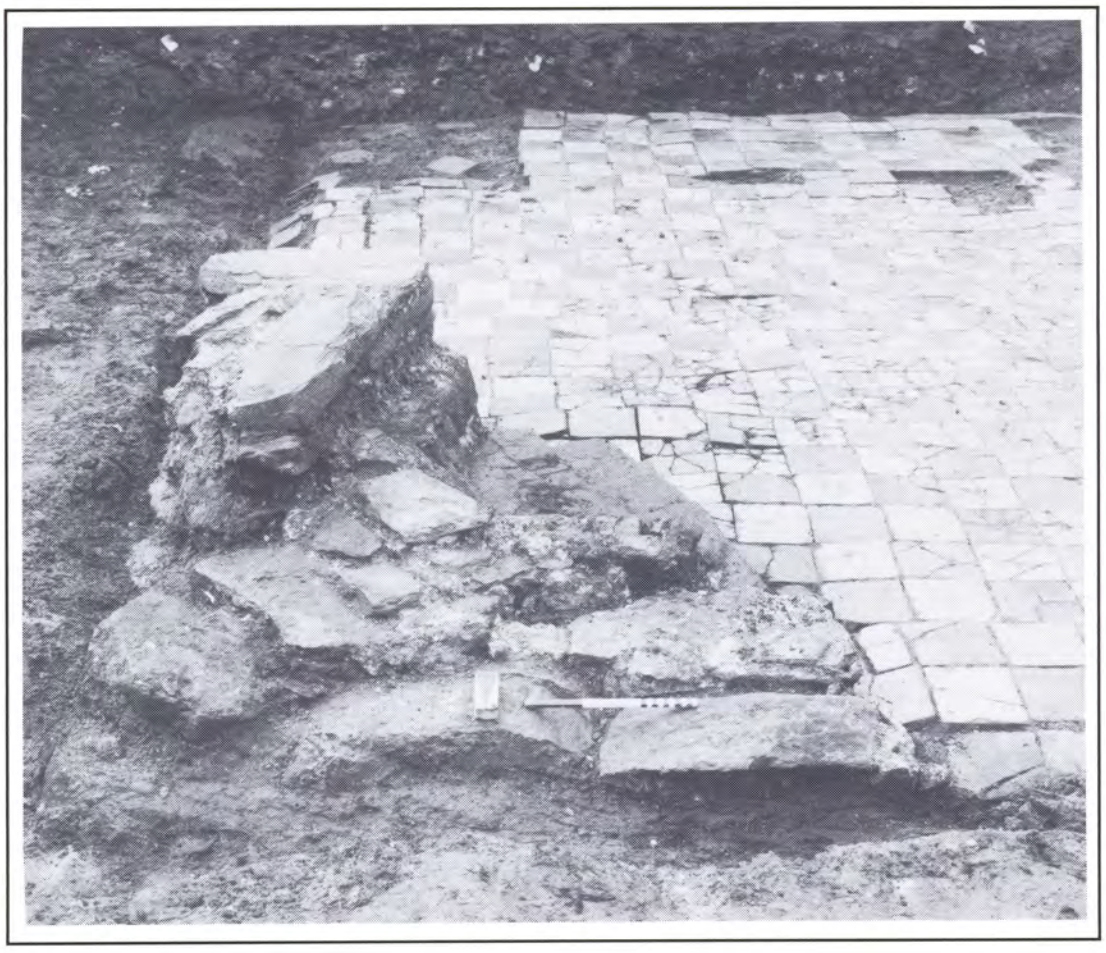


Fig. 9 Hearth K4 (looking E.)

K5 Flooring: bedding and tiled floor: 536, 570, 500

536 comprised a thick deposit of dumped beach sand on which the tiles making up floor **500** were placed. To the NW. it incorporated a presumably short (c.2m?) length of timber, N-S orientated, aligned along the W. ends of the rectangular workbenches. Since sand and beam remain unexcavated, its precise character and function are unknown. It is probably part of this building's foundation, though it may conceivably be a surviving element from an earlier building here (cf. **579 K9**).

Tiled floor **500** was almost completely intact. It sloped gently N-S from 14.26masl to c. 14.05masl, undulating slightly, with severe slumping at the very edges into the troughs containing the sill-beams **K3**. Comprised green mottled and yellow/yellow-brown streaked tiles

laid in near-regular E-W rows in such a way as to form a checquer-board pattern, although this was not wholly consistent, particularly to the S. and W. The tiles in the central part of the floor were quite heavily worn, while those around the perimeter showed very little signs of wear. In the very NW. corner there were no tiles preserved *in situ*: here there were stones instead.

Tiles were absent from the SE. corner. Here there was a straight-edged regular rectangular gap. It is possible that this is not fortuitous and that this gap was never tiled: this area may have had some other flooring medium, and may have formed a small entrance area/hall. The presence of a large flat stone abutting the exterior wall at this point may add weight to this speculation, the stone forming a possible external step. Indeed, if one examines the internal lay-out, this would arguably be the best place for an entrance. The SW. corner is similarly largely devoid of tiles, but this seems rather more irregular and may have resulted rather from deliberate removal. It can be speculated that a door communicating with the S. room may have existed in this locality.

To the NE. the tiles appear to have been shaped to conform with the curving perimeter of hearth **K4**.

To the NW. the three workbenches **K6, K7** and **K8** were incorporated into the floor by deliberately leaving regular gaps in the tile arrangement.

Tile sizes: the majority were 16cm x 16cm square, though there were also some smaller examples measuring 11.5cm x 11.5cm, to the NW. between the rectangular workbenches (where there were also 2 red bricks incorporated into the floor).

K6 The base of a rectangular structure: a moneyer's workbench: 548, 550, 564, 568, 566

Fig. 10. (1:10 drawing of these features in plan archive).

3 strips (**550**) of poorly-preserved timber, unburnt, abutting and flush with edges of tiles, and defining N., S., and W. edges of an E-W orientated rectangular gap in floor **500**. Lay on/in **568**, silty compact clay, which remained unexcavated (though possibly comprises deliberate backfill in unseen pit). N. strip = 0.02-0.05m thick x 1.40m long; S. strip = 0.01-0.03m thick x 1.15m long; W. strip 0.40m long, formerly joined at either end to other strips by nails (preserved).

Function: these strips of wood form all that remains of the base of nailed wooden box-like construction at which coins were struck; it was possibly used to hold blanks (see Fig. 8).

Dimensions of bench base: 1.65m x c. 0.45m.

564: round post-hole, cutting **568**, filled with clayey silt **548**. 0.20m diam. x 0.15m deep, pointed base. Function: accommodated base of post on which the bottom coin die was placed for stability.

566: base of wooden stake, vertical stump. Round, c. 0.06m diam.

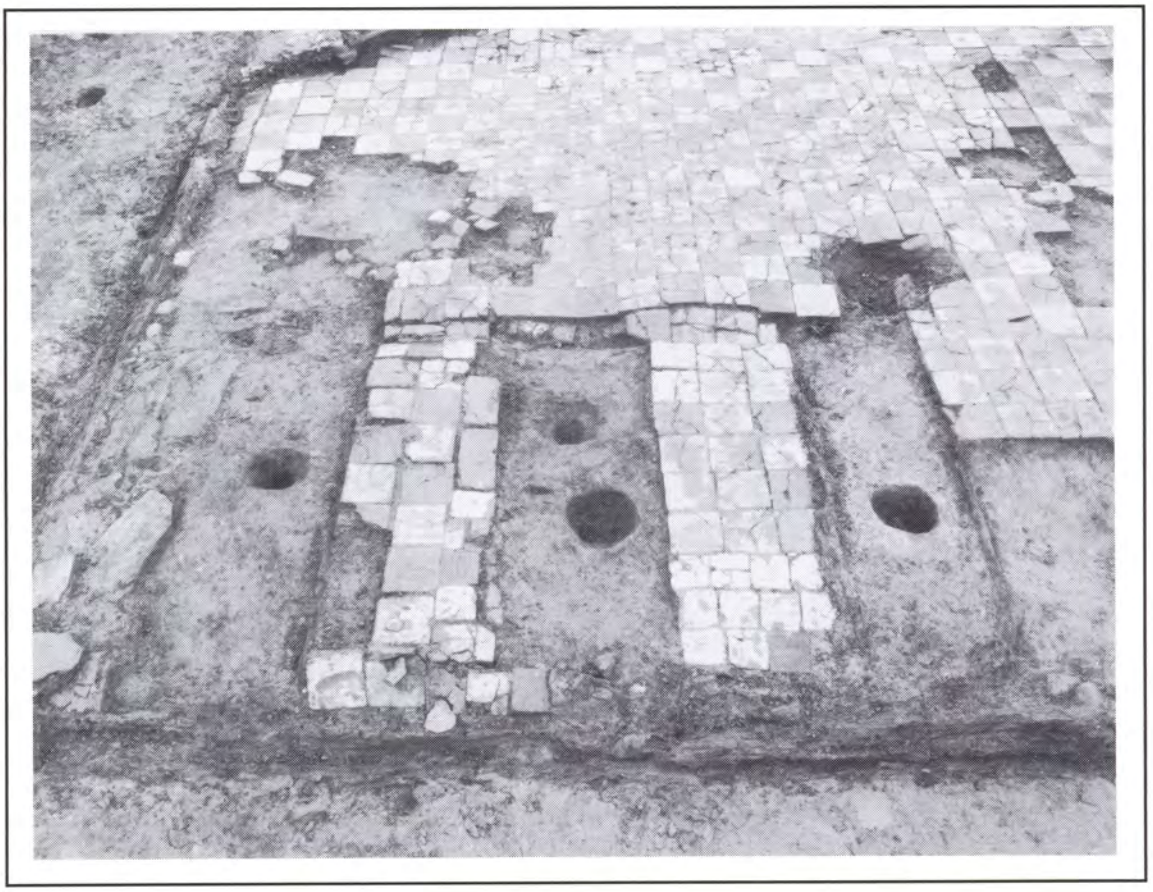


Fig. 10 Workbenches/striking benches K6, K7 and K8 (looking E.)

K7 The base of a rectangular structure: a moneyer's workbench: 569, 551, 562, 563, 549, 561

551: a short fragment of wooden strip, unburnt, abutting and flush with tiles along S. edge of an E-W orientated rectangular gap in floor **500**. Lay in **569**, compact silty clay, probably fill in (unexcavated) pit. 0.02m thick x 0.5m long. Function: cf. **550**.

Dimensions of bench base: 1.45m x c. 0.55m.

562: round post-hole, cutting **569**, filled with hard green clay **561**. 0.20m diam. x 0.15m deep, pointed base. Function: cf. **564**.

563: round post-hole, cutting **569**, filled with yellow sand **549**. 0.25m diam. x 0.16m deep, pointed base. Function: cf. **564**.

N.B. this feature has two associated post-holes; might **563** have been the first, deliberately backfilled with sand and replaced with **562**?

K8 The base of a rectangular structure: a moneyer's workbench: 556, 552, 567, 565

552: single wooden strip, unburnt, abutting and flush with tiles at S. edge of an E-W orientated rectangular gap in floor **500**. Lay in **556**, grey silty clay, probable fill of (unexcavated) pit. 0.02-0.05m thick x 1.75m long. Function: cf. **550**.

Dimensions of bench base: uncertain length - min. 1.5m/max. 1.75m x c. 0.5m.

567: round post-hole, cutting **556**, filled with hard green clay **565**. 0.20m diam. x 0.16m deep. Function: cf. **564**.

Coin blank from **556**.

K9 Timber slot?: 579

Narrow, shallow E-W aligned slot, observed in surface of **542**. 1.3m long x 0.12m wide x 0.02-0.03m deep. Function: impression left by removed timber? Part of Building A or earlier.

K10 Stone-built structure: 528

Square area, or pad, of laid angular stone rubble and beach boulders with slightly off-centre circular void. Single layer, unmortared; soil between stones. Max. dimensions: 2.15m E-W x 2.10m N-S. Diam. of central void 1.05m x 1.15m x 0.15m deep. Stones laid on **542**. Function: unknown primary function. Possible foundation for superstructure, such as a hearth? Re-used as such in Phase 3.

K11 Timber slot?: 586

Shallow narrow E-W aligned slot, observed in surface of **532**. 1.5m long x 0.18m wide x 0.07m deep. Function: impression left by removed timber? Trace of structural timber belonging to Building B?

Dating

Potsherds: A fair number of sherds, though predominantly of Dutch and German redwares (cooking pots), which are not closely datable: broadly 15th - 16th century. In addition some Raeren and Siegburg stonewares (tablewares); of these the Raeren is likely to be of late 15th-century (c. 1480+) to the first half of the 16th century in date. One frilled-base Siegburg of late 15th-16th century date. Almost all of these were recovered from the dumped layers between Building A and the curtain wall: **559, 558, 546, 535, 534, 497**. In addition, one Raeren reliquary jar, datable to 1476+, from the clay dump **487**. One residual sherd of medieval Scarborough ware from **532**. None came from sealed contexts.

Historical evidence: the late medieval archbishops were regranted the right to mint their own coins from 1458 (Archbishop Kalteisen). However, in the minting-related material recovered so far on this excavation (and elsewhere) there is no evidence for coin production before the time of Archbishop Gaute Ivarsson (1475-1510). Indeed, minting may not have started until the beginning of King Hans's reign in 1483, and the numismatic material and other dating evidence from this excavation is indicative of coin production from this date on and during the time of the last three archbishops, namely Gaute Ivarsson, Erik Valkendorf and Olav Engelbrektsson (see Nordeide & Skaare, 1992, ff.).

The combined evidence would seem to point to late 15th-century activity associated with Building A, with a likely *terminus post quem* for the phase at c. 1480.

Discussion

If the interpretation of Phase 1's **542** as levelled-off upcast is correct, both **Building A** and **Building C** stratigraphically follow directly upon the digging of the curtain wall's foundation trench. However, as stated (Phase 1 Discussion), it is not certain how long a period of time elapsed between the deposition of **542** and the erection of these buildings just to the W. of the curtain wall. Due to this uncertainty, Building A has been placed successive to the establishment of the curtain wall, although their construction periods are potentially contemporary, as implied by their mutual alignments and their close stratigraphical positions. Although Building C is positioned stratigraphically close to these structures, its alignment is different, and this factor has been taken as sufficient evidence to place it together with later structures in Phase 3. In particular, it matches closely the orientation of **Building D** (see Phase 3) which clearly post-dates the destruction of Building A. Another shared trait is that Buildings C and D are of similar construction, with stone groundwalls, which also differentiates them from buildings A and B, whose wooden foundations are set directly on the ground surface. A further factor to be noted is that while their orientations match, the positions of buildings C and D do not coincide exactly, the latter lying somewhat further S. than its E. neighbour. It is probable that this reflects the greater areal exploitation in the W. part of the area during Phase 3, Building C being pushed further S. to accommodate **Building E** to the NW.

K10 and **Building B** closely match the strict N-S orientation of the curtain wall and Building A. The former was re-used in Phase 3, while the latter was, like Building A, clearly demolished prior to the construction of Building D in Phase 3. A case has been made for their contemporaneity with Building A. There are some slight indications of structural elements (and associated dumped deposits) which might pre-date Building A, although it is impossible either to verify this or to tie them in with Building B to the N. I think it more likely that buildings A and B were either built at the same time, or that Building A was built first, and Building B subsequently. Evidence for this latter possibility lies in the interpretation of patchy cobbling **496=A591 K20** (Phase 3), which in Site B lies above dump deposits associated here with the use of Building A. In Site A, however, this cobbling could be interpreted as integral (as flooring) to Building B. If the cobbling was established with Building B, that building must therefore post-date the deposition of the waste debris associated with Building A. The clay bedding them, **A640** may correlate with **478**, which definitely post-dates the establishment of Building D's wall **439** in Phase 3 (see further thereunder).

To conclude, the close contemporaneity of buildings A and B and structure **K10** seems likely. Even if they were not built at exactly the same time, their orientation and locations complement each other; furthermore they were laid out in strict accordance with the alignment of the curtain wall, and layers associated with their use constitute the first occupation deposits which accumulated against the base of the curtain wall. On this evidence, it can be suggested that the curtain wall and these structures were planned and constructed together. The overall impression of the structural lay-out in this part of the precinct at this time is that two neighbouring buildings, with differing(?) functions stood at about the same time close up against the curtain wall; namely, a moneyers' workshop to the S. and another possible industrial building, perhaps a smithy(?), to the N. Both were demolished to make way for the next generation of buildings, which were built on a different alignment.

PHASE 3

General Characterization

This phase (Figs. 11 and 12) sees the complete reorganization of this part of the Palace precinct, with buildings erected in different locations and on a different alignment to those in Phase 2. **Building D** was erected following the dismantling of buildings A and B, incorporating pre-existing **K10** as the foundation for a hearth. There are indications that Building D was never fully completed, and that following a fire its foundations were re-used as the basis for a superimposed building, **Building F**, built on exactly the same lines and fulfilling the function of a moneyers' workshop. Neighbouring these superimposed buildings to the W. lay **Building C** (of unknown function), clearly built on the same alignment, though projecting further S. To the NW. in Site A, another building - **Building E** - was built on the same alignment, while to the N. there was an open area, or courtyard, cobbled at some stage. All these buildings appear to have been destroyed by fire. However, there is evidence for two successive fires, and it is on this very fragmentary evidence that Building D is distinguished as a separate entity from Building F. The principal evidence for two fires is largely confined to the immediate area occupied by Building D and its immediate successor Building F.

Stratigraphic Sequence

This phase proved to be complex, in that much of the stratigraphical information produced an uncertain and confusing picture as to the character of the central building on the site. It was deemed, however, that there was sufficient evidence to at least suggest that there were two fires, and that in fact the phase essentially consists of two stratigraphic subphases: features and deposits associated with the construction of a building which probably never reached completion (including small temporary workmen's hearths) and which was destroyed by fire which left only fragmentary and ambivalent traces (Fig. 11), followed almost immediately by the direct superimposition above it of an equivalent completed structure, involving the reuse of surviving groundwalls, and which was in its turn destroyed by a fire which also burnt a whole complex of buildings erected in this part of the precinct at this stage (Fig. 12).

Following the deliberate sealing of the floor of Building A with clay **494** renewed building work took place to the N. of it. A thin spread of mortar lumps, scattered wood chips and fragmented planks **487** on **494**, **509=497** and **532** probably marks the beginning of construction work. That the builders of Building D were aware of the former position of Building A is implicit in the fact that Building D's S. wall **520/388** was placed directly along the line of the earlier building's N. wall, although it did not extend as far E. This cannot be fortuitous, and it looks as if the builders may have used this old wall-line as a guide-line for the laying out of the new building, which as a result was orientated NNE-SSW. (Note also that the corner stone in **520/388** may have been deliberately set on Building A's demolished stone hearth, a stable consolidated basis). This may explain the change in orientation between Building A and Building D, and indeed the generalized change in structural alignment which was adopted by all the new buildings at this stage.

Level A: *Building D* (Figs. 11 and 13)

The individual elements which make up Building D are described in detail under Constructions (below). However, a resumé of the stratigraphy is necessary here. The following presents the deposits and structures which existed prior to a destructive fire and the subsequent establishment of Building F on the same lines.

Fig. 11 PHASE 3, level a 1:100

Fig. 12 PHASE 3, level b 1:100

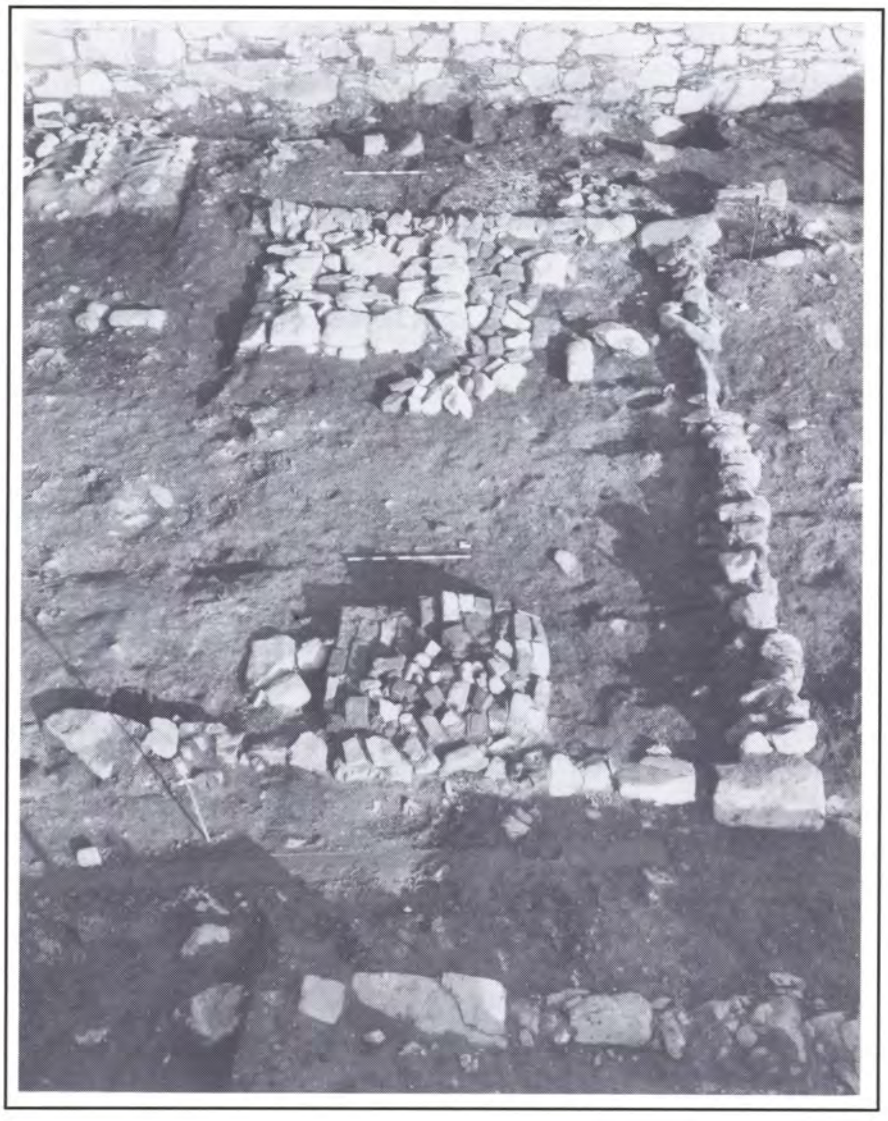


Fig. 13 BUILDING D (looking E.)

The main body of the building comprised three groundwalls (classified collectively as **K12**): to S.(**520/388**), W.(**524/411**) and E.(**522/439**), each comprising two courses separated by intervening soil or sand (respectively **519**, **523** and **521**). It was thought provisionally that this may have been indicative of two building phases. However, this intervening material is just as likely to have been used for consolidating these two courses in the walls. That these walls, at their finished two-course height, were indeed used in two phases was indicated at a higher stratigraphical level (see below).

The S. and E. walls were placed directly on the mortar spread **487**, while the W. wall's stratigraphical position proved to be more ambiguous. The line of a shallow trench **574** appeared on **524**'s removal. This appeared to cut clay **542**, although a cut from a higher level may easily have been obscured. However, in Site A, the northernmost portion of this wall was observed to have been cut down into **A567** (cut **A637**) which correlates with **B533**, a make-up deposit placed in Phase 2. This places this

wall in Phase 2 or later; since the wall is unlikely to have existed independently (?), its structural correlation with the S. groundwall **520** pulls it up into Phase 3. Abutting wall **524** on its E. side was **K14**, comprising **505** and **465**, a rectangular stone- and brick-built structure of uncertain function. This appears to have been built together with the groundwalls, being established on **532** and **533**. Also established at this time was **K13**, the stone foundation for **K27**, a brick-built hearth in the NE. corner of the building. **515**, a mass of cobbles, red brick, and stone rubble clearly abutted **439**. This primary dump and associated deposits, with the succeeding loosely consolidated massive stone platform **489** form a structural unit, placed on the pre-existing stone structure **K10**, its secondary function as a basis for the new hearth superseding its unknown primary function in the preceding phase.

Within the area enclosed by the groundwalls **K12**, and containing the aforementioned structures, a succession of deposits accumulated as a result of deliberate levelling-up and associated building activity: **512=525**, green clay, appears to be the primary make-up deposited against the W. wall and **K14**. **516** (=**A555**) was a clean sand overlain by **513**, an wood-chip layer, smelly, thickest to the W. in a localized depression there: this deposit possibly relates to wood-trimming during construction. **508** (=**A493**) above this formed a mass of redeposited clay dumped prior to the laying, apparently in two stages, of a thick consolidated mass of mortar forming the intended basis for the building's floor (**K15**). Prior to this, however, a number of red bricks and occasional stone rubble **499** were laid to the S. of **K13**, abutting it and wall **439**. This possibly represents an attempt to consolidate the area around the hearth.

As stated, the laying of the consolidated mortar platform within the building appears to have been done in two stages: a very compact mortar with scattered stone chips **507** (=**A587**) was laid first, in the E. half of the building. **498** (wood chips) was deposited towards **K14**, followed by the dumping of further make-up clays in this locality i.e. **506** (=**A616 or A567?**) under cleaner **492**. Following upon this, a further thick consolidated body of mortar **460** (=**A530**) was laid across the whole interior of the building. This was somewhat less compact than **507**. The thickness of the two superimposed mortars in the E. half of the building was variable, though with a maximum of c. 0.20m to the S., thinning to N. and W. Along its S. perimeter, the mortar was cut into during the insertion of the workbenches (**K32-34**). However, an examination of the relationship of their backfills and internal arrangements (see Building F, below) makes it clear that in their ultimate form these were integrated into the floor of Building F making it extremely unlikely that they were finished and in use in Building D. Apart from one isolated pit (**486 K16**), of ambivalent nature, there is no firm evidence to suggest that **460** was used actively as a *bona fide* floor level within a finished structure. Even though the hearth foundation **489 K13** was established together with **460**, there is no surviving evidence of a superstructure placed on it until the establishment of the brick superstructure **432 K27** with Building F.

As mentioned, there is evidence for the insertion of one possible intended internal feature into mortar **460** at this level, prior to the superimposition Building F's finished floor. This is **K16** (**486**), a truncated portion of a formerly subcircular pit, cut into **460** and sealed by gravel **469**. It is broadly analogous with subsequent pits in this exact location, and this raises the possibility that **460** was intended as an original floor level. However, its form is somewhat irregular, and it may rather have been a temporary feature, comparable with the other pit-like features in associated contexts, **504 K17** (=**AK25**) and **490 K19**, interpreted as possible building-workers' hearths. This lack of internal arrangements raises some doubt as to whether in fact Building D ever reached a state of completion (see further below, and Discussion).

The evidence for Building D's existence

This evidence is extremely fragmentary, though it is felt that it cannot be ignored and that enough

exists to suggest the presence of a structure which pre-existed Building F. It should be pointed out at the outset that both Building D and Building F burned, and that it was difficult to distinguish between two closely superimposed fire levels. In addition, it is likely that Building D's interior was systematically cleared of fire debris, robbing us of vital clues and possibly distorting the actual sequence of events e.g. where timbers burnt in one fire were removed and subsequently replaced with fresh timbers in exactly the same place, only to be burnt again. Consequently crucial links in the sequence are only inferrable.

The clearest pieces of evidence for a fire which destroyed Building D are as follows:

At the building's N. limit, the remains of a burnt E-W timber sill-beam **AK17**, which abutted **A530 AK16**, the Site A equivalent of the thick mortar floor foundation **460 K15**, and which was sealed by mortar **368**, which bedded the tiled floor of the superimposed building, Building F;

In the SE. corner (N13c), a fragment of a possible E-W burnt sillbeam, **462 K18**, with underlying charcoal/burnt sand/burnt clay deposits **457=449**, **468** and **386**, overlying the groundwall but also sealed ultimately by the next building's bedding mortar, **368 K28**. N.B. distinct problems arise in correlating these burnt elements and deposits in N13c with those to the S. and W., particularly in M13d, where similar deposits, correlated during excavation with those in N13c, provide conflicting information (see below);

In the NE. corner, on the surface of groundwall **439**, a charcoally soil with possible fragments of a N-S orientated timber (a former sill-beam?) **488**, sealed by gravel **431** and the brick superstructure **432** for hearth **K27** which belongs with Building F.

The aforementioned pit **K16** in **460**, although doubt has been raised as to its function.

Additional, even more ambivalent evidence includes:

A deposit of burnt sand, scattered charcoal and stones, **493**, localized to the area immediately around **465 K14**; this may indicate a fire at this level between Building D's mortar **460** and Building F's primary bedding gravel **469**. Alternatively, this may be rake-out from a possible workmen's temporary hearth/campfire, **504 K17** (=**K25**) lying just to the N. under **461**, part of Building F's flooring.

A concentration of scattered heavily burnt timbers, **366**, to the SE. of the building, and burnt planking(?) **484** lying parallel to its S. groundwall. These timbers' precise stratigraphical positions and associations present some problems, as they cannot be securely related to either one of the two fire levels, and it is entirely possible that the two fire levels have been confused at this particular location. **484** appeared to lie in **468** charcoal, associated (in N13c) with Building D's destruction. This charcoal was originally identified in the building's SE. corner, where it was observed to go under the mortar bedding for Building F: as far as could be judged a charcoal layer which was presumably the same as **468** spread along the line of wall **388**, and spilled over it to the S. where it was confined to an area extending along and approximately 0.50m S. of the groundwall **388**, running parallel with it. Here it lay on a distinctive green clay **386**, similarly concentrated in a line parallel with **388**. This clay was similar in character to **478** clay to the E. (see E. annexe, below), and both clays extend similarly out from the groundwalls for limited extents, perhaps implying their being deliberately laid around the building's perimeter. **468** charcoal is a crucial layer; however, it is felt that there is enough evidence to suggest that we may have been mistaken in correlating the bulk of it along the length of **388** in M13 c and d with the charcoal deposit in N13c which undoubtedly extended under Building F's floor. There is evidence to suggest that so-called **468** in M13 (and associated orange deposits) actually overlay the backfills of the workbenches, which were undoubtedly constructed and destroyed with

Building F (see further below). It is probably as a result of mistaken observations at this location that has created a "spiral" in the interconnecting fire layers (discussed in next section).

The scattered timbers **366** float between the two fire levels due to uncertain correlations and the evident intermingling of similar deposits of differing origin: an isolated timber belonging to **366** immediately S. of groundwall **388** appeared to lie pressed into **386**, and associated with the charcoal **468**. **366** scattered burnt timbers lay in a spread of charcoal fragments, referred to here as **"475"**, which was tentatively correlated with **478** (see next section for characterization and problems associated with **"475"**). These timbers lay on the clay **364**, over which the band of clay **386** lay to the N. Lying patchily over them was an orange burnt clay: this presents particular problems, as both fires have such material associated with them (**457** - in N13c - with Building D's fire, and **353** with Building F's). Indeed both were initially correlated on site prior to the discovery of superimposed fire levels in the SE. corner of the building. Consequently, this orange material in N12 has two potential associations, as do the timbers **366** which underlie it.

To the E. of groundwall **439** an annexe was established, adding an extra room to the building. It is clear on stratigraphical grounds that this was in use with Building F; it is uncertain whether it was already in existence with Building D. A case can be made for the annexe's establishment with Building F (see *Eastern Annexe*, below). All that would appear to have been here to the E. of Building D's groundwalls was a small temporary hearth, **490 K19** (Fig. 14). **K19** comprised a subcircular bowl-like pit. Surrounding it to N.,E. and W. was a scatter of angular stone rubble and red brick fragments, forming a small mound in a matrix of green clay which mingled with the annexe's flooring medium, clay **478**. This rubble probably represents the remains of some form of collapsed stone-and-clay superstructure formerly placed over the pit. **K19** is provisionally interpreted as a low hearth, either domestic or industrial: it may have been used for on-site smithing, or simply for the cooking of food.

Fig. 14 Hearth K19 (looking W.)

Level B: *Building F* (Figs. 15 and 15a).

This building was established following a catastrophic fire which apparently interrupted work on a probably uncompleted Building D, and was built directly on that building's foundations, probably following radical clearance. It will be argued (see *Eastern Annexe*, below) that it was at this stage that the E. room was added to the main body of the building. This completed workshop building's structural characteristics are described in detail under Constructions.

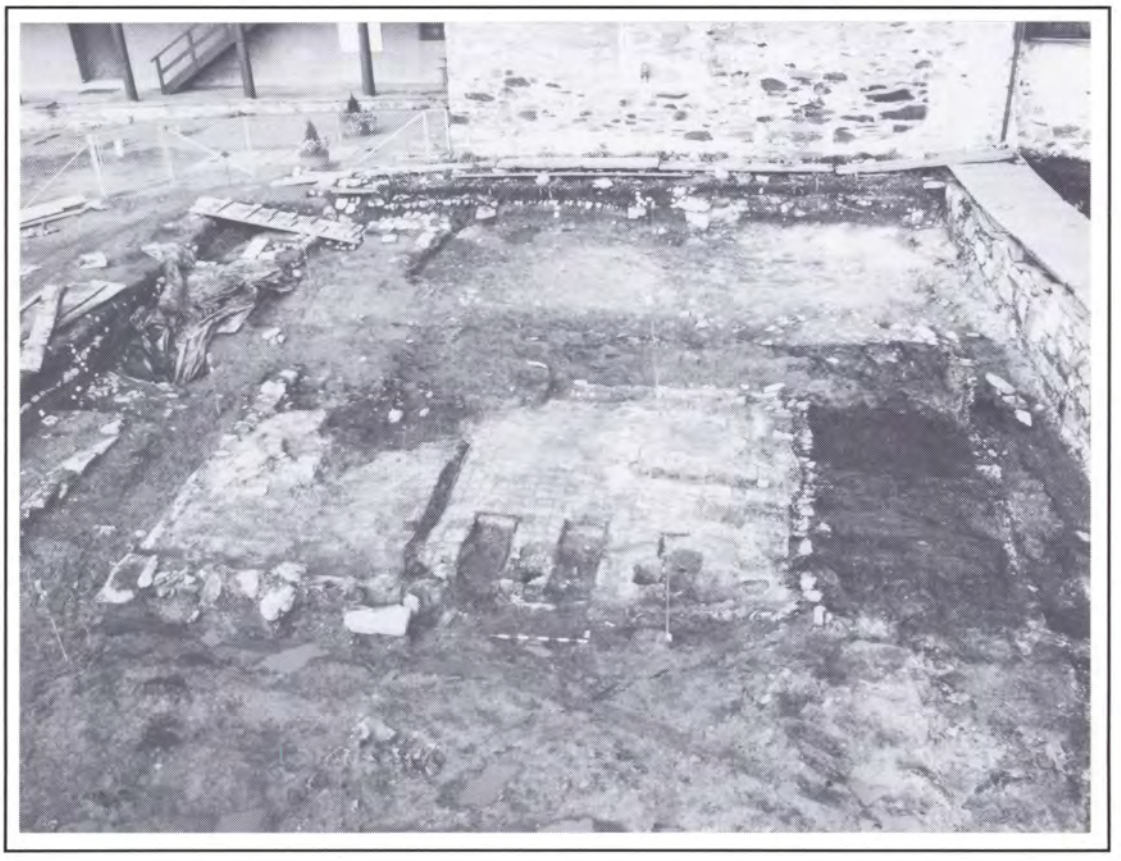


Fig. 15 BUILDING F (looking N.)

469 grey gravel possibly marks the beginning of reconstruction work within the main body of former Building D. This seals the thick mortar platform, **460 K15**, and the pit, **486 K16**, and the charcoal-bearing deposits (**493** etc.) to the W. This gravel correlates with **431** confined to the hearth area to the NE. This sealed the charcoally soil **488** (Building D's destruction debris?) localized to the top of groundwall **439** at this point. The hearth's brick superstructure **432 K27** was clearly established during

this phase of floor-laying, lying as it does partly on gravel **431**. If there was ever a similar superstructure above the foundation **K13** during Building D's lifetime, it must have been thoroughly dismantled. It however seems unlikely that Building D ever possessed more than the foundation. A second make-up deposit, yellow sand **404** (=**385**?) lies to the W., in places apparently scorched pink. This reflects the intensity of the fire which scorched the overlying mortar, **368 K28**. This was a thin mortar spread, scorched black in places, bearing tile impressions and occasional *in situ* burnt and unburnt glazed tiles, **433** (flooring foundation media and tiles described collectively under **K28**).

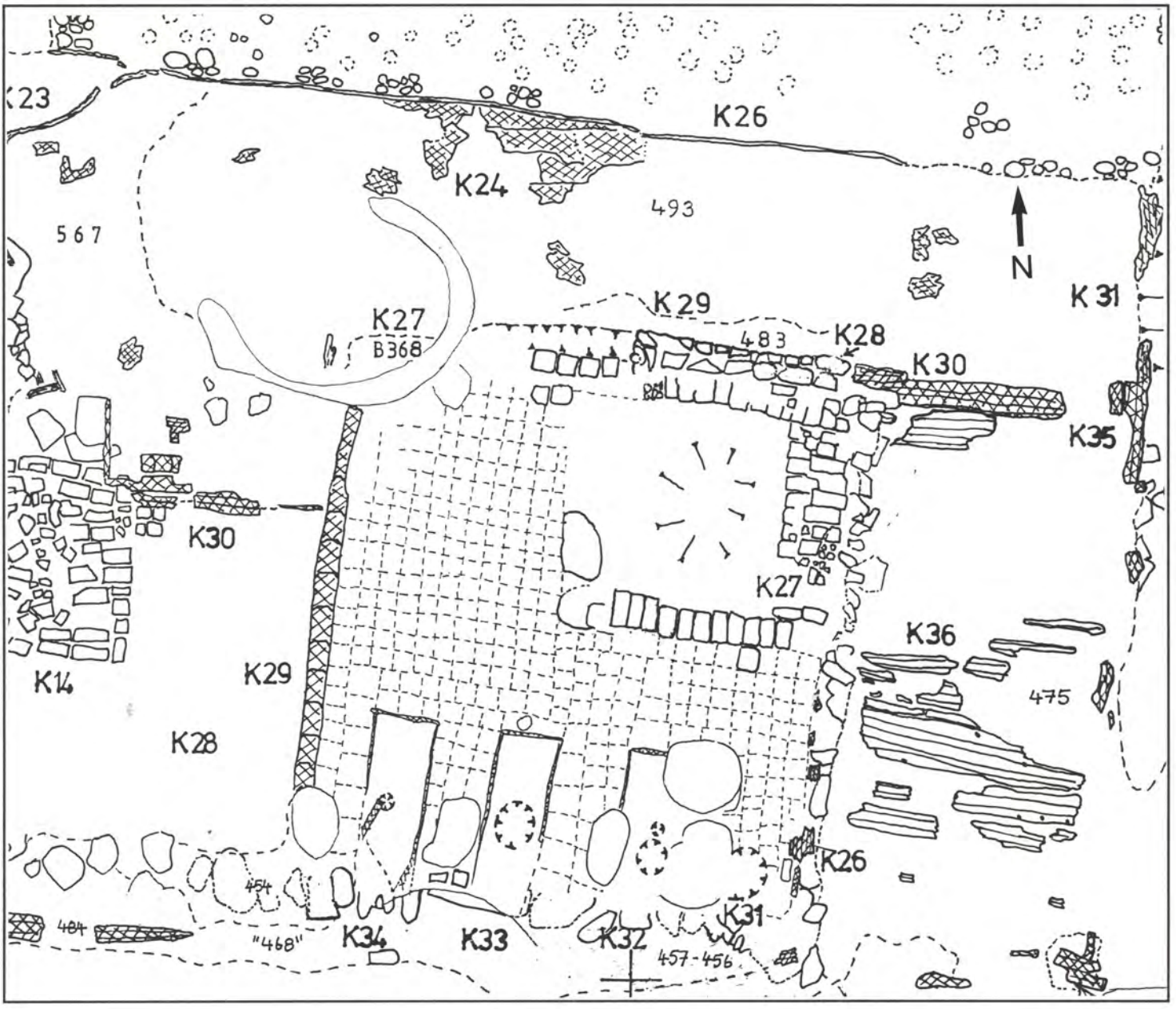


Fig. 15a BUILDING F 1:50

Evidently, there was systematic clearance of tiles after the fire, perhaps implying that most of the tiles were salvagable. Mortar **368** abutted the bricks in hearth **K27**, and both would appear to have been established simultaneously. To the N. in Site A, this encroached over the line of Building D's N. sill-beam, **AK17**. To the W., a heavily burnt N-S orientated wooden beam, **437 K29**, also appears to have been laid at the same time as mortar **368**. This probably marks the position of a partition wall. Merging with this beam to the NW. was a subsquare area of charcoal with the very fragmented remains of possible structural timbers, **461 K30**. This rested in turn on **464**, a crumbly mass of mortar admixed with brick fragments and grey ash-like material. Stratigraphically this correlates with mortar **368**, and indeed it might be the same layer, though less consolidated. Notably, this layer also encroached over the brick structure, **465 K14**, which might suggest that either this structure didn't extend upwards in the same form, or that it had been demolished down to this level, presumably redundant. Indeed elements in **461** appear to encroach slightly onto the NE. corner of **K14**, adding to this impression. This area was somewhat difficult to deal with, however, and this may be a false impression.

461 K30 is interpreted as the burnt remains of an area of timber flooring, incorporated into Building F's floor, and probably constituting a separate closed-off? entranceway or hall serving the workshop. As far as could be ascertained, this correlated with **A525 AK24** to the N., patchy burnt timbers probably constituting flooring in a communicating covered passageway placed along the N. wall of Building F.

To the SE. the fragmentary remains of a burnt N-S sill-beam **438 K26** lay on burnt orange silt **449** in turn lying on the surface of groundwall **439**. This timber and the mortar **368** abutted each other, and the charcoal **257** to the E. merged with it (a deposit above associated with Building F). Furthermore, the timber lay partly on a short length of lead, which had melted under intense heat and flowed into the gaps between the tiles (subsequently removed) set in mortar **368**. On these grounds, this timber can be associated with this floor, and not with that of Building D.

The three workbenches (**K32 K33 K34**) aligned in a row to the S. of the building were beyond doubt incorporated into Building F's floor (Figs. 16a and 16b). Given the presence of the pit **486 K16** in association with Building D, the question arises as to whether these workbenches existed with Building D and were subsequently reconstructed in Building F. All three subrectangular pits appear to have been cut (like **K16**) from the level of **460** mortar. However, when one examines their internal arrangements and relationships with the various bedding media, it is quite certain that their present fills and associated timber elements were established with Building F's floor (see section drawings on layer cards). The sequence of their construction as observed seems to be as follows: firstly, three subrectangular pits were dug into the surface of **460**, and then the bedding gravel **469** and bedding sand **404** were deposited, probably in unison with the backfilling of the pits and the incorporation within them of near-centrally positioned posts or stakes represented by post-holes **471**, **466**, and **458** and **452** (these latter may suggest two posts, one replacing another within the lifetime of the bench?). This was followed by the simultaneous laying of mortar **368** and establishment of the nailed timber frames for the workbenches. If correct, this unified process would seem to lessen considerably the possibility that Building D possessed such workbenches, at least in completed form. This has important consequences for the interpretation of Building D's status, and with the general lack of other finished internal structures gives weight to the impression that Building D was never fully completed.

Accompanying the three workbenches to the E. was a small rounded possibly wood-lined pit (truncated), **436 K31** with two charcoally fills **435**, a probable sunken container (Fig. 16b).

Fig. 16a Workbenches/striking benches K34 and K33 (looking N.)

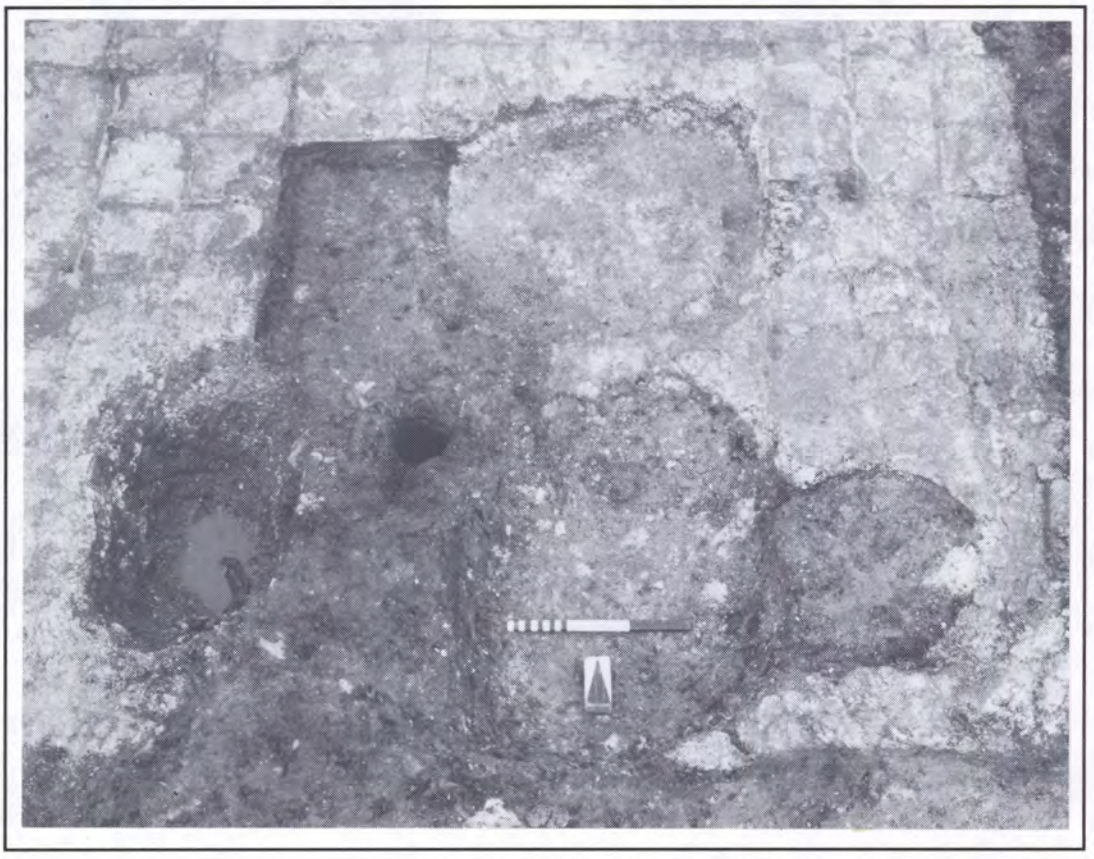


Fig. 16b Workbench/striking bench K32 and (furthest right) pit K31 (looking N.)

The problems associated with the fire-related deposits along and to the S. of the groundwall **388** have already been pointed out: layers identified in M13c-d as the equivalents of **457** and **468** in N13c are clearly not the same, and are distinguished on plan and matrix with the use of inverted commas. **"457"** was observed to encroach over the backfill of the S. ends of workbenches **K32-34**, which places this and **"468"** here with Building F. This should be borne in mind when locating finds (N.B. many coin blanks were located here).

The fire layers associated with Building F's destruction comprise **410** orange clayey silt with brick fragments and charcoal overlying groundwall **411** and burnt timbers **461**. This apparently correlated with **355** to the W. (though across an intervening intrusion, and see Building C, below), and **A453** to the N. This latter in turn appears to be the equivalent of **A378** to the NE. which is in turn the same as **353**, the orange material associated with the destruction of the E. annexe, filling the voids left by the burning-out of timbers **K35**. This orange sandy clayey material, with its content of broken red brick, charcoal and mortar lumps, is enigmatic, though that it is intimately related to the same fire that reduced the structural elements it covers to charcoal is clear. Two alternative interpretations are suggested: collapsed roof material (i.e. a collapsed turf roof) intermingled with other structural debris, or soil thrown on the building in order to dampen down the fire. This fire not only destroyed Building F, but would appear to have razed the whole complex of buildings in this part of the Palace precinct (see further under Building C).

The Eastern Annexe (Figs. 15, 15a and 17)

To the E. of groundwall **439** an annexe was built. The interior bore a sequence of deposits and structural elements set within wall-lines whose destruction appears to have taken place with the rest of Building F to the W. It will be argued below that the annexe was built together with Building F.

Set on **497**, a deposit sealing Phase 2 dumps, was a fragmentary stone groundwall **477** (**K35**), represented by a short NNE-SSW orientated length of loosely set stones to the N. and a single flat padstone to the S. This latter stood at a point directly opposite the corner stone in wall **388** to the W., and was clearly placed in conformity with it, although the padstone to the E. lies some 0.30m lower. However, the N. portion of **K35** compares favourably in height to that of the wall parallel to it to the W., **439**. The incomplete line of **477** is paradoxical: it may never have extended further S. in completed form, or may possibly have been partly demolished in antiquity. A scatter of larger and smaller stones lay on **497** just to the E. of this gap; these may represent the collapsed portion of this wall, although it is just as likely, given their character and stratigraphical position, that these are the disturbed remains of a roughly cobbled/paved surface (see **496 K20**, below). The grey-green clay **478** maintained a straight edge at this point, though whether this implies the southerly extension of the wall is uncertain. **478** appeared to be confined to the area defined by **477** and **439**, abutting both, and had the character of a deliberately laid flooring medium.

Abutting the N. portion of wall **477** on its E. side was a small patch of what looked like a crudely cobbled/paved surface **496** (**K20**), very disturbed. This sat on the same deposit as the wall, abutting it, and on this evidence was possibly laid together with it. **496** correlates with the cobbles **A591 AK18** lying just to the N. in Site A. The possibility has already been mentioned (Phase 2) that this roughly cobbled/paved surface was associated with the pre-existing building (B). This is a feasible alternative interpretation, and the paving may well be the disturbed remains of a pre-existing surface. However, if **A640** bedding these cobbles is the same as clay **478** then these cobbles must have been established after the construction of groundwall **439**. This is an insecure correlation, however, and it is more likely that **478** never extended N. under these cobbles: this is supported by the fact that it certainly did not extend E. under cobbles **496**. The S. edge of the cobbles **A591** respect the line formed by the E-W fragmentary burnt timbers **470 K35** which rest on **478** at its N. limit, although their precise

contemporaneity cannot be confirmed, the possibility existing that timbers **470** were inserted in a subsequent process of rebuilding (see below). Note also that groundwall **477** also stopped against this edge, and did not continue N. over the cobbles. There is some possible evidence for the S. continuation of the cobbled/paved surface **496** just to the E. of the wall-line, in the form of a very unconsolidated cluster of large and small angular stones, also apparently resting on **497**. An alternative interpretation for this cluster is as the collapsed S. extension of the groundwall **477** (see above).

Fig. 17 BUILDING F, eastern room/annexe (looking NW.)

There is further structural evidence in this area against the curtain wall, in the form of a post-hole, **491 K21**. This apparently cut **497**, and is therefore potentially contemporary with or later than the aforementioned groundwall and paving. There was a similar post-hole at a close stratigraphical level just to the N. in Site A (**K37**). It has already been pointed out (Phase 1) that these lay in close proximity to two diagonal slots in the W. face of the curtain wall, and probably together formed part of some sort of structure placed against the face of the wall, possibly two diagonal stairways, for example?

The fragmentary heavily-burnt remains of NNE-SSW and WNW-ESE aligned timbers (**K35: 470, 472, 473, 476**) were observed to lie in intimate physical connection with wall **477**. That the padstone and short length of groundwall to the NE. functioned as their supports is clear. Since these timbers can be shown to have burnt with Building F (see below), the question arises as to whether they re-used a pre-existing wall-line (perhaps replacing previously burnt timbers?), or whether this information perhaps

indicates that the whole E. annexe was established *de novo* with Building F. This is difficult to judge. One fragment of **472** lay in the gap between the short length of wall and the S. padstone: if the wall was formerly complete and then partly dismantled in antiquity (perhaps during the destruction of Building D) then this timber lay in the gap, and must therefore have been placed there, and burned, following this alteration, although one might question why a wall should be partly dismantled and then re-used. The natural alternative is that the wall was never complete, and that it and **472** were established together. Indeed the possible contemporaneity of **477** and **496** cobbles is probably illusory - there is every possibility that the wall was inserted at a later point in time, probably following partial removal of the cobbles. **472** extended N. into Site A as **A536 AK31**, extending beyond the N. end of **477**, and placed directly on the cobbles **A591**. This must indicate that the cobbles' original function (as either part of Phase 2's Building B or possible external surfacing for Building D) was now redundant, and was disregarded in the laying out of the E. annexe. If the cobbles do indeed relate to pre-existing arrangements, and the wall **477** and the timbers **K35** were established together, this arguably places the establishment of all the E. annexe's structural elements with Building F, the installation of which involved the partial removal of a possibly more extensive pre-existing cobbled surface. This cobbled surface may even have extended originally over clay **532** in the area subsequently overlain by clay **478**, although it must have been drastically cleared, with no *in situ* evidence surviving (though note that Building B probably extended this far S. - see Phase 2, **K11**).

Timbers **K35** must have burned in the same fire that destroyed Building F, as the voids (**361**) presumably created by their almost complete disintegration in the fire formed deep sharp-edged troughs whose primary fill consisted of the orange fire deposit **353** (=**A378**) associated with that fire, and a secondary mortary deposit **358** (=**A377**), which was a clear attempt at back-filling the voids during the establishment of the final workshop on this site, **Building G** (Phase 4). These voids could not have stood empty through the lifetime of Building F if they formed in the destruction of Building D.

The evidence suggesting that the structural timbers **K35** burnt with Building F is the most convincing we have in this area. The voids **361** at the base of which the timbers lay, formed deep troughs visible within **257**, a thick homogeneous deposit of friable charcoal lumps. This deposit must have been present when the timbers burned to form the voids. **257** and the voids are sealed by the orange silty clay **353** (burnt soil, from a collapsed roof, or soil thrown down to dampen the fire?), which firmly correlates with Building F's destruction. This also correlates with **A378** to the N. which seals **A504**, a charcoal deposit of similar character to **B257**. These Site A deposits lay to the W. of the easternmost burnt beam **A536** =**B472**, and to the S. of the northernmost burnt beam **A415**. This beam must have burned with those to the E., and must have formed the N. limit of Building F, set against the cobbled courtyard **AK21**. A clean sand **A479=B495** overlay the pre-existing cobbles to the E. (**A591=B496**); if this sand can be associated ultimately with the laying of the N. cobbled yard, then these lower cobbles, as already suggested, went out of use prior to the construction of Building F. On this evidence, it would seem that the cobbled courtyard **AK21** was not in existence prior to Building F (see also Site A Phase 3 for further evidence and discussion).

The sequence of charcoal deposits associated with this annexe pose some problems. It is possibly best to work from the more secure to the less secure. The upper charcoal deposit **257=A504** was, on account of its thickness (0.05-0.20m - thickest to N.), homogeneity, twiggy character, and its occasional content of unburnt bone, more in character with a deliberate dump of charcoal (i.e. stored charcoal) than *in situ* burning. On its removal, a number of fragmentary charred planks were exposed, **450 K36**. These re-used boat timbers formed an incomplete (disturbed?) floor surface. The height of this surface corresponds well with those of the groundwall **439**, the sill-beam **438**, and mortar **368** to the W. and the burnt timbers **K35** to the E. The northernmost plank in **450** was observed to rest on **439** groundwall. These factors confirm that this floor, and the charcoal store above it belong to Building F. On removal of **450**, however, another substantial dump of twiggy charcoal was revealed,

475. This lay on the surface of the clay **478**, and sealed the demolished hearth, **490 K19**. Consequently, there is a sequence of four structural/depositional levels enclosed within the structural lines of the annexe: As seen, the hearth **K19** cannot be tied in with either Building D or F, its character and stratigraphical level imply it went out of use with the establishment of clay **478**. The clay **478** was dumped against the wall **477**, and it has been argued that it and the wall represent new structural arrangements post-dating the disturbed cobbles **496**. If the clay "floor" **478** and the groundwall **477** formed the original ground wall and floor of the E. annexe, and the structural timbers **K35** were established at the same time, everything within them from the level of **478** upwards belongs to Building F. **475** was deposited, presumably as a charcoal store, over the redundant, formerly isolated hearth **K19**. The planking **450 K36** was subsequently inserted during the lifetime of Building F and the second, and final, charcoal store **257** was deposited on the new surface. Building F then burned.

Moving to the narrow area between groundwall **477** and the curtain wall: The patch of cobbles **496** was partly overlain by sand **495**, barely encroaching into Site B. As mentioned, this apparently correlates with one of the sands beneath Site A's cobbles **AK21**, although it is not the actual sand which held the cobbles. However, it is likely that its deposition marks the disuse of earlier cobbles **496**, and the start of a process of restructuring. Above **495** lay a layer of twiggy charcoal which was practically indistinguishable from **475** to the W. This correlation is problematical, as it would suggest that the same layer existed to either side of a structural division represented by timber **472**.

There is some slight evidence which might allow differentiation between the apparently similar charcoal layers to either side of the wall-line, suggesting that they in fact are not the same layers. If one accepts that there was a physical barrier between them (and there must certainly have been one in the case of the higher charcoal in order to form the voids), then they cannot strictly be the same. During excavation it was noted that the charcoal deposits to the E. of the wall-line contained occasional lenses of grey silt or grey-blue or brown clay, while to the W. no such lenses or inclusions occurred. The E. charcoals may possibly also have contained more potsherds and brick fragments, as well as crucible sherds and at least one large slag (a possible furnace bottom). On the basis of this subtle evidence, it is suggested that the charcoal dumps to E. and W. of the wall-line are different in terms of their character and derivation: those to the W. comprise stored raw charcoal for use in the workshop hearths, while those to the E. comprise used charcoal from the hearths intermixed with occasional domestic and industrial detritus, dumped behind the workshop (as occurred in the case of Building A, Phase 2), the silts perhaps indicating that the area was not covered over. Unfortunately, since this distinction was not fully appreciated on site, the layers to either side of **472** bear the same numbers as their counterparts to the W. Renumbering would facilitate their distinction on the matrix: however, they are discussed under these numbers in the daybook, and their finds were collected under these numbers, so renumbering might lead to (further!) confusion. They are therefore left the same, though on the matrix and phase plan the E. layers are distinguished by placing them in inverted commas i.e. **"475"** and **"257"**. As regards finds: since these latter lay in subsquares N13b and d, the finds labelled thus probably derived from these deposits.

These charcoal deposits were separated by two intervening layers: above **"475"** and banked up against the curtain wall lay a localized band of white mortar lumps, **328**. The origin of this is uncertain, though its close association with the curtain wall might imply that this accumulated during work carried out on it; perhaps partial demolition, maintenance (repointing?), or perhaps even significant construction work? Following this a grey clayey charcoally silt **480** accumulated, overlain subsequently by charcoal **"257"**. As pointed out above **"257"** must have been present when **472** burned, and was therefore presumably dumped during the lifetime of Building F. The lowest charcoal **"475"** appears to overlie the disturbed paving **495** associated with Building B or D, which indicates its deposition after this paving went out of use, and consequently with true **475** to the W. this seems best associated with a first phase of charcoal dumping associated with Building F. The intervening mortar and silt

deposits seem to represent an interval between periods of charcoal dumping within the lifetime of Building F.

The mortar deposit **328** apparently continued S. into N12 along the length of the curtain wall, where it overlay a charcoal deposit. Since no distinction could be made, this charcoal was also numbered **"475"**. The layer was thickest towards the curtain wall, and apparently extended more thinly westwards in N12 to merge with a scatter of large heavily burnt timbers, numbered collectively **366**. If these correlations can be relied upon, this would suggest a) that dumping of charcoal extended S. of the workshop within the localized hollow against the curtain wall and b) that if **366** are structural timbers burnt and then thrown down following one of the two fires, and if these lie in charcoal stratigraphically linked with **"475"**, then this fire must have taken place prior to the deposition of **328**.

If b) is correct, then **366** must be asociated with a fire pre-dating the destruction of Building F. However, the charcoal associated with **366** timbers may not be the same as **"475"** under **328** to the E. If **366** represents destruction debris, and **"475"** dumped waste, then they are essentially different. Furthermore, at the junction of N12/N13 it was thought that the orange burnt material **353** associated with the Building F's destruction encroached patchily over these timbers. They were certainly ultimately overlain by the dumped material **358** associated with reorganization in Phase 4. In addition the similarity in the character of the E. annexe's burnt timbers **K35**, and their arguably close stratigraphical and physical positions, seems to argue for their all being part of the same destructive event. Consequently, it is felt that these should be placed with the destruction of Building F, despite the stratigraphical uncertainties.

A further on-site correlation was made between **"475"** in N12 and **468** in M12; the latter is a charcoal with burnt timbers which was observed to lie under Building F's mortar floor, and which appears to relate to the burning of Building D. However, as has been pointed out, the testimony of the charcoal deposit **468** is equally ambivalent, and in fact may constitute the core of the problem whereby the correlation of charcoal deposits around the building results in a classic "spiral".

The likelihood that two similar sets of burnt layers have been mistakenly compressed into one along the length of groundwall **388** has already been mentioned. There is no reason to doubt the correlations made in N13c, where charcoal **468** and burnt orange clay **457** definitely went under Building F's mortar **368** to link with a fragmentary burnt sill-beam? **462**. This is key evidence for a fire associated with Building D. However, layers practically indistinguishable from these were followed W. along the top of the wall and abutting it along its S. side. They were consequently assigned the same numbers. An apparent contradiction was already noted on site, and is maintained by post-excavation analysis: while in N13c these deposits underlay **368**, in M13 c and d their apparent equivalents were closely associated with the destruction of the workbenches **K32-34** which can be shown to have been inserted from the level of **368** ie. in association with Building F. Hence the spiral and the evident conflation of two independent fire-levels.

If we follow the initial correlations this produces confusing consequences for the phase. Building D's fire layer **468** correlates with **"475"/366** to the SE, and with **407** to the W. in association with the destruction of Building C. **407** in turn correlates with **A450** to the NW., which correlates with **A504** to the N., a deposit which almost certainly belongs with the destruction of Building F. The spiral manifests itself.

It is felt that the weakest link in this chain is **"468"** in M13 c and d. There seems otherwise to be satisfactory inter-deposit correlation elsewhere. If **"468"** in M13 is therefore relocated stratigraphically it is possible to link all the major fire deposits across the entire complex, and to assign them to a single extensive catastrophic fire which destroyed all the structures within it. In the light of this, it

would appear that the fire which destroyed Building D was in all probability localized, the lack of debris (and the lack of internal arrangements) suggesting that the building burned during construction.

This reallocation and reinterpretation of **"468"** (represented as such on matrix and plans) has consequences for the interpretations of the deposits to the S. of Building D/F. Here, above the spread of mortar **487** and abutting Building D/F's S. wall lay silty clay **364**, bearing scattered organic material (including mussel and oyster shells), potsherds etc. In the hollow to the W. of the raised platform formed by the dump of clay over Building A, and over **364**, lay a similar clayey sandy silt, **501**, also full of detritus. To the W. apparently under **364** (though it may be possible that they are the same layer) lay **538** clay, also full of detritus, though not to the same extent as **501**. This layer abutted Building D/F's W. wall, as well as the E. wall of Building C. In the very SW. corner of the site, tight in against the S. section, the N. edge of what might turn out to be a rubbish pit or latrine was encountered during the last days of the excavation, possibly cutting **538**: this is **572**, with a brown smelly cess-like fill (no K number). This lay under a localized deposit of stiff greenish-blue clay, **578**: both remain unexcavated.

All these deposits are stratigraphically lower than the fire layer **"468"** and the probably associated timbers **366**, which it is suggested result from the destruction of Building F. Consequently, these lower deposits accumulated after the destruction of Building A, and in fact after the establishment of Building D/F's and Building C's groundwalls, and prior to the catastrophic fire which destroyed the complex: consequently they must be associated with those buildings' use, as deliberate make-up to raise the S. open area or as material accumulated throughout the lifetime of the buildings to the N., or both.

Building C (Fig. 18)

The evidence for placing Building C in this phase has been touched on above (Phase 2). It seems reasonable, on the basis of their shared alignment and certain structural and stratigraphical agreements, to assume that it existed simultaneously with Building D, even though it might have been established earlier, and continued in use after Building D's destruction. The tying-in of Building C's destruction to the two fire levels in this phase constitutes one of the phase's most difficult stratigraphical problems, although a solution has been formulated above.

Building C's E. groundwall **408 K22** was of similar construction and broadly comparable height to that of Building D's W. groundwall **411/524**. Furthermore, both were placed on identical alignments, and the stones in both bore signs of scorching by fire. Both walls appear to have been constructed in such a way as to compensate for the south-sloping gradient, with larger stones placed to the south. Both were abutted by the external layers **538**, **364** and **501**, layers which have been associated with the lifetime of Building D and F.

Building C's structural characteristics, such as could be discerned in the small portion revealed, are set out in more detail below (Constructions). Successive dumps of clay make-up formed the basis of the interior (**581**, **537**, **543=A638**, **448**). The evidence for flooring media was very fragmentary and ambiguous, although it might just be possible to tentatively distinguish two successive levels of flooring: on **448** to the very S. lay a small number of disturbed glazed tiles, **584 K23** (a disturbed first floor?), and above these two similar clays with high proportions of mortar, occasionally in concentrations, admixed with glazed tile fragments (the disturbed bedding for a second floor?). There were a few scattered fragmentary burnt pieces of wood, possible structural timbers, associated with the latter level, collectively numbered **459 K25**. These included a possible plank, part of a second wooden floor? The more substantial **409** (**K24**) constituted the building's N. wall-line: as in Building D/F there does not appear to have been a N. groundwall (again a means of compensating for the N-S

slope). Interestingly, its height compares favourably with those of the fragmentary beams forming BuildingD/F's N. wall **AK17-AK29**.

409 rested on both the northernmost stone in wall **408** and on sandy clay **543**. The timber sat in a deep trough (Fig. 18) and to the S. its upper edge appeared to rest against the building's internal make-up deposits (which also lay above **543**), from the level of the uppermost, **356** down. Consequently, this timber must belong to the building as it stood prior to the fire at that presumed floor level, and prior to its total destruction and sealing with the orange fire debris **355**, which also filled the trough (presumably caused by the effects of intense combustion, as in the case of the troughs **361** noted in connection with Building F). **543** correlates with **A638**, which to the N. underlay the cobbled area **A449 AK13**: in Site A timber **409** rested on the sand **A480** which beds cobbles **AK13**. There seems to be good correlation here, the cobbled area and the N. timber for Building C probably being established closely in time?

Fig. 18 BUILDING C (looking S.)

The question arises as to which of the phase's two fires timber **409** burnt in. Did Building C burn with Building D and go out of use or did it survive this fire (either unaffected, or rebuilt on the same lines) and subsequently burn with Building F?

Due to shared make-up/occupation layers external to their groundwalls, it is almost certain that Building C co-existed with Building D. Timber **409** was intimately associated with a spread of charcoal with burnt birch bark, **407**, lying in the area between buildings C and D/F. Unfortunately, this immediate area also contained the base of a later foundation trench which impeded direct correlation of layers across it. In its S. extension, **407** was correlated (in difficult conditions) with **468** to the S. of Building D, a similar charcoal spread with birch bark. As postulated above, this was most likely to have been deposited during the destruction of Building F. Apart from the very tenuous evidence for two floors, there is no hard evidence for two fires and an intervening rebuilding of Building C. On this evidence, therefore, Building C (ie. timber **409**) burned with Building F, and since the building was subsequently covered with orange sand/clay **355** which probably correlates with Building F's equivalent, **410=353**, it subsequently went out of use, in common with the other structures in the complex.

As stated, **407**, **409**, scattered timbers **459** and the final surface within Building C, **356**, were overlain by an orange burnt sand/clay. To the N. this appeared to correlate with **410=353=A453** (destruction of Building F). To the S. it matched two layers: **457** (destruction of Building D), and **353**, (destruction of Building F). Both are very insecure correlations, though that with **353** is possibly the best, and is adopted here. The interpretation of these orange sandy clays as possible collapsed roofing material or earth thrown down to dampen the fire has already been mooted. In both instances they must relate intimately to the burning of the structure which they immediately seal. If **355** is equivalent to **410** and **353**, then the burnt elements they seal are likely to belong to the same phase of burning. If this is the case, then Building C almost certainly burned with Building F.

See Site A for the other structures which burned in this complex-wide catastrophic fire.

Descriptions of Constructions

Building D (K12-K16, K18, *AK15-AK17*)

Character: As argued above, there is fragmentary evidence to suggest that the foundations for this rectangular building were established, but then quickly fell victim to fire. The impression is that this building never reached completion. The remains represent an interrupted sequence, Building D's foundations being subsequently re-used for **Building F**, directly superimposed. The main components in Building D are the stone groundwalls (on three sides only), a fragmentary burnt sill-beam in the SE. corner, a burnt wooden sill-beam set directly on the ground to forming the N. wall-line, the foundation for a corner hearth, a rectangular brick- and stone-built (hearth?) foundation, and a thick consolidated mortar foundation for the floor. The choice of larger corner stones may suggest that they were designed to support "lafted" corners in a log-cabin style building, or vertical corner posts, possibly in some sort of half-timbered walling arrangement? The floor area within the walls was some 34m^2.

Function: since it burned during construction, this building was never used; however, it was clearly destined to be a new moneyers' workshop.

K12 Stone groundwalls: 574, 520, 522, 524, 519, 521, 523, 388, 439, 411 (*=AK15*)

3 low dry-stone groundwalls adjoining to form three sides of a rectangular building (W., S., and E.). Each wall comprised two courses of stones separated by thin deposit of sand. Large individual blocks were set at all corners, clearly as padstone supports for timbers ("lafted" intersections or standing corner posts?).

S. wall, orientated WNW-ESE: to W. of length comprises two courses - **520** unmortared lower course of large and small unmortared stone rubble. **519** sand, singed brown, intervened below upper course **388**, irregularly set variously sized rubble, unmortared for most part, though some mortar in interstices to E. of length (where there was only one course). Stones fractured (particularly to W.), and scorched due to fire.

E. wall, orientated NNE-SSW: lower course **522**, unmortared small-medium sized angular rubble blocks and slabs. **521** brown silt intervened below upper course **439**, loosely consolidated unmortared rubble blocks and slabs. Fire-scorched surface.

W. wall, orientated NNE-SSW: lower course **524** medium-sized to large rubble blocks, unmortared. Partly set above shallow trench **574**, which may have been cut during wall's construction (cf. **A637**). **523** burnt orange sand intervened below upper course **411** which comprised predominantly loosely set thin slabs, scorched by fire.

Length of walls: (measurements from mid-points on corner stones) - S. wall: 7.3m; E. wall: 4.7m; W. wall: 4.8m.

Area enclosed: c. 34.3m^2.

K13 Hearth foundation: (K10 re-used) 515, 527, 514, 489

The stone pad **K10** appears to have been re-used as the basis for a sturdy stone-built foundation in this phase. A dump of large and small beach boulders **515** was thrown down onto the stones, though **K10**'s off-centre void was not completely filled in, **527** clay exposed here, material consolidating the boulders. Above these a dump of grey gravelly sand **514**, in turn bedding **489**, a square pad of large rubble blocks with small interstitial stones and red brick. Near-regular outer courses to S. W. and N., with more irregular inner core. To E. placed against groundwall **439**. Soil in interstices. Localized depression over incompletely filled-in void below.

Supports brick superstructure **432 K27** (next phase).

Dimensions: 2.15m E-W x 2.20m N-S.

K14 Stone- and brick-built structure: hearth foundation?: 511, 465, 505

465: rectangular pad of bricks, set in shallow cut. 6 courses of large, though variously sized red bricks (0.29x014m/0.12x0.26m), unmortared, soil in interstices. Irregular pattern to each course, and in some instances beach pebbles incorporated. One curved brick in preserved upper course. Feature slightly slumped to SE. Crude, unconsolidated structure.

Dimensions: 1.60m N-S x 1.20m E-W x c. 0.40cm deep.

505: rectangular group of set stones, abutting against N. edge of **465**. 3 courses of large stone slabs set in a cut, **511**. 0.60m x 0.50m.

Function: the brick and stone elements probably belong together as components in a possible hearth foundation (for assaying?) or some other solid-based industrial feature?

K15 Consolidated floor foundation: 499, 507, 506, 492, 460

A number of clay dumps provided the initial make-up within Building D (see Stratigraphic Sequence). A deliberate attempt was then made to provide a thick consolidated basis for a floor, primarily by laying a localized area of bricks and stones **499** around the hearth foundation **K13**, followed by the pouring of two thick deposits of mortar, **507** and **460** (**506** and **492** clays intervening to W.), the latter also consolidating **K13**. The surface of **460** was uneven, probably due to subsequent slumping; it sloped gently to the S., more abruptly to the SW. corner.

It is presumed that **460** formed the intended floor level for Building D, although no trace of tiles or other flooring media were located. However, some very slight support for this hypothesis is provided by the presence in **460** of a fragmentary round pit, **K16**.

K16 Subcircular pit: possible sunken container/temporary hearth?: 486, 485

Located in N13c. Cut **460**, filled with **485** debris-filled clayey silt, sealed by **469**. Irregular form, though predominantly circular, squared off to SW. with traces of a possible channel. 0.45m diam. x 0.05-08m deep.

Function: In location and form this is similar to features here in N13c in the next phase. However, its function is more ambivalent, and although no traces of burning were evident, this may have formed a simple hearth, possibly for metalworking (hence the channel?). Like **K17** and **K20** it may actually be a temporary construction feature, used by the builders.

K17 Part of a circular bowl-like hearth: 504 (=*AK25*)

See Site A 534 K25 for fuller description

Cut **506**, sealed by **461**. Various ashy and burnt sand fills, with final backfill of debris-filled clays. Some stones around perimeter formed remnant lining. 0.60m diam. x c.0.07m deep. Layer **503** possibly rake-out from this?

Function: clearly a temporary hearth, probably associated with construction work.

K18 Two fragments of burnt timber: sill-beam?: 462

Located in N13c. Very fragmentary segments of (a single?) burnt timber, possibly a beam, orientated WNW-ESE in accordance with groundwall **388**, on which it rested (some burnt deposits intervening stratigraphically). Surviving length of largest portion 0.80m, width 0.04-0.12m.

N.B. In common with **AK17**, which forms the Building D's N. sill-beam, this burnt beam was sealed by **368**, the mortar bedding Building F's floor. These fragments of evidence form the main clues to the existence of wall-lines prior to the superimposition of Building F's structural features.

Other structures in the lowest level of Phase 3

K19 Subcircular pit: possible bowl hearth: 490, 502

Well-defined subcircular pit, gently sloping sides, flattish irregular base. 0.55m x 0.50m diam. x c. 0.10m deep. Primary fill **502** consisted of pure charcoal with some admixed blue-grey clay, and some tumbled red brick and stones. Secondary fill **475**. No signs of associated burning. Feature appeared to be associated with a tumbled? mass of small angular stones in green clay to NW. Possibly fortuitous, though may be collapsed stone superstructure?

Function: uncertain, though a probable bowl hearth. Like **K17** it had the character of a temporary structure, and is therefore possibly to be associated with the construction workers. The stones and clay may have formed a superstructure, and the hearth possibly formed part of an oven-like structure rather than an open hearth. In this instance it is interesting to note the scattered bones in the vicinity in associated contexts. A cooking oven for the builders?

K20 Disturbed cobbling: 496 (=*AK18*)

Small patch of beach pebbles and variously sized angular stones, in apparent loosely consolidated formation, located in N13b. Disturbed and discontinuous.

Function: uncertain. Possibly part of an external cobbled/paved surface (formerly more extensive to S. and W.?) associated with Building D, or even possibly Building B?

K21 Post-hole: 491

Cut **497**. Small subcircular hole; c. 0.20m diam. x c. 0.30m deep. Very close to curtain wall. Uncertain function, but note that it coincides in position with the northernmost of two diagonal grooves on the curtain wall's inner face (see **K1**). A similar post-hole, **K37**, coincides with the S. groove. Probably not fortuitous, and these post-holes and the grooves possibly supported a structure inserted against the wall at this stage (a stair?).

Building C (K22-K25, *AK12*)

Character: It has been argued above that Building C and Building D were probably established together on a mutual orientation, though Building C was placed slightly S. of its neighbour. It has also been argued that Building C persisted in use, burning ultimately with Building F (there being little surviving evidence to differentiate between levels as perceived in Building D/F). Building C may indeed have the same interrupted history, but so little of it extended into the excavated area that we are limited in our appreciation of its structural history, form, internal character and function.

The following main structural details were observed: the building's E. groundwall, of similar construction, height and orientation to Building D/F's W. groundwall; a short portion of burnt timber

which formed the N. wall-line (as in the case of Building D/F); scattered portions of burnt timber, possible remnant structural elements (possibly suggestive of a plank floor?); internal make-up deposits and the possible remains of a tiled floor.

Function: unknown, though probably part of a complex of mint buildings.

K22 Stone groundwall: 408

Strictly a single-coursed dry-stone wall, though with occasional superimposed stones to level-up. Orientated NNE-SSW. Predominantly medium-large rubble blocks and slabs, severely fire-cracked and scorched. Stones increased in size to S., to counteract slope. Massive stone at S. end; on analogy with Building D/F this probably constituted the SE. corner padstone, accommodating either intersecting "lafted" (?) timbers or a standing corner post. Length: 7m.

K23 Small group of disturbed glazed tiles: floor?: 584

Located in very SE. corner of interior: 2-3 broken yellow and green tiles, extending into section, suspiciously grouped together. Very tenuous as flooring, however.

K24 Portion of burnt timber: sill-beam: 409 (=*AK12*)

Heavily burnt length of timber, extending W. into section. To E. terminated and rested on northernmost stone in **K22**. Concave in section, lying in hollow (caused by combustion and compression?), abutting internal make-up to S. Lies at comparative level to sill-beams to N. of buildings D and F. Comparable function. Visible length: 1.40m. Width: c. 0.30m.

Function: sill-beam set on ground surface, forming N. wall-line.

K25 Disturbed portions of burnt timbers: remnant structural timbers?: 459

Separate portions. To S. a heavily burnt plank-like timber, orientated in accordance with **K22**, extending into section; 0.80m x 0.30m. Collapsed wall element, or even perhaps evidence for a plank floor? To N. scattered fragments lying on **K22** and internal layers.

Building F (including the E. annexe) (K12, K13, K14?, K26-K36 *AK23, AK24, AK26-AK31*)

Character: This building incorporated the foundation elements described under Building D. Building F in effect adopted the form intended for its probably uncompleted predecessor, and there is probably close chronological and functional continuity between the two. Differentiation is made simply on the basis of fragmentary stratigraphical evidence for an interrupted sequence.

The fresh elements to be described here are principally a number of developed internal arrangements in the main body of the building, while to the E. an extension to the main building appears to have been added, of less substantial construction. The main elements are: evidence for secondary sill-beams inserted on the old groundwalls to the N. and E.; a brick superstructure placed on the hearth foundation to the NE.; gravel and a thin mortar spread laid down as bedding for a tiled floor laid down in checquerboard style (largely robbed out); a wooden partition dividing the main body of the building into two rooms; traces of a small wooden-floored area, possibly an entrance hall; the incorporation into the S. part of the floor in the E. room of a row of three rectangular workbenches, orientated NNE-SSW, with an accompanying circular wood-lined sunken container; the erection to the E. of the main body of the building of the E. annexe, containing two levels of thick twiggy charcoal, presumably

stored here as fuel, separated by a patchily preserved plank floor; a northern communicating passage. The building therefore consisted of three rooms and a northern passage, probably covered. It is uncertain as to whether the brick-built pad to the W., **K14**, was in use in this building. The character of the walling is uncertain - again, the building may have been "lafted" or half-timbered. Note that an array of large burnt (wall?) timbers lay thrown down to the SE., probably during clearance. Following the fire which destroyed the building, the surrounding area appears to have been levelled-up with much brick-filled debris: the large amount of shattered bricks may perhaps have derived from half-timbered walling. An amount of burnt glass, probably window glass, was found in destruction levels along the S. wall, implying that the wall contained glazed windows, placed, logically enough, next to the workbenches. The burnt orange destruction deposits may represent the burnt slumped remains of a turf roof. Alternatively, associated finds of roof tiles may be suggestive of such a form of roofing. Birch-bark insulation material was scattered in destruction layers.

Floor area: c.34m^2 in the main body: c. 43m^2 including the E. annexe.

Function: on the basis of analogy of the structural remains with contemporary wood-cuts of workshop interiors (Fig. 8), and the presence of diagnostic finds, in particular coin blanks and small assaying cupels, in destruction levels, this building was undoubtedly used as a moneyers' workshop. Hammerscale recorded in associated layers probably derived from hammering/striking. Other finds, notably a dismantled near-complete brass? chandelier or candelabrum and a small brass? head in contemporary destruction levels, it is likely that, in addition to coin-striking, metal objects were being melted down. In the building's E. room three workbenches for coin-striking were in use, while melting and heating took place in the large corner hearth. A small round sunken container in the floor may have been for struck coins. The W. room may have contained some sort of structure based on the brick foundation there: if that was a hearth, the room must have been immensely hot. Perhaps activities such as assaying or refining were conducted here? Charcoal fuel for the hearth(s) was stored in the narrow E. annexe, which was probably entered from the N. via the covered(?) communicating passage there. Used charcoal was dumped between the building and the curtain wall.

K26 Fragmentary burnt timber: sill-beam: 438

Aligned on groundwall **439**, S. of hearth **K27**. Broken fragments only. To N. of length rested on melted lead strip (registered as find).

K27 Base of brick-built walling: hearth superstructure: 432 (=*AK28*)

Three walls set above foundation **K13**, arranged on N., E., and S. sides to form three-sided rectangular structure, open to the W. All bricks red and mortared. N. wall comprised lower course of N-S orientated bricks with fragmentary superimposed course, orientated E-W and an outer facing of mortared stonework with overlying course of half-bricks externally (see **AK28**). The E. wall comprised a lower course of E-W orientated bricks, resting on **439** groundwall, with a superimposed overlapping course of E-W brickwork. S. wall comprised N-S orientated bricks.

Dimensions: the hearth covered an area 2.50m N-S x 2.30m E-W. (ie. 5.75m^2).

Function: the brick walling clearly enclosed a substantial raised hearth structure, the fireplace opening being to the W. In this phase there was no trace of internal arrangements (see surviving modifications in next phase), so its actual form unclear.

K28 Flooring: bedding sands, mortar and surviving tiles: 479, 469=431, 404=385, 464=368, 433 (=*AK27*)

The sands and gravels **479, 469=431, 404=385** were strewn over the thick mortar **460** as a means of levelling the interior prior to a) the erection of **K27** and b) the pouring of wet mortar **368** as bedding for tiles **433**. The tiles were almost completely robbed out, though their impressions were left in the surface of the mortar. A few *in situ* examples survived. **368** was of variable thickness, averaging only c. 1-2cm, and most consolidated in E. room. It was here that the tile-impressions were most emphatic. The surface of **368** undulated, and appeared discoloured, black and pink in places. This indicates scorching by fire, though post-destruction trampling may account for the black staining. The tiles had clearly been systematically removed after the fire - perhaps most were salvageable. Of those remaining in place one was severely burnt, while others bore no marked signs of fire. The tile impressions showed that floor **433** was composed of tiles of 4 different sizes: c. 11cmx11cm; 15cmx15cm; c. 17cmx17cm; c. 24cmx24cm. There was no system to their respective positioning, other than the smallest tiles lay in the W. room. Surviving tiles indicated that the tiles were probably laid in checquerboard fashion, probably yellow and green (cf. buildings A and G).

K29 Burnt wooden beam: base of partition wall: 437

Near-complete single timber, heavily burnt, possibly formerly square-sectioned. Orientated NNE-SSW. Positioned off-centre to divide Building F into two rooms of unequal size. Laid together with mortar **368**. Preserved length 3.10m; width 0.15-20m; thickness 0.03m.

K30 Heavily burnt fragmentary timbers: possible wooden floor?: 461

Delimited area of heavily burnt and disturbed timbers (beams and planking?), somewhat diffuse. Remains of at least three E-W aligned thickish timbers, possibly formerly rounded or half-rounded stocks. The S. timber appeared to extend to join with **K29**. Remains of possible N-S orientated plank/beam? on stone in **K14** to NW. Rest comprises a rectangular area of charcoal fragments. Area: c. 2m x 1.2m.

Function: this patch of burnt timbers had a self-contained nature, and the timbers maintained an orientation consistent with the rest of the building. Consequently, it is tempting to award these a distinct status, and a role as a compact area of wooden flooring is suggested. This may mark the position of a little closed-off entrance hall, for example (see also Building A's proposed entrance hall).

K31 Portion of circular pit: sunken container?: 436, 435

Located in N13c. Cut away to W. Formerly completely circular. Vertical-sided, flat-bottomed. Incorporated within mortar **368**. Traces of thin wood lining around N. edge. 0.32m diam. x 0.10-0.12m deep. Two fills (**435**) - primary: silt with charcoal; secondary: greasy silt, much charcoal.

Function: a sunken container, apparently wood-lined, incorporated into the floor **K26**. Associated with workbenches **K32-34,** and clearly integral to the minting process conducted here. Cf. similar features in same position in next phase.

K32 The base of a rectangular structure: a moneyer's workbench: 441=453, 440, 458, 452, 451

One of three commonly aligned rectangular features set into the floor **K26**, in each case comprising a backfilled pit which provided a consolidated base for a centrally placed post (which probably held the bottom coin die), with the remains of nailed wooden strips around three sides, the basal elements of a wooden box-like superstructure ie. the workbench itself (see Fig. 8 for contemporary illustration).

441=453: pit (partly truncated), backfilled with stony sandy silt **440**. Under excavation confused as two features, hence double number. Comprises deep subrectangular pit, with shallower square-ended "shelf" to N. Two fragmentary thin burnt wooden strips, set at right-angles rested on fill and shelf in NW. corner: 0.30m and 0.50m in length, c. 0.02.-0.04m thick; square in cross-section.

Cutting fill, and placed near-centrally, a small post-/stake-hole **458**: 0.10m diam. x 0.34cm deep; pointed base, fragmentary wood in fill. Base of post holding bottom coin die? S. of this a larger possible post-hole or a small sunken feature, **452**, circular, diam. 0.30m at top narrowing to base. 0.06m deep (though possibly originally deeper), much fibrous wood at base (secondary intrusive feature?).

Surviving dimensions of bench base: c. 1.2m long x c. 0.54m wide x c. 0.18m deep.

K33 The base of a rectangular structure: a moneyer's workbench: 443, 442, 466

443: sub-rectangular pit, backfilled with stony grey sandy silt **442**. Shallower "shelf" to N. (see sketch section on card and in daybook). Set around edges (though not to S.) three lengths of thin burnt wooden strips, c.05m wide x 0.03m thick, rectangular-sectioned. Large iron nails preserved *in situ* where the strips joined at NW. and NE. corners.

Cutting fill, and placed near-centrally, a large ovoid post-hole, **466**: 0.38m x 0.32m diam. x 0.38m deep, pointed base, filled with charcoally earth. Held post for bottom coin die?

Dimensions of bench base: 1.50m long x 0.50m wide x c. 0.30cm.

K34 The base of a rectangular structure: a moneyer's workbench: 445, 444, 471

445: sub-rectangular pit, backfilled with stony grey sandy silt **444**. Shallow "shelf" to N. (see sketch section on card and in daybook). As with **443**, remains of strips of burnt wood around three sides, excluding the S. edge - same dimensions, and nails in corresponding positions to NW. and NE.

Cutting fill, placed near-centrally, a small post-/stake-hole, **471**: 0.14m diam. x 0.16m deep (discovered at a late point within fill so probably deeper), pointed base, wood fragments in fill. Held post for bottom coin die?

Dimensions of bench base: 1.40m long x 0.50m wide x c. 0.35m deep.

K35 Short groundwall, padstone and aligned burnt timbers: walling elements for E. annexe: 477, 470, 472, 473, 474, 476, 361 (*=AK30/AK31*)

These were very fragmentary elements, disturbed and heavily burnt. However, they formed a self-contained stratigraphic and areal unit, and represent the foundations of an E. annexe, or extension, integral to the more robustly founded main body of Building F to the W.

477: short line of loosely set angular stone rubble, representing an incomplete or robbed-out low dry-stone groundwall, orientated NNE-SSW. Isolated stone to S. forms annexe's SE. corner stone.

472: Four separate fragments of heavily burnt timber, from a single beam(?), aligned NNE-SSW. N. fragment rested on groundwall **477**, S. fragment on corner padstone. Extends N. as **AK31**. E. sill-beam of annexe. **476** abutted N. fragment: collapsed superimposed beam in same wall-line?

473, 474: portions of same heavily burnt beam(?), in fragments aligned WNW-ESE, **473** on padstone to SE. Remains of S. sill-beam of annexe.

470: WNW-ESE aligned timber or timbers (possibly two superimposed beams, though difficult to establish), slumped down from corner stone in wall **522/439** upon which it rested. Terminated abruptly to E., 1.10m long x c. 0.20m wide. Same as **AK30**. Possibly marks N. wall-line of annexe, the gap to the E. perhaps marking an access point from the N. passage.

All the timbers lay in the base of deep sharply-defined troughs, thought originally to mark robbing trenches or the like, so numbered **361**. However, it is most likely that these troughs were caused by intense combustion and slumping along the burnt-out wall-lines during the fire which destroyed Building F.

Floor area of E. annexe: $9m^2$ (2m wide x c. 4.50m long).

K36 Plank flooring in E. annexe: 450

Incompletely preserved floor composed of a number of thin fragmentary parallel planks, charred. Boat nails in the planks suggest their origin as boat timbers, re-used in this context. Laid side-by-side in WNW-ESE orientation. Presumably formerly covered whole interior. Clearly disturbed and slightly charred in antiquity. Laid on lower charcoal **475**, interpreted as fuel store, and sealed by second charcoal store **257**. Possibly an attempt to provide a consolidated surface for shovelling and to keep the charcoal dry? The best preserved plank was 1.90m long x 0.24m wide x c. 0.01cm thick.

K37 Post-hole: 483, 482

Located in N12b, close to curtain wall. Round: 0.20m diam. x 0.27m deep. Vertical. Fill contained remains of rotted post. Uncertain function, although its position coincides with that of the southernmost of two diagonal grooves carved into stones on the internal face of the curtain wall (see **K1** above). Note in this connection also a similar post-hole, **K21**, to the N. whose position coincides with that of the northernmost diagonal groove in the curtain wall. These features possibly mark the insertion of a superstructure against the wall at this stage (a stair serving a wall-walk?).

Dating

Potsherds: very similar in character and date to the preceding phase, though more sherds: Dutch and German redwares, Siegburg and Raeren stonewares (**538, 525, 524, 519, 508, 507, 501, 479, 478, 461, 364, 355**). In addition some Raeren reliquary jars (1476+): **460, 457**); a sherd of tin-glazed ware, Spanish 15th - 16th-century (**508**); two sherds Langerwehe stoneware, 15th-century (ie. pre 1500) (**"475", "257"**); one sherd residual medieval Toynton All Saints ware. The sherds from the make-up deposits within the groundwalls of Building D/F form a group of "loosely" sealed artefacts, the reliquary jar sherd from **460** being perhaps from the best sealed context. All are potentially residual, however.

Coins: from **407** and **457** firelayers coins of 1450-1513 and 1523-37 date respectively. From **328** mortar against the curtain wall a coin of 1481-1513 date. From **385**, sand sealed by Building F's mortar floor, a coin of 1483-1513 date. A coin of date 1523-1537 registered under **339** (a Phase 5 layer) was found at the interface with the present phase's layer **364** and is better associated with that.

There is a historically recorded fire which destroyed the Palace in 1532. There is clear evidence for a catastrophic fire terminating this phase. If this is the fire of 1532 then this provides a firm *terminus ante quem* for Building F and the preceding workshop phase and provides a *terminus post quem* for Building G's construction in the next phase. There are historical references (se Skaare in Nordeide and Skaare, 1992, pp 29-32) which suggest that minting was indeed resumed here after 1532.

Discussion

It is felt that, although some manipulation of the stratigraphy has been required, a satisfactory and reasoned sequence of structural and depositional events has been reconstructed. The stratigraphical positions and mutually shared alignments of the buildings within the entire complex of buildings represented on both sites make it reasonably secure that we are dealing with contemporary arrangements in this part of the Palace precinct.

The change in alignment from the previous phase is not great, but sufficiently marked as to be noticeable. One might ask why this shift in alignment occurred, deviating from the strict N-S line set by the curtain wall. A suggestion mooted here is that the builders in this phase used, as their primary guideline when establishing the new structures, the demolished N. wall of Building A. This wall deviated from true E-W, and if we assume that Building D's S. wall was established on this line, probably as the first structural line in the new complex, then the pattern was set for the rest to follow.

The evidence for a widespread fire which resulted in the complete simultaneous destruction of all these buildings seems secure. That there was an earlier fire affecting Building D is implicit in a small but unavoidable group of factors. It has been proposed that, due to its lack of completed internal structures and the paucity of firmly associable fire debris, Building D burned at some point during its construction, probably with only its principal foundation elements in place. Building F was erected on these same foundations, and it has been argued that it was at this stage that the annexe was constructed on its E. side. The construction of this less robust annexe appears to have resulted in the partial reorganization of the area between the main body of Building F and the curtain wall. There is some evidence for pre-existing cobbling, or rather, rough paving. This may be a survivor from an earlier phase, possibly associated with Phase 2's Building B. If so, then that may enhance the impression that Building B was established at some stage after Building A, since this cobbling lay on workshop dumps. This is all very tenuous however, and there is evidence (see Site A) to suggest that this cobbling post-dates Building A. If so, it may represent an initial attempt at consolidating the surface

here, although this cannot have survived for long, as the cobbling was partly robbed out and overlain by the E. annexe associated with Building F.

Building F was clearly a completed structure with all the internal arrangements commensurate with its use as a moneyers' workshop. It was essentially a 3-roomed structure, including a partitioned main body and the E. annexe, and a probably covered passage along its N. side. The functions of the E. rooms are interpretable: the workbenches and hearth form the melting/heating and striking area, while the annexe appears to have housed the fuel for the hearth. The W. room's function is somewhat less certain: perhaps this was where the coins were clipped and finished and/or counted and weighed? There was a curious structure here with a somewhat crudely built brick foundation: it is not certain whether this was actually in use in this building; it may not have survived the destruction of Building D. Its function is anyway uncertain. If it was a hearth (for assaying, perhaps?), then the room it was housed in was extremely cramped.

Dumping of waste (used charcoal, industrial and domestic detritus) took place in the gap between the curtain wall and the E. wall of the annexe, as it did in the previous phase. To the S. of the buildings the area seems to have stood open. There was also much debris scattered in the open area to the S.

Building C jutted out beyond the line of Building F's S. groundwall. This probably reflects spatial organization necessary to accommodate Building E and the intervening cobbles and cisterns/latrines to the NW., while the area immediately N. of Building F comprised an open cobbled area.

To the E. two post-holes against the curtain wall aligned well with grooves in the wall face, and a structure may have been keyed-in to the wall here at this stage (a stair to a wall-walk?).

This second workshop phase terminated with a catastrophic fire which it is tempting to identify as that of 1532. The artefactual dating evidence does not contradict this impression, with potsherds and particularly coins of appropriate date in associated contexts.

PHASE 4

General Characterization

Following the catastrophic fire which razed all the previous phase's buildings to the ground, a new moneyers' workshop, **Building G**, was established directly on the ruin of Building F (Fig. 19). The peripheral fire deposits do not appear to have been cleared to any thorough extent, although Building F's floor was cleared of most of its tiles. Building G was smaller than its predecessor, possessing no E. annexe and only a single unpartitioned room. It was established on new groundwalls, placed directly on the fire debris. The S. wall was placed slightly to the S. of the line of the earlier groundwall here, set on destruction debris. The voids left by the burning of the timber walls of Building F's E. annexe were backfilled with demolition debris to level-up the area, which stood open. As previously, there was no groundwall to the N. The brick shell of the corner hearth seems to have survived the fire, although its interior was reconstructed. A new tiled floor was laid, and new workbenches and sunken containers installed along the S. wall. There appears to have been some reorganization of the workbenches' arrangement during the lifetime of the building, with an increase from three to four workbenches, and from one to two sunken containers. Building C to the W. appears not to have been rebuilt following the fire. Likewise no structural activity appears to have taken place to the N. in Site A, and consequently Building G appears to have stood in isolation in something of a wasteland. The phase ends with this building's demolition.

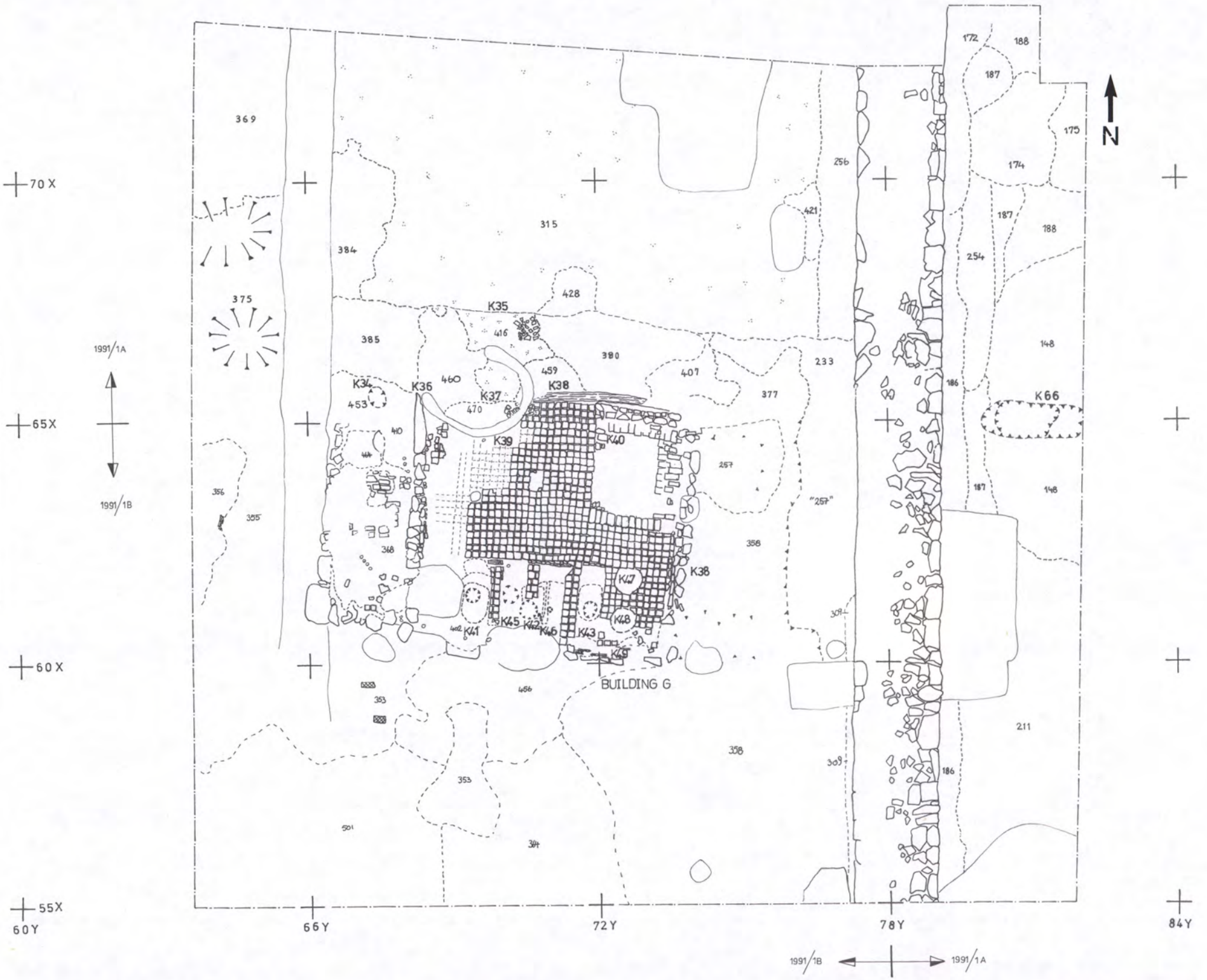


Fig. 19 PHASE 4 1:100

Stratigraphic Sequence

Building G (Figs. 19a, 20, 21, 22)

Building G's W. groundwall **324** was established on the fire-related deposit **410**, while to the S. wall **332** was laid on fire-deposit **454** and demolition debris/make-up **456** and **463=363**. The SE. corner then appears to have been consolidated with redeposited material **424**. A thick spread of yellow beach sand **402** (=**A502**) was then deposited over the whole interior, followed immediately by the establishment of the E. groundwall **317**. Sand **402** acted as the levelling-up for the thin (0.02m) mortar spread **401** (=**A470**), the bedding medium for the tiled floor **400 K39** (=**AK37**). This floor was fragmentarily preserved, partly robbed-out during antiquity. Flush with these tiles, within the area formed by hearth **432 K27** (the re-used brick superstructure from Building F), lay a few slabs of stone, apparently *in situ*. These were numbered **430 K40** lying on **325** fractured mortar which was the same mortar as that bedding the tiles (**401**, and same as **A456** here). This in turn lay on sand **402** which extended into the hearth area abutting the brickwork. **430 K40** is interpreted as a relaid secondary hearth interior, very disturbed.

Building G's structural elements are described in detail under Constructions. In the meantime their stratigraphical interrelationships will be examined, and it will be shown that this building underwent some internal alterations during its lifetime, notably in the arrangement of the workbenches and sunken containers ranged along the S. wall.

It would appear that there were originally 3 workbenches and one associated sunken container: cutting sand **402** were three equidistant subsquare pits **390 K41**, **420 K42** and **387 K43** (Fig. 21) with to the E. of them a (truncated) smaller rounded pit, **423 K44**. Alongside **K41** and **K43** on their E. and W. sides respectively lay intact strips of tiles **400** on mortar **401**, intrinsic to the main area of original flooring to the N. These two subsquare pits were backfilled with **341** and **379** respectively and contained the filled pipes of posts **370** and **392**, sealed at a higher level (see below). **341** appears to have spilled out over the floor following the bench's destruction. No post-pipe was identified in the middle pit **420 K42**: this is probably due to an oversight, though this pit was clearly modified after a time. However, it clearly formerly possessed a wooden superstructure, the slot-like feature **422** representing its former position prior to removal. Indeed, at some point it was decided to increase the number of workbenches to 4 and the sunken containers to 2. This was done by compressing two new benches in between the two outer ones, these latter (**K41** and **K43**) continuing in use (Fig. 21). The central pit **420 K42** was partly covered with an inserted strip of tiles, **413** on brown silt **414**. This served the purpose of subdividing the area into two. However, these two new benches, with the extremely fragmentary remains of their former wooden superstructures abutting the the tiles in places, did not possess deeply-dug pits housing central posts: in association with **K45** to the W. was **428**, a shallow depression c. 2cm deep in the surface of sand **402**, and in association with **K46** was a small post-hole **417 K46**. The former probably marks the position of a broad-base object (an anvil/tree-trunk?), rather than a post. Within the area of most of these benches lay patchy mortar-/sand-mixed brown silt **412**, deposited during the reorganization as consolidation. Unfortunately two unrelated pieces of timber were numbered **396** in the mistaken belief that they formed two parts of a common timber. That to the E. lay in association with inserted tiles and the easternmost of the two inserted benches, **K46**, probably forming part of its timber superstructure. That to the W. seemed to lie within the original tile floor **400**, though its function is somewhat less clear. A localized patch of replaced tiles sealed a small post-hole **418** just to the NE. of **K46**. This possibly belongs with earlier **K42**.

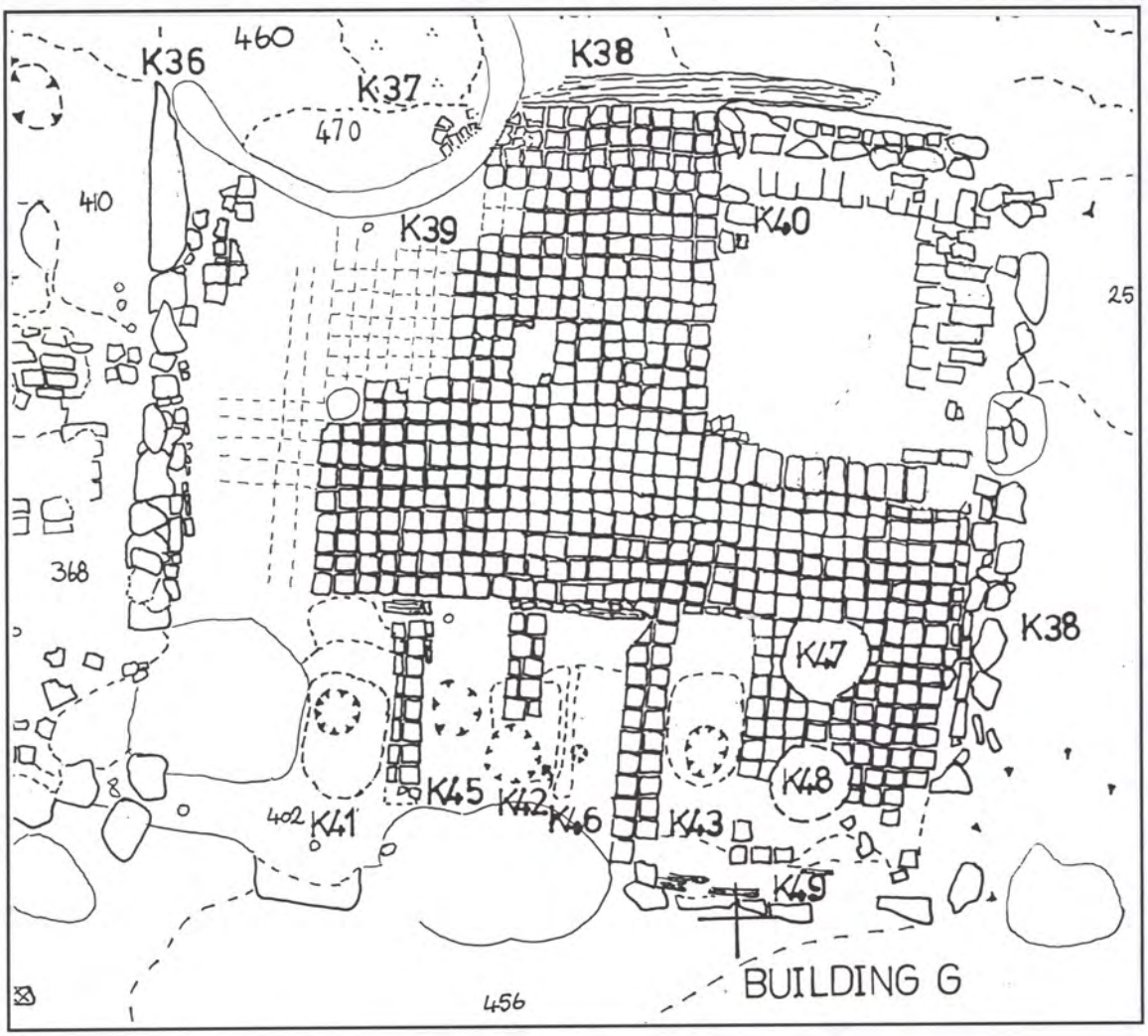


Fig. 19a BUILDING G 1:50

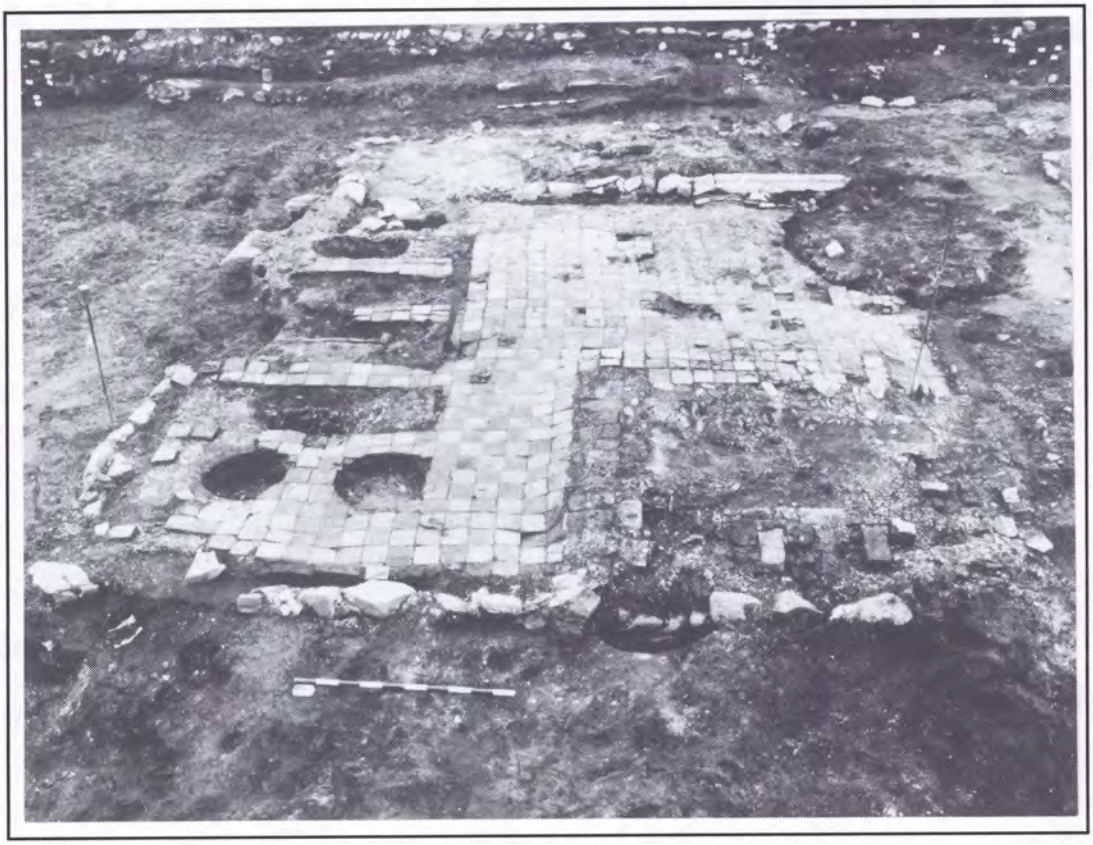


Fig. 20 BUILDING G (looking W.)

Fig. 21 *Workbenches/striking benches K41, K45, K42, K46, K43 (looking N.)*

Fig. 22 *Workbench/striking bench K43 and pits K48 and K47 (looking N.)*

To the E. part of the original flooring was removed and two new sunken containers inserted, tiles then being replaced around them (Fig. 22). The northernmost, **K47**, comprised a square pit **421** cut into **402**. It would then appear that a round wooden container, **375**, was inserted into this pit and the gap around it backfilled with **412**. To the S., **K48** was similarly constructed, pit **425** dug (cutting backfilled **423 K44**), **348** inserted, and then the space behind backfilled with **412**. The tiles were then replaced on a spread of **412**, closely arranged around the containers and sealing their host pits.

There were some fragmentary pieces of timber which may have been the remains of possible sill-beams set on the S. and E. groundwalls: to the SE. **350 K49**, a fragmented disturbed length of unburnt wood, orientated E-W. Its precise stratigraphical is uncertain, probably reflecting later disturbance. However, it is possible that it rested on **424** which acted as consolidation around the groundwall **332** here, and within **369** (next phase). A small fragment of unburnt wood lay further W. on the surface of **402**, its location possibly suggestive of its association with **350**. To the NE. an even more fragmentary piece of N-S orientated wood, **350** lay above the line of groundwall **317**, in or on **318** (next phase). I have not allotted this latter a K number as it was so fragmentary and ambiguous.

Deposits peripheral to Building G

To the E. of Building G, the fire deposits and the voids associated with the burning of Building F's E. annexe were overlain by a thick spread of loose mortar lumps and brick fragments, **358**. This was demolition debris, probably deriving from Building F and thrown down and used for levelling-up over the area. The sharp-edged voids **361** in charcoal **257** must have been filled immediately after their formation during the burning of Building F. This deposit probably correlates with similar debris **463** to the S., on which the S. groundwall **332** appeared to rest. To the W. the fire deposit **355** was overlain by a spread of burnt debris **384**, which possibly correlates with **397** which abutted Building G's groundwall **324**, and which therefore probably post-dated its construction. Consequently, there does not appear to be the same dumping of mortar-laden debris as in-fill and make-up as occurs to the S. and E. The fire levels remained exposed here when Building G was established. There were deposits and features above them in this locality, notably the groups of small stake-holes **373 K51** and **399 K55**, and the localized dumps of material **367** and **397** filled with potsherds, crucible fragments, charcoal, hammerscale, burnt sand and ash and furnace lining, all dumped waste from domestic and industrial sources (see next phase). These deposits produced finds exactly comparable to those found in the dumped material **363** to the S., which abutted Building G's groundwall **332** there. By virtue of their character these features and deposits should probably be placed in the next phase which post-dates Building G, although it is felt that, as in the case of **363** to the S., these deposits' finds content is probably residual (ie. redeposited) from this phase.

The phase ends with the probably deliberate demolition of Building G. It does not appear to have burned, there being no traces of fire on the floor or walling. Traces of demolition within the building are confined to the immediate area of the hearth **K27** and the fact that the tiled floor **400 K39** was robbed partially of tiles. **389=?=318** (**=A388**) was a concentration of lumps of mortar, broken brick and floor tile and stone fragments, directly overlying the tiled floor **400** and the disturbed hearth interior **430**. Clearly the hearth was demolished at this stage, and presumably the rest of the building down to its groundwalls. Building G appears to have been demolished very systematically.

Descriptions of Constructions

Building G (K38-K49 - *AK36-AK38*)

Character: This small building was established on new groundwalls set on the previous phase's fire-

levels. As before the building possessed low stone groundwalls on three sides and a ground-set sill-beam to the N. (**AK38**). The character of its walling ("lafted" or half-timbered?) is unknown. Building F's hearth superstructure appears to have been re-used with some internal modification. A completely new mortar-bedded tile floor of checquerboard design was established over its cleared predecessor. New workbenches were established at this level along the S. wall. There were originally three (plus one sunken circular container to the E.); this arrangement was modified subsequently, involving the partial removal and replacement of floor tiles, with an increase to four workbenches and two sunken containers. The single-roomed building's floor area was c. 26m^2. The building appears eventually to have been deliberately demolished.

Function: by analogy with its predecessors, this was a moneyers' workshop (the third *complete* workshop identified on the site). Associated finds of coin blanks and small assaying cupels confirm this interpretation. Hammerscale in associated layers probably derives from hammering/striking within the workshop.

K38 Low stone groundwalls: 317, 324, 332 (*=AK36*)

317: single course of crudely mortared(?) small angular stone rubble and red bricks. E. groundwall of building. Orientated NNE-SSW. Some stones possibly re-used (bore residual mortar). Bricks set along W. edge in S. half, set lengthwise on edge, complete and broken. Length of wall: 4.40m.

324: single dry-stone course of small angular stone rubble and red bricks. W. groundwall of building. Orientated NNE-SSW. Residual mortar on some (re-used?) stones. Incorporated a "cupped" stone, registered as find (stone mortar?). Bricks (whole and fragmented) set along E. edge in S. half. Short line of tiles on edge here too. Length of wall: 4.70m.

332: very fragmentarily preserved, broken wall-line. Represented by a number of separate variously sized rubble stones conforming to WNW-ESE orientation. Best preserved at E. end, where some interstitial mortar was noted. Length of wall: 5.50m.

K39 Flooring: sand make-up, mortar bedding, glazed tiles: 402, 401, 400, (415) (*=AK37*)

Beach sand **402** was strewn thickly over the previous floor, sealing all features, and then thin (c. 0.02m thick) wet mortar **401** was poured into which tiles **400** were pressed.

400: tiled floor, incomplete, disturbed. Composed of near-regularly laid strips of green and yellow (lighter and darker variants) glazed tiles laid for the most part in checquer-board pattern. All of the same size i.e. 11x11cm. Where removed, form preserved as impressions in **401**. Undulating surface, broken by intrusions. In S. half of building pattern erratic, and indications that sections of tiles were removed and subsequently replaced following reorganization of the workbenches and circular sunken containers (see Stratigraphic Sequence, above). Replaced tiles numbered **415**.

K40 Stone slabs: hearth interior: 325, 430

325 was the continuation of mortar **401** within the brick hearth superstructure **K27**, the interior of which seems to have been modified with the insertion of a layer of thin slate(?) slabs at floor level. Only a very few remained as **430** at W. perimeter. Paved interior for the fireplace? No signs of scorching.

K41 The base of a rectangular structure: a moneyer's workbench: 390, 341, 370
Comprised a subrectangular pit, in plan and cross-section splayed to top, rounded to base (see context card). Filled with grey charcoally sandy silt containing hammerscale, **341,** containing a round post-hole **370**, placed centrally within the pit. Dimensions of pit: 0.75m x 0.50m x 040m deep. In addition, the rectangular form of the structure was preserved as gap in tile floor **400**, pit **390** placed centrally. No wooden strips preserved at edges. Fill **341** contained a large amount of burnt grains of barley and oats (see botanical report).

Post-hole **370**: round, vertical, flattish base; 0.30m diam. x 0.17m deep.

Pit and post constructed as consolidated support for lower coin die.

K42 The base of a rectangular structure: a moneyer's workbench: 420, 419, 422, 418?

Comprised a subrectangular pit, in plan and cross-section splayed to top, rounded to base (see card). Filled with **419**, dark brown charcoally sandy silt, with hammerscale. No central post recorded, probably due to excavation error. Dimensions of pit: 0.70m x 0.40m x 0.44m deep.

422: a shallow narrow groove running parallel with E. edge of **420**, and probably part of same structure ie. trace left by base of edge-set plank in box superstructure? Dimensions: 1.90m long x 0.03-0.06m wide x 0.02m deep. The covered over shallow stake-hole **418** to NE. possibly also associated? Dimensions: c. 0.15m diam. x 0.15m deep. These probably formed the foundation for a lower coin die and trace of wooden superstructure. This structure was dismantled and covered over with a strip of relaid tiles as a result of localized reorganization.

K43 The base of a rectangular structure: a moneyer's workbench: 387, 379, 392

Comprised a subrectangular pit of similar plan and cross-section to neighbours. Filled with **379**, grey silty clay. Contained centrally-placed post-hole **392**. Dimensions of pit: 0.75m x 0.50m x 0.40m deep. Rectangular form of structure preserved in arrangement of tiled floor **400**. Some tiles standing on edge along N. perimeter. Some very slight traces of a wooden strip along W. edge.

392: post-hole, ovoid, vertical, pointed section; charcoally silty sandy fill: 0.35m x 0.25m diam. x 0.32m deep.

K44 Part of a circular pit, cut away: a sunken container: 423

The base and N. half of a disturbed formerly circular pit, shallow with sloping sides: 0.40m intact diam. x 0.12m deep.

Base of a container installed and used with the three original workbenches, subsequently cut away and covered over during installation of two similar containers during reorganization. Container for finished coins?

K45 Base of a rectangular structure: a coin-striker's workbench: 415, 428

Feature defined principally by gap in floor **400** with inserted strip of tiles **413** separating it from **K46** to E. Also tiles set on edge along W. edge and traces of a wooden strip. No deep post-pit cut as in other examples. Dimensions of rectangular plan: 1.40m x 0.50m. Just off-

centre a shallow round depression, **428**: 0.35m x 0.32m x 0.02m deep - impression left by heavy standing flat-based object? (anvil base?).

An inserted structure, replacing earlier **K42**. One of a pair with **K46**, both included under context **415**. Note that no deep post-pit cut in either case. **428** possibly indicates that a ground-set anvil used instead).

K46 Base of a rectangular structure: a moneyer's workbench: 415, 396, 417

Defined as gap in **400** and replaced tiles **413**. **396** short length of wood along N. edge; possible remains of box superstructure. Small rounded stake-hole **417** observed in charcoally fill **341**, placed somewhat off-centre. Otherwise no internal features. Dimensions: c. 1.50m x c. 0.50m.

417: post-hole: 0.09m diam. x 0.08m deep. Charcoally fill **416**. Held post associated with this feature?

396: wooden strip set on edge: 0.40m long x 0.01m thick x 0.09m high.

An inserted structure (cf. **K45**).

K47 Circular wood-lining set in subsquare pit: a sunken container: 421, 375, 380

See Stratigraphic Sequence.

Feature comprised **421** subsquare shallow pit, backfilled with primary fill **412** behind inserted wooden lining (consisting of staves?) forming a circular container **375**, subsequently filled with **380**, grey charcoally silty sand.

421: 0.64 x 0.62m x 0.6m deep. **375:** circular plan, vertical sides, flat base, unburnt wood-lining thinly and patchily preserved on sides only: c. 0.56m diam. x 16cm deep.

One of a pair of inserted features, with **K48** replacing **K44**. A wooden container sunk into floor **400**. For finished coins?

K48 Circular wood-lining set in subsquare pit: a sunken container: 425, 348, 344

See Stratigraphic Sequence.

Feature comprised **425** shallow subsquare pit, backfilled with primary fill **412** behind inserted wooden lining (ie. staves?) forming a round container **348**, subsequently filled with charcoally silty clay **344**.

425: 0.58 x 0.60m diam. x 0.07m deep. **348:** circular plan, vertical sides, flat base, unburnt wood-lining very thinly and patchily preserved on N. side only: 0.52m diam. x 0.19m deep.

K49 Fragmentary timber: sill-beam?: 350

Located in SE. corner of building. Extremely fragmented remains of unburnt wood, suggestive of a single beam respecting the wall-line, orientated WNW-ESE. Fragments add up to length of c. 1.50m. Slipped off groundwall here?

Dating

Potsherds: in contrast to the two preceding phases there were no Siegburg stonewares. The assemblage comprises exclusively Dutch and German redwares and Raeren stonewares - late 15th - 16th century (**463, 454, 402, 379, 358, 344**) - including two Raeren frilled bases, of probable early 16th-century date (ie. no later than 1550) (**428, 341**). Of the latter, only one derived from a reasonably sealed context, **341**, although it is potentially residual.
Historical: If Building F burnt in the historical fire of 1532, that forms a *terminus post quem* for the construction and use of Building G. The introduction of the Reformation to Trøndelag in 1537 provides a historical *terminus ante quem* for minting operations in the Archbishop's Palace. However, the building may conceivably have stood for some years after this date.

Discussion

This constitutes the final workshop phase, Building G being the last moneyers' workshop erected in the locality. It appears to have stood alone in the wasteland resulting from the preceding fire.

The workshop was smaller than its predecessor on whose burnt-out ruin it was placed. Its groundwalls were less robust, although the flooring is of similar form and construction, and the tiles used were exclusively of the smallest type. It would appear that the corner hearth **K27** was not fully destroyed with Building F, and it was refurbished (see **K40**) and re-used in Building G.

The floor originally incorporated three workbenches with deep backfilled pits providing consolidation centrally placed posts. In addition there was one wood-lined sunken container. At some point it was decided to alter the arrangement: two of the former workbenches were retained, while two new benches were inserted in the area formerly occupied by the central bench. Two wood-lined sunken containers replaced the original one to the E. This reorganization involved the partial removal of the original tiles and mortar and the replacement of tiles on fresh make-up around the inserted features. It is possible that this increase in the number of workbenches and sunken containers reflects an intensification of coin production in the latter part of this building's lifetime.

That Building G was probably short-lived (although in existence long enough to undergo internal modifications) is possibly indicated by the lack of deposits surrounding the building above the preceding phase's fire debris. (However, the lowest deposits placed in the next phase may contain material deriving from this phase's activity). There is no evidence for a catastrophic fire ending this phase. Rather, this phase melts almost imperceptibly into the next, Building G's superstructure eventually being demolished thoroughly, while its tiled floor was only partly robbed. Indeed, there appears to have been sporadic activity directly above this surface prior to its disappearance under silty deposits (next phase).

PHASE 5

General Characterization

The phase is characterized by initial intrusive activity (Fig. 23) which took place directly on Building G's partly robbed-out floor, cutting through its demolished walls, implying that the building had been dismantled. This activity was of a different character to that which Building G housed, and the new features would appear to have ignored the existing arrangements, probably reflecting sporadic, small-scale activity. What this activity was is as yet uncertain. A stone-filled pit **K50** was inserted into the SW. corner of the former building's floor area and to the N. an enigmatic subcircular trough (**AK45**)

Fig. 23 PHASE 5, level a 1:100

cut the floor. A dump of blue clay lay on the floor around the base of Building G's hearth, while single and grouped stake-holes were scattered over the former floor area. The floor would appear to have been quite rapidly covered with silty deposits and the building was certainly demolished at that stage (Figs. 24 and 25). Outside the area of the former building, in deposits containing much building debris and (residual?) metalworking waste, and in some instances cut through the line of the S. and E. groundwalls, were a number of post-holes and pits. It is possible that some of these may have formed components in one or more post-built buildings, of which these formed the only evidence. These posts were possibly in use until just prior to the radical building activity associated with the *Herrehus* (next phase). Otherwise there was no trace of major structural activity.

Stratigraphic Sequence

The phase is loosely subdivided into levels a and b (as depicted in Figs. 23 and 24 respectively). However, the following description comprises an unbroken narrative progressing from bottom to top.

Building G's floor **400 K39** appears to have been partly robbed of tiles, and the exposed surface of mortar bedding **401** walked on, as the tile-impressions in that area were very faint. To the N. part of a subcircular gully-/trough-like feature **391** cut the floor: this is described and discussed as **AK45** in Site A. Cutting **401** and the line of groundwall **324** to the SW. was a subsquare shallow pit packed with large stones **434 K50**. The stratigraphical evidence was somewhat ambivalent, and this feature could conceivably have been incorporated into Building G as part of the internal arrangements along the S. wall. However, the fact that groundwall **324** was incomplete at this point makes it more likely that it was robbed-out to make way for this feature. Perhaps its bed of stones derives from the robbed-out wall? This feature must have formed a foundation for some sort of superstructure of uncertain function, presumably inserted directly into the exposed bedding mortar following the removal of the original tiles at this point. Around the stones in the base lay a charcoal-flecked clayey silt. This was indistinguishable from **341** which lay in patches to the E., patches which correspond to the former position of Building G's workbenches, and which spread over the tiles **400**. **341** comprised spilled-out fill from the workbenches. As with most of the silty deposits located here, this produced a small proportion of magnetic hammerscale. Slags and occasional small assaying cupels were also found, clearly residual from activities in Building G. Lying on the surface of **400** tiles to the NE. was a low mound of stone, tile, brick and mortar fragments, **389** (=**A388**), demolition debris from hearth **K27**'s destruction. On this evidence the destruction of the hearth, and presumably the rest of the building, took place prior to the accumulation of the silty deposits which probably formed in an open environment. A number of scattered isolated stake-holes were recorded in both **402** and **401**. These have been collectively numbered **403 K51**. **426 K52** constituted a larger post-hole, cutting **400**. There was no pattern to these, and all the intrusions probably reflect small-scale and short-lived activity above the old floor just after the building's destruction. **381** to the W. was a localized patch of burnt sand with admixed red brick and glazed tile fragments. This lay on the exposed mortar **401**, and possibly derived from a fire-related activity at this level. A row of three stake-holes **374 K53** lay in N13c. They were preserved in **369**, a localized spread of brown silt with admixed clay, charcoal, brick fragments, resting on the inserted tiles **413**. These stake holes may have been cut, like the others, into the former floor. In their case, however, the stakes do not appear to have been removed. These stakes lay just to the N. of pit **K48**. This latter's fill **344** was also preserved within **369**, unlike its N. twin **K47**, whose fill **380** contained demolition debris and was sealed by blue clay **315**. It is possible that **K48** may have been re-used in some capacity: it contained a primary fill of grey silty clay with mortar, stone and brick fragments, beneath a charcoal-rich clayey silt with much unburnt bone, slag and fragments of copper. The proximity of the stake-holes may imply some association, although the pit itself is unlikely to have been used as a hearth, for example, as its sides bore unburnt wood. Perhaps it was some sort of receptacle. Its primary fill would infer that this secondary activity took place after

Fig. 24 PHASE 5, level b 1:100

the demolition of the building. The stake-holes may indicate the presence of some sort of temporary windbreaks for open air activities. Both **341** and **369** contained a few fragments of planking (**383**). These are likely to have derived from the destroyed workbenches to the S. The filled post-holes **370**, **417** and **392** belonging to workbenches **K41**, **K46**, and **K43** were first encountered either in or under **341** and **369**: **370**'s post appears to have stood while **341** accumulated around it, sealed ultimately by **338**. Likewise **417**, sealed ultimately by **313**. **392**'s post would appear to have been removed prior to the deposition of **369**. These are either spilled-out fills or new rapidly-formed deposits which accumulated synchronously, and the internal structures would appear to have have been demolished with the rest of the building. Around the destroyed hearth perimeter, and overlying **369** was a localized deposit of blue-grey clay with lenses of grey sand, **315** (=**A412**). This is likely to have been a dump of material used in some particular connection, although what this may have been is uncertain (clay was often used in connection with metalworking, or as a binding medium in stone structures). Its concentration around the denuded base of the hearth is rather enigmatic. It contained scattered stake-holes **372 K64**. The circular feature **391 AK45** was filled with **382** (=**A413**).

Fig. 25 PHASE 5, level b (looking E.)

To the W. of Building G's groundwall **324**, there was evidence for intrusive activity on the exposed surface of **368**, Building F's mortar, and the fire deposit **410**, in the form of stake-hole groups **373 K54** and **399 K55**. These may belong to the previous phase, though they fit more with the character of activity encountered in the present phase. These were probably inserted onto a partly cleared surface here. They were sealed by deposits containing much burnt debris and waste from industrial and domestic activity, **397** (=**A452**) and **367**, similar to **384** over the ruin of Building C, and **363** to the S. Although difficult to tell, due to the similarity of all deposits here, it appears that **367** encroached through the breach in **324**'s S. end to cover the stones in the inserted feature **K50**. These deposits would therefore appear to have been dumped following upon the intrusive activity taking place above the destroyed building's floor.

It should be noted that the central portion of the brick-built feature **K14** remained exposed, sealed only at a higher stage (it was thought at first that this may have constituted a post-hole base, and was given the number **362**). Given the evidence for intrusive activity in the form of stake-holes at this level, and the character of the waste-bearing deposits (note particularly the burnt bone concentration in **397**), it is just conceivable that this was re-used in a secondary role, possibly as the basis for a small temporary open-air hearth. This is very tenuous however.

To the S., cutting **402** and the line of groundwall **332**, were two pits, **378 K56** and **395 K57**. These pits' S. edges were not distinguishable in **363** which they probably also cut. These were filled with crucibles and building debris, their fills being indistinguishble from **338**. These clearly post-date Building G, and belong with the other scattered intrusions at this stage.

External to the demolished building to the E. lay a silty grey sand **312** (=**A361**) filled (c. 70%) with shattered brick fragments, scattered mortar, charcoal and stone and floor-tile fragments (some burned). This certainly abutted Building G's E. groundwall, and possibly also encroached over it (and into the interior as **314**). It also appeared to seal **377 K58**, a shallow charcoal-, mortar- and brick-filled pit, which definitely cut away groundwall **317**. This pit's function is uncertain, though it should probably be seen together with the other intrusive features as representative of small-scale activity above the ruin (cf. also **AK48** in a similar stratigraphical position). **377**'s location and stratigraphical position are important, however, as it demonstrates that **312** must have been deposited <u>after</u> the actual destruction of Building G. It is therefore uncertain whether this layer contained debris originating from that building. The likelihood is that it comprised redeposited make-up/dump from an uncertain source, though given its close stratigraphical relationship and character, its finds content's origin in Building G is conceivable. Likewise that of **363** to the S., which apparently correlates with **312**. This in turn seemed to match with **360** (=**A424**) to the W. of the building, which covered the aforementioned dumps of hearth debris (**367**, **397** and **384**), which were probably deposited after Building G's destruction.

Covering most of the area and the aforementioned deposits in the W. half of the former building was **338** (**A342**), very similar to **382**. **338** correlates with **336** and **345** to the W., silty deposits with much shattered building debris. **354** (=**A391**) and **371** intervene between **338** and lower **360** here, deposits full of burnt material and brick and roof tile. To the S. Under **336** and over **360**, **367** and **397**, and encroaching over the wall **324** lay a deposit of twiggy charcoal, **337** (=**A326**) mixed with clay and building debris. This was clearly deposited after Building G's demolition. **336** and **338** correlate with **340** and **357**, again full of shattered brick and tile, mortar fragments, charcoal, wood chips etc. The final accumulation of silty sands full of building debris, crucibles and potsherds comprises **313=?=334=?=335** (=**A347**). All these similar deposits contain material which may have derived ultimately from Building G. These deposits, which seal the initial intrusive activity, comprised principally sandy silts full of coarse elements, probably deposited in an open environment. However,

the absence of humusy soils would appear to suggest that while the area stood open, it may not have been totally neglected or allowed to become overgrown.

There were a number of post-holes which appear to belong to this phase of indeterminate activity. They formed a somewhat enigmatic pattern, and their true function can only be guessed at. If they were all indeed contemporary (and this is difficult to be precise about), and if they were all components of a single structure, then they are all we have left of it.

In Site B there were 4 definite large post-holes: **323 K59**, a stone-packed post-hole located directly W. of the SW. corner of Building G. Its post-pipe appeared first in **319** under **250**. Its post-pit's cutting level was difficult to ascertain, though it may have been cut from either **338=336** or **363**; to the E., at a point directly opposite Building G's SE. corner, was **256 K60**, another stone-packed post-hole, whose post-pipe first appeared under **216**, and whose post-pit was fully exposed in **353**, although it may have been over-dug. The post-pit was certainly sealed by **312**, however, and the post-hole therefore must pre-date that layer's deposition, being cut from from the level of **353** or **358**; directly S. of this post-hole lay another, **302 K61**, which appeared first as a partial void under **265**, while the post-pit expanded in lower deposits, its cutting level possibly being as low as **363**; another post-hole **327 K62** was located up against the curtain wall.

All these post-holes were of similar character: stone- or brick-packed, with post-pipes containing the rotted remains of wooden posts. The problems of identifying their cutting levels make it impossible to securely correlate them as a stratigraphically-related group: however, the suggested levels of their insertion would allow for their being inserted at closely related times following the destruction of Building F. It is just conceivable that they were inserted in association with Building G, although the majority would appear to have been inserted into material which probably accumulated after Building G's destruction. Furthermore, unlike Building G, these posts were preserved *in situ* through subsequent deposition until just prior to the construction of Herrehuset in Phase 6, although of course the posts may have already rotted by then, as stumps rather than posts supporting a structure at that time. The two post-holes **K59** and **K60** were clearly inserted for a common purpose, and it is possible that their co-alignment at the corners of Building G is significant. If they were inserted with Building G, it is possible that they played some role in the support of its walls, although such an arrangement, involving timbers sticking out beyond the corners would be rather unusual. It would perhaps be best to see them as posts inserted just after the destruction of Building G, and given their deliberate positioning, perhaps utilizing that building's old groundwall for a shared sill-beam. Given the ambivalent stratigraphical position of the fragmentary timber **530 K49**, this may be the remains of just such an inserted beam. This said, it seems unlikely that there was a wall-line at this level prior to the deposition of **338**, since prior to that there is intrusive activity along the old wall-line in the form of the pits **K56** and **K57**.

Given the evidence for post-destruction activity above the Building G's floor, these posts may have perhaps supported an associated structure. There is no firm evidence for similar stratigraphically equivalent post-holes to the N. (see below) and the possibility that a roof spanned the area containing the aforementioned intrusive features does not seem likely, given the clearly rapid accumulation of silty deposits over them. The deposits in the area to the N. seem more characteristic of accumulations within an open area.

To the S. there occured a series of thick dumps of brick- and crucible-bearing material: these were clearly dumped to compensate for the S. slope. This may have taken place either in association with the post-hole digging noted above or in the next phase, to level-up the ground before establishing the Herrehus. This latter might seem the most logical; however, there is some slight evidence to suggest that in fact all the dump deposits here, up to **339**, **359** and **313=?=334=?=335** were dumped together

with the establishment of the aforementioned post-holes, as a means of levelling-up beneath a post-built building. In the surface of **359** occurred three shallow sunken hollows **349 K63**: their spacing, form and content of rotted wood suggests that they represent the former positions of timbers placed directly on the ground, and in view of the post-holes, these may have been joists for a wooden floor. These possible joist impressions did not correspond to the floor arrangements encountered in the next phase.

Even if these joist-impressions are illusory, these deposits may have accumulated under a raised floor of a "stabbur"-like building, raised on the posts described above. However, there was no stratigraphically equivalent post-hole located to the SE.(*) to complement the other three making it difficult to unite them into a broad-spanned raised building occupying the area to the S. of former Building G. This omission, and the oblique positioning og **K62** to the NE. makes the positioning of the posts enigmatic and difficult to interpret.

(*There was in fact a post-hole in an exactly appropriate location recorded at a stratigraphically higher level: **271 K81** in the next phase. I have re-examined this, but it is stratigraphically impossible for this to belong with the post-holes in the present phase since it was not present in deposits pre-dating the construction of Building I).

To the N. of **K59** lay a round depression **362**, while to the N. of **K60** lay **377 K58**. With the eye of faith these form a near-regular pattern of equidistant intrusions. However, it is felt that this is illusory: these N. intrusions were shallower, did not contain packing, had different fills, and were sealed by deposits in which the posts in the S. post-holes were still present (ie. those to the N. were shorter-lived than their more substantial neighbours). The same can be said of the post-hole-like features in Site A.

Descriptions of Constructions

K50 Stone-filled pit: foundation?: 434

Subsquare shallow pit, filled with single layer of closely packed angular rubble, large and small stones.
Dimensions: c. 1.0m x 1.0m x 0.15m deep.

Function uncertain: supported industrial feature?

K51 Scattered stake-holes: no discernible pattern: 403 (collective number)

5 small isolated stake-holes, vertical, scattered over area of former floor **K39**.

K52 Post-hole?: 426

Subcircular, shallow: 0.26m diam. x 0.08m deep.

K53 Row of 3 stake-holes: 374

All round, vertical, rotted stakes *in situ*: 0.04m diam. x c.0.10m deep.

K54 Row of 4 stake-holes: 373

All round-ovoid, vertical, silt-filled: 0.05m diam. x 0.10-0.12m deep.

K55 Row (arc) of 3 stake-holes: 399

All round, vertical, silt-filled: 0.05m diam. x c. 0.10m deep.

K56 Portion of truncated circular? pit: 378

Cut away SW. corner of Building G's wall. Filled with metalworking debris (almost indistinguishable from **338**).

K57 Cf. K56: 395

Cut through line of Building G's groundwall. Filled with metalworking debris. Max. preserved diam.: 0.60m.

K58 Ovoid pit: 377

Cut through line of Building G's groundwall. Filled with **394**, charcoally debris-laden silt. Ovoid, steep-sided: 0.52m x 0.40m x c. 0.24m deep.

K59 Post-hole: 323

Large, deep stone-packed subcircular post-hole. Diam. of post-hole/post-pipe: c. 0.70m/0.50m. Depth: 0.50m. **322** fill: upper fill of debris-laden silty sand, primary fill of rotted wood fragments in lower 0.20m.

K60 Post-hole: 256

Large, deep stone-packed subcircular post-hole. Diam of post-hole/post-pipe: c. 0.70m/0.40m. Depth: c. 0.45m. **326** fill: upper fill possibly **186**, primary fill soft brown silt with frequent woodchips.

K61 Post-hole: 302

Large, deep brick-packed circular post-hole. Diam. of post-hole/post-pipe: c. 0.50m/0.35m. Depth c. 0.40m. **308** fill: brown-grey silt beneath upper void.

K62 Post-hole: 327

Large, deep stone-packed post-hole, with *in situ* rotted post. Diam. of post- hole/post: 0.40m/0.20m. Depth: c. 0.15m. Fill **258**: mixed debris-laden brown sand.

K63 3 parallel narrow trough-like depressions: joist impressions?: 394

Located in N12. All commonly aligned E-W., though not equidistant: 1.10m-1.50m apart. Dimensions: range from 0.14-0.22m broad x 1.30-1.90m long x 0.03-0.06m deep. Some wood fragments in bases of two to S.: rotted beams?

K64 3 stake-holes: 372

3 scattered small stake-holes, vertical, cutting **315**. All 0.05m diam. x 0.04m deep.

Dating

Potsherds: a fair amount of pottery, though the range as limited as before - Dutch and German redwares and Raeren stonewares (again no Siegburg) (**384, 382, 378, 371, 369, 363, 360, 354, 345, 339, 337, 312**). In addition, a Raeren face jug (1475-1525) (**367**); two Raeren collared rims (pre-1550) and a sherd of Dutch slipware with arc decoration (late 15th century) (**340, 363**); three possible cross-fitting costrel sherds (15th-16th century) (**340, 333, 319**); an Aachen piper jug (1475-1525) (**336**). The latest fragment recorded was an early 17th-century rim sherd, from **357**.

N.B. A good deal of the sherds from these deposits were secondarily burnt. Much argues for their redeposition, probably after a fire (ie. that which ended Phase 3 - 1532??). None came from well sealed contexts (although the phase itself is provided with a secure *terminus ante quem* (see below).

Coins: one coin of 1523-1537 date from **339**; however, this is better associated with Phase 3, since it was found at the interface with that phase's **364**.

A finely preserved lead cloth seal was found in **338**, N 115979. This has not proved possible to date closely as yet; it can be said provisionally to be probably of 15th-16th-century date.

Historical: The Reformation, introduced to Trøndelag in 1537, saw the end of the archbishop's activities. Since minting was one of these, and since the Danish coinage was minted elsewhere, it is reasonable to assume that Building G's function became redundant. The first Danish governor did not occupy the Palace, and it can be assumed that Building G did not last for long during the hiatus prior to 1556. A number of wooden buildings are recorded as occupying the precinct during the century or so prior to 1640, including an earlier governor's residence (1556-1616) (Lysaker, 1989, 13-14), and it is not inconceivable that the large post-holes recorded here belong to a wooden building which occupied the plot prior to the construction of *Herrehuset*. The latter's construction in the next phase, the foundations of which comprehensively overlie these deposits and features, provides a secure *terminus ante quem* of **AD1640** for all activity contexts preceding it.

Discussion

This phase essentially comprises two subphases: an initial (short-lived?) period of intrusive activity which seems to have taken place directly over the exposed floor of the by then probably systematically demolished Building G, followed by the accumulation of silts above the pits and stake-holes. Some large post-holes occur. These may have been established during the period of pit and stake-hole activity, though their posts appear to have been present, either intact or perhaps already rotted, until just prior to the next phase of building associated with *Herrehuset*. This suggests that these posts had greater longevity than the other features, and that the structure they possibly supported stood in the precinct for some time, although isolated from the N. wing. As to what this structure might have been is unclear. There is slight evidence for joist impressions on the surface of deposits in the SE. corner, and the post-built building may have been built with a floor placed directly on deliberately dumped levelling-up deposits, the posts, dump and floor established in one go. Another possibility is that the posts supported a wooden building with a raised floor under which the silty clayey deposits which characterize the phase accumulated over some time. The enigmatic arrangement of the post-holes, and the lack of other clues make interpretation tenuous. The post-holes hold fills which contain rotten wood: this may suggest that the posts had rotted out some time before the next phase. However, it is as likely that these represent the subsequently rotted stumps of posts which were sawn off just prior to the building of *Herrehuset*.

Despite the tenuous nature of these structural remains, it should be noted that in 1639 Oluf Parsberg obtained permission to demolish an "old derelict wooden building" formerly used as the governor's residence (during the period 1556-1616, although its date of construction is not actually recorded): Lysaker infers from the documentary evidence that this building was probably located in the E. wing (it was apparently demolished to make way for Parsberg's new building), and that it was "a large, solid timber construction in two storeys with "*svalgang*" (external communicating passage) and "*karnapp*" (projecting bay). Another building of less certain location is also mentioned in 1629: the "old *Fruerstue* known as Friedrichs Kammer" (*fruerstue*: a hall-like building). Lysaker suggests that it was located in the NE. corner of the Precinct and that it belonged to the original governors' residential complex (Lysaker 1989, 13-14). Might the post-holes in this phase mark the former position of one or other of these building's belonging to the governors' residence? If they are not, then the old residence may lie further S? Perhaps the remains are too sparse to have belonged to what must have been sturdily built structures? One curious factor is the almost complete absence of pottery of late 16th- and early 17th-century date. On the one hand this supports the argumentation for the layers' deposition in the first half of the 16th century, though it also would tend to argue for very little activity on the site in later years. However, the redeposited layers laid down as make-up for *Herrehuset* in the next phase contained a fair proportion of early 17th-century potsherds.

PHASE 6

General Characterization

Following the preceding phase of sporadic activity and the accumulation of silts over the workshop ruins, this phase begins with intensive and systematic construction work associated with **Building I** *Herrehuset* (Figs. 26 and 27). Thick dumped deposits lay to the S. to compensate for the gradient, although it has been proposed above that this dumping probably took place during the previous phase in association with the establishment of a possible post-built building in the S. half of the site.

The foundation for chimney **K65** was the first element to be established in Building I, followed closely by the construction of the groundwall **K67** to the W., the placing of large padstones **K66** against the curtain wall and the installation of wooden flooring **K74** and cobble flooring **K70**. To the W. of the W. groundwall further dumped material bedded the external cobbles, **K79**. The flooring was poorly preserved in Site B, only joists and patchy cobbling surviving. There are some somewhat ambivalent indications of internal restructuring.

Stratigraphic Sequence

Building I

The building's structural features are discussed in individual detail under Constructions.

It is conceivable that the rotten posts in the previous phase's large packed post-holes **K59-62** represent the bases of posts sawn off at this point in time. Their fills were sealed first by **265** and **216**. The deposits by which they were surrounded are all likely to belong to the previous phase (see above). The stone foundation **197** for chimney **30** (**K65**) was established on the surface of **359**, and its base consolidated with fresh dumps of redeposited clays filled with bricks, mortar, bone etc.: **333=?=321=?=329=?=342**. These clayey deposits are of similar character, hence the uncertain correlations. To the E. a narrow shallow slot-like depression **376** filled with silt **365** formed a very tenuous and enigmatic feature. If a real cut, and not simply caused by localized slumping as seems probable, its purpose is elusive, though it might be suggested that some of the make-up deposits

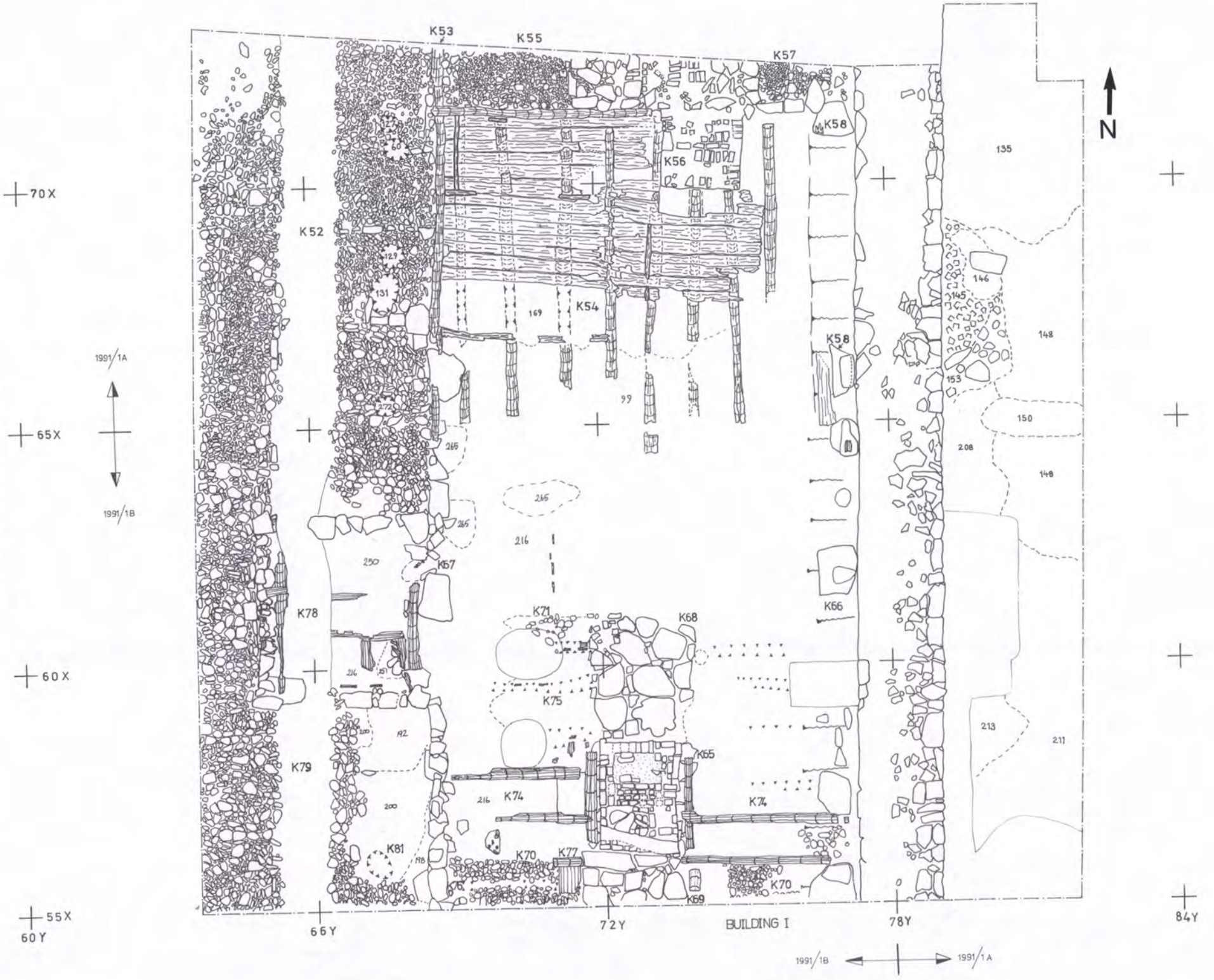


Fig. 26 PHASE 6 1:100

around and under the chimney foundation might have been dug up from here. Two large abutting stones **291** and **282** were set on **365**. At comparable stratigraphic levels there were a number of other large stones set at near-regular intervals within the N-S hollow against the curtain wall - **282, 209, 210, 205**, and **263**. With the exception of **205** these large blocks each bore a superimposed smaller stone (respectively **163, 120, 206**, and **262**), the top heights of which all corresponded closely to 15 m.a.s.l. These paired stones clearly formed a line of regularly-spaced level stone supports for a sill-beam: **261** on **262=204** probably represented the remains of this beam. These features are collectively classified as **K66**. See Site A for equivalent stones. This row of padstones lies at a level only some 10-15cm lower than the W. groundwall **182=254=175**.

Further dumps of brick-filled levelling-up deposits lay around the chimney foundation to the S. (**316, 319**), and further to N. and W. (**281=265=250=311** - Site A equivalents **A275, A223, A317**). On this material over most of the area lay a thin spread of wood-chips **216**, clearly a layer deriving from the working of wood on this surface (**249, 274** and **292** are isolated planks which lay haphazardly within the layer). The W. groundwall was established at this level: **K67** (**=AK53**). As a result of its piecemeal exposure it was given three context numbers: **182**, its S. portion, **175** the projecting square portion midway along its length, and **254** the N. portion (**=A273**), with remnant sill-beam **253** (**=A59**), which is included under **K67**.

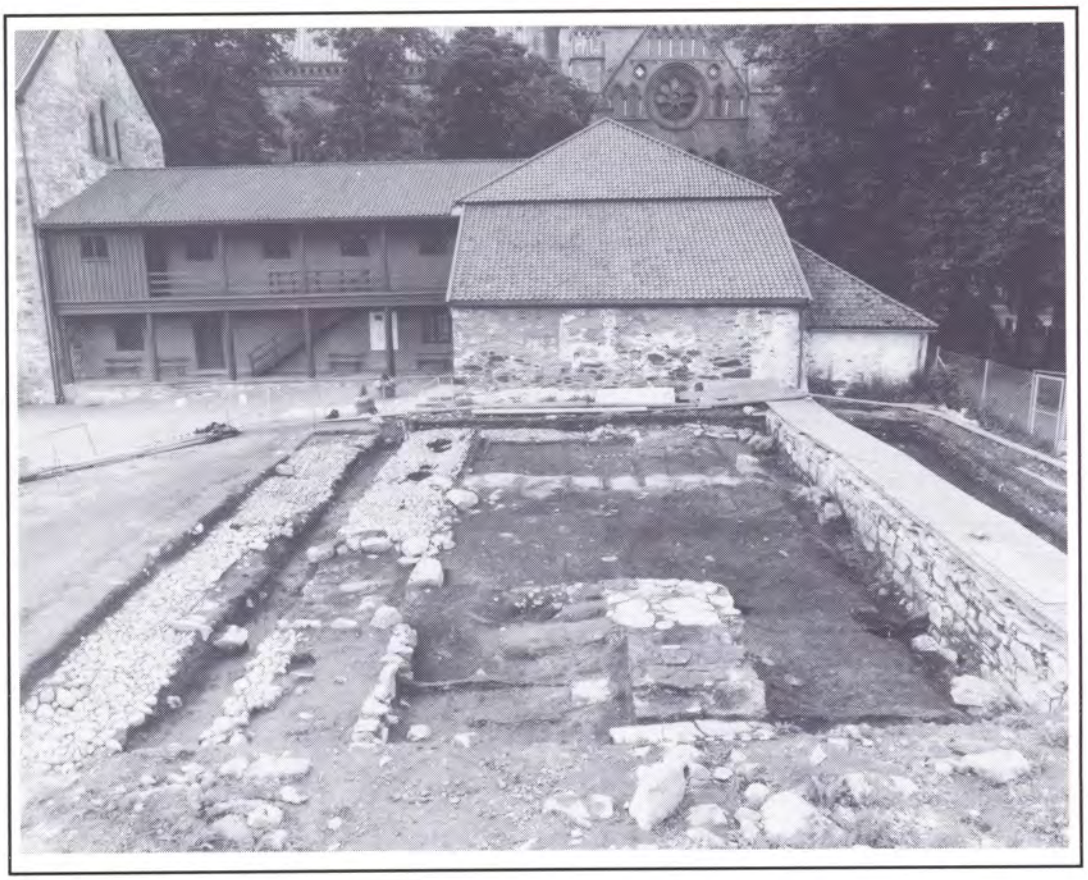


Fig. 27 BUILDING I, Herrehuset (looking N.)

Fig. 28 *BUILDING I, Herrehuset: internal arrangements - cobbles K70, joists K74, chimney elements K65, K68, K69, and groundwall K67 (looking W.)*

Flooring (Fig. 28)

The surviving flooring was very fragmentary, and in the very N. of Site B it had evidently been completely removed in antiquity. In addition, the floor appears to have undergone some modification, although the precise extent, character and sequence of structural changes are difficult to define precisely. The stratigraphical problems were compounded by difficulties in differentiating between very similar deposits.

The two ramp-like stone-paved pads **220 K68** and **222 K69** formed part of the fireplace arrangements (they are given unique K numbers to distinguish them better in the discussion). Although added after the chimney was built, they were clearly integral to the chimney, providing a fire-proof floor area in front of each fireplace. The former rested on bedding mortar **226**, while the latter rested on **245=228**, a sand which also bedded the cobbles **232** and **192** (**K70**) which lay to either side of the stone pad.

Possible evidence for a corresponding cobbled arrangement in association with the N. stone pad **K68** existed in the form of patchy cobbles **229 K71** in bedding sand **219** to the W. However, there was no complementary evidence for cobbling to the E., raising suspicions that a mistake was made during excavation in awarding the patchy cobbles **229** independent structural status: it lay in close proximity to sand and cobbles forming the higher feature in Phase 7, **K82**, and it is possible that cobbles **229** were actually part of that. This situation was far from clear, and the presence of possible joist impressions in the sand here complicates interpretation (see further below).

On stratigraphical grounds, the stone ramps and S. cobbled surface seem to be have been established simultaneously. There was a rather complex series of mortar/organic make-up deposits and structural timbers in the area under **232** cobbles (**K70**) and **K69** stone ramp: at the base lay **288 K72**, a timber placed on a stone in wall **K67**; however, this timber was covered by a number of deposits, and ultimately by the cobbles **K70**. Its function is therefore a mystery, although it should be noted that its original height prior to slumping was equatable with the joists just to the N. (**K74**). It was therefore probably laid down with these, although it was covered by the cobbles. In the area ultimately occupied by stone pad **K69**, three short beams, **299**, **300** and **270** (**K73**) were arranged, presumably to form a timber-frame foundation under the stone ramp.

The surviving remains of the flooring to either side of chimney **K65** itself consisted of poorly preserved E-W aligned regularly-spaced joists and N-S sleeper beams at the chimney base (N.B. all these plank-floor elements are collectively known as **K74**). To the W. of the chimney lay padstones **242**, **243**, and **244**. **242**, a large worked block of soapstone, supported the E. ends of two E-W orientated joists, **214** (N.) and **231** (S.), this last also lying over a sleeper beam **280** placed between **242** and the chimney's foundation. **243** and **244** bore very fragmentary remains of timber on their surfaces; possibly the remains of N-S orientated planking? Intervening between the joists and the wood-chip layer **216** were mortar-laden deposits **238** and **227** and sandy clay **230**. These were presumably deposited to consolidate the joists and fill the space beneath the now vanished floorboards. The same phenomenon occured to the E. of chimney **K65**: **217** corresponded to **227**, bedding joists **223** (S), **224** (N), and **225** (placed N-S on chimney foundation). Joist **224**'s E. end lay up against the large pad-stone **209** (**K66**), apparently inserted at this level. The impressions of four removed joists **204** lay in the surface of **155** to the N. of the preserved joists. Joist **223** rested against the regular N. edge of cobbles **192**.

The question arises as to what significance these differentiated areas of flooring have. Do they themselves coincide with and mark the room divisions or are they specifically related to the fireplace within a room otherwise plank floored? And why were joists apparently set into the surface of the cobbles? Does this imply a partial or general change of floor, or were the cobbles in fact used only as a means of localized consolidation under an original plank floor?

There is evidence that timbers, presumably joists, were inserted into the cobbled surfaces: the patch of cobbles **229 K71** contained the impressions of E-W joists **283** and **246** (**K75**). Comparable evidence for an inserted joist occurs to the S. on the surface of cobbles **232 K70** which bore an E-W groove **267 K76**, with decayed wood in its fill. The cobbles which were deliberately removed to make way for this timber lay on the surface of **232** to N. and S. of the groove. To the E. remnant planking **236 K77** overlay the cobbles **232** (layer **284** intervening and also stretching N. to partly cover joist **231**), and on joist **239** (also **K77**) which also appeared to encroach over the cobbles.

This evidence appears to indicate that the cobbled areas were covered over at some point by a joisted and planked floor. If the evidence of **284** is correct (and this is by no means secure) then the planking over the S. cobbles **232 K70** was placed on a deposit which may have accumulated following the removal of planks over the joists to the N. However, the stratigraphical information is not clear enough

to clarify whether this change was confined to the cobbled areas or whether the joists which survive immediately to W. and E. of the chimney are also secondary inserts, and that therefore all the surviving wooden elements (ie. **K74-77**) are part of a second flooring level.

In favour of the latter is the regular spacing and comparable heights of all the joists, both to E. and W. That all the joists were secondary might explain the presence of the joist impressions **204** to the NE. in N12-13: if these mark original joists, then this would imply that there was never cobbling here. However, they lay on what was taken to be layer **155** which may have possibly been deposited during or after localized disturbance within the building i.e. possibly after the removal of the floor to the N. in M13-N13 (it covered joist **259=A214** - part of **AK54** - and contained debris, including a small pile of glazed floor tiles which must have been set there deliberately), and after a small portion of the N. stone pad **K68** had collapsed (bedding mortar **226** spilled out to the E. and a stone was dislodged and lay some distance away). Consequently, it is conceivable that any pre-existing cobbles may have been removed. Similarly, the enigmatic isolated patch of rather loosely consolidated cobbles **255** in N13 may be suggestive of two successive floor levels, although these may simply have been dumped; however, they are recorded as having been set on bedding sand **228**, and covered with **217**, the latter implying their existence prior to the insertion of joists **223** and **224** (**K74**).

This said, it seems somewhat bizarre that whatever flooring (cobbles?) may have existed prior to the joists to E. and W. of the chimney should have been removed altogether in just those areas, while cobbles were left in place to the S. and NW. I think it most reasonable to assume that the cobbles comprised integral parts of the original flooring, flooring which otherwise was probably planked. At some point joists were inserted into the surface of the cobbles, and presumably the whole floor area was planked at this stage. (Layer **155** is perhaps actually best interpreted as the exposed surface of the ground surface which lay under the removed planking). This process may have taken place at any time in the lifetime of the building prior to the demolition of the chimney. It is also just conceivable that the demonstrably inserted joists were actually placed here during the next phase, as part of the possible reorganization within the lines of *Herrehuset* (see Phase 7). Unfortunately, the stratigraphical information is so confused that the precise sequence and character of arrangements is unclear. There was also no physical evidence for partition walls, so room divisions must be inferred on the basis of documentary information (see Discussion).

To the N. **187** (=**A121**) was a probable make-up layer which extended under the original flooring prior to its removal. An isolated N-S plank **203** in gravel **202** lay on this layer: this may, with a similarly orientated and fragmentary timber joist **259** be all that remains of the vanished original, presumably planked, floor. Note that the joists' orientation matched those in Site A rather than those to the S.

Further deposits and timber structural elements (collectively **K78**) lay to the W. in association with the projecting part of the groundwall **K67**. Above wood chips **216** lay a short N-S length of timber **275**. Parallel to this a similarly short length, **277**, resting on a charcoal deposit **276**. These timbers' N. ends terminated under the line of E-W timber **235**. Intervening between these timbers was a localized deposit of mortar with a small cluster of stones, **251**, reminiscent of that bedding **220**. It is suggested that this patch of timbers, mortars and stones may indicate an attempt at localized consolidation. Given the possibility that this room housed stairs to the first floor, it is tempting to interpret this tentatively as a stair foundation. In the N. part of the projecting area was a grey silt **247**, probably the same as **187** further E. The joist-like timbers **233**, **234**, **240=168** and **235** were laid down at this level, with **275** and **277** forming the basis of the flooring here. This was presumably a plank floor, although no planks survived.

Due to systematic clearance and demolition, nothing which could be classified as sealed occupation deposits were found within the building; however, burnt deposits **29** and **241** represent the remains of the final fires lit in the chimney fireplaces.

The cobbled yard (**K79**)

This received two context numbers - **136** and **143** - due to piecemeal exposure. To the S. in L12 the cobbles were set above a thick sequence of dumped silts, sands and clays, deliberate make-up. Less material was required further N. for this purpose. As already observed, Building I's groundwall **K67** was one of the first elements established, and the wood chips from the erection of the wooden walls, layer **216**, also lay in the SW. corner of the site. Above this, and along the length of the W. side of the c. 0.10-0.70m high wall **K67** was dumped a series of very mixed debris-laden deposits, evidently redeposited: **330**, **310**, **298**, **303**, **294=?=286**, **293**, **279**, **199**, **200**. A short length of timber on **286**, **295**, was probably not structural. A stone-packed post-hole, **278 K80** was located in L12, cutting **279** though apparently sealed by layer **200** which bedded the cobbles. It therefore seem to have had a short life, and was probably related to construction work (for scaffolding?). Another post-hole lay just to the E. of this, **271 K81**. Its fill contained cobbles, which were probably inserted into the hole during or after repair activities on the cobbled surface (see below). The post-hole is likely to have been originally incorporated within the cobbles, and may have held a contemporary post. It should be compared to those found in this phase in Site A, there interpreted as post-holes for the posts supporting a first-floor *svalgang* (external communicating passage).

The cobbled surface was for the most part intact, though uneven due to differential slumping. However, in the S. in M12c there was clear evidence of disturbance and of subsequent patchy repair. The cobbles were at some point removed from a localized area along the southern length of **K67** (cobble impressions left in the surface of **200**). The post-hole **K81** was then emptied of its post and filled with **268** and sealed by a localized accumulation of silt, **201**. Clay **198** and gravel **183** were then deposited, and a small area of cobbling was replaced to the SW.

Dereliction/destruction deposits

On the surface of the cobbles **K70** to the S. lay a thin dark brown silty sand, **191=237**. **221** was patchy sand localized to the joists **223-5** (**K74**), deposited after they went out of use. The most emphatic evidence for destruction of a standing structure was the thick deposit of mortar, brick and tile fragments **186**. This apparently sealed the aforementioned layers and structural elements in the immediate area around the chimney. It appeared to cover the chimney stump itself. However, and this is important, in this it may have been confused with an identical, but stratigraphically higher deposit, **28** (see next phase for discussion). Between these deposits there were intervening deposits and traces of inserted structures (Phase 7). Consequently it is possible that **186** merely represents <u>partial</u> demolition/collapse of the chimney, its full demolition (**28**) ensuing at the end of the next phase. It has already been mentioned that some of the inserted joist impressions, and the sand-and-cobbles **K75** may in fact relate to such secondary activity.

<u>Descriptions of Constructions</u>

Building I - Herrehuset

On the basis of archaeological and historical evidence, this was a substantial 2-storeyed multi-roomed wooden house which occupied a large part of the precinct's E. wing. We have to date excavated c. 75% of its area, revealing its ground-floor foundations: a W. groundwall with a characteristic square portico-like projection (as represented on Naucler's plan of 1658); the bases of two brick-built

chimneys (the N. and central chimneys as shown on Maschius's Prospect - see Fig. 29); variably preserved areas of differentiated flooring, both planked and cobbled; a row of massive low stone rubble pillars against the curtain wall which presumably accommodated the E. wall's sill-beam; and, puncturing an extensive area of cobbled yard fronting the building to the W., a number of post-holes which supported a projecting first-floor external communicating passage (*svalgang*), and which is known to have continued round the S. gable-end and along the E. side, where it was presumably supported on posts based on the specially levelled-down curtain wall (as depicted by Maschius). See Discussion for more details of the building.

There were traces of damage, dereliction and possible repair, all historically recorded.

Fig. 29 *Detail from Maschius's Prospect dated 1674, showing Herrehuset's E. frontage and chimneys.*

K65 Base of chimney containing two back-to-back fireplaces: 197, 347, 346, 30

(See Daybook II 15.8. entry for extended detail; also comprehensive photo record, plans and elevation drawings in archive).

197: rectangular foundation pad of stones, large angular rubble mostly (a few worked stones), closely set, unmortared. 2.60m x 2.0m. Dumped on this **347** bricky soil, on which sand **346** and a peripheral course of angular rubble was established. It was at this level that the brick superstructure was established.

30: a slightly irregular rectangular brick-built chimney base, incorporating two opposed fireplaces to N. and S. (see Fig. 28). The northernmost of these comprised a sand-filled chamber (in effect the brickwork simply formed a shell here). There were indications that this chamber was back-filled with sand and mortar, on top of which were laid flat stone slabs (not preserved, since this had been partly emptied in antiquity, although enough traces to suggest the fireplace lay at the same level as that to the S.). The S. half of the chimney base was, in

contrast, of solid construction. The fireplace's flat stone slabs were laid above this on a layer of mortar. The mortared brickwork was laid somewhat crudely, possibly indicative of poor workmanship. The red bricks, predominantly of same size (0.25mx0.12mx0.05m), and the facing bricks were laid in alternate courses, long-side over short-side etc. Some yellow bricks and stones occasionally incorporated. Patchy traces of mortar rendering were preserved on the exterior.

N.B. A number of the red bricks bore plasterwork with traces of painted motifs: at least two varieties - red on white and black and yellow on white - showing plant motifs. Others showed traces of previous burning. Clearly these were re-used, deriving from a destroyed wall.

Dimensions: 1.5-1.6m x 2.2-2.3m x 0.90m max. preserved height (incl. foundation).

K66 **A row of regularly spaced massive set stones and short length of timber: padstones for E. sill-beam (261): 120, 209, 291, 282, 163, 206, 210, 205, 262, 263** (=*AK58*)

5 pairs of superimposed stones (large lower, small upper) forming row of low pad-stone supports. Placed in localized hollow parallel to internal face of curtain wall. Clearly intended to provide a raised and levelled support here. Stones possibly derived from partly demolished curtain wall itself? **261** was a very short length of timber preserved on stone **262**: probable remains of N-S orientated sill-beam.

K67 **Low groundwall and short length of sill-beam: 175=254=180=289, 288** (=*AK53*)

W. groundwall of Building I: comprised two straight N-S sections to N. and S. of a square projecting section. The narrow wall ran the full length of the excavated area (18m). It comprised angular rubble for the most part, variously sized, some with residual mortar implying reuse. To the N. it was formed of a single course of mortared blocks, on one of which sat a short rotted portion of N-S sill-beam, **288**. The projecting square "portico" comprised roughly assembled variously-sized stones, slabs and bricks on three sides and a large isolated block to E. Apart from the W. section no interstitial mortar apparent - mortar confined to upper surfaces. Larger blocks placed at corners. Single course. The S. section of wall increased in height to S. to compensate for increasing S.-sloping gradient (max. height 0.70m). It consisted of crudely mortared rubble, large and small, occasional brick, in two main courses with pinning stones. Roughly built. Ground-set (ie. no foundation trench).

K68 **Stone-paved pad or ramp: 220**

N. of chimney base **K65**, abutting it. Flat-laid stones set in and on mortar **226**, forming a rectangular ramp sloping gently to N. Composed of large and small slabs and fragments of soapstone rubble, and one massive profiled pillar-section of marble bearing mason's bearing-mark. A square patch of mortared red tiles in NW. corner (secondary?). Slightly disturbed condition. Ramp dimensions: c. 2.0m x 2.60m. Fire-secure flooring medium fronting fireplace.

K69 **Stone-paved pad or ramp: 222**

S. of chimney base **K65**, abutting it. Extends S. into section, only partly excavated. Probably directly analogous to **K68**. Composed of flat-laid stones, predominantly variously sized soapstone rubble, some reused, and occasional cobbles, set on sand. Portion of S-sloping paved ramp. Width of ramp: 2.10m.

K70 Cobbled surfaces: 192, 232

Two directly opposed portions of laid cobbled flooring juxtaposed **K69** to W. and E. Extend S. into section. Slope down on either side of **K69**. Composed of small cobble stones set on sand bedding. Both areas have straight clearly defined N. edge. Cobbles to E. disturbed and incomplete; to W. bear trace of inserted beam **K76** and partly overlain by planking **K77**.

K71 Patch of cobbles: 229

Extremely disturbed isolated patch of cobbles in bedding sand **219**, situated to W. of **K68**. Remains of floor surface (cf. **K70**), or remnant **K82** (Phase 7)? Bears slots **K75**, traces of inserted timbers?

K72 Timber beam: 288

Short rotted beam, orientated E-W, set on lower protruding stone in **K67**. Slumped. Supportive role uncertain. 1.40m long x 0.20m wide.

K73 3 co-aligned beams forming a frame: 270, 299, 300

Short lengths of timber arranged to form three sides of a square frame beneath make-up deposits under ramp **K69**. Consolidation for ramp bedding? Shorter lengths to E. and W. (0.40m and 0.50m), longer timber to N. (1.30m).

K74 Stones and timber beams laid to either side of chimney: padstones and floor joists: 242, 243, 244, 214, 231, 280, 239?, 223, 224, 225, 204

A unified structural arrangement (though beam **239** abutting cobbles **K70** to SW. may have been inserted). All were rotted and compressed, though probably formerly substantial square-sectioned beams. To W. padstones **242**, **243**, **244**, established (the first a large worked slab of masonry). Of the timbers, **225** and **280** were laid first, N-S on protruding stones in chimney foundation, to which they were confined. Ends of E-W joists then laid on these. Near-symmetrical arrangement to either side of chimney. Surviving timbers regularly spaced c. 0.70m apart (**239** also conforms to this arrangement, and the positions of slots **K75** do not diverge greatly). Possible traces of N-S planking on padstones **243** and **244** and sand **219** to N. To the NE. four E-W linear slots in **155** mark the position of robbed-out joists; these conform well in dimensions and positioning with the preserved timbers to S. All the aforementioned comprise the surviving foundations of a probable plank floor.

K75 3 equidistant slots in surface of K71: joist impressions?: 252, 246, 283

E-W aligned shallow slots, each containing occasional fragments of E-W lying wood, remnant joists? Near-equatable with dimensions, pattern and heights of joists **K74**. Inserted or part of same flooring? Possible Phase 7 features (cf. **K83**)?

K76 Slot in surface of K70: joist impression?: 267

E-W narrow shallow linear slot: stones in cobbles **232** were presumably removed in order to accommodate an inserted timber, of which only extremely faint traces observed. This slot did not fit with the pattern of the evenly-spaced joists **K74**. Secondary? Phase 7 feature? Terminated to E. 2.50m long x c. 0.14m wide x c. 0.04m deep.

K77 Fragmentary plank? and associated joist?: secondary flooring?: 236, 239?

Small fragment of planking, N-S, **236**, abutting joist **239**. Stratigraphic position unclear. Plank **236** clearly overlay the cobbles **K70** here. Preserved dimensions: 0.50m x 0.45m (disturbed, fragmented and rotted). Inserted floor level? Phase 7 features?

K78 Group of associated timbers: flooring, including possible stair foundation(?), in square W. projecting "porch": 275, 277, 233, 234, 235, 168=240

A number of timber beams in coalignment: joists forming basis for flooring. Rotted and fragmentary. To E. and W. of square area two long N-S beams, **235** and **240**, which supported E-W joists **234** and **235**. To S. a discrete group of timbers, **277** and **275**, form a small square, over which a small cluster of stones in compact mortar (**251**) lie: might this be localized consolidation of the floor here to support a stair base, for example?

K79 Extensive cobbled surface: exterior yard fronting Building I: 136=143 (*=AK52*)

Set on thick levelling-up deposits, and abutting groundwall **K67** on its W. side, a broad extent of cobbling (extending across whole frontage of Building I). Extends into sections. Composed of closely set cobbles of various sizes lodged in bedding sand. Surface undulating due to subsidence and broken by later intrusions. Robbed-out in area against S. portion of groundwall. Post-hole **K81** probably housed a contemporary post.

K80 Post-hole: 278

Ovoid stone-packed post-hole, apparently incorporated within make-up for cobbling **K79**, which sealed it. 0.50m x 0.45m diam. x 0.16m deep. Possibly related to construction of Building I? Base for scaffolding, for example?

K81 Post-hole: 271, 268

Ovoid post-hole. Robbed of post and subsequently backfilled with cobbles (derived from immediate locality) and debris laden humusy soil **268**. 0.55m x 0.50m diam. x 0.25m deep. Probably incorporated within cobbles **K79** to house base of post supporting projecting first-floor "svalgang" (cf. post-holes **A60** and **A129** to N. incorporated in cobbles **AK52**).

Dating

Documentary evidence: Herrehuset constructed in 1640 and demolished in 1672 (see Lysaker 1989).

Potsherds: The lowest deposits contain some residual 16th-century sherds. Otherwise a variety of imported 17th-century wares, with, notably, one possible sherd of very early Trønder ware. The (redeposited) make-up deposits sealed by the cobbles **K79** included Westerwald and Cologne wares

(including encrusted ware, 1575-1625) and pipkin handles. The internal make-up deposits held Westerwald, pipkin handles, Jutish blackware, German slipware, and a 17th-century costrel. Of particular note was a sherd of a possible Trønder chafer dish (if so, one of the earliest from the town) from **217**, a layer associated with the flooring. However, this layer was not securely sealed, and it may be an intrusive sherd, deposited after the removal of the floorboards (this factor must be taken into account in those localities where flooring was removed in antiquity e.g. **155**, **187**). In addition, a sherd of Portuguese or Dutch tin-glazed ware (1600-1650) from **226**, a layer sealed by an internal structure.

Clay pipe: This was the first phase with associated clay pipe fragments (Dutch and English). The broad date range of makers' marks covers the period c. 1620 to the last quarter of the 17th century. In sealed make-up deposits under cobbles **K79** were pipe bowls and a decorated stem datable to 1620-1640 (**293, 279**). Recovered from sealed make-up deposits under internal structures were bowls and decorated stems of c. 1620 to mid 17th-century date (probably c. 1640). These correspond well with the historically recorded construction date for the building. In areas where the flooring was removed in antiquity, some possibly intrusive material occurred: from **247**, **251**, **265**, **155** and **187** were derived pipe bowls and stems from the late 17th century (ie. 1670+).

Coins: from **311** and **216** two coins, both of 1448-1481 date, clearly residual. From **286** and **199**, deposits sealed by external cobbles **K79**, coins of 1621 and 1523-37 date respectively. From **276** and **155** two coins dated 1648.

Discussion

Oluf Parsberg's *Herrehus*, or Governor's mansion house, built in 1640 and demolished in 1672, is the subject of this phase. Contemporary sources provide detailed information about the building's structural details and internal organization. It was a substantial multi-roomed 2-storeyed wooden building used for housing servants and guests, entertaining, and collecting taxes. While of course we only have the excavated remains of the ground-floor foundations, the physical remains can be compared with the available documentary sources to provide detailed information about the character and fate of the building (see Lysaker, 1989, 26-28), although there are some interesting discrepancies and enigmas.

The W. groundwall's plan, with the characteristic projecting square arrangement, corresponds exactly with the building's representation on Naucler's plan of 1658. This porch-like projection lies midway along the length of the building. The wall was of simple construction, and built up in such a way as to compensate for the south-sloping gradient, set directly on the ground surface with no trace of a foundation trench. In this it does not correspond with the contemporary accounts for the building work which state that the groundwall to W., S. and N. was established to a depth of 2.5 alen (1.5m). To the E. the curtain wall served as a groundwall, and was partly demolished (presumably to its present level) to accommodate the new building. It is probable that in fact the wall supported the posts which bore the projecting first-floor *svalgang* (external communicating passage). The building's E. sill-beam and timber walling were apparently placed on a row of massive padstones set against the interior of the curtain wall. This fits with the impression given by the building's representation in Maschius's 17th-century view of the town, where massive posts supporting a *svalgang* are visible, apparently resting on the curtain wall.

The building is recorded as having been 14 alen (c. 8.75m) broad at ground level. This matches exactly the distance between the inside of the curtain wall and the top of the length of groundwall S. of the projecting "porch".

The historical records relate that the walling comprised timbers (presumably *lafted* logs), shaped on site: this work resulted in the accumulation of a layer of wood chips and scattered timbers across the building site. The walls were also clad externally with planks, and the roof comprised planks, birch bark insulation and turfs.

Maschius's view shows three chimney stacks, apparently regularly spaced along the length of the building. The northernmost of these was revealed in Site A while the central chimney base lay in Site B. These three chimney stacks are also recorded in the building accounts, where they are said to accommodate 13 fireplaces serving rooms on both floors. Only Site B's chimney base (**K65**) preserved evidence for the actual fireplaces: there were two, placed back-to-back, to N. and S. Established on stone foundations, the chimney stacks were brick-built. According to the accounts, 27,000 imported Dutch bricks were used in their construction. The bricks salvaged from **K65**, however, were predominantly red bricks of medieval/early post-medieval format, in some instances bearing remnant mortar covered with medieval painted motifs. In this instance at least, it would appear that the builders re-used old bricks, possibly obtained locally (a "red wall" is recorded as having been demolished in the N. wing in 1614-16; the bricks may perhaps have derived from this, part of a building dating from Archbishop Erik Walkendorff's time). This casts some doubt on the accuracy (and honesty!) of the building accounts (though of course we only had a small portion of both chimneys preserved and both old and new bricks may have been used).

As far as the flooring and the organization and sub-division of the ground-floor interior into rooms is concerned, there is both physical and documentary evidence available. However, both are somewhat ambivalent, as precise dimensions and positions of rooms are not given, and there are no surviving partition walls. Neither have we excavated the whole building. That said, the recorded rooms on the ground floor are as follows (N. to S., each occupying the full breadth of the building and with their own doors to the yard) (see Fig.30):

skriverstue (accounting room/counting house/treasury): with chimney fireplace;

skriverkammer (accounting chamber);

Reersvends kammer (personal name) with *drengestue* (assistants'/apprentices' room) within (rooms divided with a grillwork partition);

borgestuen (servants' room): with chimney fireplace;

skredderkammer (tailor's chamber, though in 1656 recorded as being used as the *handskrivers kammer* - the scribe's chamber): with chimney fireplace;

a *trapperom* (stair-room - chamber beneath(?) a spiral staircase communicating with the first floor);

gjestekammer (guest chamber, though in 1656 recorded as having been used formerly as a *kipperboe* - (??) - but then known as *Fogdens kammer* - the Bailiff's chamber): with chimney fireplace;

budeistuen (milkmaid's room): with chimney fireplace, and the *melkekammer* (dairy) within.

If we use the chimney fireplaces as a primary guide, it seems that the building's most important room, the *skriverstue* (where tax collection was conducted) was served by the building's southernmost chimney. Two successive rooms lie N. of this, both without chimney fireplaces. The next room to be served by a chimney fireplace is the *borgestue*. It is possibly this room into which the southern fireplace in Site B's **K65** projects, and the stone hearth-front and cobbled floor here lie within the

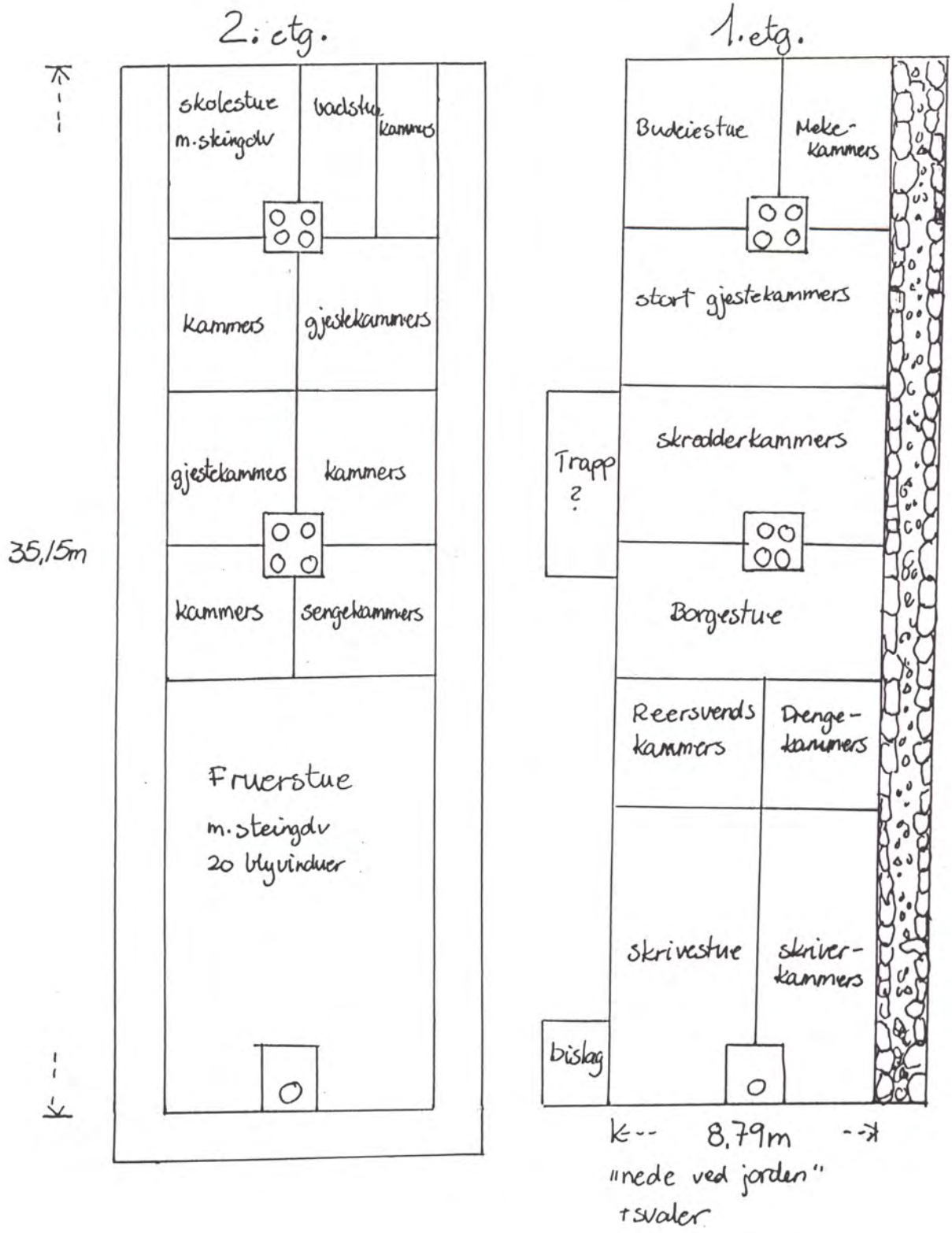


Fig. 30 *Schematic reconstruction of Herrehuset's internal layout (ground floor to right).*

servants' room. The northern fireplace in **K65** would therefore have served the neighbouring *skredderkammer*. The *trapperom* may have occupied the projecting "porch", or vestibule, to the W. Continuing N., neighbouring the *skreddekammer* lay another room served by a chimney fireplace, namely the *gjestekammer*: this would have lain to the S. of Site A's chimney, and the fine planked floor there (**AK54**) is likely to reflect the status of the room. To the very N. the cobbled flooring **AK55** probably belongs to the rooms associated with the dairy, the milkmaid's room itself being served by a chimney fireplace.

Unfortunately no partition walls survived intact to precisely define the room areas. The clearest division would appear to be that between the cobbled flooring of the milkmaid's room/dairy and the plank flooring of the guest room to the N. in Site A. The division here would appear to lie midway along the chimney on either side of it.

The division between the *gjesterom* and the *skredderkammer* has been removed along with the rest of the flooring in the latter. This is in itself noteworthy: in 1666 it was indeed recorded that this very room's floor was ripped up. A postulated division can therefore be drawn at the southernmost extent of the surviving joists for the guest room's flooring. The generally floorless (apart from an enigmatic patch of cobbles to the NW. of the fireplace) *skredderkammer* might conceivably have been equivalent in area to the *gjesterom*. Since it also incorporated a chimney fireplace it is tempting to draw a postulated division between it and the *borgestuen* to the S. at a point midway along the length of the chimney **K65**, as occurs with the rooms to either side of the northern chimney. There is no physical evidence for this however. Indeed, the positions of the cobbled areas seem rather incongruous in such an arrangement: they would have stood some distance out from the partition. Might instead the edges of the cobbling mark the positions of partition walling? If so, then there were two very small chambers to either side of the chimney.

The projecting "porch" to the W. possibly housed the *trapperom*, presumably a vestibule-like room containing spiral stairs leading to the first-floor: there is a possible foundation for these (**K78**) in the SE. corner of the room.

According to the surviving accounts, Parsberg appears to have spared no expense on the house, employing expert craftsmen and importing building materials, such as Dutch brick and French window glass. When one compares the character of the physical remains of the chimneys, flooring and groundwall, one is left with a slightly contradictory impression: the groundwall is an insubstantial free-standing wall, the flooring of variable character with internal cobbling in evidence, and the chimneys somewhat crudely constructed using medieval/early post-medieval brick.

The dating evidence, in particular the clay pipes, from sealed construction contexts, tally well with the recorded date of construction. Likewise similar evidence from unsealed contexts points to intrusive activity above the ruin (see next phase).

Dereliction and partial reconstruction(?) after 1658

During their short occupation of the complex the Swedes appear to have ransacked and vandalized the building, and the Norwegian-Danish cannon bombardment during the siege of the town also wreaked much structural damage to the building, as recorded in a survey of 1662. In the upper storey, the roof was rotten and holed, the eastern wall holed, the chimney stacks shattered and in ruins, the windows glassless, and the interior ransacked and vandalized. On the ground floor some rooms were repaired and in use: "skriverstuen samt Fogets og Hoffmands Kammer". Only a few years later in 1666 a survey of the ground floor states that the northern chimney was in a poor state of repair, the guest room's ceiling dilapidated, the *skredderkammers*/tailor's chamber's floor and ceiling ripped out, the

middle chimney shattered, the *borgestue*/servants' room's door and windows absent. In 1671 the building was regarded as unworthy of renovation, and its destruction was recommended. It was dismantled the following year.

If the proposed location for *skredderkammer*/the tailor's room is correct, the recorded absence of flooring in 1666 corresponds well with the situation as recorded on site. In the same year it seems clear that the *borgestue* was unusable, and the chimney in ruins. This room is not one of those recorded as having been renovated after 1658. However, there are curiously some traces of possible secondary flooring inserted above the cobbles here (as there is in the surface of the cobbles **K71**, ostensibly in *skredderkammer*). Doubt has been raised above as to the associations of the apparently inserted features: they may indeed relate to this reconstruction, although the historical accounts suggest that only the southernmost rooms were renovated. This perhaps lends some weight to the possibility that in fact the inserted joists and cobbles (**K71-K75-K77**) possibly belong to the next phase of structural reorganization.

PHASE 7

General Characterization

This phase (Figs. 31 and 32) is characterized by fresh deposits and features of somewhat enigmatic origin and function, in particular an arrow-shaped area of cobbles/paving **K82**. Stratigraphically, this certainly encroached over the preceding phase's stone ramp **K68**, and appeared to post-date a deposit associated with the partial or complete demolition of the chimney **K65** and the subsequent deposition of sand make-up to the N. and E. On these grounds, it is assumed that **K82** was established after the demolition of Building I, *Herrehuset*. It must be stressed that this is inferred only; the W. cobbles **K79** are respected, and are probably still in use in this phase, and this, together with the known historical evidence for dereliction and partial reconstruction of Herrehuset do leave open the alternative possibility that this phase's arrangements comprise part of internal reconstruction during a phase of dereliction. Yet another possibility is that the fragmentary remains form evidence for the insertion, directly within the structural lines of *Herrehus*, of a new building. It cannot be stated categorically what the function of the arrow-shaped cobbles **K82** was, or indeed whether this structure was incorporated within the old building, or a new building inserted above the partly demolished foundations of Building I (perhaps re-using the W. groundwall, the pillar supports, and/or the curtain wall), or under open sky, forming part of a yard, for example. However, the sum of the evidence (including artefactual evidence) from both sites possibly points to the insertion of a new building of somewhat primitive construction within the same lines as Herrehuset. This might best be termed a "shadow" building, **Building J**.

Stratigraphic Sequence

The mortar and brick debris **186,** presumably deriving from the demolition of chimney **K** was overlain to the E. by thick sand dump **193**, presumably make-up. This extended N. as **189=156=167=?=215**. Bedding sand **179** for the S. part of the arrow-shaped arrangement of cobbles, bricks and stone slabs, **174 K82**, lay above this. A strip of wood along their NW. edge, **180**, clearly formed an integral part of this structure, and is included under **K82**. Sand **193** contained a couple of extremely faint E-W aligned sunken depressions (unnumbered) which might conceivably be traces of removed timbers. It also contained a thin strip of poorly-preserved timber, **188 K83**, again possibly all that remained of a former structural element associated with the cobbles and sand. A shallow round depression, possible post-hole **195 K84**, appeared to be cut from this level. Either cut into, or incorporated within cobbles **174 K82** was a possible post-hole **149 K85**. The cutting level for **211 K86**

Fig. 31 PHASE 7 1:100

post-hole? was very difficult to establish. It is possible that it was inserted as high as **172**, but it would in that case have been short-lived and filled quickly with the clay make-up **110** for the next phase's building. All these posts are difficult to place in connection with this or the ensuing phase: they were possibly temporary, and might have accommodated scaffolding posts, for example. For the moment they float between the two phases.

Fig. 32 PHASE 7 (looking N.)

In the partly-robbed out gap in the cobbles **K79** clayey debris-filled layers **184** and **172** accumulated, while on the surface of the intact cobbles lay silt **154**. The two aforementioned deposits probably correlate respectively with **181** and **170** within the interior of Building I. **181** encroached over the mortar debris **186**. Also within the building at this level were **194=213** and **218**, all with brick and mortar fragments. In the square "porch" area, the exposed timbers of the robbed-out floor were interspersed with sand and silty debris-laden deposits **264**, **266**, **269**, and **248**. This latter may be a patch of the same sand strewn across the E. of the site ie. **193** etc, as might the sand **219** placed in the preceding phase. An error may have been during excavation, and it is conceivable that the cobbles **229 K71** within the sand were in fact a disturbed portion of this phase's cobbles **174 K82**.
In M13 to the NW. of the cobbles **K82**, abutting them, were a series of debris-laden deposits, possibly make-up forming a contemporary surface: **177** (=**A156**), **176** and **171** (=**A152**).

In N12 to the SE. of the cobbles **K82**, the sand dump was overlain by further dumped deposits: **208**, full of mortar and brick debris and sand **185**. Above this a silty deposit with debris, **190**, which appeared to correlate with a number of very similar deposits to the W. of the demolished chimney: **207=?=178=?=170=172=?=154**. These were possibly also dumped make-up, raising the ground to the

level of cobbles **K82**. Above **190** lay a thick deposit of mortar and brick debris, **28**, practically indistinguishable in character from lower **186**. Indeed their similarity caused problems during excavation, although it was eventually recognized that they comprised two separate deposits, although of course this distinction could only be made where layers intervened; in the immediate vicinity of the chimney it was impossible to distinguish between them which has led to stratigraphic uncertainties. This material was either redeposited **186**, or possibly indicates that the chimney was not fully demolished previously?

It should be noted that **28** appeared to stop abruptly at its N. edge, this edge forming a quite straight E-W line. Notably this appeared to coincide with the location of the thin strip of timber **188 K83**: perhaps this suggests that there was indeed some sort of wooden barrier here which stopped **28** from spreading further N.?

Succeeding these deposits and the cobbling was a silty accumulation **135** (=**A49**), possibly the same as **173** in N13.

Descriptions of Constructions

Building J (K82?, K83?)

If this building did in fact exist, and is not simply an illusion, then it left behind very little evidence. This may possibly be the result of its having been inserted within the surviving foundations of *Herrehuset*, re-using certain structural components, notably the cobbled yard to the W., the W. groundwall, and possibly the row of padstone supports inside the curtain wall and even the chimney. It may also suggest that the building was possibly a simple insubstantial structure. The enigmatic arrow-shaped cobbles may have formed some sort of internal arrangement. To the N. in Site A gravel (a floor?) was dumped over the old floorboards. There were only faint suggestions of wooden joists(?) to the S.

Historical evidence, equally ambivalent, also hints at the possible presence, after 1672, of a long building in the former position of *Herrehuset* (see below, and Fig. 33).

K82 Arrow-shaped formation of cobbles, brick and stone slabs, with trace of associated timber beam: 174, 180

Irregular S-pointing arrow-shaped stone arrangement, comprising flat angular rubble (to the N.), smaller angular rubble slabs and occasional cobbles (to the E.), and a random mix of large and small cobbles, angular rubble slabs, and red and yellow brick. Crude, haphazard composition. Disturbed, partly robbed (to N.). Abuts groundwall **K67** to W., terminates short distance from curtain wall to E. narrows slightly to ends. Straightened edge to S. where it also rises up sharply over concealed edge of **K68** below. Otherwise generally level. Shallow rounded depression/gap near-central at S.edge - 0.07m deep only. Along NW. edge lay an extremely fragmentary length of timber (1.40m long) - integral to the structure? The function of the cobbles remains enigmatic.

K83 Very fragmentary remains of timber: structural element?: 188

Thin and fragmentary strips of wood, aligned E-W., abutted by **174** to N. (partly), **28** to S. With unnumbered faint slots to S. possibly indicative of robbed-out structural elements, for flooring? **188** itself possibly partition wall base, hindering N. encroachment of **28**?

K84 Post-hole?: 195, 196

Round post-hole, stone-packed? 0.55m diam. x 0.29m deep. Fill **196** brown clayey silt and stones. Uncertain function. Possibly scaffolding posts for next phase?

K85 Post-hole: 149, 148

Subcircular post-hole, cut into **K82**, off-centre. 0.55m x 0.48m diam. x 0.24m deep. Fill **148** brown silty sand with stones (stone packing?), and some fragmentary vertical wood (rotted post?). Unknown function. Scaffolding post for next phase?

K86 Post-hole?: 211

Ovoid; 0.70m x 0.60m: depth uncertain. Cf. **K84-85**.

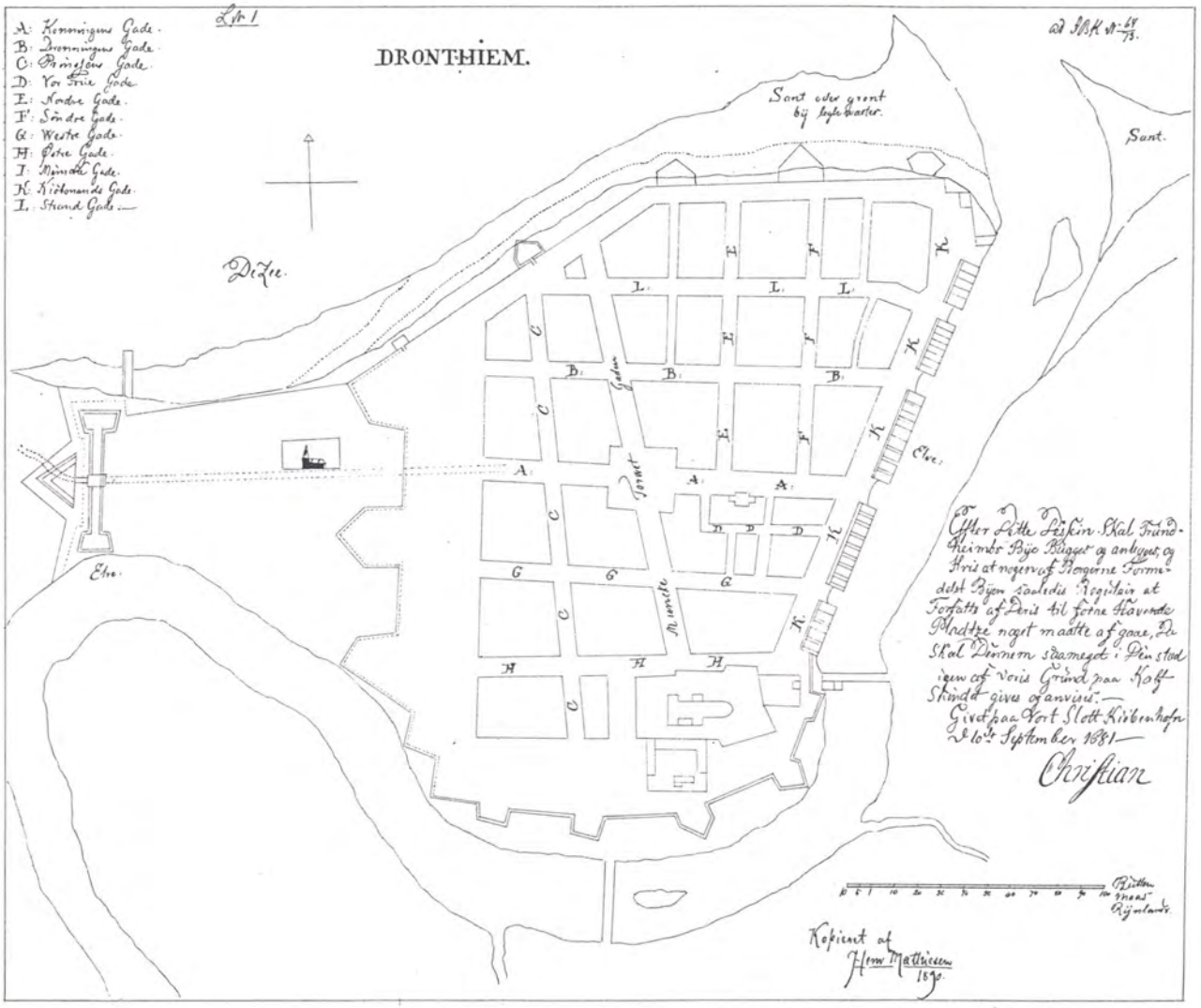


Fig. 33 Cicignon's regulation plan of 1681

Dating

Herrehuset's historically recorded date of demolition provides a *terminus post quem* for subsequent activity, including the possible construction of Building J, of **AD1672.**

Potsherds: This phase sees the first appearance of Chinese porcelain and Trønder ware (the preceding phase's Trønder sherd was possibly intrusive from this phase). Dutch and German redwares predominate, with occasional Jutish black ware, a late tin-glaze and Westerwald. The Trønder ware is almost certainly post c. 1690, the Chinese porcelain late 17th-early 18th.

Clay pipe: The broad date range of marks is c. 1660-1940. However, the majority of forms and the closely datable marks can be said to be concentrated in the late 17th - early 18th century (c. first quarter). No contexts were sealed and the potential for intrusion was significant.

Coins: from **213** a coin of 1523-1537 (residual). From **178** a coin dated to 1618-1660, and from **28** a coin dated 1662.

Cartographic evidence: two maps of 1681 (see Fig. 33 for Cicignon's) ostensibly show the presence of a building in exactly this location, extending N. to join with the Bakery. If their testimony is to be relied on then this may be Building J (see Discussion). By 1708 and/or 1716 further plans show an isolated building set some distance to the S. of the Bakery. This is possibly the next phase's Building K (see phase 8). Consequently, tentative speculation would place the putative Building J after 1672 and prior to 1708.

Discussion

This is a problematic phase; the stratigraphy was complicated and the structural evidence very ambivalent and fragmentary. If the recorded observations are correct then the constructions and deposits are representative of activity which occurred above the pre-existing internal arrangements of *Herrehuset.* The deposits accumulated (eg. the mortar from the collapse of the chimney) or were dumped (the sand as deliberate make-up following the chimney's partial or complete collapse) after the building's floorboards were removed and the internal cobbles went out of use. Likewise, the arrow-shaped arrangement of cobbles and paving stones **K82** physically encroached over the northern pad of stones **K68**, and were inserted after the collapse of debris from the chimney. It has been suggested that the presence of two identical mortar debris deposits, separated by this phase's structural evidence, may imply that the chimney was not fully demolished at first: it is perhaps even conceivable that the fireplaces were re-used during this phase of reconstruction. The function of cobbles **K82** is uncertain, though their close alignment and orientation towards the chimney base may add some weight to the very hypothetical suggestion that the chimney fireplaces were reused. There were some slight traces of associated structural elements at the level of **K82**'s bedding sand, and these cobbles may not have stood in isolation. It is further likely that the pre-existing cobbles to the W., **K79**, remained in use, and it is not inconceivable that the W. groundwall **K67** and the pad-stones **K66** were also re-used. In Site A there is correspondingly ambivalent evidence for secondary deposits and structures placed within the old lines.

The ambivalent evidence does give rise to a number of alternative interpretations: do we have here the remains of internal restructuring within a derelict Herrehus?; are these remains of a new building erected over the demolished Herrehus?; or are these the remains of structures in an open environment, a yard for example?

It is known from historical sources that after 1658 *Herrehuset* rapidly fell derelict, although some rooms on the ground floor were partly refurbished. Could the cobbles **K82** and the sand deposit and associated traces of structures have formed part of this refurbishment? The question of possible restructuring has already been raised in connection with the previous phase's evidence, there being traces of structural changes at a lower level, although these structural changes do not correspond directly with those recorded historically. Likewise, the structural changes in evidence in the present phase do not correspond with those recorded for 1662, which seem to have been confined to other rooms to the S. and N. of those in Site B. Most telling, however, is that the deposits and structures distinguished here were observed to physically overlie pre-existing structures and what must comprise destruction deposits which were of such a substantial nature as to argue for their association with a major demolition rather than simple neglect. Consequently, these contexts are best seen as post-dating Building I's destruction.

Is the character of the remains sufficient to merit their interpretation as belonging to a new building inserted within the lines formed by *Herrehuset's* foundations? The traces of wood are insubstantial and enigmatic, and the arrow-shaped cobbles somewhat crude and of uncertain function. We also cannot prove whether the various walls and padstones were re-used. Nonetheless, it is felt that the sum of fragments may add up to their possible interpretation as the remains of a "shadow" building, probably of somewhat primitive and insubstantial character, inserted closely within *Herrehuset's* old structural lines. It is felt that this is a more satisfactory interpretation of these new arrangements than as their being components in an open yard area, for example.

There is some cartographic evidence which may add a little weight to there having been a new building here: Coucheron's plan and Cicignon's regulation plan of 1681 both show the presence of a long building (N.B without a projecting part to the W.) in exactly this position. If these are representative of the situation in 1681 then it would appear that there was indeed a building erected on *Herrehuset's* plot. Unfortunately these plans are not completely trustworthy as they may have been based on earlier plans whose information was out of date.

The more closely datable clay pipe fragments from these contexts would comply with a post 1672 date for the phase, and with activity in the locality during the last quarter of the 17th century and the earliest part of the 18th century.

The whole question of the precise sequence and character of structural events associated with the lifetime of *Herrehuset* and subsequent arrangements on this plot is a problem which should receive some attention during next year's excavation.

PHASE 8

General Characterization

Following the accumulation of a thin silt deposit over the preceding phase's arrow-shaped cobbles, new structural arrangements on completely new lines occur in this phase (Figs. 34 and 35). If there was a Building J, it was thoroughly and comprehensively demolished. Phase 8 comprises a new building, **Building K**, the N. end of which was confined to Site B, the rest of the building extending S. to await excavation next season. The excavated portion of the building was founded for the most part on stone groundwalls, and subdivided into (two) rooms with different flooring media. There were possible signs of structural repair/adjustment to the walling to the SE. A localized area of cobbles **K88** lay around the N. and NW. perimeter of the building. There was otherwise no structural evidence to the N., the area apparently lying open (see Site A), with patchy fire debris and thicker accumulations

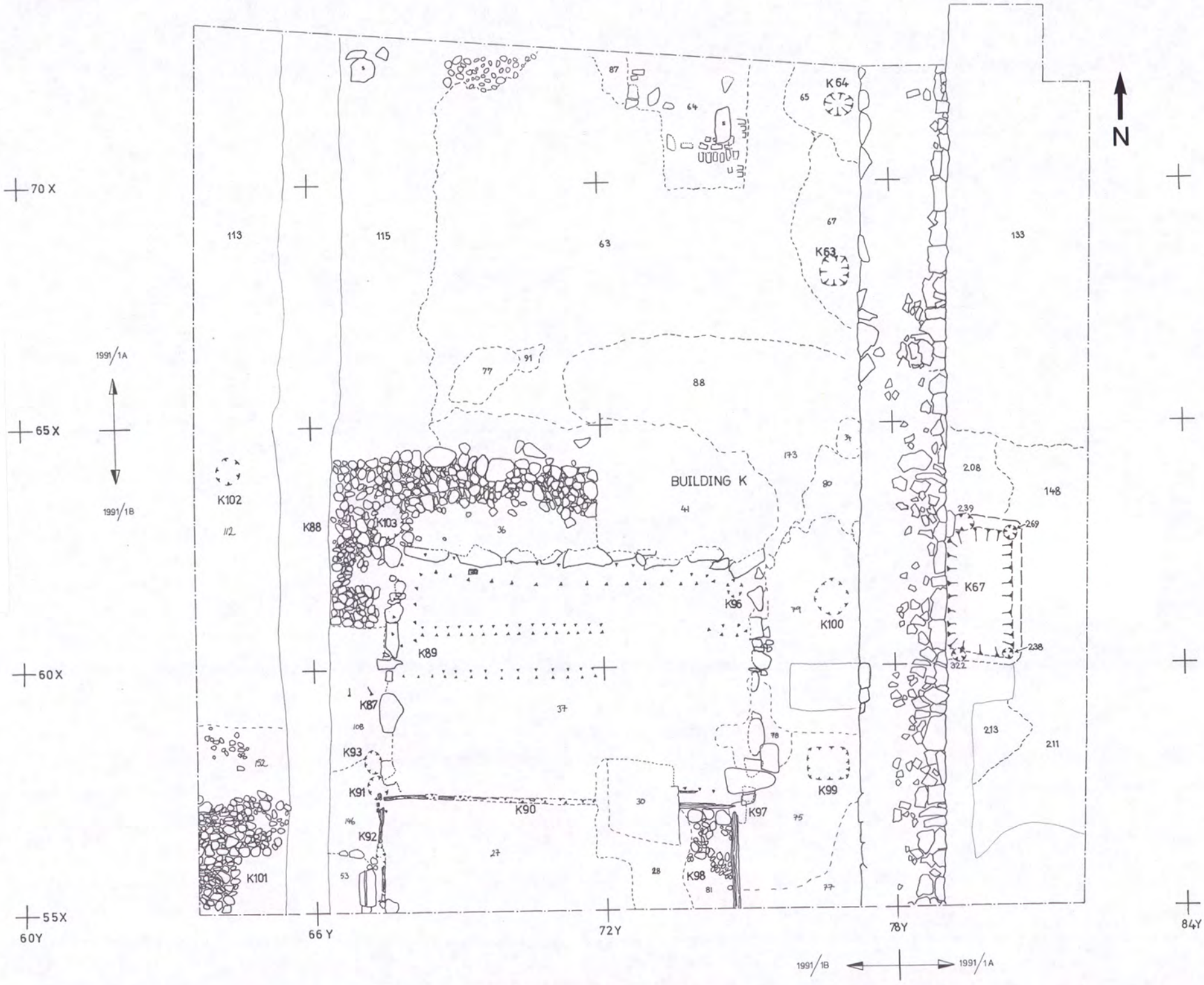


Fig. 34 PHASE 8 1:100

of silts and debris-laden deposits in evidence. A small patch of cobbles **K101** lay to the W. of Building K, probably formerly connecting with those to the N. to form a peripheral cobbled area surrounding this simple wooden building. Two shallow depressions, **K99** and **K100**, adjacent to the curtain wall may, with equivalents in Site A, indicate the former presence of some sort of post-supported structure along the internal length of the curtain wall. There was no evidence that the building burned, and following its demolition the area may have lain open for some time.

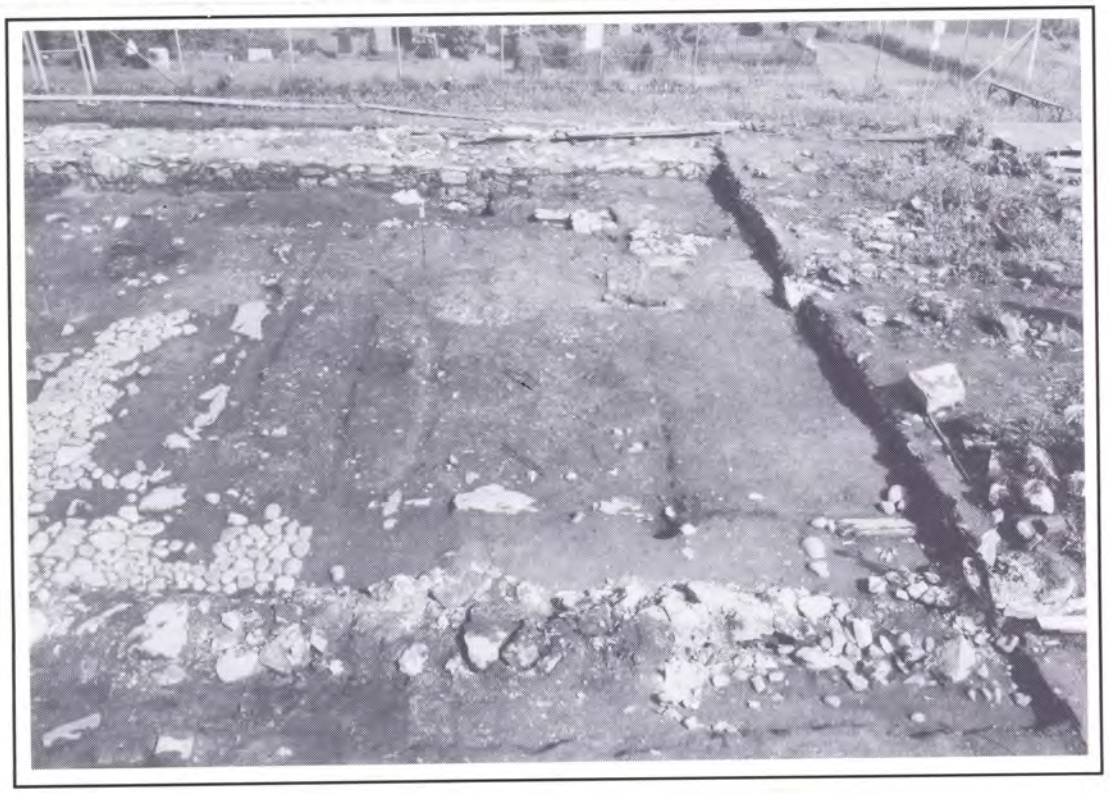


Fig. 35 BUILDING K (looking E.)

Stratigraphic Sequence

The groundwalls for **Building K** were laid directly on the final accumulations in the preceding phase. The groundwalls **40**, **61**, **160** and **87** (collectively **K87**) were the first to be established followed by the deposition of thick earthy clay dumps and sand (**110**, **107**, **141**, **125**, **158**, **159**, **98**, **37**, **109**, **27**) within them as make-up for two separate floor areas, and the dumping of distinctive blue-grey clay (**41=108=162=157**) to N. and W. as make up for exterior cobbling (**K88**).

The excavated interior consisted of two different floor areas, comprising different media (Fig. 36). To the N. clay **37** bore the impressions of E-W aligned joists, set at regular intervals (**58**, **59**, **60 K89**). The remains of the base of a probable wooden partition wall, **50 K90**, separated this joisted clay floor area from a sand-filled area to the S. **27** formed a thick deposit of gravelly sand; there were no impressions surviving on its surface to indicate whether the sand bedded a planked and joisted floor or a stone paved/cobbled floor, for example (though see further below). The partition beam **50** fell into the fill of **45 K91**, a post-hole set at the junction of the W. end of **50** and the N. end of a N-S orientated beam, **51 K92**. This latter rested on a less substantial length of groundwall, **160** in **K87**. This was probably a sill-beam for an external wall. These beams were probably established at the same time as the laying of the floor media (ie. there is no clear evidence for their later insertion), and they

later rotted to form localized sunken hollows (**83** filled with brown silt **52** which also filled post-hole **45 K91**). Another post-hole, **145 K93** lay just to the N. of **K91**: this had no obvious load-bearing function, although its position external to the groundwall matches that of post-hole **151 K94** to the N. The latter was probably a short-lived feature, sealed by the cobbles to the N. Like post-hole **47 K95** it was possibly a scaffolding feature. By virtue of its rather anomalous position perhaps **145 K93** should be viewed in the same light, although its lifespan seems to be longer. In the NE. corner, there was a similarly enigmatic post-hole **91 K96**, apparently set into clay **37**.

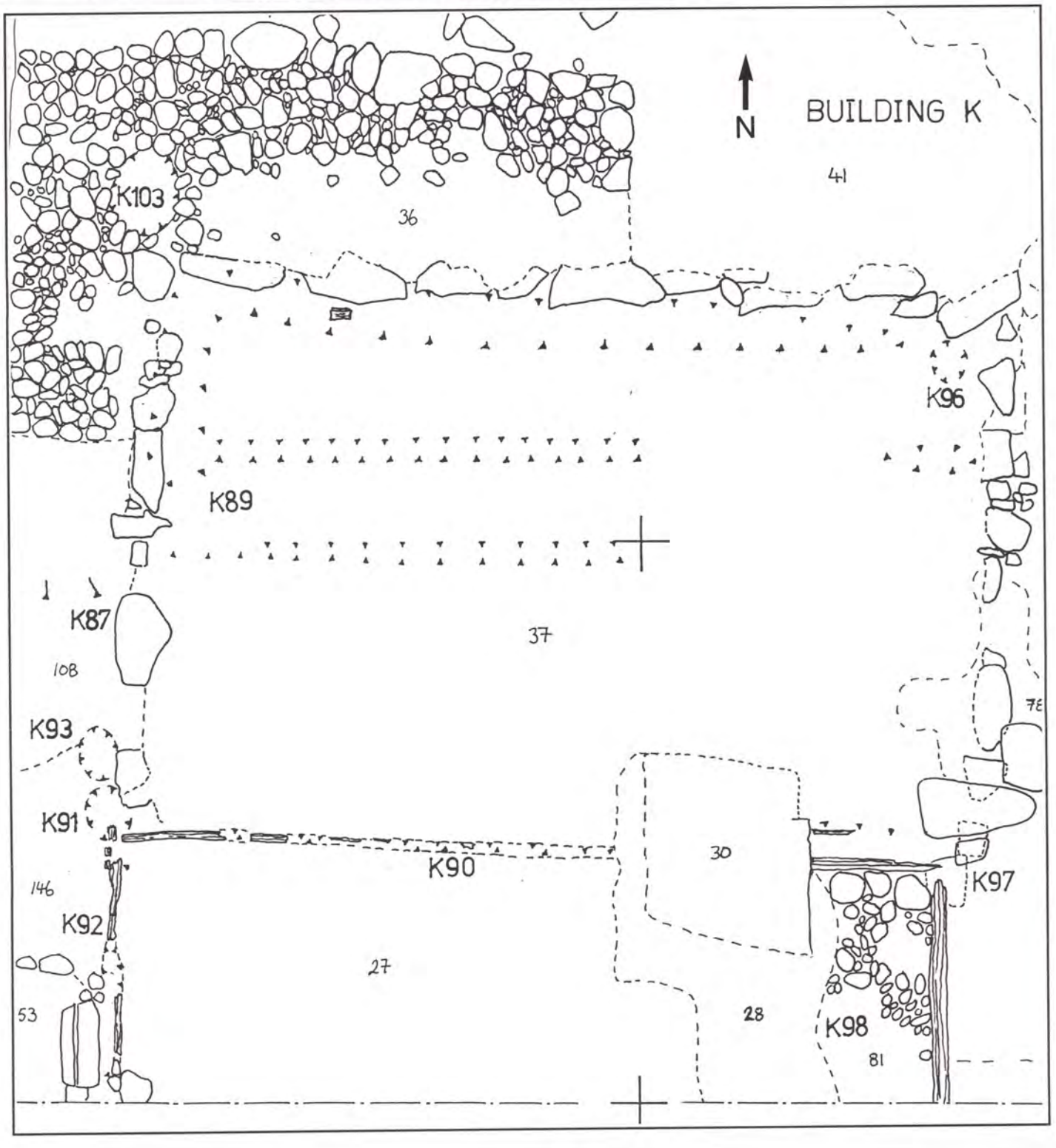


Fig. 36 BUILDING K 1:50

In N12 there was a complex series of deposits and structural elements associated with the E. groundwall **87**. Abutting it on its E. side was a series of dumped deposits: **166**, debris-laden sand under **79**, clean brown crumbly clay on the surface of which lay a localized spread of charcoal on thin gravel, **76**. This latter ran parallel to the exterior of the groundwall, and looked suspiciously like the remains of a burnt beam, for example. However, it was the only trace of fire in the vicinity, and it may be a fortuitous scatter/dump. It was anyway sealed by further dumps of debris-laden make-up, clearly designed to level up this area between the groundwall and the curtain wall: **164**, **147**, **128**, and **78=?=81**. It was at this level that the foundation elements for Building K were established in the SE. corner of the site, although there are some problems in untangling the structural history of this corner. (The walling elements are described individually under the collective number **K97**). A N-S orientated timber, **165** was inserted above **164**, although **128** intervened between this and a timber superimposed along its length, namely **73**, the broken off E. extension of **K90** (there was another fragment of E-W timber here, **74** - this was probably a detached part of **73**). This, together with other discontinuities, raises some doubt as to whether all the structural elements in this locality were established at the same time, or whether they in fact represent successive structural changes, perhaps as a result of partial rebuilding.

It is clear that **50** and **73** formed separate portions of the same partition wall **K90**, its back broken over the stump of the chimney here. **73**'s E. end rested on a padstone laid together with the W. groundwall **87**. The N-S beam **72** shared this padstone, although it was laid on a deposit **75** which covered a short length of timber **93** which extended E. of this padstone. This was thought to be an E. extension of **73** but it lay slightly off line, and was probably not the same. Its function is not clear, though it lay at the S. extremity of the groundwall **87**.

The sandy make-up layer **164** contained pockets of cleaner sand: it is suggested that this formed the same level as the sand **27** further W. Above it **81** mixed deposit bedded **71 K98**, a partly robbed-out patch of cobbles with which the beam **72**, on its E. side, was clearly laid. This beam probably functioned as the sill-beam for an external wall at this point, the E. equivalent of **51 K92**.

Again, in the case of the groundwall **87**, at its S. end, there was rather confusing evidence of possible structural alteration. The S. line of **87** was obscured by **78**, which filled a localized hollow here. Two large stones **62** were laid on this at right angles to each other as if to form a corner. Their positions deviated somewhat from that of earlier **87**, although their heights were not much greater than the more northerly stones on **87**. **78** was very similar to **81**, and if they were the same or dumped together then **62** stones and **71** cobbles were established at the same level. When one bears in mind the previously noted fact that timber **72** lay above a timber (**165**) set at a slightly lower stratigraphical level, then, with the cited evidence, there seems to be a suggestion that some sort of alterations were carried out here: ie. cobbles **71**, timber **72** and stones **62** may have been inserted above pre-existing structural elements. Given the nature of the area, sloping down towards the curtain wall, slumping may have necessitated alterations during the building's lifetime.

In the area between groundwall **87** and the curtain wall, cutting the dumped deposits here, there were traces of other probable structural elements: two subrectangular shallow hollows, **66 K99** and **68 K100** possibly marked the positions of standing objects, perhaps the bases of flat-based posts (there were two similar features to the N. in Site A: **AK63** and **AK64**). Stone **70** was the uppermost of three on the same spot; however, since deposits intervened between this and the stone beneath, it is possible that this stone may denote secondary use for this stack of stones, the lower two belonging to Building I (**K66**). **94** filled with **92** was a small pit filled with a dump of metal (no K number).

To the N. of Building K, the groundwall **40** was packed round with a thick blue-grey clay **41** (thinning rapidly to the W.), which formed a platform against the exterior of this wall. Following the

accumulation of thin deposits of clay and sand (**134=A126** and **133=A124**) a shallow basin, **56** was cut into this. Silt **132=A123** and gritty gravel **131=A120** accumulated, and then a thick deposit of beach sand **36** was dumped to act as bedding for cobbles **25 K88**. These were partly robbed out, some cobble impressions remaining in the surface of **36**. Some dubious short-lived(?) post-holes (for scaffolding?) were sealed by the cobbles (**151 K94**, **138 K104**). A complicated succession of accumulated deposits spread northwards from the edge of this cobbled surface into Site A, most comprising debris- and waste-laden silts and clays, though with a fair proportion of charcoal and burnt sand concentrations: **121**, **105**, **103=95=A63**, **80**, **100=A96**, **101**, **102=A115**, **104**. A possible post-hole **55 K103** was recorded in the surface of the cobbles **25 K88** - possibly contemporary or post-destruction? An isolated post-hole **129** cut **112** to the NW.

To the W. of Building K another area of cobbles was laid out at the same level, **118 K101**: above the clays here were rather more thin spreads of gravelly sand (**161**, **152=146**) laid as bedding for the cobbles. These were disturbed and only patchily represented towards wall **61 K87**, **53** probably having accumulated in the void left by their removal. (The large stone here, recorded as being part of **61**, in fact deviates from that line, and lay to the W. of the supposed sill-beam **51 K92**: a possible step up to a door?) These cobbles **K101** may have originally been physically connected to **K88** to the N., forming a consolidated perimeter surface around this wooden building.

The building seems to have been deliberately dismantled down to this recorded level at some stage; there were no traces of fire connected with its foundations.

Like the partition wall and the sill-beams, the joists in the N. room appear to have been left to rot: **38** silt filling slots **K89** contained very fragmentary strips of wood. **38** was probably the same as the general grey silt **26**, with debris and waste content, which covered the demolished building and the robbed-out cobbles **K88/101**. This layer correlates with **126=99=?=96=?=153**, and **A66**. To the E. it was overlain by debris-laden dump **49** (also sealing **K99** and **K100**). There was a multiplicity of localized dumps and accumulations all around the perimeter of the former building, and particularly up against the curtain wall: ie. **89**, **34=A53**, **85**, **39=A155**, **84**, **88**, **86**, **35=A57**, and **142=?=119=?=117** to the W. above and to the N. of the derelict cobbled surface **K101**. To the N. and E. stretched a thick deposit of brick-and rubbish-laden material, clearly a deliberate dump: this comprised a lower component **31=?=48=?=112** (correlation made difficult by intrusions), and an upper component, **24**, which probably represented the disturbed and/or weathered surface of the deposit. These correlate respectively with **A52** and **A48**.

129 K102 in L13 was a possible isolated post-hole, cutting **112**. This appeared to have a short life, sealed by **124** debris-laden dump, which possibly also belonged to the destruction/dereliction levels of the phase. This last produced a finely-turned bone chess piece.

Descriptions of Constructions

Building K (K87-K98, K101)

Character.

As yet only partly excavated: a building with large stone groundwalls at its N. end surrounding substantial clay make-up formerly supporting a joisted/planked floor bounded on its S. edge by a wooden partition, supported on a post to the W. and a padstone to E. To the S. of this a thick sand layer, deposited within a basin left in the clay make-up, formed a different floor medium, possibly formerly bedding a cobbled floor, a possible remnant patch of which lay to the SE. The wall

foundations bounding this sand simply comprised wooden sill-beams, that to the W. laid on an insubstantial stone groundwall, sharing the partition wall's post, that to the E. earth-fast. In the SE. corner there were signs of possible modification, and the insertion of secondary walling elements. This N. portion of the building was divided into two rooms, that to the N. with a total area of 33.5m^2. The building was orientated with its long-axis almost due N-S.

Function.

K87 Stone groundwalls: 40, 61, 87, 160

Three substantial and one very insubstantial lengths of low stone walling. The three larger walls were set around three sides of the clay platform making up the building's N. room's floor. The E. and W. walls were c. 5m long, and the N. wall almost 8m long. Each comprised a single course of large and small angular rubble, unmortared. The smaller wall, basically a single line of very small angular stones, lower than its N. equivalent, lay to the SW., and supported a sill-beam, **K92**.

K88 Cobbling: 25

Platform-like extent of cobbles and occasional large stones abutting N. wall of Building K. The closely set cobbles (partly robbed) were lodged in sand in turn filling basin-like cut in a thick (to E.) dump of blue grey clay. From a point just S. of the NW. corner of the building the cobbling extended around the building to a point half-way along length of N. wall where it terminated abruptly. Cut away to W. by 1809 groundwall, but no sign that it continued W. of that. Extended out from the wall for a max. recorded width of c. 2m. Surface undulated to W. due to slumping.

K89 Narrow slots: joist impressions: 58, 59, 60

Revealed in surface of clay **37**. Two shallow, narrow E-W orientated slots with very fragmentary rotted wood running across width of floor, and a deeper wider slot running part of the way around the floor's N. edge. This produced a door-hanger. All formerly probably supported planking in this room.

K90 Thin fragmentary timber: base of partition wall: 50=73

E-W aligned timber, very poorly preserved, between the clay floor and sand floor. W. end in fill of post-hole, E. end on padstone. Extended across the width of the building (its back was broken on the chimney base). 7.3m long x 0.10m max. width. Occasional spaced thin wooden pegs or stakes survived attached to its base, presumably a means of anchoring the timber? The base of a light partition wall?

K91 Post-hole: 45, 44

Round, vertical, round-bottomed post-hole. 0.40m diam. x 0.38m deep. Fill **44** soft grey silt, with one possible packing stone, and portions of collapsed beams **K90** and **K92**, which were formerly supported on this post (robbed-out in antiquity).

K92 Fragmentary timber: sill-beam: 51

Short fragments of N-S orientated timber, set on wall **160 K87**, and formerly on post in **K91**. Rotting left its trace in sand **27**: excavated length 2.3m x c. 0.14m preserved width. Formed low sill-beam for W. wall of building.

K93 Post-hole: 145, 144

Round post-hole, vertical, stone packed. 0.40m diam. x 0,40m deep. Fill **144** dark brown humusy sand. Uncertain function.

K94 Post-hole?: 151, 150

Tenuous. Steep-sided hollow, round. c. 0.50m diam. x c. 0.18m deep. **150** silt with debris.

K95 Post-hole?: 47, 122

Ovoid, shallow-sided pit. 0.65m x 0.40m diam. x 0.20m deep. Fill **122** brown soft silty sand. Uncertain function: construction/scaffolding pit?

K96 Post-hole?: 91, 90

Small, round hole. 0.40m x 0.30m diam. x 0.26m deep. Fill **90** soft brown silty sand. Uncertain function - post-destruction feature?

K97 Timbers and aligned stones: elements in modified walling?: 165, 93, 72, 62

165: short thin length of N-S orientated timber: 0.60m long.

93: short thin length of E-W orientated timber: 0.70m long.

72: length of thin timber, N. end over **73** to N., both resting on padstone. 2m long x 0.12m wide.

62: 2 large rubble blocks, set at right angles in back-filled depression over S. end of groundwall **87**. Inserted stones heightening slumped groundwall?

K98 Patch of cobbles: 71

Discrete area of large and small cobbles, closely set, disturbed. Lay in angle formed by **72** (**K97**) and **73** (**K90**). Probably remains of more extensive cobbled surface stretching W. over sand **27** in the S. room.

K99 Subrectangular shallow depression: impression left by base of post?: 66, 65

Dimensions: 0.86m x 0.64m diam. x 0.7m deep. Fill **65** compact silty sand.

K100 Subrectangular shallow depression: cf. K99: 68, 67

Dimensions: 0.70m x 0.68m diam. x 0.04m. Fill **67** compact silty sand.

K101: Cobbled area with in-built drain: 118

Small area of disturbed cobbled surface, to SW. Large and small cobbles, closely set. Double row of inward-sloping cobbles aligned E-W formed in-built drain in surface. Surface probably extended further N. and W. originally, implied by scattered cobbles and thin gravelly sands. Formerly extended to join with **K88**?

K102: Post-hole?: 129, 130

Round. 0.60m x 0.60m diam. x 0.48m deep. Uncertain function.

K103: Post-hole?/pit?: 55, 54

Subcircular. 0.65m x 0.52m diam. x c. 0.15m deep. Fill **54** grey brown silty sand. Cut through cobbles **K88**. Uncertain function. Post-destruction feature?

K104: Post-hole?: 138, 137

Round. 0.40m diam. x uncertain depth. Fill **137** brown silt. Construction feature?

Dating

Potsherds: The assemblage comprises redwares, Trønder wares, Chinese and European porcelain, tin-glazed and black-glazed wares, and Staffordshire slipware. Most of the more closely datable material is 18th-century, possibly mid 18th at the latest. Make-up deposits within the building produced Staffordshire slipware (late 17th-18th century) (**98**), and a Dutch tin-glaze cup (mid 18th century) (**128**).

Clay pipe: The broad date range of marks is 1680-1940. Pipes derived from make-up deposits within the building narrow this down to 1680-1843 (**110**, **128**, **75**). Of these only one had a potential production date which extended into the 19th century, the majority being confined to the first half of the 18th century.

Coins: from layer **80** a coin of 1677; from **99** a coin of 1655; from **31** a coin of 1681; and from **124** a coin dated to 1660-1697.

Cartographic evidence: Building K's location would match well with that of the buildings shown in the E. wing on the town maps of 1716 and 1733, and may even be the same as that shown in the E. wing on Stockhoff's plan of 1708 and Wibe's plan of the same year (Fig. 37). Plans of 1681 apparently record the presence of a building here, although this extends all the way N. to the bakery, and it has been argued, with all due caution, that this might be the previous phase's "shadow" building, Building J. If these sources are any indication, the isolated Building K may have been built sometime between 1681 and 1708 or 1716. There is no building recorded in this part of the E. wing on Eckleff's plan of 1758 (Fig. 38), and likewise the locality is empty on an undated town map (probably of 1772) and a map of 1775. On this evidence, the previously recorded building, presumably Building K, would appear to have been demolished before 1758. No other buildings are recorded here until 1809.

The artefactual evidence from associated contexts is in keeping with a date for this building during the first half of the 18th century.

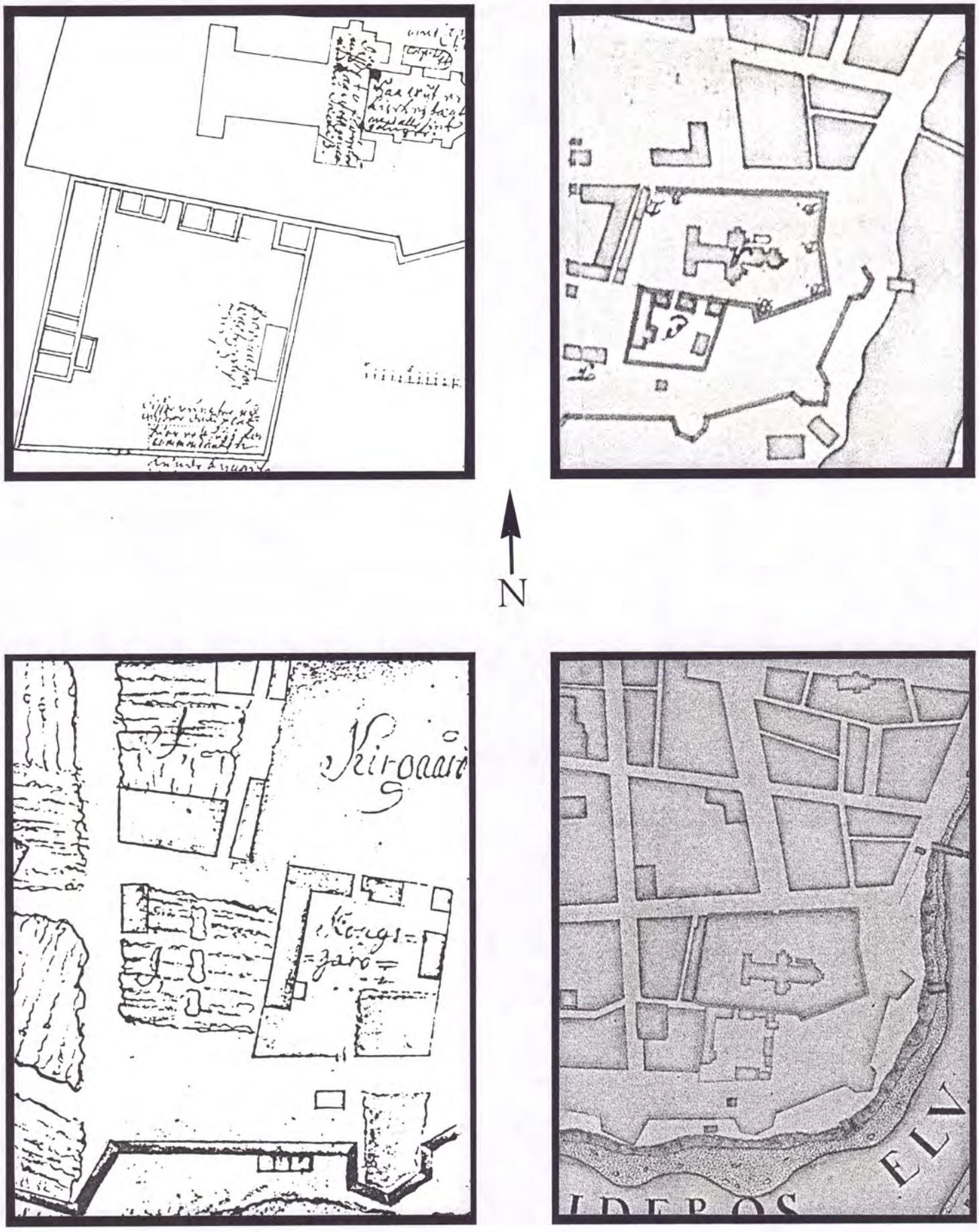


Fig. 37 *Details of plans showing "Kongsgaarden": (clockwise) Wibe 1708; Stockhoff 1708; Lillie 1716; 1733*

Discussion

Building K and its surrounding cobbles form the principal structures in this phase. The excavated N. portion of the building comprised a stone groundwall surrounding a clay and soil platform on which a plank floor presumably rested. A partition wall divided this room from a neighbouring room to the S., the floor of which comprised a sand bedding; a patch of cobbles to the SE. may indicate that the S. room was cobbled. The groundwall of large stones and the clay platform were coextensive, the groundwall not continuing in quite the same form S. of the partition. Indeed to the SE. there was no trace of a groundwall at all, while that to the SW. was very insubstantial. Wooden sill-beams formed the principal foundation element here. As well as a change in the character of its foundation, the building appears to narrow slightly to the S. of the partition wall. Evidence in the SE. excavated portion of the building hints at some sort of structural readjustment, either at the time of building or at some later point in the building's lifetime.

Apparently coexisting with the building were the subrectangular depressions (**K99** and **K100**) adjacent to the curtain wall, interpreted as marking the positions of substantial flat-based posts. What these supported can only be guessed at, but the fact that they continue N. into the open area in Site A is suggestive of a possible association with the curtain wall rather than with Building K. If posts, they may have supported a superstructure place against the curtain wall, either semi-permanent or temporary. Perhaps in this connection it should be noted that repair work on the curtain wall is recorded in 1697 and 1732 (Lysaker, 1989, 45 and 48-49); might these depressions mark the position of scaffolding used in either one of these operations? During this period much rebuilding work was conducted on the N. wing, and some debris from this work may have been deposited in the open area to the N. of Building K (though see further below in relation to the 1708 town fire).

The NW. perimeter of Building K was surrounded by cobbles set in clay and sand, and a patchy cobbled surface lay to the SW. It is unknown how far W. these cobbles extended - perhaps they formed part of a more extensive cobbled area in the precinct. However, it is perhaps more likely that, in common with the cobbles to the N., they terminated a short distance out from the building. The building on its "island" of cobbles would appear to have stood separated from the N. wing by an open area. In this it would seem to match well with the building shown in a corresponding position on plans of 1716 and 1733, and perhaps more tentatively with that shown on a map of 1708 (Fig.37). On Eckleff's plan of 1758 (Fig. 38) there is no building recorded in this particular position, and this is also the case on plans dating to the 1770s. This evidence, which must be used with all due caution, may suggest that Building K existed in the early 1700s, but had been demolished already by 1758.

Building K's function is unknown, although there is a sketch plan from 1708 with annotations which, if deciphered, might cast light on this. The character of the surviving structural evidence might perhaps be best equated with a domestic, administrative or service building, subdivided into rooms, the northernmost with a joisted plank floor, and that neighbouring it to the S. with possibly a cobbled floor. This differentiation between flooring media is probably related to differential functions for each room.

It is uncertain as to when this building was built, though, as stated it might have been in existence in 1708. Much building work took place in the complex from the late 1680s on during the installation here of a military garrison. Perhaps this was erected then?

Lysaker (1989, 45) suggests that the building shown on a sketch plan of 1708 was in fact the quartermaster's residence (*proviantforvalterensbolig*). However, on Eckleff's plan of 1758, a large house identified as such is shown as standing in the S. wing. Unless this was a second, later building replacing an earlier one, the building shown in the E. wing cannot be the quartermaster's house.

The town fire of 1708 did affect the building complex, though amazingly only the stone buildings suffered damage, various turf-roofed wooden buildings in the precinct (including the quartermaster's house) surviving intact (Lysaker, 1989, 47-48). There were no signs that Building K burned, so if it was in existence in 1708 it, like the other wooden buildings, was indeed apparently unaffected by the catastrophic fire. However, the fire would have come very close since the bakery to the N. burned. It should be noted in this context that there were a good deal of dumps of burnt debris in contexts lying between the bakery and Building K in this phase, and it is conceivable that this debris derived from this major catastrophe. The bakery roof also burnt in 1719 (Lysaker, 1989, 48).

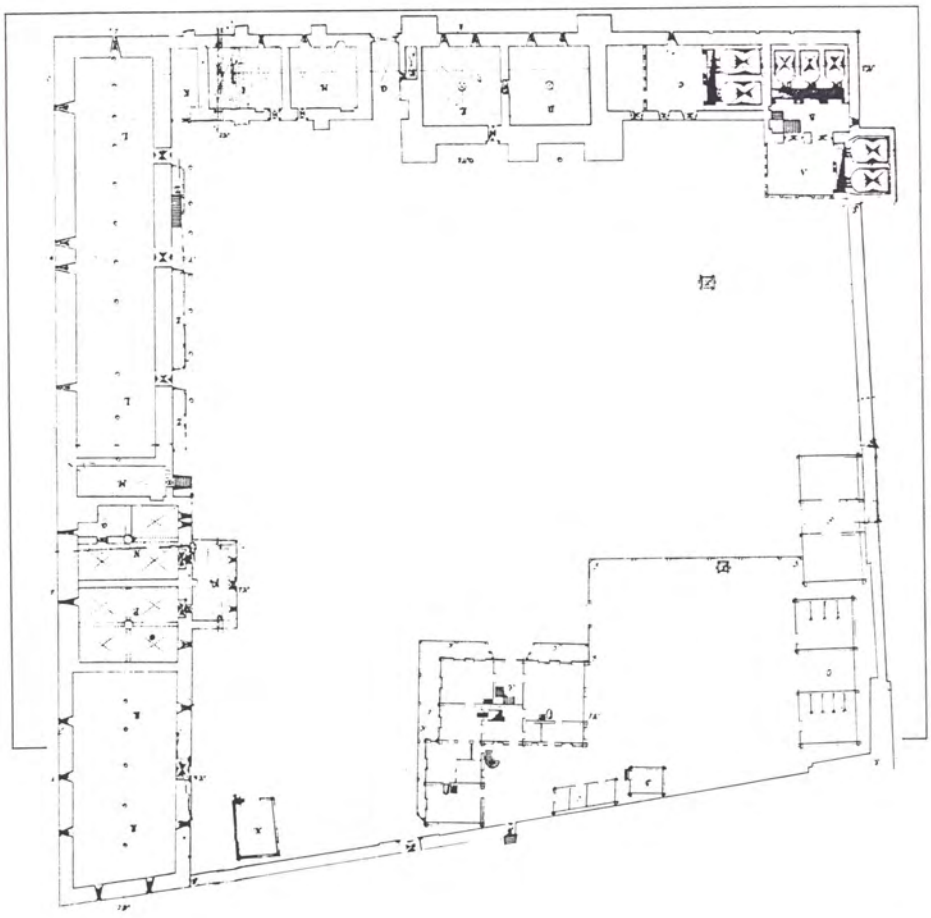


Fig. 38 Eckleff's plan of 1758

The weathered nature of the surface of the final deposit here may indicate that the area stood open and derelict for a period of time following the demolition of Building K and the deposition of the next phase's thick soil horizon.

PHASE 9

General Characterization

The phase is characterized by the presence over the greater part of both sites of a thick dark soil (Figs. 39 and 40). This was an imported soil, and can be interpreted as either a cultivated garden soil or as deliberately dumped make-up under the floor of the 1809 building, **Building L**. Because of the possibility that this horizon did represent a period of cultivation, it has been defined as an independent phase. However, if the alternative interpretation eventually proves to be correct then this soil must be incorporated in the next phase with Building L. The sequence of stratigraphical events is not quite as straightforward as it may appear: the precise cutting level for Building L's W. groundwall, itself consisting of upper and lower components which may or may not be exactly contemporary, was very difficult to judge. Likewise, the soil horizon did not occur to the W. of that wall. Consequently, there is some doubt as to the precise nature and sequence of events, and hence the cautious differentiation of the stratigraphy into two phases.

Stratigraphic Sequence

The major depositional event in this phase was the formation of a c. 0.10-0.25m thick brown earth **17=19=A39=A31=A17=A45** across almost the whole of the excavated area to the W. of the curtain wall and the E. of the N-S wall **K105**. This humic soil formed a near-homogeneous horizon, although, particularly in Site A there was some internal differentiation, and generally it contained a fair proportion of organic material, domestic refuse (some worn and battered potsherds included) and building debris. This was self-evidently a redeposited soil, although it was also reminiscent of a cultivated garden soil. However, the stratigraphical information, and most particularly this layer's relation with the W. wall raises some questions as to exactly what this soil represents. It is possible that the present phase is illusory and that all the elements set out and discussed separately below are all in fact part of a single phase of construction activity relating to the 1809 building. This is particularly likely in the case of the W. wall **K105**, but due to certain stratigraphical and interpretative uncertainties it is dealt with in detail below. This phase exists because of these uncertainties. Future re-evaluation will hopefully resolve the problem.

The wall **K105** (=**AK71**) running N-S to the W. of the sites consisted of two distinct parts: there was a lower portion, **63** sitting tightly in a narrow trench **64** (represented on the present phase plan). This was of unconsolidated dry-stone construction c.0.80m deep, and somewhat broader than the upper portion of wall, **11**, which it supported. This narrower upper wall (next phase plan) was mortared, and appears to have been completely free-standing, no trench-cut being visible on either side of it. Viewed objectively, these are interpretable as contemporary elements of the same wall construction, namely a trench-set foundation of unmortared rubble supporting a mortared groundwall. There is a (slight) possibility, however, that they form independent entities (see Discussion).

In Site B the first clear sighting of the foundation trench in which **63** was contained was in the surface of clay **108** and the cobbled surfaces **118 K101** and **25 K88**. In Site A this trench was observed to cut a slightly higher deposit, **A48** which correlates with **B24**, the demolition/dereliction deposit terminating Phase 8. Consequently, **63**'s insertion certainly post-dated the destruction of Phase 8's Building K. However, the present phase's soil horizon, **17=19**, appeared to obscure this cut at this level and indeed abutted the upper wall **11** with no sign of a cut. Indeed **17=19** appeared to dip slightly against the E. side of **11** (reflecting lower subsidence) and under a line of crudely mortared rubble which had been tacked onto **11**'s E. edge, probably as a means of compensating for this localized subsidence. This close abuttal of **17=19** and **11** raises the possibility that the soil was deposited up against **11**, and that they were both established together or that the soil's deposition significantly post-dated the erection

Fig. 39 PHASE 9 1:100

of the wall. In L12 a dark brown silty sand **140** intervened between **63** and **11**. It was practically indistinguishable from **17=19**. To the N. in L13b occurred another dark brown silty sand **139=A74** between and slightly to the W. of **63** and **11**. It was impossible to confirm whether these in fact were the same as **17=19**, though they were very similar. Another factor to be noted is that **17=19** was not present on the W. side of **11**. Here **11** was abutted by a rather sandier layer, **43** (next phase). This situation gives rise to alternative interpretations about the wall's function and what the soil **17=19** represents (see Discussion).

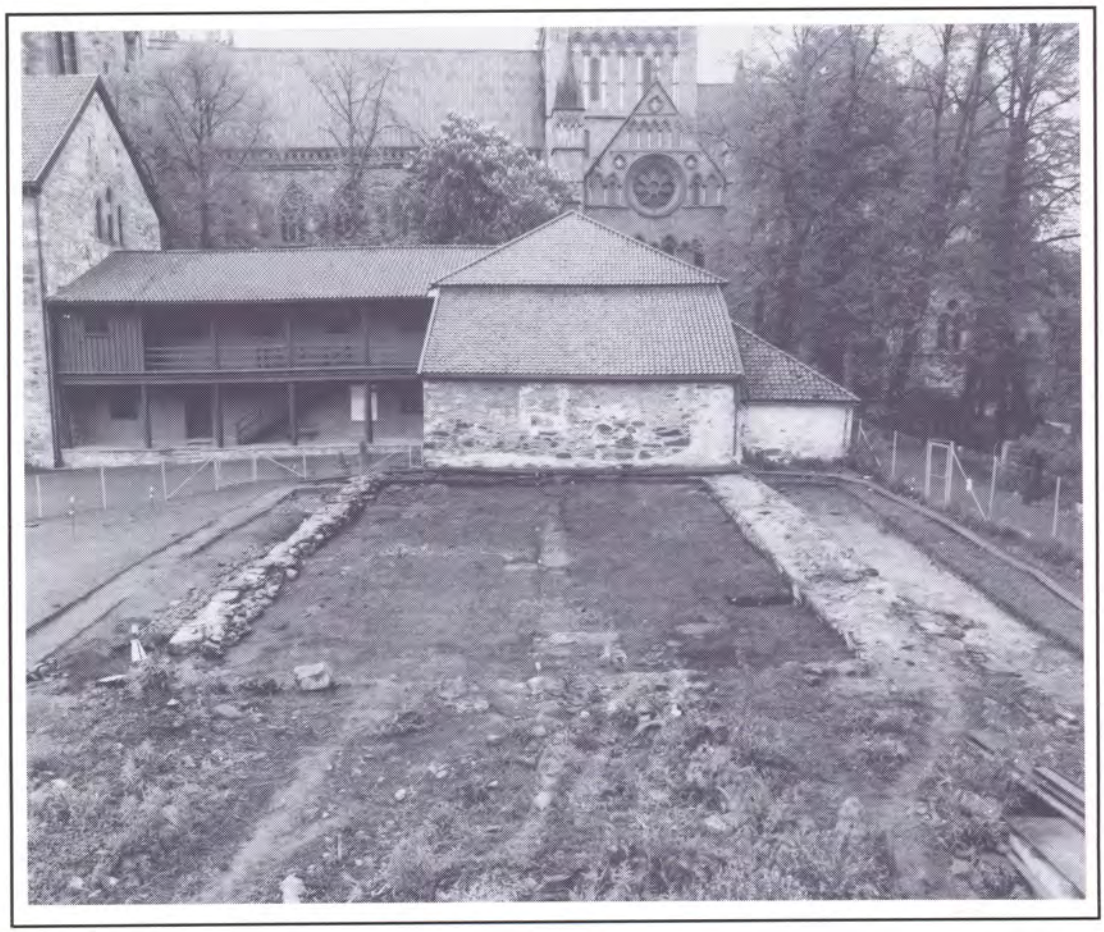


Fig. 40 PHASE 9 (looking N.)

Apart from the above there is little else which can be confidently assigned to this phase. To the W. of the W. wall-line on the surface of **124** (placed in the previous phase) were two very fragmentary E-W orientated strips of wood set 0.70m apart, **115**, the northernmost abutted by a patch of thin clay **116**. Cutting **124** S. of these was a possible stone-packed post-hole **113**. These were all very fragmentary, but perhaps are all that remain of a flimsy structure (clay-floored hut?) here: see **K106**.

Descriptions of Constructions

K105 Stone groundwall: trench-set dry-stone foundation and mortared groundwall: 64, 63, 11
(=AK71-72) Probably part of Building L (next phase)

63: loosely packed dry-stone foundation wall set into narrow N-S trench **64**. Variously sized rubble. 0.90m-1.10m wide x c. 0.80m deep. Extended N-S for full length of excavated area (18m). Formed deep-set foundation for superimposed mortared groundwall **11**.

11: narrow low mortared groundwall, set on foundation **63**. Free-standing. Mortared variously sized rubble, large course of blocks aligned to form regular outer face, rendered externally, with secondary dumped rubble on ragged internal face. 0.90-0.70m wide x 0.40m high.

K106 Strips of wood, a post-hole, and clay patches: associated structural elements?: 115, 113, 114, 116

Two parallel strips of wood, **115**, orientated E-W, 0.70m apart, extending into section. 0.30m wide timbers. N. timber abutted by thin blue grey clay patch **116**. Post-hole **113** to S., round, 0.50m diam. x 0.12m deep, fill **114** contained possible stone packing. Tenuous features - elements in a single structure e.g. a lightly built clay-floored building?

Dating

If groundwall **K105** is a single-phase construction, and not reused, it was inserted with the establishment of the E. magazine building in 1809. Whatever the interpretation of the soil, as representing a longer period of cultivation, or as make-up for the 1809 building, this wall provides a *terminus ante quem* for its deposition.

Potsherds and clay pipe: these provide dates for the brown soil horizon concentrated in the second half of the 18th century, the clay pipes in particular being indicative of this.

Discussion

The main stratigraphical problems in this phase lie in:

a) establishing the relationship between the upper and lower portions of the W. wall **K105**;

b) defining the cutting level of its foundation trench;

c) and, related to the above, establishing the relationship of the wall and the thick humic soil on its E. side.

The functional interpretation of both wall and soil depend on the interpretation of their interrelation.

The lower portion of the wall, **63**, rubble set in a deep trench, is in character consistent with a sturdy foundation for a load-bearing wall. This was established after Building K was demolished, and possibly following a period of dereliction. Thin soils were observed to intervene between **63** and the upper portion, **11**; it was not possible to establish whether these were encroaching from the rest of the site (ie. that they were the same as the humic brown soil, for example). These soils may hint at a chronological and functional discontinuity between the two portions of wall, which, it can be observed, were not firmly bound into each other with mortar. **63** may be the stump of an earlier dry-stone wall

later re-used as the basis for a secondary wall, **11**. **63** might have formed a garden wall for example. However, given the insubstantial nature of the deposits, and the substantial nature of this deep-set wall, it is felt that this is unlikely, and that the best interpretation is that **63** and **11** were established together as a substantial load-bearing groundwall in 1809. N.B. There is also no cartographic evidence for a pre-existing wall here, although other boundaries within the precinct are marked on late 18th-century maps.

K105 is therefore interpreted as a single-phase construction. As stated the brown soil **17=19** appeared to obscure the cut for the wall's foundation as well as abutting right up against the free-standing upper portion **11**. Subsequent slumping may have obscured the true relationship, but it must be stressed that in neither site was there any hint of a cut observed in this layer. If this is any indication, **17=19** must have been deposited against the wall ie. at the same time as it was built or at some point afterwards.

On the basis of these observations, it is possible that both groundwall **K105** and the thick redeposited soil **17=19** were established in a single phase of building activity. Since this wall is known to have been used for the 1809 building, then it is to that phase that these elements belong. It can be proposed that the groundwall was established first and the soil dumped to the E. of it as make-up for the interior (N.B. thereby explaining its absence on the W. side of the wall). For the rest of the 1809 building's elements see the next phase.

Following this interpretation the division into phases 9 and 10 is accordingly false: there should in fact be only one phase comprising all these elements, and both groundwall and the dark soil horizon belong together with the other 1809 building elements. It is felt that the weight of evidence falls in favour of this interpretation of events.

Nonetheless, at the moment there is sufficient insecurity surrounding the relationship of the wall **K105** and the soil **17=19** to allow some doubt as to their contemporaneity. This doubt is based largely on intuitive feelings. The brown soil did possess the character of a garden soil, cultivated *in situ*. It would appear from cartographic evidence that the area stood empty from at least the mid 1700s to 1809. It would have made an excellent garden. Its absence to the W. of the wall may be due to later truncation. The content of pot and clay pipe covers the relevant period. It is also difficult to drop an attractive idea formed during excavation! Hopefully, next season's excavations will resolve this problem.

PHASE 10

General Characterization

As set out in the preceding phase, it is possible that the differentiation between this phase and the previous one is spurious. The division is maintained simply as a means of keeping options open with regard to the interpretation of the thick soil horizon **17=19**. However, it is probable that it, along with the W. wall **K105** and other structural elements detailed below, all combine to form the surviving foundations of **Building L**, the Eastern Magazine Building, built in 1809 and destroyed in 1983. The phase (Figs. 41 and 42) is characterized by substantial make-up deposits both inside and outside the building, in the latter instance associated with the laying of a narrow cobbled area **K108** parallel with the groundwall **K105** (Fig. 43). Within the building a central groundwall **K107** was also established, forming a roof-ridge support, and various consolidated low stone piers **K109** formed joist supports. The curtain wall was re-used as the building's E. groundwall. The building was destroyed by fire, and some fire deposits (and a portion of scorched plank flooring) survived despite radical site clearance after the fire.

Fig. 41 PHASE 10 1:100

Fig. 42 BUILDING L, foundation elements K105, K109, K107 in site B (looking N.)

Stratigraphic Sequence

It is possible that **17=19** may be associated with the construction of Building L (see argumentation above, phase 9). It certainly forms a firm and almost level surface upon which a number of subsequent consolidating make-up deposits were dumped. The centrally placed groundwall **10 K107** (=**AK75**) is recorded as having occupied a trench, **21=A30**, cutting **17=19**, and it was clearly inserted after the brown soil was deposited. This factor adds weight to the view that **17=19** was laid down prior to the erection of the 1809's walling, though whether by years or days is uncertain. To the E. **14** clayey sand was dumped up against the curtain wall, associated with residues **20=A41** and **23** on the wall top. **22** filled the interstices of **K107**, and was in fact the same stony mortar dump as **18=A29=13=A15** lying to either side of **K107**. A second similar dump of mortar debris **8=A8=3** was deposited over the area.

It was at this level that a number of scattered crudely mortared low stone pillars **6=9 K109 =AK74** were established, forming joist supports. Above these was a patchy deposit of debris- and charcoal-laden gravelly sand, **2=12**, probably the deposit which lay under the burned-out and almost completely removed plank floor (a small area of floor and joists remained to the NW. of Site A). Layer **1** comprised the burnt debris left after the 1983 fire and the subsequent topsoil formation.

Abutting the W. of groundwall **K105** were dumps of compact sandy brick-filled make-up (**43=A19**, **106**, **33**, and **42**). A narrow strip of cobbles **5 K108 =AK70** was inserted at this level parallel to the building's frontage. Gravelly **16** abutted this to the W., probably forming a contemporary surface. **4=A12**, gravelly soil, formed the final accumulation here under **1**, concealing the cobbles.

Fig. 43 BUILDING L, wall AK72=BK105 and cobbles AK70=BK108 (looking N.)

Descriptions of Constructions

Building L (K105, K107-K109, *AK70, AK72-AK75*)

The building's character prior to destruction has been recorded on plan and photographs (see Fischer archive). The foundations of this long wooden building as recorded by excavation were as follows:

K105 Stone groundwall (see previous phase): 11, 63

K107 Stone groundwall: roof-ridge support: 10 (=*AK75*)

Low stone rubble groundwall, orientated N-S, within narrow trench. Intermittently mortared, large and small stones. Extended full length of excavation (18m).

K108 Narrow strip of cobbling, incorporating a drain: 5 (=*AK70*)

Closely set cobbles extending in a strip along full exterior length of **K105**. Regular width of c. 1m. Disturbed to S. A N-S running drain incorporated within the cobbles in the form of angled stones.

K109 Isolated low stone pillars: joist supports: 6=9 (=*AK74*)

A large number of low isolated clumps of stone rubble, crudely constructed and cursorily consolidated with mortar. Scattered over building interior, in loose pattern designed to accommodate overlying regularly spaced E-W orientated joists for a plank floor.

Dating

The building is known to have been built in 1908, and destroyed by fire in 1983. Following clearance the site lay open until 1991.

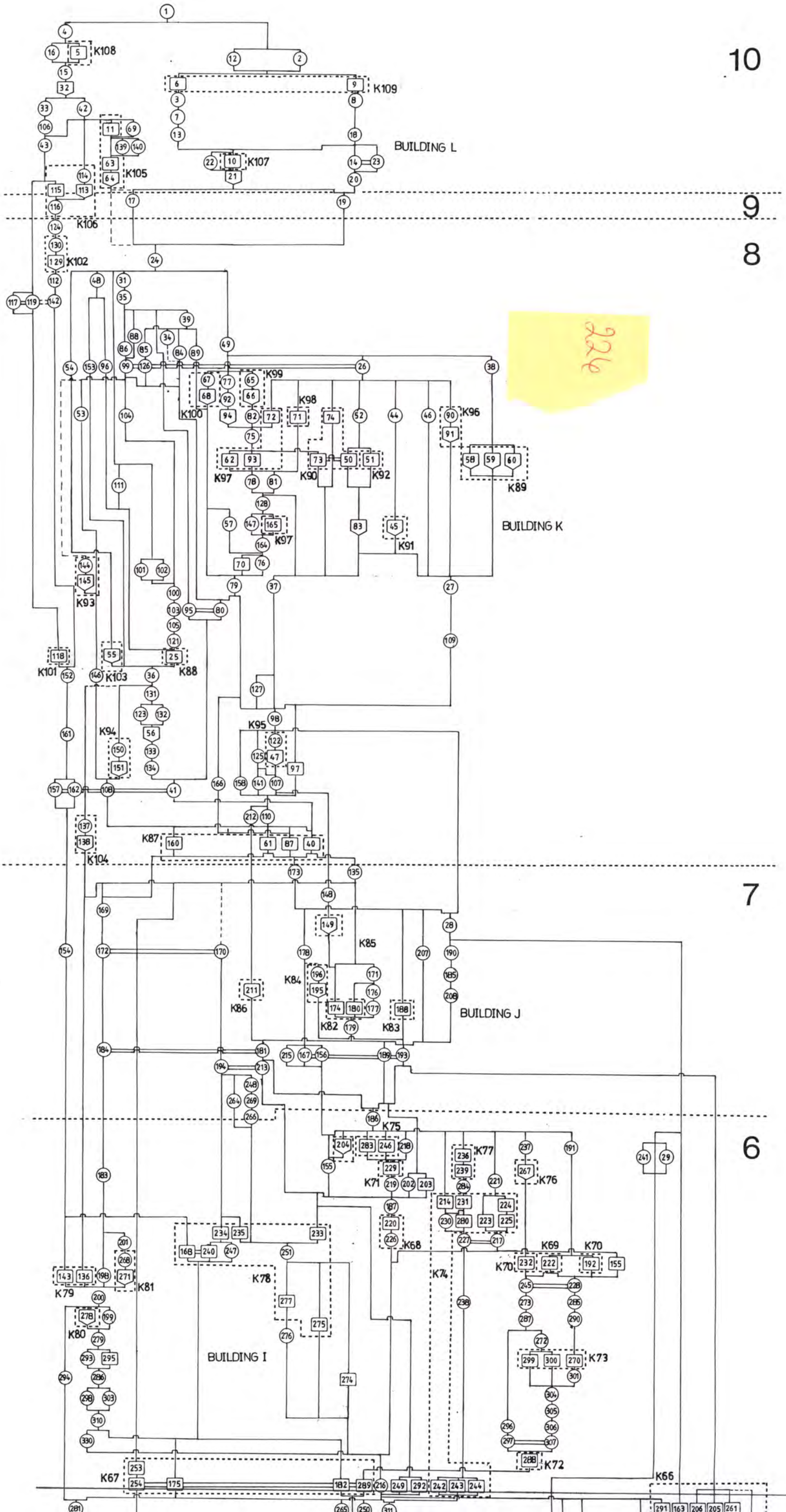
Coins: a coin of 1876 from **69**, soil between the interstices of the stones in wall **11**, and from **16** a coin (residual) of 1677.

Discussion

The stratigraphy and interpretation was straightforward. As mentioned, the placing and interpretation of soil horizon **17=19** is problematical, though the weight of evidence so far would place it most comfortably within the process of construction related to Building L.

Building L has been recorded previously on plan and film. Its character is known historically. The present excavation has recorded in detail the character of its (substantial) foundations and the presence of a narrow cobbled strip along its frontage, incorporating a drain to carry off rainwater falling from the roof. This eventually became neglected and hidden by subsequent accumulations.

Very little debris from the 1983 fire remained - evidently a very thorough clearance job was undertaken. Quite a substantial topsoil had formed in the period 1983-91.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BUILDING I
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K66
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227

Site B: Matrix

4 CONCLUSIONS: THE SEQUENCE OF OCCUPATION IN THE NE. CORNER OF THE PRECINCT OF THE ARCHBISHOP'S PALACE.

Introduction: the character of the archaeological material and its historical context

The remains of *ten* successive phases of structural development and associated activity were documented in this NE. corner of the precinct of the Archbishop's Palace. The stratified archaeological remains - deposits associated with occupation, construction and destruction, the foundations and flooring elements of buildings, other structural features such as boundary walls, consolidated surfaces, pits, cisterns, latrines, and a whole variety of associated elements and artefacts - derived from activities stretching back in time from the present day to the medieval period. The latest structure uncovered in this season's excavated area was the 19th-century building which burnt in 1983 and the earliest was a buttress-like feature to the N. of the site, radiocarbon dated to the mid to late 1300's.

The archaeological phases can be associated with at least four successive major historical *periods* of activity:

- the high medieval period is possibly represented by a thick clay horizon which lay immediately above natural uncontaminated clay. A current theory regarding this deposit's possible origin is that it represents a mass of redeposited clay dumped here as a result of major excavation work in the vicinity ie. possibly during the building of either the cathedral or the palace's northern wing. In 91/A an isolated buttress-like feature **AK1** has been dated to 555±40BP, AD 1320-1414 (calibrated) and may therefore constitute the earliest structural feature in this locality.

- the precinct appears to have been created *ex nihilo* with the erection of an enclosing perimeter wall, possibly in the mid 1400s. This date is tentative, and no evidence providing an absolute date for its construction was recovered. Stratigraphically, the construction of the perimeter wall (a substantial defensive curtain wall) is followed closely by the erection of the first buildings within this part of the precinct. Consequently, it is possible to see these elements as part of a single laying-out process, and the wall's dating may therefore be assessed in relation to the dating evidence associated with the earliest buildings. These first buildings on the site were undoubtedly associated with an historically attested period of *late medieval coin production* conducted under the auspices of the archbishopric during the fifty or so years prior to the Reformation. This activity is characterized chiefly by a succession of distinctive moneyers' workshops, supplemented by associated artefactual evidence for on-site minting activities.

- the use of the Palace as a residential and administrative centre by the Danish overlordship during the first 150 years or so following the Reformation in 1537. Historical sources record the presence here of a *lensherreresidens* or regional governor's residence (mid 16th century? - early 17th century) and a later extension to the governor's quarters known as *Herrehuset* (1640-1672). This latter was uncovered on the present site, there being no conclusive evidence here for the presence of the former.

- the use of the area by the military authorities from the mid 1680s onwards, culminating in the construction in 1809 of the large storage building in the E. wing which burnt down in 1983.

A review of the major discoveries

Evidence for the earliest on-site activity, and the construction of the curtain wall

As stated, no evidence by which the curtain wall (Phase 1) could be closely dated was recovered, although it can be noted that its building technique is late medieval in character, and that the lowest layers excavated against its foundation contained potsherds of late 15th-century date. Consequently, there is as yet no reason to contradict the Fischers' theory that this wall was built by Archbishop Aslak Bolt prior to 1450, although it may be possible to tentatively push its construction forward somewhat into the second half of the 15th century (see below). The foundation trench for this wall apparently cut a thick horizon of probably redeposited clay, the earliest archaeological deposit encountered. This was far too thick to excavate systematically, and was observed only in trial cuts. If this does constitute redeposited material this was dumped *en masse* at some point in time prior to the insertion of the curtain wall. Unfortunately no datable evidence was obtained from this material. A working hypothesis is that this clay derived from large-scale earth removal in the vicinity, and that this was perhaps most likely to have been associated with the digging of the foundation trenches for the cathedral and/or the 12th-century Palace itself.

The remains of a possibly contemporary cobbled surface, perhaps a (truncated) perimeter road, lay outside the precinct to the NE. of the curtain wall. The possibly earliest structures recorded on the site were a possible buttress foundation (dating to the last half of the 14th century) associated with an unseen structure to the N. of the site boundary, and a drain serving a wood-lined cistern, all located to the NW. of the site.

The late medieval mint workshops and associated buildings

The foundations and flooring of *three* successive buildings interpreted as moneyers' workshops were located on this site (phases 2, 3 and 4). Other buildings were associated with the identifiable moneyers' workshops in the two earliest workshop phases, but their functions remain uncertain. The period of time during which these three generations of workshops were in operation would appear, on the basis of historical and artefactual evidence, to have been relatively short, perhaps about 55 years, from c. 1483 to 1537. Furthermore, given the short stratigraphical interval between the construction of the curtain wall and the erection of the first buildings on the site, it is possible to suggest that both the first mint building(s) and the substantial curtain wall were conceived and established as part of a single unified building initiative. Seen in the light of the buildings' status and functions the wall would have served to provide an enclosed protected area within which the working of precious metals and the production of coins could be closely controlled.

The structural sequence of the three "workshop phases" is as follows: Following upon the construction of the curtain wall, the first buildings to be erected within the precinct in this locality included a moneyers' workshop (*Building A*) and a simple wooden building of unknown function (*Building B*) (Phase 2). Dating evidence places activity in these buildings within the late 15th century, and it is known from historical sources that the archbishops' were regranted the right to mint their own coins from 1458, although the first mint may not actually have been in operation until 1483. Building A's internal structural arrangement conforms well with those of late medieval moneyers' workshops depicted on contemporary illustrations (Fig. 8 in Chapter 3.4), in particular the corner hearth and the tell-tale row of bases of characteristic box-like structures, the moneyers' workbenches, or striking benches. Tiled floors also appear to have been typical, logically enough when precious metals were being worked. Coin blanks and offcuts, crucibles and, most eloquently, a tool interpreted as either a possible discarded lower coin die or punch for producing blanks were recovered from associated contexts, confirming this building's function as an active centre of coin production. This building

extended S. into the section, and the tiled room uncovered this year appeared to adjoin another room to the S., to be excavated next year. The degree of wear on Building A's checquered tile floor would suggest that this workshop was in use for some time before it was, for some reason, deliberately dismantled down to floor level.

Following the deliberate demolition of buildings A and B, the structural layout in this part of the precinct was radically altered (Phase 3). While the first buildings had been aligned strictly parallel with the line of the curtain wall, the new buildings were positioned at a slightly oblique angle to it. This second workshop phase saw the construction of a complex of buildings and associated structures situated to the W. and S. of a cobbled courtyard to the N. of the site. To the NW. lay part of a simple wooden building, *Building E*, to the SW. a portion of a building with a stone groundwall, *Building C*, and to the S. a complete rectangular building, the construction of which appears to have been interrupted by fire, *Building D/F*. Located between buildings C and E was a cobbled area. Building E appeared to incorporate the earlier cistern in the NW of the site. It was subsequently re-used as a latrine. Its reuse as a latrine associated with Building E may reflect the fact that its primary function as a cistern became redundant with the probable demolition of the conjectured building to the N. of the site boundary. A second cistern/latrine was constructed a little to the south in the cobbled area between Building C and E. This structure was most probably inserted during the general reorganization of the complex at the beginning of phase 3. These buildings and cisterns/latrines were probably all in use at the same time, and although we only know the function of Building F, the associated buildings may also have conceivably formed parts of the mint complex.

All these buildings were destroyed by a catastrophic fire, and clearly one which caught the moneyers by surprise. It is known that the archbishop's enemies burned the Palace in 1532, and the associated datable evidence does not contradict the hypothesis that it was this historical fire which destroyed this complex. The fact that this fire interrupted minting activities is clear from the large number of coin blanks, assaying cupels and crucibles which were found in associated destruction levels (the former in particular were closely associated with the benches used for striking coins). Also found in destruction levels were a dismantled brass chandelier and a small brass(?) head from a figurine: the recovery of these items gives rise to the suggestion that objects of this kind were melted down here for their metal content. In fact, it would appear from the finds evidence that a number of related activities took place here, probably under the same roof: namely, the melting down of metals, the assaying and refining) of silver, and the preparation and striking of coins.

Building F's layout was simple, comprising a small rectangular building with a main floor area of some $34m^2$, divided into two rooms, with a less sturdily founded annexe adjoining it to the E. and a narrow communicating passage along its N. side. The annexe would appear to have been used for storing charcoal, presumably fuel for the large brick-built hearth in the corner of the building's E. room. This room also contained the bases of three rectangular workbenches placed side-by-side along the S. wall, with a single associated sunken round container, possibly a fixed receptacle designed to hold finished coins? The main floor area was originally tiled (although these were removed following the fire), while the annexe was originally clay floored and later substituted with a scrappy plank floor. Conditions in the small workroom must have been extremely hot, cramped and noisy, with the hearth ablaze and coins presumably being struck by three moneyers simultaneously. The smaller W. room's function is uncertain. There was a brick-built pad-like structure which is likely to have formed the base of some sort of superstructure of unknown function. If this was indeed in use at this stage (there is some slight doubt as to this), it may have been another hearth, perhaps for melting down objects (the aforementioned chandelier was found nearby) although the room was arguably too small to have housed such an operation. Perhaps this was where silver was weighed or assayed, or where the coin blanks were clipped, for example? A number of bone-ash cupels were indeed found in close proximity, and this association may suggest that the brick foundation formed the base of an *assaying* hearth.

As regards the finely constructed wood-lined cisterns/latrines: their primary use as water-holding structures seems most likely, although they would have been conveniently located for use as latrines by the workmen. The earliest cistern appears to have been associated with the conjectural building to the north of the site indicated by the buttress-like feature AK1, discussed above. Its apparent incorporation into Building E as a latrine may have prompted the construction of a replacement cistern a little to the south. This was probably also in use as a latrine before the catastrophic fire which destroyed Building F, however. The cess deposits produced much of interest with regard to contemporary diet, with, for example, seeds of various locally derived fruits and berries, as well as more exotic imports, such as figs and grapes. Seagull eggs would also appear to have been on the menu (see botanical report).

Following the catastrophic fire, the area as a whole appears to have been left largely untouched. The only new building erected on the destruction debris was an even smaller moneyers' workshop, *Building G* (Phase 4). This stood isolated in a burnt-out wasteland. It was erected directly on the ruin of Building F, though on new groundwalls, and a new tiled floor was established as well as three new workbenches and a single round sunken container. Building F's hearth seems to have been refurbished and reused. There was no annexe for fuel storage. Cramped as this workshop must have been, it was at some stage decided to increase the number of workbenches to four and sunken containers to two. To this effect, the S. part of the tile floor was removed, the new structures inserted, and the tiles subsequently replaced. This can be interpreted as reflecting a desire, possibly urgent, for increased capacity and production, four moneyers striking coins where there were formerly three. The historical reasons for this will be an interesting topic of research: given that this building was probably in operation during the final, politically turbulent years of Olav Engelbrektsson's episcopacy, ultimately terminating in the Reformation, this modification may point to the archbishop's need for greater numbers of coins, possibly for the procurement of armaments and payment of troops (including mercenaries?). Another possibly heavy drain on his resources were fines imposed by the royal authorities: for example, following the failure of Kristian II's campaign and the reassertion of Frederik I of Denmark's claim to Norway in 1532, the archbishop had to pay 15,000 marks as a fine for his support for Kristian (Norges historie, bind 5, 418 and Skaare, 1992, 29-30).

The Post-Reformation period - structural fragments.

Following the demolition of the final moneyers' workshop, presumably soon after the archbishop's flight from Norway in 1537, the area does not appear to have been systematically utilized (Phase 5). The fragmentary remains of part of a simple wooden structure with a hearth, *Building H*, lay to the NW., and to the S. there were some slight indications that a post-built structure may have stood there. Otherwise, there was initially only sporadic activity, characterized by scattered stake-holes and pits whose actual functional associations remain unresolved. Historical references place the first *lensherreresidens* in the E. wing of the precinct, and, although extremely tenuous, there were some structural remains in the form of deep post-holes which may have related to this late 16th-/early 17th-century building. This phase was also noteworthy for thick redeposited layers containing much metal-working related finds, notably crucibles ranging in size from small to very large indeed. These presumably constituted redeposited waste debris from the preceding workshop phases. A fine impressed lead cloth seal from Holland was also found in related contexts.

Herrehuset/Governor's Mansion House - 1640-1672

This building (which provided facilities for practical and administrative work, servants quarters, and the housing and entertaining of guests) is well represented in contemporary documentation, including building accounts and surveys, plans and Maschius's town prospect. Consequently it has been possible to relate, to a satisfactory degree, the surviving physical remains of the floor and foundations to the

documented descriptions of the ground floor's division into rooms of various function (Phase 6). Particular architectural features, such as the chimneys, provide interesting details to complement and indeed question the veracity of the documentary evidence. The characteristic groundplan, with the projecting portion to the W., as represented on Naucler's plan of 1658, was reasonably intact: of particular note were two chimney bases, one of which produced some fine carved stones in its foundation, while the other produced a number of reused medieval bricks bearing plaster with painted plant motifs; the fine wooden floor (one of the few substantial wooden structural components preserved on the site) belonging to the guest room; the extensive cobbled yard fronting the building, containing post-holes which formerly held the pillars supporting the first-floor's *svalgang*; the kitchen midden outside the curtain wall to the NE. with its large content of oyster shells; and the large number of finds generally which tell of the luxury enjoyed by the occupants of the building.

The latest buildings

There was some rather enigmatic evidence which suggested that, following *Herrehuset's* demolition, a new building (*Building J*) was inserted directly upon its surviving ground floor and foundation elements (Phase 7). Certainly, a rather curious arrow-shaped paved and cobbled surface was inserted over demolished internal structures. Maps post-dating 1672 do show a building here, though their testimony should be regarded with caution as they may portray a previous situation.

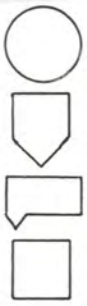
Likewise, the cartographic evidence for an isolated building succeeding Building J in the NE. part of the precinct at the beginning of the 18th century is somewhat unclear. However, the physical remains of just such a building (*Building K*) were located (Phase 8), and judging by the situation portrayed on Eckleff's detailed plan of 1758, this building must have been destroyed before that plan was drawn, there being no such building represented on it. Building K was a simple building with a stone groundwall to the N.; two different floor areas were encountered this year, one planked and the other probably cobbled and separated by a partition. This building's function is as yet unknown, and its S. end remains to be excavated next year.

Building K was demolished and a brown humusy soil horizon accumulated over the whole site (Phase 9). This may be a garden soil cultivated during the latter half of the 18th century or an imported soil dumped *en masse* as levelling-up during the construction in 1809 of the final building to occupy the area, namely the Eastern Magazine Building, *Building L* (Phase 10). This building's deeply-entrenched W. groundwall, associated narrow cobbled area fronting it and a central wall which acted as the basis for the central roof-support were the main features left after the fire and subsequent clearance in 1983.

APPENDIX I - IV

APPENDIX I: KEY TO SYMBOLS

1. Matrix:



Layer/deposit

Pit/post-hole

Stake-hole

Structural element

2. Plans:

Edge of excavation

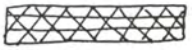
" " intrusion

Edge of contemporary cut/feature - hachures to show slope

Edge of layer/deposit

Stake-holes and post

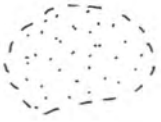
Unburnt timber



Burnt/charred timber

Stone

Vertically-set stone



Gravel/sand

Charcoal

Bricks

Cobble impressions

421 Layer/deposit number - see text/layerlist

K12 Construction number - see text/layerlist

APPENDIX II: LAYERLIST SITE 1991/1A

Lag	Fase	Equivalents	Type	Grouping
1	10	B1 includes 4, 7	D	
2	10	B11	K	K72
3	1	B580	K	K2
4	10		K	
5	10		D	
6	10	B7	K	
7	10	B1	D	
8	10	B8	K	
9	10		D	
10	10		K	
11	10		K	K75
12	10	B4	D	
13	10	B15	K	K70
14	10	B5	K	K70
15	10	B13	K	
16	10		K	
17	9	B17 B19, 31, 39, 46	D	
18	10	B6	K	K74
19	10	B43 includes B124	K	
20	10		K	
21	10		K	
22	10		D	
23	6	B143 B136, 58	K	K52
24	10	32	K	K74
25	10		K	K73
26	10		K	
27	10		K	
28	10	B10	K	K75
29	10	B18	K	K75
30	10	B21	K	K75
31	9	B19 B17, 17, 39, 46	D	
32	10	24	K	K74
33	10		K	
34	10		D	
35	10		K	K74
36	10		D	K77
37	10		K	K74
38	10		D	K77
39	9	B17 B19, 17, 31, 46	D	
40	10		B	
41	10	B20	K	
42	10		K	K73
43	10		K	
44	10		D	
45	10		D	K76
46	9	B17 B19, 17, 31, 39	D	
47	10		K	K77
48	8	B24	D	
49	7	B135	D	
50	10		K	
51	10		K	

Lag	Fase	Equivalents	Type	Grouping
52	8	B31	D	
53	8	B34	D	K65
54	8		K	K65
55	10		D	K76
56	7		D	
57	8	B35	D	
58	6	B136 23, 1B/143	K	K52
59	6	B253	K	K53
60	6		K	K52
61	6		D	K60
62	6		K	K55
63	8	B95 B103, 91, 115	K	
64	6		K	K56
65	7		K	
66	8	B26 includes B99	D	
67	8		D	
68	10		D	
69	10		D	
70	8		D	K63
71	8		K	K63
72	8		K	K64
73	8		D	K64
74	10	B139	K	K72
75	6		K	K61
76	8		D	
77	8		D	
78	7		K	
79	10	B69	K	K72
80	7		K	
81	#	B63 # PHASE 9 OR 10	K	K71
82	10		K	
83	6		K	K55
84	6		K	K54
85	7		K	
86	7		K	
87	6		K	K55
88	8	B173 B178	D	
89	6		K	K54
90	10		D	K76
91	8	B103 63, 115	K	
92	8		D	
93	10		K	K76
94	7		K	
95	7		K	
96	8	B100	K	
97	10		D	K76
98	8		K	
99	6	B216 111, 151	K	
100	7		K	
101	6		K	K54
102	6	135	B	
103	7		K	
104	6		K	K61

Lag	Fase	Equivalents	Type	Grouping
105	6	B156	K	K59
106	8		D	
107	8	B121	K	
108	10		D	K76
109	1	612	K	
110	7		K	
111	6	B216 99, 151	K	
112	8		K	
113	8	B112	K	
114	8		K	
115	8	B102	K	
116	8	B41	K	
117	8		K	
118	10		D	K76
119	8		K	
120	8	B131	K	K62
121	7	B187	6	
122	7		K	
123	8	B132	K	K62
124	8	B133	K	K62
125	7		K	
126	8	B134	K	K62
127	6		K	K60
128	7		D	
129	6		K	K52
130	6		K	K60
131	6	432	K	K60
132	7		D	
133	6		D	
134	6		D	
135	6	102	B	
136	8		D	
137	8		D	
138	6		K	K52
139	6		K	K52
140	8	B149	K	K62
141	8		K	K62
142	8		K	K62
143	6		D	
144	10		K	K74
145	6		D	
146	6		B	
147	*	* PHASE 7-9	D	
148	+	+ PHASE 2-5	D	
149	#	B64 # PHASE 9 OR 10	K	K71
150	+	+ PHASE 2-5	D	K66
151	6	B216 99, 111	K	
152	7	B171	K	
153	6		D	
154	6		D	
155	8	B39	D	
156	7	B177	K	
157	6		D	

Lag	Fase	Equivalents	Type	Grouping
158	8		D	
159	6		K	K55
160	7		D	
161	7		D	
162	6		K	
163	7		D	
164	6		D	
165	+	+ PHASE 2-5	D	
166	6		B	
167	6		D	
168	6		K	K54
169	6	B202	K	K54
170	6		D	
171	7		K	
172	+	+ PHASE 2-5	K	
173	6		K	K54
174	+	+ PHASE 2-5	D	
175	+	+ PHASE 2-5	D	
176	7		K	
177	7		K	
178	7		K	
179	7		K	
180	6		K	K61
181	7		D	
182	7		D	
183	7		D	
184	7	B80	D	
185	6		D	
186	1		K	
187	+	+ PHASE 2-5	D	
188	+	+ PHASE 2-5	D	
189	8		D	
190	6		K	K54
191	6		K	K54
192	7		D	
193	8		D	
194	+	+ PHASE 2-5	K	K66
195	+	+ PHASE 2-5	D	K66
196	6		K	K61
197	6		D	
198	6		K	K61
199	6		D	
200	6		D	
201	6		D	
202	6		D	
203	6		K	K61
204	6		K	
205	6		K	K57
206	6		K	K58
207	6		D	
208	6		D	
209	6		K	K54
210	6		K	K54

Lag	Fase	Equivalents	Type	Grouping
211	+	+ PHASE 2-5	D	
212	*	* PHASE 7-9	K	K67
213	+	+ PHASE 2-5	D	K67
214	6	B259	K	K54
215	6		K	
216	6		K	
217	6		K	K58
218	*	* PHASE 7-9	D	K67
219	6		K	K54
220	6		K	K54
221	6		K	K54
222	6		K	K54
223	6	B265 B250, B311	K	
224	6		K	
225	6		K	
226	6		K	
227	6		K	
228	6		K	
229	6		K	K54
230	6		K	
231	6	B155	K	K59
232	+	+ PHASE 2-5	D	
233	4		D	
234	6		D	
235	6		D	
236	*	* PHASE 7-9	K	K67
237	*	* PHASE 7-9	D	K67
238	*	* PHASE 7-9	K	K67
239	*	* PHASE 7-9	K	K67
240	6		K	
241	6		K	
242	6		K	
243	6		K	
244	+	+ PHASE 2-5	D	
245	+	+ PHASE 2-5	D	
246	*	* PHASE 7-9	D	
247	*	* PHASE 7-9	D	K67
248	*	* PHASE 7-9	D	K67
249	*	* PHASE 7-9	D	K67
250	1		K	K8
251	6		K	
252	1		K	K8
253	+	+ PHASE 2-5	D	
254	+	+ PHASE 2-5	D	
255	6		K	
256	3b		K	K33
257	6		K	
258	1		D	K2
259	6		K	K55
260	6		K	
261	6		D	K51
262	6		K	K51
263	6		K	K52

Lag	Fase	Equivalents	Type	Grouping
264	6	B200	K	K52
265	6	B279	K	
266	6		K	
267	6		K	
268	*	* PHASE 7-9	D	K67
269	*	* PHASE 7-9	K	K67
270	6		K	K57
271	7		D	
272	6		K	K60
273	6	B182	K	K53
274	6	B294	K	
275	6	B281	K	
276	6		K	K57
277	6		K	K57
278	6		K	K57
279	7		D	
280	10		D	K69
281	10		K	K69
282	5		D	
283	6		K	K57
284	6		K	
285	6		K	
286	6		K	
287	6		K	
288	6	305, 339	K	K56
289	6		K	
290	6		K	K53
291	6		K	
292	6		K	
293	6		K	
294	6		K	
295	6		K	
296	6		K	
297	6		K	
298	6		K	
299	6		K	
300	6		K	
301	1		K	
302	1		K	
303	6		K	K56
304	3b		K	K33
305	6	288, 339	K	K56
306	6		K	
307	6		K	
308	6	B329 317	K	
309	3b	315	K	K21
310	5		D	
311	5		D	
312	6		K	K56
313	6		K	K54
314	5		D	
315	3b	309	K	K21
316	5		D	

Lag	Fase	Equivalents	Type	Grouping
317	6	B329 308	K	
318	1		K	K8
319	1		K	K8
320	1	346	K	K2
321	1		K	
322	*		K	K67
323	*		D	K67
324	5		D	
325	5		D	
326	5		D	
327	5		D	
328	5		D	
329	5	B342	D	
330	1		K	K4
331	1		K	K4
332	5		K	K39
333	5		D	
334	5	INCLUDES 340	D	
335	5		K	K40
336	5	B337	D	
337	6		K	K49
338	5		D	
339	6	288, 305	K	K56
340	5	334	D	
341	1		B	
342	5	B338	D	
343	5		D	
344	6		K	K56
345				
346	1	320	K	K2
347	5	B313	D	
348	6		K	
349	5	B345 374	D	
350	5	351	D	
351	5	350	D	
352	5		D	
353	6		K	
354	5		D	
355	1		D	
356	5		D	
357	5		K	K39
358	1		K	K6
359	5		D	
360	5	B295	D	
361	5	B312	K	
362	5		D	
363	1		D	K7
364	1		K	K7
365	1		K	K3
366	1		D	K3
367	3b		K	
368	3a	384	K	
369	3b		D	

Lag	Fase	Equivalents	Type	Grouping
370	3b		K	K19
371	5		D	
372	5		K	
373	1		K	K6
374	5	B345 349	D	
375	3b	434	D	
376	6		K	
377	4	B358 378	D	
378	3b	B353 377	D	
379	5		D	
380	4		K	
381	5		D	
382	5		D	
383	6		K	K50
384	3a	368	K	
385	3b		D	
386	5		D	
387	5		D	K41
388	4	B389	D	
389	5		K	K41
390	5		D	
391	5	B354	D	
392	5		D	
393	5		D	
394	4		K	
395	3a		K	K14
396	1		K	K2
397	5		D	
398	5		D	
399	3b		K	
400	3b		D	
401	1		K	K5
402	3b		D	
403	5		K	K48
404	3b	B355	D	
405	5		D	
406	5		D	
407	4		K	
408	5		D	K46
409	5		K	K46
410	5		D	
411	3a		D	
412	5	B315	B	
413	5	B382 429	D	K45
414	4	416	K	K35
415	3b		K	K26
416	4	414	K	K35
417	+	+ PHASE 2-5	K	K68
418	+	+ PHASE 2-5	D	K68
419	3b	B361	D	
420	4		K	K38
421	3b		K	
422	3b		K	

Lag	Fase	Equivalents	Type	Grouping
423	3b		D	
424	5	B360	K	
425	3b		D	
426	3b		K	
427	3b		K	
428	3b		D	
429	5	B382 413	D	K45
430	5		D	
431	4	B324	K	K36
432	6	131	K	K60
433	7		D	
434	3b	375	D	
435	3a		B	B1
436	3b		K	K21
437	3a		B	B1
438	5		D	
439	3b		K	K19
440	3b		K	K19
441	3b		K	
442	3b		K	K19
443	3a		B	B1
444	6		D	
445	6		D	
446	5		D	
447	5		D	
448	3b		K	K19
449	3a		K	K13
450	3b	B407	D	
451	5		D	
452	4	B397	D	
453	3b	B410	D	
454	4		D	K34
455	4		K	K34
456	5	B325	D	
457	4	B400	K	K37
458	3b		K	K19
459	4		K	
460	3b		D	
461	5	B391	K	K45
462	4		K	
463	4		K	
464	3b		D	
465	5		K	K44
466	3b		K	K21
467	3b		K	K21
468	5		K	K47
469	5		K	K42
470	4	B401	K	K37
471	3b		D	
472	+	+ PHASE 2-5	D	
473	3b		D	
474	3b		D	
475	3a		B	B1

Lag	Fase	Equivalents	Type	Grouping
476	5		K	K43
477	3b		K	
478	+	+ PHASE 2-5	D	
479	3b	B495	D	
480	3a		K	K13
481	3a		K	K13
482	4		K	
483	3b		K	K29
484	2		K	K10
485	5		D	
486	2		K	K10
487	3a		K	K14
488	3a		K	K14
489	3a		K	K14
490	3b		D	
491	3a		K	K14
492	3a		K	K14
493	3a	B508 570	K	
494	1		K	K5
495	1		K	K5
496	1		K	K5
497	1		K	K5
498	1		K	K5
499	3b		D	
500	2		K	K10
501	3a		D	
502	4	B402	K	K37
503	3b		K	
504	3b	B257	B	
505	3b		K	
506	3b		B	B2
507	3b		K	
508	3a		B	B1
509	3a		B	B1
510	3b		K	
511	3b		B	B2
512	3b		B	B2
513	3a		B	B1
514	3a		K	K14
515	3a		K	K14
516	3a		K	K14
517	3a		K	K14
518	3a		K	K17
519	3b		K	
520	3b		K	K29
521	3b		B	B2
522	3b		B	B2
523	3b		D	
524	3b		K	
525	3b	B461	K	K24
526	3b		D	
527	3a		K	K17
528	3a	531	K	K17

Lag	Fase	Equivalents	Type	Grouping
529	3b		D	K25
530	3a	B460	K	K16
531	3a	528	K	K17
532	1b		K	K5
533	3b		B	B2
534	3b	B504	K	K25
535	3b		D	K25
536	3b	B472	K	K31
537	3b	B470	K	K30
538	3b		K	K28
539	3b		K	
540	3b		K	
541	2	554	D	
542	3a		K	
543	3a		K	
544	3b	B432	K	K28
545	3b		K	K28
546	3a		K	
547	3b		K	K26
548	3a		K	
549	3a		K	
550	3a		K	
551	3a		K	
552	3a		K	
553	3b		K	
554	3	541	D	
555	3a	B516	K	
556	3a		K	
557	3a	558	K	
558	3	557	K	
559	3b		K	
560	3b		K	
561	3		K	K26
562	3		D	
563	3		D	
564	3b		K	K23
565	3a		K	K14
566	3b		K	
567	2	B533	K	
568	3a		K	
569	3b		K	K23
570	3a	493	K	
571	3a		D	
572	2		K	K11
573	2		D	
574	2		K	K9
575	3b		K	K22
576	2		K	K9
577	2		K	K9
578	2		K	K9
579	2		K	K9
580	2		K	K9
581	2		K	K9

Lag	Fase	Equivalents	Type	Grouping
582	2	B497	D	
583	2		K	K11
584	3b		D	K22
585	3b		K	K22
586	3b		D	K22
587	3a	B507	K	
588	1		K	K4
589	2		D	
590	3b		K	K19
591	3a	B496	K	K18
592	2	B529	D	
593	1		K	
594	3b		K	K19
595	3a		K	
596	1		K	K4
597	3b		K	
598	3b		K	
599	3a		D	
600	3b		D	K32
601	3b		K	K32
602	3a		K	
603	2		K	
604	3b		D	
605	3b		D	K20
606	3b		K	K20
607	2		K	K10
608	1		K	K1
609	2		K	K10
610	2		K	K10
611	2		K	K9
612	1		K	
613	2		K	K10
614	2		K	
615	1		D	
616	3a	B506	K	
617	1		K	K1
618	3a		K	
619	3b		K	K19
620	2		K	
621	3a		K	
622	1		K	
623	2		K	
624	2		K	
625	2		K	
626	1	B532	K	
627	1		K	
628	3a		K	
629	1		D	
630	1		D	
631	3a		D	
632	3a		D	K15
633	3a		D	K15
634	3a		K	

Lag	Fase	Equivalents	Type	Grouping
635	2		K	
636	2	B532	K	
637	3a	B574	K	K15
638	3a	B543	K	
639	3a		K	
640	3a		K	K18
641	3a		K	K18
642	1		D	
643	3		D	
644	3a		K	K18
645	2	B532	K	
646	1		D	
647	1		D	
648	1		K	K1
649	3a		K	
650	1		D	
651	2		K	
652	1		D	
653	1		D	
654	1	B542	D	
655	1	B575	D	
656	1	B573	K	
657	3b		B	B2
658	1		K	
659	1		K	K2
660	1		K	K2
661	5		D	K40
662	2		K	K10
663	3a		K	K14
664	3a		K	K14
665	3a		K	K14
666	3a		K	K14
667	3a		K	K14
668	3a		K	K14
669	3a		K	K14
670	3a		K	K14
671	3a		K	K14
672	3a		K	K14
673	3a		K	K14
674	3a		K	K14
675	1	B583	D	
676	1		K	K1

APPENDIX III: LAYERLIST 1991/1B

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
1	10	1	D		
2	10	0	D		12
3	10	0	K		8?
4	10	12	B		
5	10	14	K	K108	
6	10	18	K	K109	9
7	10	6	K		
8	10	8	K		3
9	10	18	K	K109	6
10	10	28	K	K107	
11	10	2	K	K105	
12	10	0	D		2
13	10	15	K		18
14	10	0	K		23
15	10	13	K		
16	10	0	B		
17	09	39	B		19
18	10	29	K		13
19	09	31	B		17
20	10	41	K		
21	10	30	K		
22	10	29	K		18=13
23	10	0	K		14
24	08	48	D		
25	08	0	K	K88	
26	08	66	D		126,99,96?,153?
27	08	0	K		
28	07	0	D		
29	06	0	B		
30	06	0	K	K65	
31	08	52	D		
32	10	0	K		
33	10	0	K		
34	08	53	D		
35	08	57	D		
36	08	0	K		
37	08	0	K		
38	08	0	D		
39	08	155	D		
40	08	0	K	K87	
41	08	116	K		
42	10	0	K		
43	10	19	K		
44	08	0	D	K91	26?,52?
45	08	0	K	K91	
46	08	0	D		
47	08	0	K	K95	
48	08	0	D		31? 112?
49	08	0	D		
50	08	0	K	K90	

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
51	08	0	K	K92	
52	08	0	D		44?
53	08	0	D		
54	08	0	D		24? 26?
55	08	0	K		
56	08	0	K		
57	08	0	K		
58	08	0	K	K89	
59	08	0	K	K89	
60	08	0	K	K89	
61	08	0	K	K87	
62	08	0	K	K97	
63	0#	81	K	K105	# PHASE 9 or 10
64	0#	149	K	K105	# PHASE 9 or 10
65	08	0	D	K99	
66	08	0	K	K99	
67	08	0	D	K100	
68	08	0	K	K100	
69	10	79	K		
70	08	0	?		
71	08	0	K	K98	
72	08	0	K	K97	
73	08	0	K	K90	50?
74	08	0	K	K90	
75	08	0	D		
76	08	0	D		
77	08	0	D		
78	08	0	K		81?
79	08	0	K		
80	08	184	?		95, 103?
81	08	0	?		78?
82	08	0	?		
83	08	0	K		
84	08	0	?		
85	08	0	?		
86	08	0	?		
87	08	0	K	K87	
88	08	0	D		
89	08	0	?		
90	08	0	D	K96	
91	08	0	K	K96	
92	08	0	?		
93	08	0	K	K97	73
94	08	0	?		
95	08	63	K		80, 103?
96	08	0	D		99?,26?,126?,96?
97	08	0	K		
98	08	0	K		
99	08	66	D		26, 126, 96?
100	08	96	?		
101	08	0	?		26?, 96?
102	08	115	?		
103	08	63	?		95?, 80?

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
104	08	0	?		
105	08	0	?		
106	10	0	K		
107	08	0	?		
108	08	116	K		41, 162, 157
109	08	0	K		
110	08	0	K		212
111	08	0	?		
112	08	52	D		48?, 31?
113	09	0	K	K106	
114	09	0	D	K106	
115	09	0	K	K106	
116	09	0	K	K106	
117	08	0	B		119
118	08	0	K	K101	
119	08	0	B		117
120	06	0	K	K66	
121	08	107	?		
122	08	0	D	K95	
123	08	123	K		132
124	08	0	D		
125	08	0	K		
126	08	66	D		26, 99, 96?, 153?
127	08	0	K		
128	08	0	?		
129	08	0	K	K102	
130	08	0	D	K102	
131	08	120	K		
132	08	123	K		123
133	08	124	K		
134	08	126	K		
135	07	49	D		173?
136	06	58	K	K79	143
137	07	0	D		
138	07	0	K		
139	10	74	K		
140	10	0	?		17?
141	08	0	?		
142	08	0	D		117? 119?
143	06	58	K	K79	136
144	08	0	D	K93	
145	08	0	K	K93	
146	08	0	K		36, 152
147	08	0	?		
148	07	0	D	K85	
149	07	0	K	K85	
150	08	0	D	K94	
151	08	0	K	K94	
152	08	0	K		36, 146
153	08	66	D		96?,99?, 126?, 26?
154	07	0	D		170?
155	06	231	?		
156	07	105	?		167, 189, 193, 215?

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
157	08	116	K		41, 108, 162
158	08	0	K		
159	08	0	K		107?
160	08	0	K	K87	
161	08	0	K		
162	08	116	K		41, 108, 157
163	06	0	K	K66	
164	08	0	?		
165	08	0	K	K97	
166	08	0	?		
167	07	105	K		156, 189, 193, 215?
168	06	0	K	K78	240
169	08	0	K		
170	07	0	D		172, 154?, 178?, 207
171	07	152	D		
172	07	0	D		170, 154?, 178?, 207
173	07	49	D		135
174	07	0	K	K82	
175	06	273	K	K67	182, 254
176	07	0	K		
177	07	156	K		
178	07	0	D		190?207?170?172?154?
179	07	0	K		
180	07	0	K	K82	
181	07	0	D		184
182	06	273	K	K67	175, 254
183	06	0	?		
184	07	0	D		181
185	07	0	K		
186	07	0	D		
187	06	121	B		
188	07	0	K	K83	
189	07	105	K		193, 156, 167, 215?
190	07	0	D		207?178?170?172?154?
191	06	0	D		237?
192	06	0	K	K70	255?
193	07	105	K		189,156,167,215?
194	07	0	D		213
195	07	0	K	K84	
196	07	0	D	K84	
197	06	0	K	K65	
198	06	0	D		
199	06	0	K		
200	06	264	K		
201	06	0	D		
202	06	169	K		219?
203	06	0	K		
204	06	0	K	K74	
205	06	0	K	K66	
206	06	0	K	K66	
207	07	0	D		190?178?170?172?154?
208	07	0	?		
209	06	0	K	K66	

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
210	06	0	K	K66	
211	08	0	K	K86	
212	08	0	K		110?
213	07	0	?		194
214	06	0	K	K74	
215	07	105	K		167?156?189?193?
216	06	99	K		
217	06	0	K		227
218	06	0	D		
219	06	0	K		202?
220	06	0	K	K68	
221	06	0	D		
222	06	0	K	K69	
223	06	0	K	K74	
224	06	0	K	K74	
225	06	0	K	K74	
226	06	0	K	K68	
227	06	0	K		217
228	06	0	K		245
229	06	0	K	K71	
230	06	0	K		
231	06	0	K	K74	
232	06	0	K	K70	
233	06	0	K	K78	
234	06	0	K	K78	
235	06	0	K	K78	
236	06	0	K	K77	
237	06	0	D		191
238	06	0	K		
239	06	0	K	K77	
240	06	0	K	K78	168
241	06	0	B		
242	06	0	K	K74	
243	06	0	K	K74	
244	06	0	K	K74	
245	06	0	K		228
246	06	0	K	K75	
247	06	0	K		
248	07	0	K		
249	06	0	K		
250	06	223	K		311?265?281?
251	06	0	K	K78	
252	06	0	K		
253	06	59	K	K67	
254	06	273	K	K67	175, 182
255	06	0	K		192?
256	05	0	K	K60	
257	03b	504	B		
258	05	0	K	K62	
259	06	214	K		
260	?*	0	?		*insecure context
261	06	0	K	K66	
262	06	0	K	K66	

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
263	06	0	K	K66	
264	07	0	K		
265	06	223	K		311?250?281?
266	07	0	K		
267	07	0	K	K76	
268	06	0	D	K81	
269	06	0	K		
270	06	0	K	K73	
271	06	0	K	K81	
272	06	0	K		
273	06	0	K		
274	06	0	K		
275	06	0	K	K78	
276	06	0	?		
277	06	0	K	K78	
278	06	0	K	K80	
279	06	0	K		
280	06	0	K	K74	
281	06	275	K		265?250?311?
282	06	0	K	K66	
283	06	0	K	K75	
284	06	0	K		
285	06	0	K		
286	06	0	K		294?
287	06	0	K		
288	06	0	K	K72	
289	06	273	K	K67	182,175,254
290	06	0	K		
291	06	0	K	K66	
292	06	0	K		
293	06	0	K		
294	06	274	K		286?
295	06	0	K		
296	06	0	K		
297	06	0	K		307?
298	06	0	K		
299	06	0	K	K73	
300	06	0	K	K73	
301	06	0	K		
302	05	0	K	K61	
303	06	0	K		
304	06	0	K		
305	06	0	K		
306	06	0	K		
307	06	0	K		
308	05	0	D	K61	
309	04	0	K		
310	06	0	K		
311	06	0	K		
312	05	361	D		363?314?360?
313	05	347	D		
314	05	0	D		312?363?360?
315	05	412	B		

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
316	06	0	K		
317	04	0	K	K38	
318	04	0	D		389?
319	06	0	K		
320	06	0	K		
321	06	0	K		
322	05	0	K	K59	
323	05	0	K	K59	
324	04	431	K	K38	
325	04	456	K	K40	401
326	05	0	D	K60	
327	05	0	K	K62	
328	03b	0	?		
329	06	308	K		342?333?340?357?
330	06	0	K		
331	05	0	B		
332	04	0	K	K38	
333	06	0	K		321?329?342?
334	05	0	D		313?335?
335	05	0	D		334?313?
336	05	349	D		345,338,340,357?
337	05	336	D		
338	05	349	D		345,336,340,357?
339	05	0	D		
340	05	349	D		357?,338,336,345
341	04	0	D		
342	06	0	K		329?333?321?
343	05	0	?		
344	04	0	D	K48	
345	05	349	D		336,338,340,357?
346	06	0	K		
347	06	0	K		
348	04	0	K	K48	
349	05	0	K	K63	
350	04	0	K	K49	
351	04	0	K		
352		0	#		#artificial context
353	03b	378	D		455?410?355?
354	05	391	D		
355	03	404	D		410?455?353?
356	03	0	K		
357	05	349	D		340?338?336?345?
358	04	377	K		463?
359	05	0	K		
360	05	424	K		314?363?312?
361	03b	419	D	K35	
362	05	0	K		
363	05	361	D		312?
364	03a	0	K		525/512?
365	05	0	?		
366	03	0	D		484?
367	05	452	?		397?
368	03b	0	K	K28	464?

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
369	05	0	?		
370	04	0	K	K41	
371	05	0	D		
372	05	0	K		
373	05	0	K	K54	
374	05	0	K	K53	
375	04	0	K	K47	
376	05	0	?		
377	05	0	K	K58	
378	05	0	K	K56	
379	04	0	D	K43	
380	04	0	D	K47	
381	05	0	?		
382	05	413	D		
383	05	0	D		
384	05	0	?		
385	03b	0	K	K28	404?
386	03a	0	D		
387	04	0	K	K43	
388	03a	0	K	K12	
389	04	388	D		318?
390	04	0	K	K41	
391	05	461	K		
392	04	0	K	K43	
393	05	0	?		
394	05	0	D		
395	05	0	K	K57	
396	04	0	K		
397	05	452	?		367?
398	#	0			# cleaning context
399	05	0	K	K55	
400	04	457	K	K39	
401	04	470	K	K39	
402	04	502	K	K39	
403	05	0	K	K51	
404	03b	0	K	K28	385?
405	03	0	D		
406	03a	0	K		
407	03	450	D		484?366?
408	03	0	K	K22	
409	03	0	K	K24	
410	03b	453	D		355?455?353?
411	03a	0	K	K12	
412	04	0	K		
413	04	0	K	K45	
414	04	0	K		
415	04	0	K	K45	
416	04	0	D	K46	
417	04	0	K	K46	
418	04	0	K		
419	04	0	D	K42	
420	04	0	K	K42	
421	04	0	K	K47	

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
422	04	0	K		
423	04	0	K	K44	
424	04	0	K		
425	04	0	K	K48	
426	05	0	K	K52	
427	04	0	K		
428	04	0	K	K46	
429	04	0	D		369?
430	03	0	K	K40	
431	03b	0	K	K28	469
432	03b	544	K	K27	
433	03b	0	K	K28	
434	05	0	K	K50	
435	03b	0	D	K31	
436	03b	0	K	K31	
437	03b	0	K	K29	
438	03b	0	K	K26	
439	03a	0	K	K12	
440	03b	0	K	K32	
441	03b	0	K	K32	453
442	03b	0	K	K33	
443	03b	0	K	K33	
444	03b	0	K	K34	
445	03b	0	K	K34	
446	03	0	K		
447	03	0	K		
448	03	0	K		
449	03a	0	K		457?
450	03b	0	K	K36	
451	03b	0	D	K32	
452	03b	0	K	K32	
453	03b	0	K	K32	441
454	04	0	K		
455	03b	378	D		353?410?355?
456	04	0	K		
457	03	0	D		449?
458	03b	0	K	K32	
459	03	0	K	K25	
460	03a	530	K	K15	
461	03b	525	K	K30	
462	03a	0	K	K18	
463	04	377	K		358?
464	03b	0	K	K28	368?
465	03a	0	K	K14	
466	03b	0	K		
467	#	0			#cleaning context
468	03	0	D		
469	03b	0	K	K28	431
470	03b	537	K	K35	
471	03b	0	K	K34	
472	03b	536	K	K35	
473	03b	0	K	K35	
474	03b	0	K		

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
475	03b	510	B		
476	03b	0	K	K35	
477	03b	0	K	K35	
478	03b	0	K		
479	03b	0	K	K28	
480	03b	0	B		
481	03a	0	?		493
482	03b	0	K	K37	
483	03b	0	K	K37	
484	03	0	D		366?
485	03a	0	D	K16	
486	03a	0	K	K16	
487	03a	0	K		
488	03a	0	D		
489	03a	0	K	K13	
490	03a	0	K	K19	
491	03a	0	K	K21	
492	03a	0	K	K15	
493	03a	0	?		481
494	02	0	D		554?547?
495	03b	479	D		
496	03a	591	K	K20	
497	02	582	D		
498	03a	0	K		
499	03a	0	K	K15	
500	02	0	K	K5	
501	03a	0	K		508?
502	03b	0	B	K19	
503	03	0	?		
504	03	534	K	K17	
505	03a	0	K	K14	
506	03a	616	K	K15	
507	03a	587	K	K15	
508	03a	493	K		
509	02	0	D		497
510	02	0	K	K3	
511	03a	0	K	K14	
512	03a	0	K		525
513	03a	0	K		
514	03a	0	K	K13	
515	03a	0	K	K13	
516	03a	555	K		
517	02	0	D		
518	02	0	B		
519	03a	0	K	K12	
520	03a	0	K	K12	
521	03a	0	K	K12	
522	03a	0	K	K12	
523	03a	0	K	K12	
524	03a	0	K	K12	
525	03a	620	K		512
526	03	0	K		
527	03a	0	K	K13	

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
528	02	0	K	K10	
529	02	592	D		
530	02	0	K	K3	
531	02	0	K	K3	
532	02	645	?		535,557,558
533	02	567	K		
534	02	0	B		
535	02	645	?		532,5557,558
536	02	0	K	K5	
537	03	0	K		
538	03a	0	K		
539	02	0	B	K4	
540	02	0	K	K4	
541	02	0	?		
542	01	654	K		
543	03	638	K		
544	02	0	B		
545	02	0	K	K3	
546	02	0	B		555
547	02	0	D		494?554?
548	02	0	D	K6	
549	02	0	D	K7	
550	02	0	K	K6	
551	02	0	K	K7	
552	02	0	K	K8	
553	02	0	B		
554	02	0	D		494?547?
555	02	0	B		546
556	02	0	K	K8	
557	02	645	B		532,535,558
558	02	0	B		532,535,557
559	02	0	B		
560	02	0	D		
561	02	0	D	K7	547?
562	02	0	K	K7	
563	02	0	K	K7	
564	02	0	K	K6	
565	02	0	D	K8	554?
566	02	0	K	K6	
567	02	0	K	K8	
568	02	0	K	K6	
569	02	0	K	K7	
570	02	0	K	K5	
571	02	0	D		
572	03a	0	K		
573	01	656	?		
574	03a	637	K	K12	
575	01	655	?		
576	01	0	?		
577	01	0	K	K2	
578	03a	0	?		
579	02	0	K	K9	
580	01	3	K	K1	

B-LAYER	PHASE	A-EQUIV	TYPE	GROUPING	SAME AS
581	03	0	K		
582	01	346	K	K1	
583	01	675	?		
584	03	0	K	K23	
585	04	0	K		
586	02	0	K	K11	

APPENDIX IV: NOTE ON OUTSTANDING DATING/SAMPLE ANALYSES

A number of dating and specialist reports are outstanding from the site, and it should be borne in mind that the results might have a bearing on the phasing and conclusions above. The following specialist reports will eventually form part of the 91/1 research archive:

analysis of botanical samples*

analysis of entomological samples

analysis of mortar samples

analysis of metallurgical samples

analysis of textiles

dendrochronological dating of timber samples

radiocarbon dating of timber sample

(*the preliminary results of the analysis of botanical samples by Paula Sandvik have been included in this report).

BIBLIOGRAPHY

Bjerck, L.B. og Jansson, K. 1988: Fra åkerlapp til palmehave. *Arkeologiske undersøkelser i Trondheim* nr. 1.

Christophersen, Axel 1988: "..og ordnet det slik at der skulle være kaupstad". *Trondhjemske Samlinger.*

Dahlin, E. 1987: Arkivmaterial, TA 1987/12, Riksantikvarens Utgravningskontor for Trondheim.

DN - Diplomatarium Norvegicum.

Espelund, Arne et. al. 1989: Smedene på Ørene. Metallverksteder i middelalder-Trondheim. *Arkeologiske undersøkelser i Trondheim*, nr. 2, Trondheim.

Fischer, Gerhard: Upublisert arkivmateriale Erkebispegården. Riksantikvarens, Oslo.

Fischer, Gerhard 1977: Erkebispegård - Kongsgård - Erkebispegård. *Fortidsminner* LXIV (særtrykk av FNFMB Årbok 1975), Oslo.

Flodin, L., Hodkinson, B., Horrel, G. og Nordeide, S. 1985: Stratigrafisk analyse delfelt FO, FY og FZ. *Fortiden i Trondheim Bygrunn: Folkebibliotekstomten, Meddelelser*, nr. 10.

Gunnes, Erik 1976: Rikssamling og kristning. Mykland, K. (red): *Norges Historie* bd. 2, Oslo.

Halland, Nils 1976: Nidarnes og Nidaros. Trondhjemske Samlinger bd. 10, hefte 1.

Hommedal, Alf Tore upubl.: Budsjettforslag med bakgrunnsnotater, Riksantikvarens Utgravningskontor for Trondheims arkiv, 1989.

Lunde, Ø. 1985: Arkivmateriale. Prøvegraving i Erkebispegården, 1985. Riksantikvarens Utgravningskontor for Trondheim.

Lysaker, Trygve 1989. Arkivmateriale, vesentlig fra Riksarkivet, om bygningene på Kongsgården og vedlikeholdet av dem 1591-1686. Riksantikvarens Utgravningskontor for Trondheim.

Lysaker, Trygve upubl.: Rapport om Erkebispegården som residens for lensherrene og de første stiftsamtmenn, med samlet arkivmateriale. Riksantikvarens Utgravningskontor for Trondheims arkiv, 1989.

Lysaker, Trygve 1990: Erkebispegården som residens for lensherrene og de første stiftsamtmenn. *Trondhjemske Samlinger* 1989.

Mathiesen, H. 1903-1905: Trondhjem i senere middelalder. Byens historie og topografi i tiden fra 1263 til omkring 1300. Trondhjem.

Nordeide, Sæbjørg 1991: Hva skjuler Aslak Bolts mur? I *Kompendium fra konkurranseseminar om Erkebispegården i Trondheim 6.-7. juni*, utgitt av NAL.

Nordeide, Sæbjørg and Skaare, Kolbjørn 1992: Erkebiskopenes myntverksted. Småskriftserien - nr. 5, Nidaros Domkirkes Restaureringsarbeiders Forlag

Program for Nordisk arkitektkonkurranse Erkebispegården i Trondheim, NAL, 1991.

RN - Regesta Norvegica, utg. for Kjeldeskriftfondet v. S. Bagge og A. Nedkvitne, Oslo.

Sand, Kåre: R. 832 Erkebispegården. Grunnundersøkelser. Geoteknisk vurdering. Geoteknisk seksjon, Plankontoret, Trondheim kommune, 04.06.91.

Sandvik, Paula Utigard upubl.: Ytre Kongsgård, TA-1988/10. Paleoøkologiske undersøkingar. Rapport ved Riksantikvaren, Utgravningskontoret for Trondheims arkiv, 1990.

Sandvik, Paula Utigard, arkivrapport, in prep.

Snorres Kongesagaer, Overs. av A. Holtsmark og D.A. Seip, Oslo, 1980.

Supphellen, S. 1981: Bybrannen og by....??. I *300 år med Cicignon*, Trondhjems Historiske Forening.