

*Artefacts
Catalogue
Avondster site
1998-2004*

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The
Anglo-Dutch
East-Indiaman
that was wrecked
twice in Ceylon

Editors

Contributions

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Catalogue of Artefacts from the Avondster site 1998-2004

Excavated, Lost and Found

This is the catalogue of the artefacts excavated from the Avondster site between 1993 and 2004. It is not a normal find catalogue of an archaeological excavation, because the majority of the documented artefacts have once again been lost. The tsunami of December 26th, 2004 destroyed not only the building of the Maritime Archaeological Unit (MAU) in Galle, but also caused the loss of two thirds of the excavated artefacts of the Avondster stored within. The significant part of the single body of find documentation was also lost as a result of that tsunami.

Year	Finds N	Rec. N	Lost N	Lost %
1993	5	1	4	80 %
1994	3	-	3	100 %
1995	-	-	-	-
1996	5	1	4	80 %
1997	1	-	1	100 %
1998	173	78	95	55 %
1999	75	40	35	45 %
2000	-	-	-	-
2001	236	45	191	81 %
2002	497	168	329	66 %
2003	672	214a	458	68 %
2004	407	95	312b	77 %
Total	2074	642	1432	69 %

a. Including 27 wood samples.

b. Including 55 numbers lost before registration in the artefact register.

Table 1.1: Excavated, lost and recovered after tsunami 26.12.2004.

The numbers in table 1.1 are only a general indication. They are based on the find numbers in the artefact register, some of which can relate to more than one object. On the other hand, the register includes 1435 lost numbers and approximately 140 objects *recovered* without the identifying label indicating their registration number and which could therefore not be traced back to the data base or photo collection.

Figure 1.1: Tubs and containers containing artefacts under treatment in the new Maritime Archaeology Lab, Galle, Sri Lanka

Figure 1.2: Face of a Baardman jug

The registration of the finds

During the first years of the underwater survey of Galle Harbour, all the artefacts found during the campaign were assigned a sequence number starting from 1 irrespective of which part of the the excavation site they came from. This then formed part of a composite registration number for the find consisting of year of find, site code, (GHL = Galle Harbour Avondster site) and sequence number. With the commencement of the regular excavations in 2001, a process of registration by site was adopted.

The excavated artefacts were registered directly after the return of the divers to the MAU building. Every object received a find number which, together with a sketch and a short description, was written in the artefact register. A plastic label with the allocated number was connected with the artefact by a piece of fishing-line. The artefact was then placed in a bag made of plastic mesh that allowed the free flow of fresh water or conservation liquid. After the tsunami, many objects were recovered in their bags, and though filled with sea sand, were easy to clean.

From 2001 onwards, the Filemaker Pro 5 computer program was used for the registration of the finds in database files. This had already been done as much as possible during a campaign, but because of the many people requiring shared access to the available computers, the work was always behind schedule.

During the November- December 2004 campaign, the artefact registration was done by Ross Anderson, Niels de Groot, Dinesh Nisshanka, Sannate and Nicholas Bigourdan.

Before the departure of the foreign members of the team on December 20th, all the artefacts excavated in that year were assembled and written in the artefact register. Unfortunately the final steps of photography and computerised database recording were not finished on December the 26th. Of the 412 find numbers of 2004 only 95 were recovered. These are described in the catalogue together with the 260 lost objects of which the documentation was saved. The remaining 57 objects, which were lost together with the find administration are not included in the catalogue.

A general correction of the artefact registration and a new and complete photo documentation of all the artefacts excavated since 1992, which was planned in January 2005, was not possible after the tsunami.

Photos and drawings

A photo of almost every excavated artefact was taken during the surveys between 1993 and 1999.. Sometimes this took place directly after the excavation, and in other cases after treatment. With the growing number of artefacts after the start of the excavation of the *Avondster* in 2001, only the more recognisable objects were photographed in anticipation of a full photographic recording of the artefacts being made on completion of the excavation period. This was mandated by the time pressures arising from the training aspect of the project and the limited possibilities during the busier periods of field work. In the end not all the artefacts were photographed, but of the recognisable objects there are more than one.

One of the lessons learned by the tsunami is that at least one digital photo of every excavated artefact should be made as soon as it arrives on shore and several copies must be stored at

different places. After the tsunami, all the recovered objects were sketched and photographed.

Other photos came from the participants' own collections. During the training courses in 2001 - 2002, several artefacts were drawn. A small number of recovered artefacts - especially bottles - were drawn for this catalogue.

In 2003, all the excavated ceramics were studied and described by Christine van der Pijl-Ketel and Ranjith and Nayana Bandara. Other specialists of the team made their personal documentation available during the campaigns.

“Modern artefacts” from the wreck site

The *Avondster* was lost in 1659. While putting together this catalogue, it became clear that many artefacts date from the eighteenth up to the twentieth century. The reason of this pollution is the location of the wreck close to the shore. Garbage, thrown over board by the crew of the ships moored in the bay, would have drifted to this quiet area. However, most of the rubbish, came from the town dwellers and the fish market near the shore, which predates the start of Dutch settlement. During the last 350 years, the amount of run-off has increased with the growth of the population. At the time of the shipwreck, a small river discharged into the sea to the east of the site. This local garbage dump was blocked in the nineteen fifties, but the flow of pollutants continued.

The main part of this very modern garbage had already been removed by the divers, but several other post 1659 artefacts were recovered and are described in the catalogue.



Figure 1.3 : A modern artefact from the wreck site: a gasket. (1998GHL013)

Old artefacts, modern garbage.

As Ross Anderson described site:

Two stormwater drains enter the sea from the town and the marketplace of Galle to the east of the site.

Following heavy rain, rubbish and silt washed out of the drains both clouding the visibility and contaminating the site with rubbish.

Other intrusive finds included 19th century kerosene lamp glass, ceramic shards, artefacts and butchered animal bone believed to have washed into the site over years either from the Galle Harbour anchorage or from the land by wave action and water run off.

As the Avondster wreck sits proud of the seabed, this has effect on the natural littoral processes. Eddying and scouring occurs around the wreck structure along with naturally occurring significant storm changes that may remove large amounts of sand from the site.

The combined effects of these processes has caused modern intrusive material to enter earlier stratigraphic layers on the site, often resulting in confusing and sometimes amusing 20th century finds such as glass and plastic bottles, toy cars, vegetables, plastic bags, toys, toothbrushes and shavers as well 19th century artefacts and animal bone.

Introduction of the Catalogue

The objects in the catalogue are registered according to the different categories of materials: ceramics, building ceramics, metal, wood, rope, stone and coal, tobacco pipes, glass, bone and antler, leather, shell and turtle, fruit, miscellaneous, and concretions. It also includes a list of the find numbers of the 2004 campaign, which were lost without documentation.

Every category has an introductory text and one or more chapters of detailed background information about the special finds from this category, which is then followed by the catalogue proper.

A consistent description method is followed for every object: the description of the artefact, whether a photo exists, and a standard list of characteristics which always follow the same line but with differences according to the described category.

This detailed description is not possible with the lost artefacts of which there are no photos or data available. In that case, the description is perforce reduced to: catalogue number, inventory number + status post tsunami, name, and other available information.

Photos:

If a photo is available, which is often not the case, this is used if the quality is adequate. The object always stands below the relevant text.

Catalogue number:

The same for every kind of material and always starts with the first letters of the category (e.g. CE = Ceramics) and number 1.

Inventory number:

This number starts with the year, followed by the site code GH (Galle Harbour site L = Avondster) and sequence number of that year.

Post tsunami:

The inventory number is followed by the letter **L** (lost during the tsunami) or **R** (recovered after tsunami)

Type code:

This code is only used in the description of the ceramics.

Dating:

The dating is based on the period between the first time the Blessing / Avondster was mentioned and the loss of the ship (1640-1659) or the literature.

a: first quarter of the century: (16a = 1600 - 1624), b: second quarter of the century a.s.o.

A: first half of the century: (16A= 1600 - 1649), B: second half of the century (Ceramics has its own dating system')

Measurements:

Only the size of an archaeological complete object is given: length / width / thick of the complete object in cm. An object is archaeologically 'complete' when its size can be reconstructed from the fragments. If one measure is missing, 0.0 is filled up.

Material:

Material of the object with additional information, like colour or glaze

Name:

The name of the object, sometimes with additional information (e.g. fragment)

Provenance:

Sometimes it was possible to give a reference of the location where the object was made.

In most cases it was only possible to give a more general indication of the production centre (e.g. 'the Netherlands or Europe')

Literature:

The references in the catalogue: see literature list at the end of the book.

	Ceramics	Building Ceramics	Metal	Wood	Rope	Stone and Coal	Tobacco Pipes	Glass	Bone and Antler	Leather	Chank shell and Turtle	Fruit	Miscellaneous
Catalogue number	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Colour		✓					✓	✓					
Date	✓	✓	✓	✓				✓		✓			
Decoration							✓	✓					
Inventory Number - status post tsunami	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Literature		✓	✓	✓			✓	✓					
Manufacturing			✓	✓		✓	✓	✓					
Material		✓	✓	✓	✓	✓	✓	✓		✓			✓
Measurements			✓	✓		✓		✓					
Miscellaneous	✓		✓	✓	✓		✓			✓			
Name	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Provenance	✓	✓	✓	✓		✓	✓	✓					
Type Code	✓							✓					
Type of Surface	✓												
Type of Ware	✓												

Table 1.2: Catalogue







The ceramic finds

As ceramics shards make up a major part of the *Avondster* finds, a separate research project was carried out.¹

The aim was to:

- Sort the shards into groups according to material (earthenware/stoneware/porcelain);
- Identify the shards according to their shape;
- Identify the shapes according to their origin (kiln site/country);
- Make a typology that can be used for future finds and identification;
- Place the objects in an historical context (what were they used for and by whom were they used);
- Include this project as part of a larger research study of the use of the ceramics on Dutch East Indiamen and Dutch settlements of the 17th century.

All the ceramic pieces were sorted according to colour, type of body and part of body (rim, base, etc.). It was possible to group these, making a typology according to country of origin, type of vessel, general shape and size of vessel. The typologies can be useful for future archaeological finds.

The historical context of the ceramics

The role of ceramics in VOC trade

It is commonly known that all kinds of products from the East were very sought after in Europe from the time that Portuguese ships brought these back after their first voyages to Asia. The majority of these products were silks, lacquers, gilded objects and only in the last place Chinese porcelain. However, the Portuguese did not make that much effort to bring them to Europe because they found that the inter-Asiatic trade was profitable enough. At the end of the 16th century, Dutch private traders also started returning with luxury products from the Orient and it was clear that huge profits could be made. The establishment of the VOC in 1602 was the start of a multinational enterprise in goods from the East. During the course of the 17th century, the Dutch also built up a profitable inter-Asiatic trade which extended to the Middle East, i.e. Persia and Arabia.

So what kinds of ceramics were traded? We must distinguish the demands made by the Directors of the VOC in Holland from the requests of the Inter-Asiatic and Middle Eastern trading posts. The research on the different types of ceramics salvaged from shipwrecks is essential to determine what was trade-ware and what was part of the personal possessions of the crew/officers.

1. The ceramics of Sri Lanka were all described by Ranjith Bandara and the drawings made by Nayana Bandara. Thanks to Dharshani Samanthilaka for her research on the medicine jars; Rasika Muthucumarana, Palitha Weerasinha and A.M.A. Dayananda for their research on the Baardman jars; and Nogami Takenori of the Arita Archeological Museum for the information of the Japanese porcelain pieces.

Figure 2.1 : Complete martavaan with seal mark 17th. C. China, (1998GHL010) (see also Figure 2.13.)

Figure 2.2 : Conservators cleaning artefacts at Maritime Archaeology Lab, Galle, Sri Lanka

The role of Galle in the ceramic trade

Around 1659, the date of the sinking of the *Avondster*, the trade in ceramics and porcelain was especially concentrated between Japan and Formosa to Batavia and from there to Holland. The inter-Asiatic trade was just as profitable and the shipments of porcelain and other ceramic wares between the VOC posts there was a continuing flourishing business. Galle was one of the most important head-posts of the VOC in this inter-Asiatic trade but ceramics only played a minor role there. It was however a port for transshipping such wares. The porcelain that arrived there came either from Formosa to where the porcelain was delivered from kilns in China, or Batavia to where Chinese junks brought the porcelain from ports like Amoy. These were then brought to Galle and from there transshipped, mostly to Surat and Persia. (Mocha and Gamron were important ports for receiving Chinese porcelain.)

For example, in 1642:

"The invoice of the 'Pauw' from Formosa for Surat via Ceylon and Wingurla on November 11th, and dispatched from Surat for Mocha on March 23rd of the next year, shows 19,995 fine porcelains, costing 1242 florins, an average of 0.06 florin. They consisted of teacups in four kinds, small cups with feet, quarter-sized bowls, small saucers, small dishes, half fine ditto"....." and 5478 coarse porcelains averaging 0.08 florin for Gale"(Volker, 1954, p. 93)

In 1643:

'....it is reported from Ceylon that 300 pieces of porcelain have been taken over from one of the ships there and that the 'Waterhont' had arrived at Pulicat from Formosa with 61,143 pieces of coarse porcelain and that the office at Masulipatam had shipped 23 cases of porcelain in native vessels for Persia and 229 cases of the same commodity in two sailings for Mocha (Volker 1954, p.94).

Therefore,, we see a lively transshipping of porcelain but hardly any orders for Ceylon itself.

One example:

'On April 23rd [1645] the Governor of Ceylon had the rest of the cargo not in demand on the Malabar Coast, including some 1400 pieces of porcelain, taken from the 'Arent' for the use of the garrison at Gale (Volker, 1954, p.97).

This is a rather curious statement as porcelain was still at that time an expensive and an exceptional commodity to own. Porcelain would have only been used as tableware for high-ranking officers or for the Governor General but certainly not for common usage.

Another document mentioning ceramic ware concerns the voyage of the *Avondster* from Japan, wherein is stated that there are:

'10 pots (for) tea for (the) Netherlands', and: 'some porcelain flasks and jars for the surgeon's shop (NA 1.04.21 (Factory Japan) 701656, October 1658)

It is still unsure what kind of 'pots for tea' (tsaipotten) these would have been but most probably stoneware as it was customary in Japan and China to keep tea in such ware. Moreover, a high price was paid for them. Another possibility is that these were stoneware jars from South China, which were first transported to Japan and from there to Batavia.

The Avondster project and ceramics

The history of the VOC ship *Avondster* and the salvage of its artefacts has already been extensively documented. As the ship was mainly used for trading local products such as areca nuts and not used for shipping ceramics and such trade commodities, the amount of ceramic shards found on the site is not very large. The diversity of the types is, however, interesting as they illustrate the general amount of ceramics used on such a ship's voyage and what they were used for on board.

At the time of its sinking during the night of July 2nd, 1659, the *Avondster* was not fully loaded – she was waiting to be loaded with cargo bound for India. Just before that the ship had gone from Bengal to Colombo with all kinds of commodities and in February from Colombo to Canara. As the ship had undergone several voyages between posts in Asia it is not surprising that several finds include Chinese porcelain and storage jars. So we find a shipwreck, from which the ceramic artefacts are a good example of a time capsule.

The ceramic finds

As the finds consist of various types of material, the shards were sorted firstly according to material, then shape and then country of origin. Thereafter one could have a clear idea what they were used for. The main categories are:

Earthenware

A: Asian

A.1 Sri Lanka

A.2 S.E. Asian

B: European

B 1 : Holland

B 1, type 1: Dutch medicine jars

B 2: English cream ware

Stoneware

A: Asian

A1. China: storage jars

A2: Thailand: storage jars

A3: South East Asian countries: storage jars

B: European

B1: Baardman jugs

B2: Dutch jars

Porcelain

A: China

A.1 Coarse porcelain:

Type a: Zhangzhou type

Type b: bowls of various sizes.

A.2 Fine Porcelain

Type a: Chinese shapes (bowls and teabowls)

Type b: Export ware (kraaktype porcelain)

B: Exportware

B.1 Japan

Type a: albarello

Type b: kraakware

B.2 China

Type a: kraakware

As to their purpose, these can be categorised as follows:

Daily use on the ship:

- Galley: earthenware cauldrons/cooking pots – local; some coarse porcelain bowls
- Surgeon's chest: medicine jars; albarelo's
- Storage: storage jars (martavans); baardman jugs (wine/mercury)
- Cabin use: porcelain dishes and cups for meals
- Personal use/belongings: Chinese /Japanese porcelain (probably bought as personal items in Batavia)

Earthenware

Sri Lanka – Local earthenware

Vessels made from local clays moulded by hand or on a simple wheel and fired in small village kilns. The tradition is usually continued for generations so that the shapes used today can be the same as 300-400 years ago. Nearly all shards found belonged to some type of cooking vessel or pot used for keeping food or preparing food. They were easily attainable from local markets and the price was very low. These represent the local Plain Red Ware family (PRW/ RW). The terms that have been given for the purpose of this description have been chosen basically from traditional and contemporary use on the Island. The vessels illustrated below can be traced to early periods and have much archaeological evidence to prove their long ancestry (Deraniyagala 1972; Kuna 1985, Bandara 2004, Gunasekara, Premathilake and Silva).

In one of the 'Dagregisters', there is mention of pots being transported.

In 1641, there is a mention of the 'fluytschip' Capelle and the yacht Leecq, which took in all kinds of animals (pigs, chickens, goats) and other foodstuffs. 371 pieces of earthenware pots were in Poelceraa and Tegenepatnam to be taken from Battacaloo to St. Cruys de Gale (Colenbrander 1900, p. 266).

The shards are divided into 2 main types:

Fine red fired; can be high fired: usually thin, fine body, unglazed or glazed (transparent)

Coarse red fired: many impurities, thick, can be unglazed or glazed (transparent)

Processing ware and Storing ware:

a) Cooking bowls:

a.1. Cooking bowls A: (Sinhala – Äthili or äthiliya) – A wide mouthed- shallow vessel. The mouth or orifice is wider than its belly. The rim flattens outwards. Rounded base (fig. 1). Äthili has multiple functions in kitchen. Specially used for cooking curries. This type has various rim variations.



Figure 2.3 : Äthiliya and analogous form

1999GHL036c

a.2. Cooking bowls B: (Sinhala – Hatti/ Kundahatti) – A wide mouthed-shallow vessel. The mouth has almost the same size as the belly. The shape is quite similar to äthiliya type, but it is shallower than the äthiliya. The base is not as flat as the äthiliya-type. The body is very squat and spherical. The rim flattens outwards (fig. 2). This type also has multiple functions; generally used for boiling rice and yams but occasionally used for cooking curries such as in the preparation of mällum (edible plant leaves).



Figure 2.4 : Kundahattiya and analogous form.

2003GHL095

b) Cooking pot:

b.1. Cooking pot (sinhala- Häliya) – A rounded and squat pot that has an orifice; it is smaller than the belly but wider than the 'muttiya'. This vessel is also deeper than Kundahattiya. It has a flared rim with no neck and the shoulder curves inwards (fig. 3). This type comes in many sizes; small häliya is used for cooking rice (Sin. bath-häliya, bath means rice) and large häliya is used for storing purposes (Sin. pili-häliya, clothes-pot, pili means clothes. Traditional Sinhalese use large size häliya for storing their clothes. It has a lid and luted foot. People called this kind of häliya as pili-häliya. It can protect clothes from insects and moisture. Even today rural Sinhalese are using pili-häliya.).

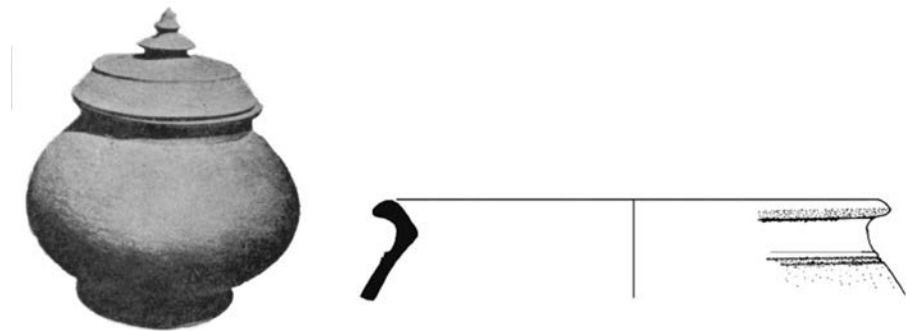


Figure 2.5 : Häliya and analogous form.

2001GHL004

b.2. Cooking pot (Sinhala- Appalla)- the term used for large size häliya. It has a flared rim with no neck and sloping shoulder (fig. 4). The appalla is used for storing paddy or grains. When it is used for storing purposes, it has a removable foot called Daranuva which is made of clay. This type of appalla is also used for cooking rice or curry on ceremonial occasions when many people are gathered.

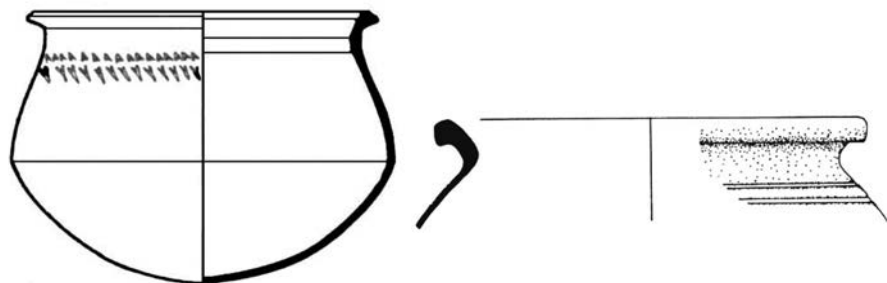


Figure 2.6 :Appalla and analogous form.

1999GHL36J

b.3. Cooking pot (Sinhala- Mutti)- There are two kind of mutti: a) carrinated belled vessel and b) rounded belied vessel. The orifice is much smaller than its belly than that of the häliya. It has an outward flaring rim, no neck and sloping shoulders (fig. 5). There are three different types according to the size, large, medium and small. Large mutti are used for storing purposes, like grains and foods. Medium sized mutti are mostly used for cooking rice. Small ones are used for ritual purposes, for example, when magical objects are buried in the ground for exorcist purposes. The *Avondster* site contained medium size mutti.

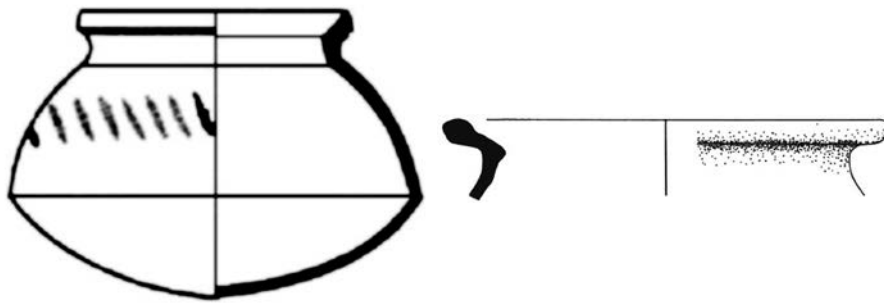


Figure 2.7 : Muttiya and analogous form.

1999GHL036F

c) Husking tray (Sinhala- Nāmbiliya)

The orifice is wide with a thick rim. It has no shoulder, and the body is of a globular shape. Nāmbiliya is one of commonest vessel in domestic use today; it is used to sift sand and grit from the rice before it is boiled. The incised comb marks on the interior are characteristic for this type. (fig. 6).

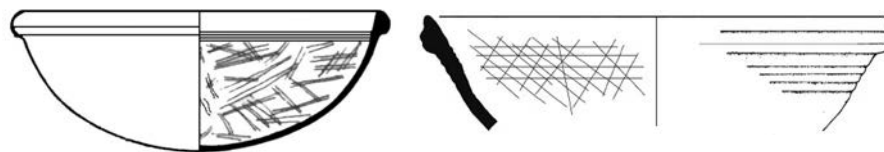


Figure 2.8 : Nāmbiliya and analogous form.

2003GHL546

d) Storing ware / Transferring ware:

d.1. Water container (Sinhala- Kale) – Narrowed orifice and globular body. It has a short neck (fig. 7). The Kale or Kalagediya is carried on the hip (especially by rural women) while the neck of the kalagediya is held by the arm. There are a few neck variations. This type is used for transporting and storing water in most Sri Lankan homes.

d.2. Water pot B (Sinhala – Kotale) – much smaller variation of kale. The round orifice has a flared rim. The Kotale is a spouted vessel with a simple neck that is used as a grip. Kotale was traditionally used for drinking water. Now this type of vessel is only use for ritual purposes.

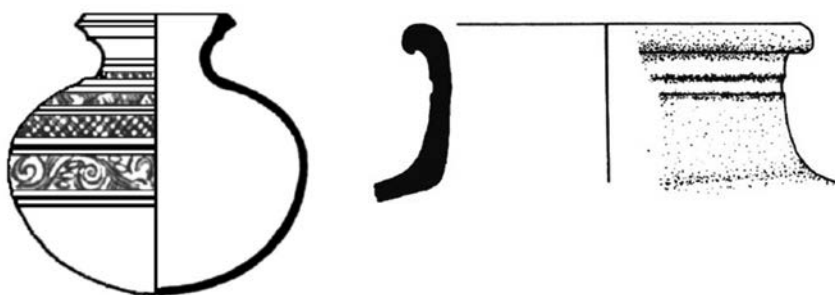


Figure 2.9 : Kalagediya and analogous form

2003GHL121.

Other Asian wares

Not all shards could be accurately identified as being locally made in Sri Lanka and as the ship went back and forth from India, it is quite probable that pots were bought there as well.

European earthenware

Dutch medicine jars.

A number of medicine jars have been found during the course of the excavation. These are known in the Netherlands as 'zalfpotten', which includes majolica alberelli. Medicine jars are traditionally associated with the apothecary. The manufacturing of medicine jars started in Europe in the 15th century, and later such jars were produced in China and Japan. Medicine jars are a common find in all shipwrecks of Dutch origin as they were part of the inventory of the ship's surgeon.

The medicine jars and fragments found from the Avondster site can be divided into two groups according to manufacturing area, i.e. a European type and a Japanese type. The significant difference between these two types of medicine jars is the firing technique.

Earthenware: all the medicine jars and fragments that can be identified as European are earthenware. They can be divided into two groups according to glaze technique and exterior

decoration, namely, white tin glazed earthenware, and tin glazed earthenware decorated in blue on white glaze. The jars are coated with a mixture of ground tin oxide diluted with water. When fired at a low temperature of about 800 degrees, this mixture turns into a white glassy surface.

Sometimes the surface is decorated with either cobalt, which turns to blue, or other metallic pigments. There are all types of tin-glazed earthenware but among the Avondster finds there are only the white and the white with blue types.

Porcelain: another type found is that of an albarello made of porcelain instead of earthenware. Because porcelain was durable, it was very popular in Europe and the VOC requested the potteries to produce shapes especially for the European market. Japanese porcelain was made after models of European shapes such as albarello's, pots used for ointments.

In a letter from 1657, Opperhoofd (Chief) Wagenaer writes to Batavia about the porcelain medicine phials and small apothecary's pots ordered for the surgeon's shop at Batavia": ' we have contracted for (them) In time, but because of the large quantity they could not yet be delivered.(p. 127 Volker)

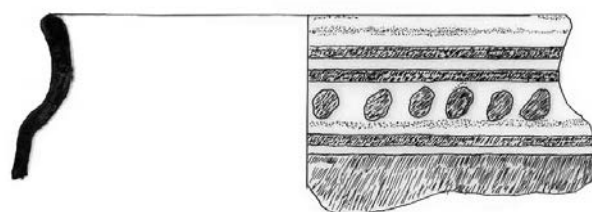


Figure 2.10 : Fragment of earthenware , alberello

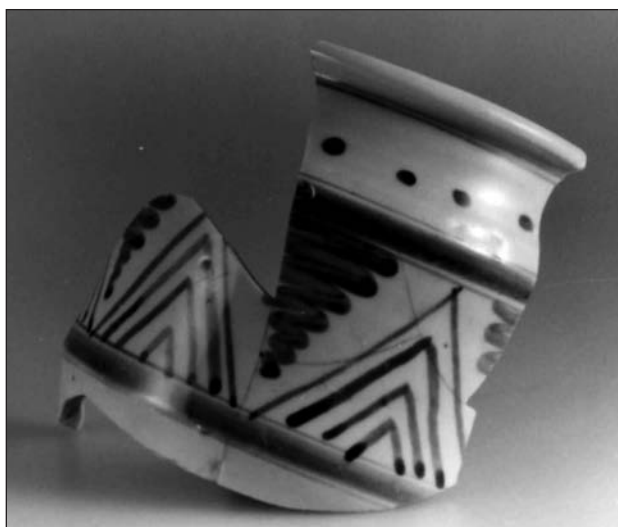


Figure 2.11 : Porcelain shard of an alberello found at Saragawa kiln site, Kyushu, Japan. Photo: Nogami Takenori



Figure 2.12 : orcelain shard of an alberello found at the Avondster, site L.

Stoneware

As mentioned above, earthenware is a ceramic ware that is fired at a relatively low temperature (a maximum of 800° C.) Stoneware is a ceramic type fired at a high temperature i.e. 1200° C. - 1400° C. In order to sustain such a high temperature in the kiln, the clay material of which stoneware is made needs more minerals than the earthenware clay. The most important minerals are silica and aluminium. These minerals cause a 'vitrification' so that the body of the vessel becomes non-porous. Clay containing these minerals would usually be found near the kiln sites. The vessels are usually shaped on the wheel, then dried after which a glaze or 'engobe' is poured onto and sometimes into them and they are fired in the kilns.

There are two identifiable types of stoneware among the shards of the *Avondster*:

- Stoneware Storage jars from Asia (martabans)
- Stoneware jugs from Europe (baardman)

Asian storage jars

The term 'martaban' has generally been used for certain types of strong storage jars. However, this term can be very misleading as it has been associated with jars made in the vicinity of Martaban, which was an export port on the coast of what is now called Myanmar (Gulf of Siam, Burma). In the VOC archives there are numerous references to this port. A translation of the first report mentioning these follows:

In this city large earthenware pots are made, which are called martavanas in Indian; they are transported in large numbers through the whole of India; the reason that so many are transported is that in India they are used in houses and ships instead of jars: because there are none of such from Portugal; these come in their place to preserve oil, water and wine and such things, and it stays very well in them and it is a great comfort to the travelling man; because they also appear in Portugal; as they are used on ships from India, for water and oil etc (Kern 1910,p.97).

Such jars were locally made jars, and are still being produced, but they were unglazed, high fired, earthenware. The stoneware jars from the Thai kilns would have been transported overland to the Martaban port for export or arrived there by ship (Siam Society 1986, pp. 122-123).

China

Characteristics are a pale beige or yellow stoneware body covered in a dark-brown glaze that stops short of the base. The neck is short and the mouth not very wide with a short rolled lip. Usually four small horizontal handles rest on the shoulder. Earthenware lids could be placed on the mouth and tied down with string using these 'handles'. These jars were produced for hundreds of years in South China and commonly traded over maritime routes. They were not only used for preserving food and water but also as packing material for goods, even porcelain. When filled with alcohol they bore a seal stamp near the mouth and are still used for that purpose today.



Figure 2.13 : Complete martavaan with seal mark 1998GHL010



Figure 2.14 : Shards of a large martavaan: 1998GHL011

Thailand

These jars have a hard stoneware body in many different colours - usually dark grey, black, or purple or mixed (because of different clay-types and firing). Most are covered with a glossy dark brown/black glaze; sometimes drips can be seen on the lower half where it is unglazed (e.g. 2003GHL052). The neck is high and the mouth flared with a pronounced rolled lip. Again 4 handles are positioned on the shoulder of the jar to tie down a cover. These jars were fired in the kilns of Maenam Noi, in the Bang Rachan area of Sing Buri province in Thailand (Vilaikew 1990, pp. 36-40).

There was an enormous market for these storage jars throughout Asia; in Brunei they account for more than 60% of the jars found in the Kota Batu excavation.(Harrison,1986) and they are also found in the numerous shipwrecks of SE Asia. (E.g. The Binh Thuan shipwreck (1608), the Ko Kradat shipwreck, the Royal Captain Shoal site and others).

Other S.E. Asian Stoneware

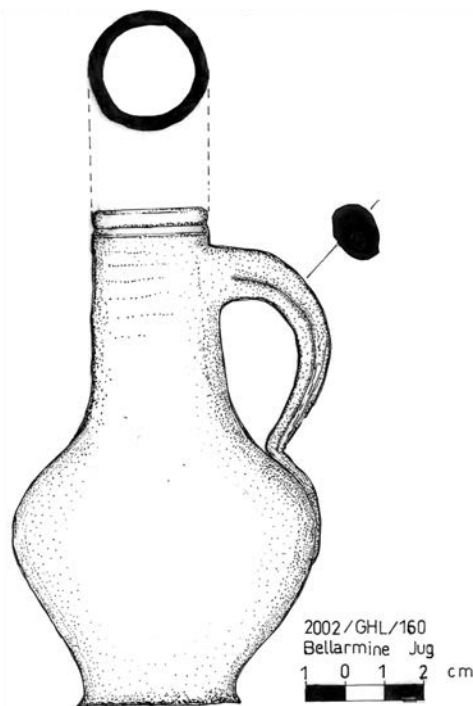
Not all the stoneware shards have been fully identified but only a few will have come from other SE Asian countries.

European Stoneware: Baardman jugs

These characteristic jars or rather jugs, as they all have a narrow neck, originate from the Rhine area in Germany. The main centres of manufacture were Siegburg, Cologne and nearby Frechen and Raeren. These centres all became established, and assumed great artistic importance, during the second half of the 16th century. They were succeeded by a group of factories in the West-erwald, at Hohn, Grenzau and Grenzhausen, to which many potters from Siegburg and Raeren migrated and which flourished particularly in the latter part of the 17th century.

Technical information

The body is of white, buff or grey clay with a rich content of silica acid that vitrifies at a high temperature. For this reason a lead glaze could not be applied. The jugs were thrown on the potter's wheel and then left to dry. The decoration - a bearded face, medallion or rosette - was then applied. This came from a mould and 'glued' onto the jug with some slip. The jug was then dipped into a glazy substance containing metal oxides to give it its colour. Other colours were added to the decoration - blue by cobalt or purple by manganese. Common salt was thrown into the kiln during firing and the soda formed during this process combined with the silica and alumina in the body leaving a thin, colourless glassy film on the surface.



Usage

The original common use of the jug was a pouring vessel. In taverns, beer would be drawn from a barrel and the customer would pay for a jug. Such a type would have been the larger one and from the second half of the 17th century, smaller jugs came more in use with the aim of storing wine, oil or vinegar. That is the reason many simply decorated baardman jugs have been found in shipwrecks. Another use was to store mercury. Mercury was an important trade commodity as it was needed for the production of mirrors, for amalgamate and for medical use. As a stoneware jug could be closed with a cork stopper for instance, the mercury could not spill out. Again, the small sized jugs would have been put to this purpose (Hees 2002).

In a letter dated December 28th, 1636, the VOC Governor Van Diemen states that the mercury kept in leather pouches during transport was subject to leakage. Another letter dated 1668, Governor General Maetsuyker states that the 'baert-cannen' are the best way of shipping mercury as they do not break (NA, VOC 1.04.02 nr. 1266 p. 205).

Baardman: just a bearded face

Many interpretations have been given to the 'bearded face' on these stoneware jugs. The most known one is that the face would have been a resemblance to a Jesuit by the name of Robertus Bellarminus. As this man lived from 1542-1621 and baardman jugs had already been in use from about 1500, this interpretation is not plausible. Other explanations are: the resemblance to King Charles and even Christ (there are jugs with Christian symbols and sayings) or even the 'wildman' – a mythical creature from Germany. All in all, none of these explanations have been given enough proof (Hees 2002). The name 'bellarmine jug' is however still in use.

Decoration: medallions

The medallions are always situated on the belly of the jar. As with the faces, there are lots of different shapes, but usually have some cultural, heraldic or commercial significance e.g. the coats of arms of Amsterdam, Prince of Orange Nassau, House of Habsburg and English monarchy.

Some medallions were used as trademark: these were the symbols of the owners of the factories.

The rose-crown-heart type and the flower type are the most common among the medallions. This type represents the cultural and religious character of those countries. Because of that, we can find this type with lots of variations and additional features.

The flower (rosette) type also has a cultural and decorative meaning. They have different numbers of petals (six units, eight units, twelve units) and layers (two layers, three layers)

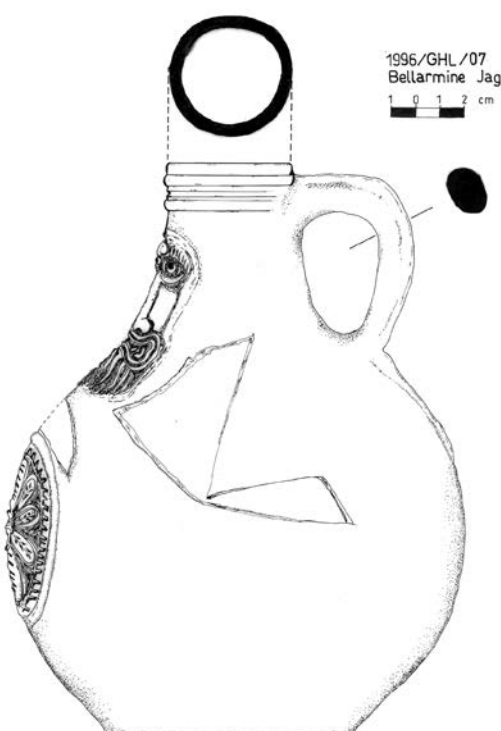


Figure 2.15 : Plain Baardman: 2002GHL160

Figure 2.16 : Jar with one Mask: 2002GHL161

Figure 2.17 : Jar with one face and one medallion: 1996GHL007.

Types of baardman jugs from the 'Avondster'

At the *Avondster* site many small shards, mainly parts of the belly, were found on the site belonging to different baardman jugs which means that many jugs were used on the ship. As most of the pieces were found near or in the galley of the ship, they would have been used for storing special liquids such as oils or alcohol. A few complete jars are without any damage, and some nearly complete ones were found as well. One jug had a lid and still contained some liquid (R. Muthucumarana, P. Weerasinha and A.M.A. Dayananda, personal comm.)

Three types have been categorised:

1. Plain ware

The plain jars are a typical find of the 17th and 18th century wrecks. Plain jars have been found on the *Batavia* (1629), *Vergulde Draeck* (1656), *Stanbury* (1974), *Zeewijk* (1727), and *Dartmouth* (1690). These jars come in various sizes: small (height around 12 cm), medium (around 16 cm), and large (around 25 cm).

2. Jars with one mask.

This type appears to be rather rare. They are not commonly recorded in literature, nor do they appear in *Batavia*. Their sizes range from small to medium (height 12–16 cm), similar to the plain jars. Possibly the small size jars differed in use or purpose from the larger jars with medallions.

3. Jars with one mask and one medallion

This group is the most common type. The height ranges vary between 189 mm and 258 mm, and the corresponding capacity between 1.3 liters and 3.0 liters. One complete jar is 19.8 cm (large size): 1999GHL007

Porcelain

The demand for Chinese porcelain

After the capture by the Dutch in 1602 and 1604 of two Portuguese 'carracks' which contained all kinds of products from the East, including Chinese porcelain, it was decided by the Directors of the VOC to also order porcelain from China.

At first, the return shipments to Holland contained porcelain 'of all types and qualities' (Volker 1954, p. 21). However, the home market became increasingly critical and in the course of the 17th century, the directors gave specific instructions as to the shape and amounts of porcelain to be ordered. In popular demand were butter-dishes, plates, mustard-pots, wine jugs, and various shapes of bowls and cups. (The teacup with handle had not yet been 'invented' but tea from Japan was already being traded.) The amount of porcelain mentioned on invoices to Holland grew amazingly in the course of the 17th century especially after the establishment of a VOC post on the island of Formosa in 1634 from where they could order porcelain directly from China. We see amounts of 100,000 to 250,000 pieces of porcelain on the invoices of the return ships (Viler 1954, pp. 34–64). However, due to internal struggles in China, the trade from Formosa was stopped by 1662 and the shipments of porcelain came mainly from Japan.

After the reopening of the porcelain kilns in 1680, the trade in ceramics was taken over by private company traders so the VOC gradually stopped shipping this commodity. Even when European countries, including the Dutch, opened factories in Canton from 1727 for the tea trade, only 6% of the goods shipped to Holland were porcelain (Jörg 1982, Chapter 3).

Porcelain from the *Avondster*

The sporadic pieces of porcelain salvaged from the *Avondster* site clearly point to these having been personal possessions as they are individual pieces and not 'sets' of dinner services. Most shards belong to small teacups and simple bowls. Only few shards of plates have been found.

They are divided into the following categories:

1. Coarse porcelain:
 - Type a: from kilns in South China
 - Type b: bowls of various sizes.
2. Fine Porcelain
 - Type a: Chinese types (bowls and tea bowls)
 - Type b: Export ware (kraakware)

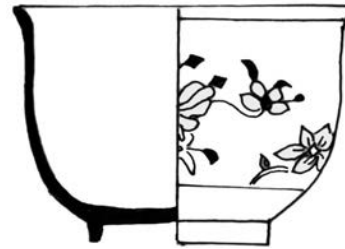


Figure 2.18 : Porcelain bowl, Chinese type. 2003GHL212

1. Coarse Porcelain

The orders from Holland were in the first place for good quality Chinese porcelain while the inter-Asiatic trade in ceramics consisted largely of sturdy 'provincially made' porcelain which sold very well in all the VOC posts of SE Asia. This type of ware is known as Zhangzhou ('Swatow') ware. It has been found on most of the VOC wrecks, e.g., the *Mauritius* sunk in 1609, the *Witte Leeuw* sunk in 1613 and the *Banda* sunk in 1615. However only few shards of this type of ware was salvaged from the '*Avondster*'. Other shards of coarse porcelain indicate that such ware was used as 'kitchen ware' and not kept for their aesthetic value.

Technical aspects:

The body of this type of ware varies from a fine-grained white porcelain to coarse greyish porcellanous stoneware. The glaze also varies in colour, ranging from a clear, greenish or bluish colour to an opaque, greyish white. It is applied thickly but carelessly and is often 'cracked'. Unglazed patches are burnt a reddish-brown or buff colour. The under glaze washes are cobalt blue varying from a watery blue to a purplish black or even a 'muddy' grey. The pieces are usually full of impurities and the base nearly always has a crust of sand from the kiln adhered to it.

2. Fine Porcelain

2.a. Chinese types.

Most of the finds are of bowls of various sizes as well as small tea bowls. As they are of fine, thin porcelain, with finely painted designs, these would have been bought for personal use or as a 'souvenir'.

Technical aspects:

Contrary to the coarse ware made in the southern kilns, the porcelain made in the main production area of Jingdezhen in the province of Jiangxi is the type, which has been most in favour. The production of porcelain started in this area as early as 12th century. During the 14th century the use of cobalt blue as an under glaze decorative pigment was fully in use. It was this type of porcelain which was exported to the Middle East and which became favourite in Europe during the 16th century. Nevertheless, it was also in demand for the Chinese market and enormous amounts had to be produced. It is therefore not surprising that 'ordinary' bowls and tea bowls would have been brought to the VOC trade posts for sale. The quality of the porcelain varies from a very fine, thin white body to a white but thicker porcelain body. A specific type of bowl is that with an unglazed 'ring' on the centre. This was done on purpose as to enable the bowls to be 'stacked' before firing. The foot ring is also unglazed so as not to adhere to the unglazed centre of the first bowl. Until recently, this type of fine

but crude porcelain was believed to have been made in kilns other than Jingdezhen. However, recent archaeological finds in and around Jingdezhen have proven to be otherwise: this type of 'coarse' porcelain was made in enormous quantities from the Ming dynasty onwards. Most of the fine wares of the Chinese type, are small bowls and tea bowls. These all have a white porcelain body with a bright cobalt blue under glaze decoration with various designs.

There are numerous tea bowls. The habit of drinking tea as a beverage was already common in China in the Tang dynasty (8-12th century). The first known treatise on tea was done by Lu Yu at the end of the 8th C. A.D. Tea was first exported to the west in the 17th century but it is not before around 1730 that teacups and saucers were ordered as shapes specially made for the west. In China today, everyone still drinks tea from these small cups without handles.

2.b. Export ware.

'Kraakware' distinguishes itself from Chinese ware because it was especially made for export to the Middle East, Portugal, and finally Holland (Pijl-Ketel 1982). In short, the main characteristics of this type of ware are:
the shapes:

these are completely different from those for the Chinese market. They consist of flat dishes with a rim (sizes varying from 14 cm-51 cm diameter, shallow dishes with a rim (klapmuts) and without one. High, straight cups (crowcups), pouring vessels (gendis and winepots) covered boxes and large deep bowls.

the decoration:

This gives kraakware its most specific identification. Scalloped medallions filled with various diaper patterns surround the central decoration on plates, saucers and shallow dishes as well as the large, deep bowls. The interior and exterior of walls and rims are divided into broad panels decorated with different designs and narrower panels with beaded pendants or ribbons. The central decoration on flatware usually consists of some ducks/geese/fowl with plants and flowers. The high cups have a bird on a rock as central design. The panels can be decorated with flowers and Chinese symbols and the vessels usually have flowering branches as decoration.

the dating:

There has been much discussion on the dating of kraakware the last 20 years. The first large amount of kraakware was that salvaged from the VOC ship the Witte Leeuw and this has been extensively documented (Pijl-Ketel 1982). However, recent and still unpublished

archaeological finds in and around the porcelain production area of Jingdezhen has shown new light on the dating. Moreover, the continuing salvage of shipwrecks has made it possible to date certain types of kraakware more accurately. (E.g. the salvage of a 17th century wreck in Malaysia discovered in November 2003)

So by comparing finds of dated shipwrecks and archaeological finds it is possible to give a more accurate date to new finds.

The *Avondster* finds contain only few shards of kraak type ware. (2002GHL227, 20003GHL353 etc). One extraordinary find is that of a spout and part of the neck of a small ewer which is identical to one found in the 'Witte Leeuw' sunk in 1613 (2003GHL502, 2002GHL195). Another shard belongs to a covered box again identical to one from the 'Witte Leeuw' (2003GHL392) (Pijl-Ketel 1982, type 3.17 and type 1.8)

Were these heirlooms,, because at that time these were not made anymore, or did one of the officers buy them from others? Another 'antique' piece in someone's belongings is the large shard of a blue and white pot (2003GHL353). This design again corresponds to the period of 1610-1620 and certainly not later. These were a favourite for the Portuguese as many can be seen in museums of Lisbon and projected as imitation in Portuguese faience (Pinto de Mattos 1996, pp. 100-101).

Another exceptional find are the rims and part of the centre of a kraak-type plate (2002GHL227 / 2003GHL353). These pieces are identical with shards found in the Hokaoyama

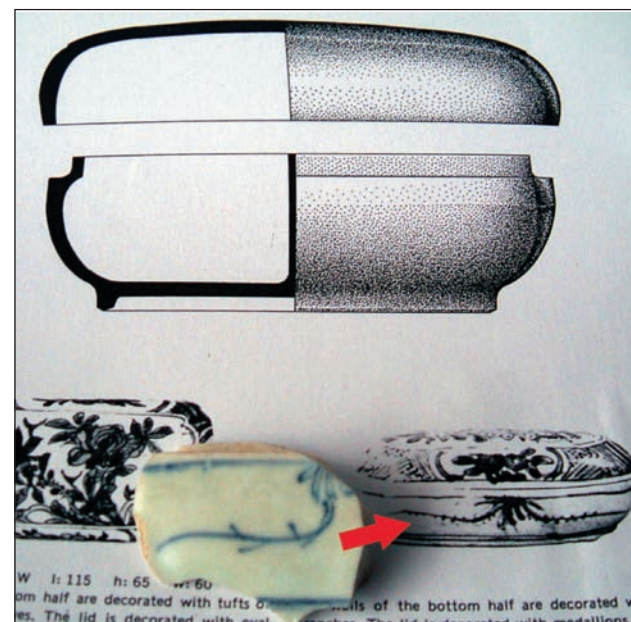


Figure 2.19 : Shard of covered box identical to that recovered from the Witte Leeuw , sunk in 1613.

kiln site near Amrita in Kyushu, Japan. They date from the 1650's when there was a demand for porcelain from Japan because of civil wars in China, making the exportation of Chinese porcelain difficult. Again, such a piece could have been the private property of an officer on the *Avondster* as there was no 'cargo' of porcelain on board.(Nogami et al. 2005).

Conclusion

The ceramic finds from the *Avondster* site have so far given a certain idea of what type of ceramics were used in everyday life on board a ship of this period. Not only are the vessels used for daily consumption or storage depicted, but a special insight is given by the finds of high quality Chinese and Japanese porcelain pieces which were either used personally or kept as 'souvenirs' or as 'antiques'. The various qualities of the ceramics coincides with the different classes of people on board. Cooks and sailors would hardly be owners of fine porcelain but could have had some coarse-ware porcelain bowls in their possession. The officers would have been able to buy some special pieces at some time or another during their voyages to Batavia. Other types are clearly part of the ship's Inventory.

These finds are an important contribution to art historians specializing in Chinese ceramics and the inter-Asiatic trade of this commodity. They are also an asset in understanding the role of Galle in this function and Sri Lanka's historical role in trade in S.E. Asia, not just for cinnamon and areca nuts but also as a crossroad for what appears to be all kinds of ceramics. Until now, the most important finds of Chinese ceramics were those found at Mantai but these are of a much earlier date. However, to understand the history of the ceramics trade fully, it is essential that as many ceramic finds as possible be put into context and this will hopefully be continued to be carried out in the coming years.

Catalogue Ceramics

catalogue number

1 inventory number - post tsunami

2 type code

3 date

4 type of ware

5 type of surface

6 miscellaneous

7 name

8 provenance

Categories:

EARTHENWARE

Asian

Asian - Sri lanka

European

STONEWARE

Asian

European

PORCELAIN

China

Exportware

Figure 2.20 : Plates/shards from the Hokaoyama kiln site near Arita, Japan. Photo: Nogami Takenori

Figure 2.21 : Identical shards from a kraak-type plate from the Avonster site, (2002GHL227 / 2003GHL353)

Figure 2.22 : Figure 18 placed on top of figure 18



Catalogue Ceramics

Earthenware
Earthenware, Asian

CE001

- | | | | |
|----|---------------------|----|---|
| 1. | 1998GHL059 / R | | |
| 2. | e-pot | 3. | - |
| 4. | Earthenware, Asian | | |
| 5. | High fired red ware | 6. | - |
| 7. | Pot | | |
| 8. | Sri Lankaww | | |

CE002

- | | | | |
|----|--------------------|----|---|
| 1. | 1998GHL065 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, Asian | | |
| 5. | Low fired red ware | 6. | - |
| 7. | - | 8. | - |

CE003

- | | | | |
|----|--------------------|----|---|
| 1. | 1998GHL073 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, Asian | | |
| 5. | Low fired ware | 6. | - |
| 7. | - | 8. | - |

CE004

- | | | | |
|----|--------------------|----|---|
| 1. | 1998GHL074 / R | | |
| 2. | e-pot | 3. | - |
| 4. | Earthenware, Asian | | |
| 5. | Low fired ware | 6. | - |
| 7. | - | 8. | - |

CE005

- | | | | |
|----|----------------------------|----|---|
| 1. | 1998GHL131 / R | | |
| 2. | e-pot | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, Asian | | |
| 5. | High fired red ware | 6. | - |
| 7. | Pot | | |
| 8. | Sri Lanka? | | |

CE006

- | | | | |
|----|----------------------------|--|--|
| 1. | 1999GHL006 / L | | |
| 2. | e-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, Asian | | |
| 5. | Low fired ware | | |

- | | | | |
|----|------------|----|---|
| 6. | - | 7. | - |
| 8. | Sri Lanka? | | |



CE007

- | | | | |
|----|----------------------------|----|---|
| 1. | 1999GHL017 / R | | |
| 2. | e-pot | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, Asian | | |
| 5. | Low fired ware | 6. | - |
| 7. | Pot | | |
| 8. | Sri Lanka? | | |



CE008

- | | | | |
|----|----------------------------|--|--|
| 1. | 1999GHL037 / L | | |
| 2. | e-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, Asian | | |
| 5. | High fired red ware | | |
| 6. | impressed decoration | | |
| 7. | Jar | | |
| 8. | South-East Asia | | |



CE009

- 1. 1999GHL041 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE010

- 1. 2001GHL029a / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Red fired
- 6. -
- 7. -
- 8. Sri Lanka?

CE011

- 1. 2001GHL029b / L
- 2. e-pot-cpt
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Brown-black glaze
- 6. -
- 7. -
- 8. Sri Lanka?

CE012

- 1. 2001GHL030 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE013

- 1. 2001GHL106 / R
- 2. e-pot-cpt
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. High fired red ware
- 6. -
- 7. Pot
- 8. Sri Lanka?



CE014

- 1. 2002GHL007 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired red ware
- 6. -
- 7. Pot, fragment
- 8. Sri Lanka?

CE015

- 1. 2002GHL013 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired red ware
- 6. incised lines
- 7. pot?
- 8. Sri Lanka?



CE016

- 1. 2002GHL032 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE017

- 1. 2002GHL078 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE018

1.	2002GHL081 / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	High fired red ware	6.	-
7.	-	8.	-

CE019

1.	2002GHL093 / R		
2.	unidentified		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	Low fired ware		
6.	-	7.	-
8.	Sri Lanka?		

CE020

1.	2002GHL094 / L		
2.	e-pot		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	High fired red ware		
6.	-	7.	-
8.	Sri Lanka?		

CE021

1.	2002GHL123 / R		
2.	e-pot		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	Low fired red ware	6.	-
7.	Pot, fragment		
8.	Sri Lanka?		

CE022

1.	2002GHL151 / R		
2.	e-jar		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	High fired red ware	6.	-
7.	Pot, fragment	8.	-

CE023

1.	2002GHL153 / R		
2.	unidentified		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	Low fired ware	6.	-
7.	-	8.	-

CE024

1.	2002GHL209 / R		
2.	e-jar		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	High fired red ware		
6.	-		
7.	Pot, fragment		
8.	Sri Lanka?		

CE025

1.	2002GHL249 / R		
2.	e-pot		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	High fired red ware		
6.	-		
7.	Pot		
8.	Sri Lanka?		



CE026

1.	2002GHL270 / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	Low fired red ware	6.	-
7.	-	8.	-

CE027

1.	2002GHL274 / R		
2.	e-jar	3.	-
4.	Earthenware, Asian		
5.	Low fired ware	6.	-
7.	-	8.	-

CE028

1.	2003GHL001 / R		
2.	e-jar	3.	-
4.	Earthenware, Asian		
5.	High fired red ware	6.	-
7.	jar	8.	-

CE029			
1.	2003GHL082 / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	Low fired red ware	6.	-
7.	-	8.	-

CE030			
1.	2003GHL194 / R		
2.	e-jar	3.	-
4.	Earthenware, Asian		
5.	-	6.	-
7.	storage jar, fragment	8.	-

CE031			
1.	2003GHL405 / R		
2.	e-pot		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	High fired red ware	6.	-
7.	storage jar, fragment		
8.	Sri Lanka?		

CE032			
1.	2003GHL458a / R		
2.	e-jar	3.	-
4.	Earthenware, Asian		
5.	High fired red ware	6.	-
7.	storage jar, fragment	8.	-

CE033			
1.	2003GHL520 / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	Low fired ware		
6.	-	7.	-
8.	Sri Lanka?		

CE034			
1.	2003GHL523a + b / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	Low fired ware	6.	-
7.	-	8.	-

CE035			
1.	2003GHL523c / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		

5.	Low fired ware	6.	-
7.	-	8.	-

CE036			
1.	2003GHL525 / R		
2.	e-jar	3.	-
4.	Earthenware, Asian		
5.	High fired red ware	6.	-
7.	Storage jar, fragment		
8.	Sri Lanka?		

CE037			
1.	2003GHL526 / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	Low fired ware	6.	-
7.	-	8.	-

CE038			
1.	2003GHL561 / R		
2.	unidentified	3.	-
4.	Earthenware, Asian		
5.	Low fired ware	6.	-
7.	-	8.	-

CE039			
1.	2004GHL040 / R		
2.	unidentified		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	Low fired ware		
6.	-	7.	-
8.	Sri Lanka?		

CE040			
1.	2004GHL041 / R		
2.	unidentified		
3.	p.d.: unknown - t.d.: 1659		
4.	Earthenware, Asian		
5.	Low fired ware		
6.	-	7.	-
8.	Sri Lanka?		

CE041

- 1. 2004GHL044 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. - 7. -
- 8. Sri Lanka?

CE042

- 1. 2004GHL046 (identical to 2003GHL274) / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired red ware 6. -
- 7. - 8. -

CE043

- 1. 2004GHL082 / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired red ware
- 6. -
- 7. Pot
- 8. Sri Lanka?



CE044

- 1. 2004GHL108 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. - 7. -
- 8. Sri Lanka?

CE045

- 1. 2004GHL169 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659

- 4. Earthenware, Asian
- 5. Low fired ware 6. -
- 7. Pot, fragment
- 8. Sri Lanka?

CE046

- 1. 2004GHL201 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. High fired red ware 6. -
- 7. Pot, fragment
- 8. Sri Lanka?

CE047

- 1. 2004GHL253 / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. High fired red ware 6. -
- 7. jar
- 8. Sri Lanka?



CE048

- 1. 2004GHL254 / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. High fired red ware 6. -
- 7. jar
- 8. Sri Lanka?

CE049

- 1. 2004GHL255 / R
- 2. e-jar 3. -
- 4. Earthenware, Asian
- 5. High fired red ware 6. -
- 7. jar
- 8. Sri Lanka?

CE050

- 1. 2004GHL262 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. Low fired red ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE051

- 1. 2004GHL338 / R
- 2. unidentified
- 3. -
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. Pot, fragments (4)
- 8. -

CE052

- 1. 2004GHL343 / R
- 2. e-pot
- 3. -
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. Pot, fragment
- 8. Sri Lanka?

CE053

- 1. 2004GHL347 / R
- 2. e-pot
- 3. -
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. Pot, fragment
- 8. Sri Lanka?

CE054

- 1. 2004GHL362 / R
- 2. unidentified
- 3. -
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE055

- 1. 2004GHL365 / R
- 2. unidentified
- 3. -
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?



CE056

- 1. 2004GHL371 / R
- 2. unidentified
- 3. -
- 4. Earthenware, Asian
- 5. Low fired ware
- 6. -
- 7. -
- 8. Sri Lanka?

CE057

- 1. 2004GHL374 / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, Asian
- 5. High fired red ware
- 6. -
- 7. -
- 8. Sri Lanka?

Earthenware, Sri Lanka

CE058

- 1. 1998GHL002 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. High fired red ware
- 6. -
- 7. Pot
- 8. Sri Lanka

CE059

- 1. 1998GHL018 / R
- 2. e-pot-cpt
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired ware
- 6. -
- 7. Cooking pot
- 8. Sri Lanka



CE060

- 1. 1998GHL019 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired ware 6. -
- 7. Pot
- 8. Sri Lanka

CE061

- 1. 1998GHL058 / L
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. High fired red ware 6. -
- 7. jar
- 8. Sri Lanka?

CE062

- 1. 1998GHL085 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired red ware 6. -
- 7. Pot
- 8. Sri Lanka

CE063

- 1. 1998GHL091 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired red ware
- 6. - 7. -
- 8. Sri Lanka

CE064

- 1. 1998GHL098 / L
- 2. e-bow
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired red ware
- 6. raised
- 7. Shallow bowl
- 8. Sri Lanka

CE065

- 1. 1999GHL042 / R
- 2. e-jar

- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. High fired red ware 6. -
- 7. jar
- 8. Sri Lanka



CE066

- 1. 1999GHL046 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired red ware 6. -
- 7. Pot
- 8. Sri Lanka

CE067

- 1. 2001GHL105 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired red ware 6. -
- 7. Cooking pot
- 8. Sri Lanka?



CE068

- 1. 2002GHL071 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired ware 6. -
- 7. Pot
- 8. Sri Lanka



CE069

- 1. 2002GHL072 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired ware 6. -
- 7. Pot
- 8. Sri Lanka



CE070

- 1. 2002GHL076 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. High fired red ware 6. -
- 7. Pot
- 8. Sri Lanka



CE071

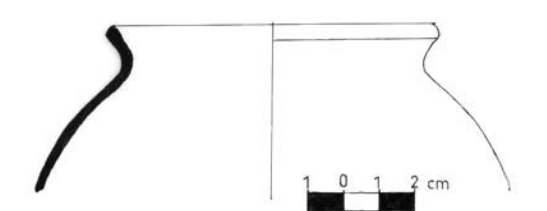
- 1. 2002GHL083 (one of 16 parts) / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659

- 4. Earthenware, A1 Sri Lanka
- 5. High fired red ware 6. -
- 7. jar
- 8. Sri Lanka?



CE072

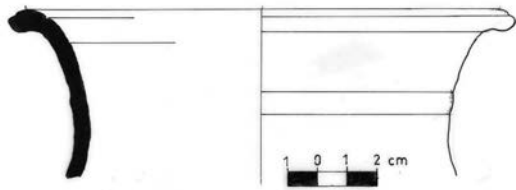
- 1. 2002GHL027a-b / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type 3.d
- 5. Brown glaze 6. -
- 7. Pot
- 8. Sri Lanka



CE073

- 1. 2002GHL117 / L
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 Sri Lanka
- 5. Lowfired red ware 6. -
- 7. jar
- 8. Sri Lanka





CE074

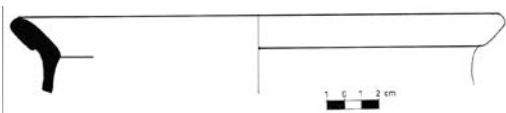
1. 2002GHL119 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka
5. Lowfired ware
6. -
7. Pot
8. Sri Lanka

CE075

1. 2003GHL098 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka
5. High fired red ware
6. -
7. Pot
8. Sri Lanka

CE076

1. 2002GHL121 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka
5. Lowfired ware
6. -
7. Pot
8. Sri Lanka



CE077

1. 2003GHL173 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka

5. Lowfired ware
6. -
7. Pot
8. Sri Lanka?

CE078

1. 2004GHL291 / R
2. e-jar
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka
5. Lowfired ware
6. -
7. jar
8. Sri Lanka



CE079

1. 2003GHL180 / R
2. unidentified
3. -
4. Earthenware, A1 Sri Lanka
5. Lowfired red ware
6. -
7. jar
8. Sri Lanka?

CE080

1. 2004GHL016 / L
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka
5. Lowfired red ware
6. -
7. Shallow bowl
8. Sri Lanka

- CE081
1. 2004GHL074 / R
 2. e-pot
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 Sri Lanka
 5. Lowfired ware 6. -
 7. Pot, fragment
 8. Sri Lanka

- CE082
1. 2004GHL076 / R
 2. e-pot
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 Sri Lanka
 5. Lowfired red ware 6. -
 7. Pot
 8. Sri Lanka

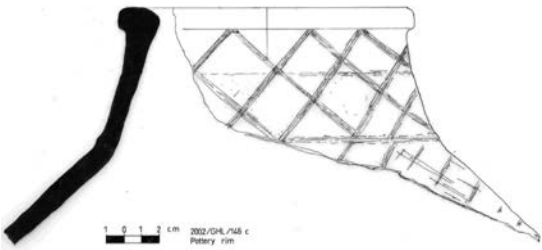
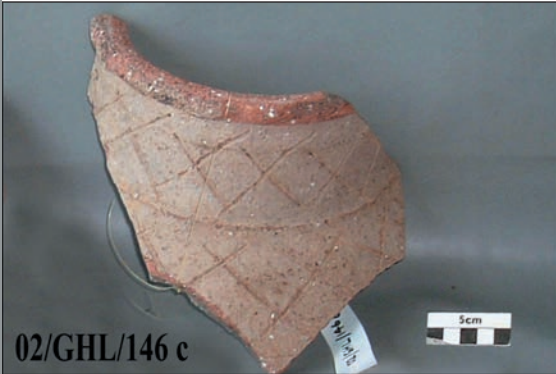
- CE083
1. 2004GHL085 / R
 2. e-bow
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 Sri Lanka
 5. Lowfired red ware 6. -
 7. Shallow bowl
 8. Sri Lanka

- CE084
1. 2004GHL087a-b / R
 2. e-pot
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 Sri Lanka
 5. Lowfired red ware 6. -
 7. Pot
 8. Sri Lanka

- CE085
1. 2002GHL085 (identical to 2002GHL083) / L
 2. e-jar
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 Sri Lanka
 5. High fired red ware raised
 6. raised
 7. jar
 8. Sri Lanka

- CE086
1. 2002GHL146 / R
 2. e-jar

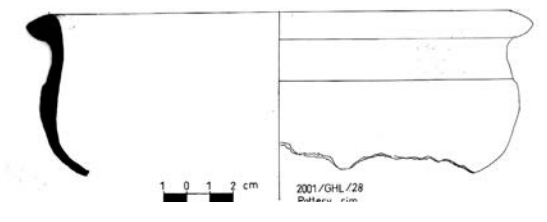
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 Sri Lanka
5. Unglazed
6. XXXmarks engraved
7. jar
8. Sri Lanka?



- CE087
1. 1998GHL049 / R
 2. e-jar
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 Sri Lanka
 5. High fired red ware 6. -
 7. jar
 8. Sri Lanka?



- CE088
1. 2001GHL028 / R
 2. e-pot-cpt
 3. p.d.: unknown - t.d.: 1659
 4. Earthenware, A1 type1.a-i
 5. Black glaze 6. -
 7. Cooking pot
 8. Sri Lanka



CE089

1. 2001GHL054 / L
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired ware 6. -
7. Cooking pot
8. Sri Lanka



CE090

1. 2002GHL253 / L
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired red ware 6. -
7. Pot
8. Sri Lanka

CE091

1. 2002GHL256 / R
2. unidentified
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. High fired red ware 6. -
7. - 8. -

CE092

1. 2003GHL089 / R
2. e-jar
3. p.d.: unknown - t.d.: 1659

4. Earthenware, A1 type1.a-i
5. Low fired red ware 6. -
7. jar
8. Sri Lanka?

CE093

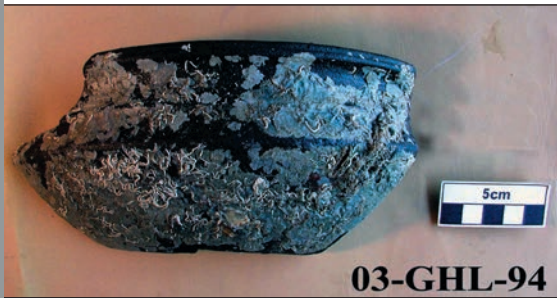
1. 2003GHL090 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. High fired red ware 6. -
7. Pot
8. Sri Lanka

CE094

1. 2003GHL091 / R
2. e-jar
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired red ware 6. -
7. jar
8. Sri Lanka

CE095

1. 2003GHL094 / L
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired ware 6. -
7. Cooking pot
8. Sri Lanka



CE096

1. 2003GHL197 / R
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired red ware
6. -
7. Cooking pot
8. Sri Lanka



CE097

1. 2003GHL262 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. High fired red ware
6. incised
7. pot, fragment
8. Sri Lanka



CE098

1. 2003GHL285 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired red ware
6. -
7. Cooking pot
8. Sri Lanka

CE099

1. 2003GHL374 / R
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired red ware
6. -
7. Cooking pot
8. Sri Lanka



CE100

1. 2003GHL518c / R
2. unidentified
3. -
4. Earthenware, A1 type1.a-i
5. Low fired red ware
6. -
7. -
8. Sri Lanka

CE101

1. 2003GHL553 / L
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. High fired red ware
6. -
7. Pot
8. Sri Lanka



CE102

1. 2004GHL080 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. -
6. -
7. Pot
8. Sri Lanka



CE103

1. 2004GHL084 / R
2. e-bow
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired red ware
6. -
7. Cooking pot
8. Sri Lanka



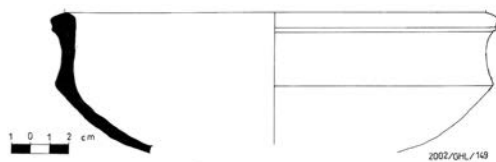
CE104

1. 2004GHL107 / R
2. e-bow
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Red fired
6. -
7. Shallow bowl
8. Sri Lanka



CE105

1. 2002GHL149 / L
2. e-bow
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-ii
5. low fired ware
6. -
7. Shallow bowl
8. Sri Lanka



CE106

1. 2002GHL168a-c / L
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-ii
5. low fired ware
6. incised
7. Pot
8. Sri Lanka

CE107

1. 2003GHL095 / R
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-ii
5. low fired ware
6. -
7. Pot
8. Sri Lanka



CE108

1. 2003GHL096 / L
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-ii
5. low fired ware
6. identical to 2003GHL095
7. Pot
8. Sri Lanka



CE109

1. 2003GHL546 / R
2. e-bow
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-ii
5. Red fired
6. -
7. Shallow bowl
8. Sri Lanka



CE110

1. 2002GHL077 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.a-i
5. Low fired ware
6. raised
7. Pot
8. Sri Lanka



CE113

1. 2002GHL118 / R
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.b-iii
5. low fired ware
6. -
7. Pot, fragment
8. Sri Lanka



CE111

1. 2001GHL004 / R
2. e-pot-cpt
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.b-i
5. low fired ware
6. -
7. Cooking pot
8. Sri Lanka



CE114

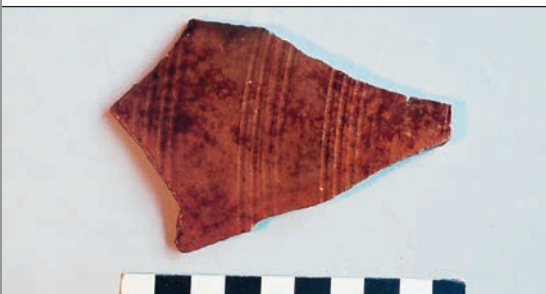
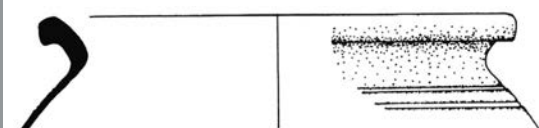
1. 2002GHL125 / L
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.b-iii
5. low fired ware
6. engraved
7. Pot, fragment
8. Sri Lanka

CE115

1. 2002GHL136 / L
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.b-iii
5. low fired ware
6. incised
7. Pot
8. Sri Lanka

CE112

1. 1999GHL036 / L
2. e-pot
3. p.d.: unknown - t.d.: 1659
4. Earthenware, A1 type1.b-ii
5. High fired red ware
6. raised band
7. Pot
8. Sri Lanka



CE116

- 1. 2004GHL047 / L
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type2.b-i
- 5. Red fired
- 6. -
- 7. Pot
- 8. Sri Lanka

CE117

- 1. 1999GHL040 identical to 1999GHL040a-1999GHL040B-2003GHL146a-d / L
- 2. e-pot-cpt
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type2-d
- 5. High fired red ware
- 6. incised lines
- 7. Pot
- 8. Sri Lanka



CE118

- 1. 2002GHL273 / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type3.c
- 5. Low fired red ware
- 6. -
- 7. jar
- 8. Sri Lanka

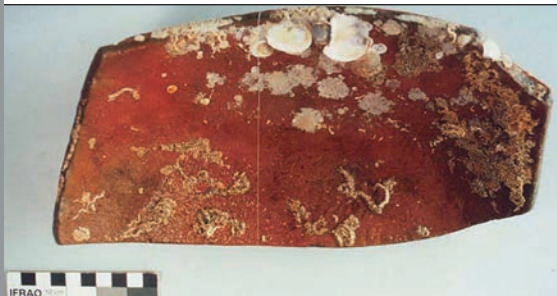


CE119

- 1. 2003GHL130 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type3.a
- 5. low fired red ware
- 6. -
- 7. Pot
- 8. Sri Lanka

CE120

- 1. 2002GHL087 (identical to 2002GHL083) / L
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type4.b
- 5. Red fired
- 6. raised
- 7. jar
- 8. Sri Lanka



CE121

- 1. 2002GHL106 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type4.b
- 5. low fired ware
- 6. -
- 7. Pot
- 8. Sri Lanka?



CE122

- 1. 2003GHL230 / R
- 2. e-pot
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type4.a
- 5. low fired ware
- 6. -
- 7. Pot
- 8. Sri Lanka

CE123

- 1. 2003GHL080b / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, A1 type4.a
- 5. Low fired red ware
- 6. -
- 7. -
- 8. -

CE124

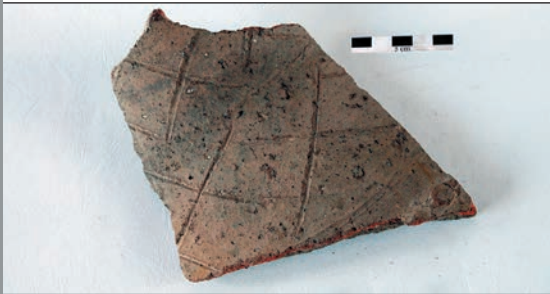
- | | | | |
|----|----------------------------|----|---|
| 1. | 2003GHL080c / R | | |
| 2. | unidentified | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, A1 type4.b | | |
| 5. | Low fired ware | 6. | - |
| 7. | - | 8. | - |

CE125

- | | | | |
|----|----------------------------|----|---|
| 1. | 2003GHL081 / R | | |
| 2. | unidentified | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, A1 type4.a | | |
| 5. | low fired red ware | 6. | - |
| 7. | unidentified | 8. | - |

CE126

- | | | | |
|----|---|--|--|
| 1. | 2003GHL277(identical to 2003GHL297) / R | | |
| 2. | e-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, A1 type4.b | | |
| 5. | High fired red ware | | |
| 6. | incised | | |
| 7. | jar | | |
| 8. | Sri Lanka | | |



CE127

- | | | | |
|----|---|----|---|
| 1. | 2003GHL297(identical to 2003GHL277) / R | | |
| 2. | s-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, A1 type4.b | | |
| 5. | low fired ware | | |
| 6. | incised | | |
| 7. | jar | 8. | - |



CE128

- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL513 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, A1 type4.a | | |
| 5. | Low fired red ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

CE129

- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL514 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, A1 type4.a | | |
| 5. | Low fired red ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

CE130

- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL518a / R | | |
| 2. | e-pot | 3. | - |
| 4. | Earthenware, A1 type4.b | | |
| 5. | Low fired red ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

CE131

- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL518b / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, A1 type4.b | | |
| 5. | Low fired red ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

CE132

- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL521a / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, A1 type4.a | | |
| 5. | Low fired ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

CE133

- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL521b / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, A1 type4.a | | |
| 5. | Low fired ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

- CE134
- | | | | |
|----|-------------------------|----|---|
| 1. | 2003GHL522 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, A1 type4.a | | |
| 5. | Low fired red ware | | |
| 6. | - | 7. | - |
| 8. | Sri Lanka | | |

Earthenware, European

- CE135
- | | | | |
|----|---------------------------|----|---|
| 1. | 1998GHL015 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Earthenware, B - European | | |
| 5. | Ash coloured ware | 6. | - |
| 7. | - | 8. | - |

- CE136
- | | | | |
|----|-------------------------------|----|---|
| 1. | 2002GHL250 / R | | |
| 2. | unidentified | | |
| 3. | p.d.: after 1659 / t.d.: 2005 | | |
| 4. | Earthenware, B - European | | |
| 5. | Underglaze-blue | | |
| 6. | - | 7. | - |
| 8. | England? | | |



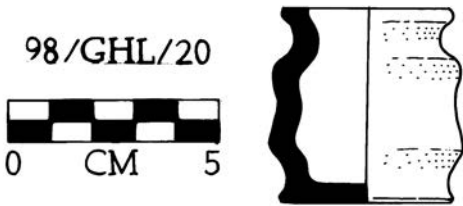
- CE137
- | | | | |
|----|-------------------------------|----|---|
| 1. | 2003GHL382 / L | | |
| 2. | p-bow | | |
| 3. | p.d.: after 1659 / t.d.: 2005 | | |
| 4. | Earthenware, B1- Holland | | |
| 5. | Underglaze-blue | 6. | - |
| 7. | bowl, fragment | | |
| 8. | Holland | | |



- CE138
- | | | | |
|----|------------------------------------|----|---|
| 1. | 1998GHL003 / L | | |
| 2. | e-alb | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, B 1.1 - medicine jars | | |
| 5. | Tin glaze | 6. | - |
| 7. | Albarelo | | |
| 8. | Holland | | |



- CE139
- | | | | |
|----|------------------------------------|--|--|
| 1. | 1998GHL020 / R | | |
| 2. | s-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, B 1.1 - medicine jars | | |
| 5. | Tin glaze | | |
| 6. | incisedbase and footring unglazed | | |
| 7. | Ointmentpot | | |
| 8. | Holland | | |



- CE140
- | | | | |
|----|------------------------------------|----|---|
| 1. | 1998GHL026 / L | | |
| 2. | e-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Earthenware, B 1.1 - medicine jars | | |
| 5. | greyish | | |
| 6. | salt glaze | 6. | - |
| 7. | Ointmentpot | | |
| 8. | Holland | | |



CE141

1. 1998GHL027
2. e-jar
3. p.d.: unknown - t.d.: 1659
4. Earthenware, B 1.1 - medicine jars
5. Tin glaze
6. -
7. Ointmentpot
8. Holland



CE142

1. 1998GHL039 / R
2. e-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Earthenware, B 1.1 - medicine jars
5. Tin glaze
6. -
7. Albarello . Holland



CE143

1. 1998GHL122 / L
2. e-alb
3. p.d.: unknown - t.d.: 1659
4. Earthenware, B 1.1 - medicine jars
5. Tin glaze
6. -
7. Albarello
8. Holland



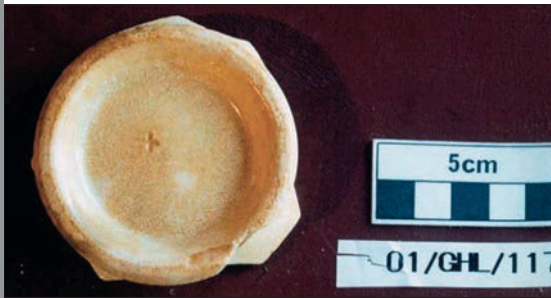
CE144

1. 1998GHL139 / L
2. e-alb
3. p.d.: unknown - t.d.: 1659
4. Earthenware, B 1.1 - medicine jars
5. Underglaze-blue
6. -
7. Albarello
8. Holland



CE145

1. 2001GHL117 / L
2. e-alb
3. p.d.: unknown - t.d.: 1659
4. Earthenware, B 1.1 - medicine jars
5. Off-white glaze
6. very tiny + mark; base and footring glazed
7. Albarello
8. Holland



CE146

- 1. 2003GHL393 / L
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, B 1.1 - medicine jars
- 5. Tin glaze
- 6. blue decoration
- 7. jar
- 8. Holland?

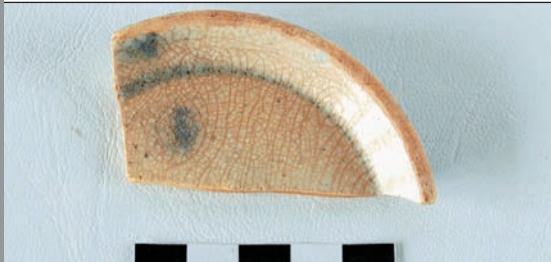
CE147

- 1. 2004GHL014 / R
- 2. e-alb
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, B 1.1 - medicine jars
- 5. Tin glaze
- 6. -
- 7. Albarello
- 8. Holland



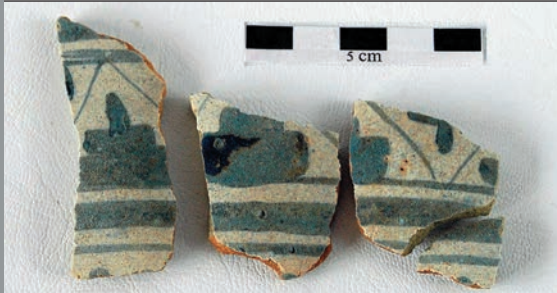
CE148

- 1. 2004GHL055 / R
- 2. e-alb
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, B 1.1 - medicine jars
- 5. Tin glaze
- 6. -
- 7. Albarello
- 8. Holland



CE149

- 1. 2004GHL211 / R
- 2. e-alb
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, B 1.1 - medicine jars
- 5. Tin glaze
- 6. -
- 7. Albarello
- 8. Holland



CE150

- 1. 2004GHL313 / R
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, B 1.1 - medicine jars
- 5. Tin glaze
- 6. -
- 7. Ointmentpot
- 8. Holland



CE151

- 1. 2004GHL320 / L
- 2. e-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Earthenware, B 1.1 - medicine jars
- 5. Brown-black glaze
- 6. base and footring unglazed
- 7. Ointmentpot ?
- 8. Holland?

CE152

- 1. 1998GHL055 / R
- 2. p-dish
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Earthenware, B2 - English creamware
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Plate
- 8. England



CE153

- 1. 2004GHL246 / R
- 2. p-sau
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Earthenware, B2 - English creamware
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Saucer
- 8. England



Stoneware
Stoneware, Asian

CE154

- 1. 2002GHL236 / R
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware
- 5. Off-white glaze
- 6. -
- 7. -
- 8. -



CE155

- 1. 2002GHL260 / L
- 2. s-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, Asian
- 5. Brown glaze
- 6. -
- 7. jar
- 8. -



CE156

- 1. 2003GHL100 / L
- 2. s-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, Asian
- 5. Black glaze
- 6. -
- 7. jar
- 8. -



CE157

- 1. 2003GHL172 / R
- 2. s-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, Asian
- 5. High fired red ware
- 6. -
- 7. Pot
- 8. Sri Lanka?

CE158

- | | | | |
|----|------------------------------|----|---|
| 1. | 1998GHL130 / L | | |
| 2. | s-jar-mrt | | |
| 3. | p.d.: 1650-1700 / t.d.: 1659 | | |
| 4. | Stoneware, Asian, A | | |
| 5. | Brown glaze | 6. | - |
| 7. | Martavaan | 8. | - |

CE159

- | | | | |
|----|----------------------------|----|---|
| 1. | 2003GHL068 / R | | |
| 2. | s-jug | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Stoneware, Asian, A | | |
| 5. | Yellow-brown glaze | 6. | - |
| 7. | - | 8. | - |



CE160

- | | | | |
|----|---------------------|----|---|
| 1. | 2003GHL195 / R | | |
| 2. | s-jar | 3. | ? |
| 4. | Stoneware, Asian, A | | |
| 5. | Transparant glaze | 6. | - |
| 7. | jar | 8. | - |



CE161

- | | | | |
|----|----------------------------|----|---|
| 1. | 2003GHL288 / R | | |
| 2. | s-jar-mrt | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Stoneware, Asian, A | | |
| 5. | Light brown glaze | 6. | - |
| 7. | jar | 8. | - |



CE162

- | | | | |
|----|---|--|--|
| 1. | 1998GHL010 / L | | |
| 2. | s-jar-mrt | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Stoneware, A.1 type1.a | | |
| 5. | Black-brown glaze; top rim unglazed | | |
| 6. | square mark with incised Chinese character, 4 small handles | | |
| 7. | Martavaan | | |
| 8. | China - South | | |



CE163

- | | | | |
|----|------------------------------|----|---|
| 1. | 2002GHL214 / R | | |
| 2. | s-jar-mrt | | |
| 3. | p.d.: 1600-1650 / t.d.: 1659 | | |
| 4. | Stoneware, A.1 type1.a | | |
| 5. | Brown-black glaze | 6. | - |
| 7. | Martavaan | | |
| 8. | China - South | | |





CE164

1. 1998GHL062 / L
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE165

1. 1998GHL132 / L
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE166

1. 2002GHL232 / R
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE167

1. 2003GHL137 / R
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE168

1. 2003GHL246 / R
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE169

1. 2003GHL301 / R
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE170

1. 2003GHL420 / L
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.a
5. Brown-black glaze
6. -
7. Martavaan
8. China - South

CE171

1. 1998GHL011 includes 37 body shards, 2 base shards 1 rim shard / R
2. s-jar-mrt
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A.1 type1.b
5. Brown-black glaze outside; unglazed inside
6. Concentric rings around neck
7. Martavaan
8. China



CE172

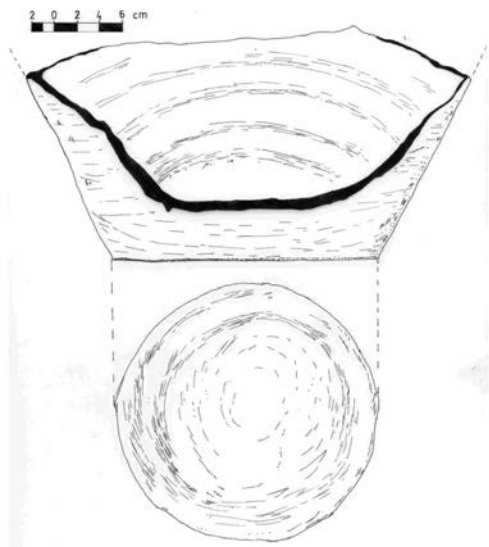
- 1. 1998GHL022 / R
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A.1 type1.b
- 5. Brown-black glaze
- 6. -
- 7. Martavaan
- 8. China - South

CE173

- 1. 1998GHL050 / R
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A.1 type1.b
- 5. Brown-black glaze
- 6. -
- 7. Martavaan
- 8. China - South

CE174

- 1. 2002GHL166 / L
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware
- 5. Brown glaze
- 6. -
- 7. Martavaan
- 8. -



CE175

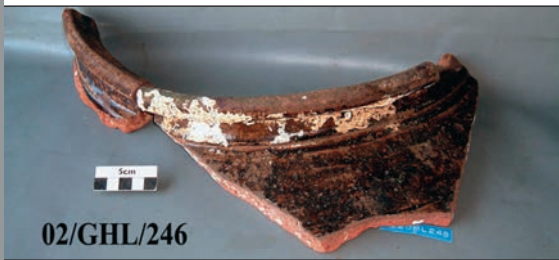
- 1. 2003GHL099- b/c/e/h/i/j/k (also 2003GHL164 a+b 2003GHL249-20 03GHL370) / R
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A.1 type1.b
- 5. Brown glaze
- 6. -
- 7. Martavaan
- 8. China - South

CE176

- 1. 2003GHL284 / R
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A.1 type1.b
- 5. Brown glaze
- 6. -
- 7. Martavaan
- 8. China - South

CE177

- 1. 2002GHL246 / R
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A.1 type1.b
- 5. Brown glaze
- 6. -
- 7. Martavaan
- 8. China - South



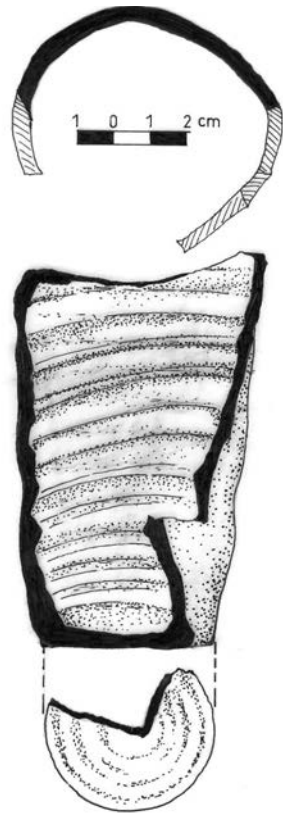
CE178

- 1. 2001GHL099 / L
- 2. s-jar-mrt
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware, A.1 China
- 5. Brown glaze
- 6. -
- 7. Martavaan
- 8. South-East Asia



CE179

- 1. 2002GHL079 / R
- 2. s-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A 1 type 1.c
- 5. Unglazed
- 6. moulded
- 7. jar
- 8. China - South



CE180

1. 2002GHL074 / R
2. s-jar
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A 1 type 1.c
5. Unglazed
6. moulded
7. jar
8. China - South



CE181

1. 2003GHL047 / R
2. s-jar
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A 1 type 1.c
5. Unglazed
6. moulded
7. jar
8. China - South

CE182

1. 2003GHL122 / R
2. s-jar
3. -
4. Stoneware, A 1 type 1.c
5. Unglazed
6. moulded
7. jar
8. China - South

CE183

1. 2003GHL138 / R
2. s-jar
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A 1 type 1.c
5. Unglazed
6. moulded
7. jar
8. China - South



CE184

1. 2004GHL018 / R
2. s-jar
3. p.d.: unknown - t.d.: 1659
4. Stoneware, A 1 type 1.c
5. Unglazed
6. moulded
7. jar
8. China - South

CE185

- 1. 2003GHL422 (identical to...) / L
- 2. s-jar-mrt
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware, A 2 Thailand
- 5. Chocolate-brown glaze/d. brown glaze
- 6. -
- 7. Martavaan
- 8. Thailand

CE186

- 1. 1999GHL035 / L
- 2. s-jar-mrt
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, A2 Thailand
- 5. Brown-black glaze
- 6. -
- 7. Martavaan
- 8. Thailand



CE187

- 1. 2003GHL052 / 1999GHL035 / L
- 2. s-jar-mrt
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware, A2 Thailand
- 5. Dark brown glaze
- 6. Glaze drips
- 7. Martavaan
- 8. Thailand



CE188

- 1. 2003GHL153 / R
- 2. s-jar-mrt
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware, A2 Thailand
- 5. Light brown glaze with dark brown streaks
- 6. -
- 7. Martavaan
- 8. Thailand

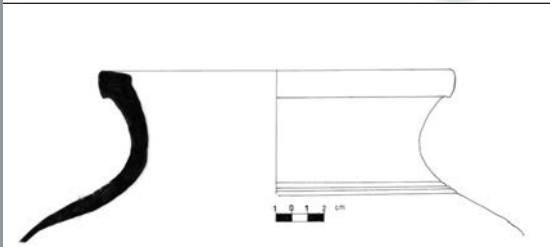


CE189

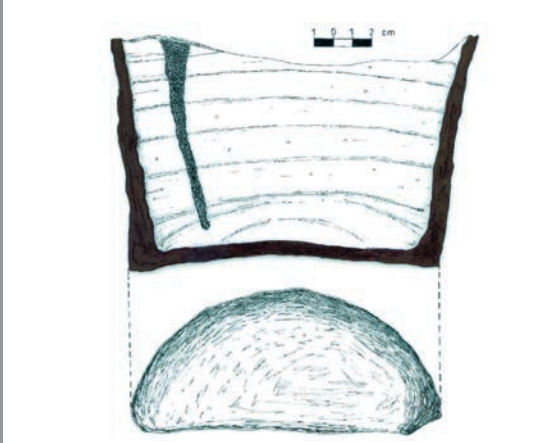
- 1. 1998GHL001 / L
- 2. s-jar-mrt
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware, A2 Thailand
- 5. Dark brown-black glaze, running to unglazed base
- 6. -
- 7. Martavaan
- 8. Thailand



- CE190
- 1. 2002GHL084 / L
 - 2. s-jar-mrt
 - 3. p.d.: 1600-1650 / t.d.: 1659
 - 4. Stoneware, A 3 Southeast.Asian
 - 5. Brown glaze
 - 6. -
 - 7. Martavaan
 - 8. -



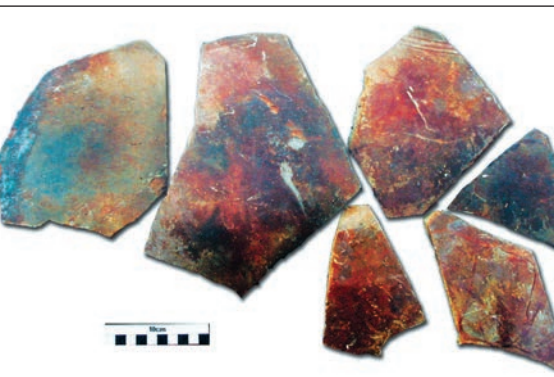
- CE191
- 1. 2002GHL212 / L
 - 2. s-jar-mrt
 - 3. p.d.: 1600-1650 / t.d.: 1659
 - 4. Stoneware, A 3 Southeast.Asian
 - 5. Dark brown glaze; Inside:chocolate slip
 - 6. Shell concretions; inside: throw rings
 - 7. Martavaan
 - 8. -



- CE192
- 1. 2004GHL006 / R
 - 2. s-jar
 - 3. p.d.: unknown - t.d.: 1659
 - 4. Stoneware, A 3 Southeast.Asian
 - 5. Ash coloured ware
 - 6. -
 - 7. jar
 - 8. -



- CE193
- 1. 1998GHL048 / L
 - 2. s-jar-mrt
 - 3. p.d.: 1600-1650 / t.d.: 1659
 - 4. Stoneware, A 3 S.E.Asian
 - 5. High fired red ware
 - 6. -
 - 7. Martavaan
 - 8. South-East Asia



- CE194
- 1. 1998GHL047 / R
 - 2. s-jar-mrt
 - 3. p.d.: 1600-1650 / t.d.: 1659
 - 4. Stoneware, A 3 S.E.Asian
 - 5. High fired red ware
 - 6. -
 - 7. Martavaan
 - 8. South-East Asia



Stoneware

Stoneware, European

CE195

1. 1996GHL007 / L
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze
6. one mask and one medallion(without few small parts), complete face of common type with linear beard on the neck, no moustache, hour glass shaped mouth with two lines, an eight unit flower design medallion on the belly
7. Beardman jug
8. Germany



CE196

1. 1999GHL047 / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze
6. -
7. Beardman jug
8. Germany

CE197

1. 2002GHL073 / L
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware, Europe, type B.1
5. Ash glaze
6. -
7. Beardman jug
8. Germany



CE198

1. 2002GHL170 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Ash coloured ware
6. -
7. Beardman jug
8. Germany



CE199

1. 1999GHL008 / L
2. s-jug
3. p.d.: unknown - t.d.: 1659
4. Stoneware, Europe, type B.1
5. Salt glaze
6. applied rosettes/bands around neck, cobalt blue
7. Jug
8. Europe



CE200

1. 2002GHL219a+b / R
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware, Europe, type B.1
5. yellowish glaze with brown spots
6. Lower part of medaillon (stukje a of b??)
7. Beardman jug
8. Germany



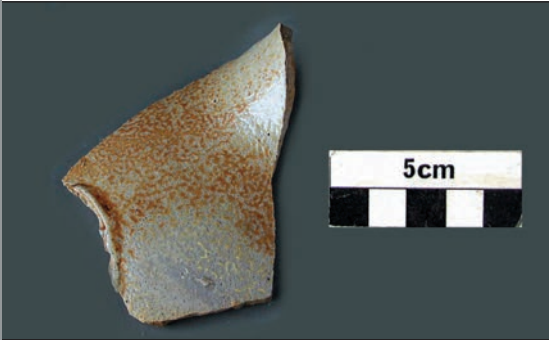
CE201

1. 2002GHL220 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze
6. -
7. Beardman jug
8. Germany



CE202

1. 2002GHL221 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze
6. raised
7. Beardman jug
8. Germany



CE203

1. 2002GHL224 / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze 6. -
7. Beardman jug
8. Germany



CE204

1. 2003GHL011a / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze 6. -
7. Beardman jug
8. Germany



CE205

1. 2003GHL011b / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1

5. Salt glaze 6. -
7. Beardman jug
8. Germany

CE206

1. 2003GHL066 (part of 2003GHL135c) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. greyish salt glaze 6. -
7. Beardman jug
8. Germany

CE207

1. 2003GHL108 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Ash coloured ware 6. -
7. Beardman jug
8. Germany

CE208

1. 2003GHL357 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown-speckeld glaze 6. -
7. Beardman jug
8. Germany

CE209

1. 2003GHL384 (part of 2003GHL414 + 2002GHL268) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Brown glaze 6. -
7. Beardman jug
8. Germany

CE210

1. 2003GHL391 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1
5. Ash coloured ware
6. incised line Beardman jug
8. Germany

- CE211
1. 2003GHL450 / R
 2. s-jug-brd
 3. p.d.: unknown - t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Brown-speckeld glaze 6. -
 7. Beardman jug
 8. Germany

- CE212
1. 2003GHL454 (part of 2002GHL259) / L
 2. s-jug-brd
 3. p.d.: 1600-1650 / t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Ash coloured ware
 6. large part of beardman face
 7. Beardman jug
 8. Germany



- CE213
1. 2003GHL475 (belongs to 2003GHL065) / R
 2. s-jug-brd
 3. p.d.: 1600-1650 / t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Brown-speckeld glaze
 6. nearly complete medaillion with floral design: type
 7. Beardman jug
 8. Germany

- CE214
1. 2003GHL490 / R
 2. s-jug-brd
 3. p.d.: 1600-1650 / t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Ash glaze with yellowish spots
 6. -

7. Beardman jug
8. Germany

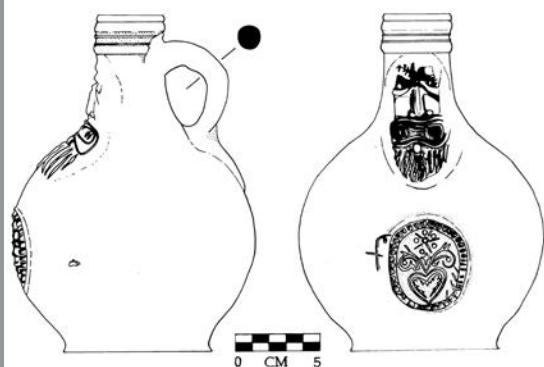
- CE215
1. 2004GHL009 / R
 2. s-jug-brd
 3. p.d.: unknown - t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Brown-speckeld glaze 6. -
 7. Beardman jug
 8. Germany

- CE216
1. 2004GHL197 / R
 2. s-jug-brd
 3. p.d.: unknown - t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Brown-speckeld glaze 6. -
 7. Beardman jug
 8. Germany

- CE217
1. 2004GHL198 / R
 2. s-jug-brd
 3. p.d.: unknown - t.d.: 1659
 4. Stoneware, Europe, type B.1
 5. Ash glaze 6. -
 7. Beardman jug
 8. Germany

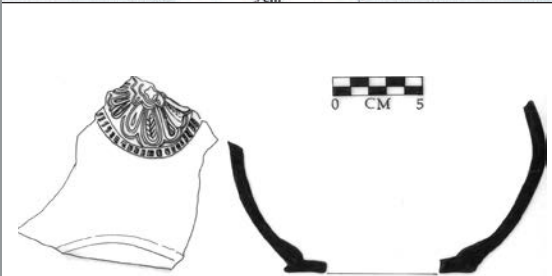


- CE218
1. 1999GHL007 / L
 2. s-jug-brd
 3. p.d.: unknown - t.d.: 1659
 4. Stoneware, Europe, type B.1.l
 5. Brown-speckeld glaze
 6. complete face of beardman;uncommon medaillion type: other type of rose-crown-heart type.Above the heart a small cross,flowere and 2 branches with leaves and buds.
 7. Beardman jug
 8. Germany



CE219

1. 1999GHL044 (related to 2003GHL379a-b-c and 2003GHL270 / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.I
5. greyish salt glaze
6. lower half of medaillon:simple rosette
7. Beardman jug
8. Germany

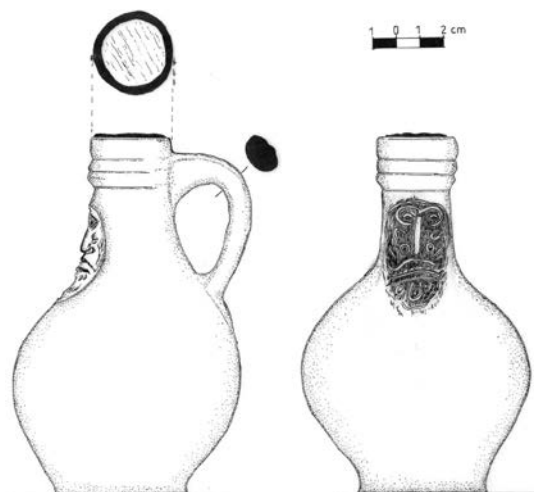


CE220

1. 2002GHL101 - identical to: 2002GHL191 & 2002GHL258 & 2002GHL015 & 2003GHL203 / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.I
5. Brown-speckeld glaze
6. -
7. Beardman jug
8. Germany

CE221

1. 2002GHL161 / L
2. s-jug-brd
3. p.d.: 1627-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.I
5. Brown glaze / Salt glaze
6. beardman face
7. Beardman jug
8. Germany



CE224

1. 2003GHL069 (identical to 2003GHL065 & 2003GHL108) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.I
5. Salt glaze
6. -
7. Beardman jug
8. Germany

CE225

1. 2003GHL388 / 2003GHL476 - 2002GHL88e-2003GHL233 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.II
5. yellow-brown glaze
6. -
7. Beardman jug
8. Germany

CE226

1. 2003GHL414 (belongs to 2003GHL384a,b & 2002GHL268 & 2002GHL242) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.II
5. Brown-speckeld glaze
6. raised: part of face with eye
7. Beardman jug
8. Germany



CE222

1. 2002GHL192 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware, Europe, type B.1.I
5. Brown-speckeld glaze
6. -
7. Beardman jug
8. Germany

CE223

1. 2003GHL065 / R
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware, Europe, type B.1.I
5. Brown-speckeld glaze
6. Part of raised design
7. Beardman jug
8. Germany

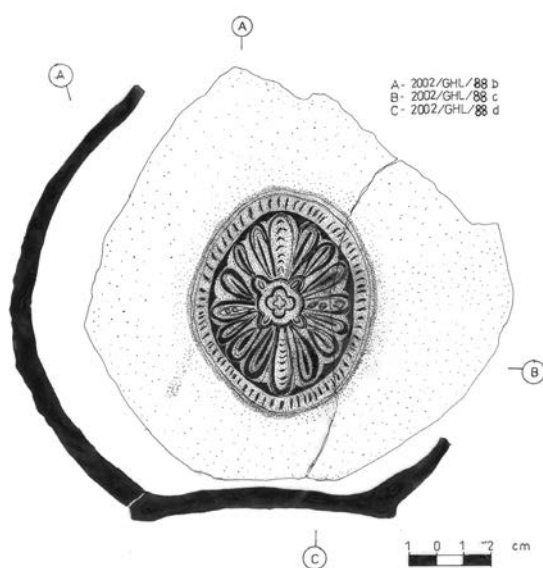
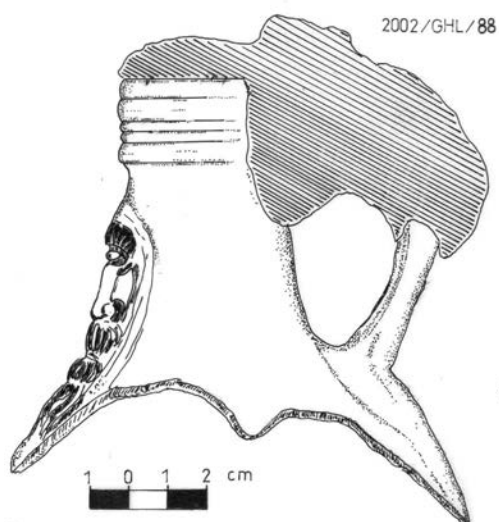


CE227

1. 2002GHL015 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. Chocolate-brown glaze6. -
7. Beardman jug
8. Germany

CE228

1. 2002GHL088c / 2002GHL088b / 2002GHL454 / 2002GHL259 / R
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware type B.1.1.
5. Salt glaze;blue and yellow glaze
6. raised floral design
7. Beardman jug
8. Germany



CE229

1. 2002GHL160 / L
2. s-jug-bdm
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. Brown-speckeld glaze
6. raised-beardman face;with cork stopper
7. Beardman jug
8. Germany



CE230

1. 2002GHL191 (identical to: 2002GHL101 & 2002GHL258 & 2002GHL015 & 2003GHL203) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. Brown-speckeld glaze 6. -
7. Beardman jug
8. Germany

CE231

1. 2002GHL222 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. Brown glaze 6. -
7. Beardman jug
8. Germany

CE232

1. 2002GHL189 (identical to 2003GHL376) / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. Salt glaze
6. inside slip glazed; Drops of blue glaze
7. Beardman jug
8. Germany

CE233

1. 2003GHL050 / R
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware type B.1.1.

5. Brown glaze 6. -
7. Beardman jug
8. Germany

CE234

1. 2003GHL051 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. Salt glaze / light brown
6. Part of medaillion: floral design
7. Beardman jug
8. Germany

CE235

1. 2003GHL196 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1.
5. light brown glaze; blue cobalt glaze
6. Medaillion: floral design; Splashes blue glaze
7. Beardman jug
8. Germany



CE236

1. 2003GHL203 (identical to 2002GHL258 & 2002GHL191 & 2002GHL101 & 2002GHL015) / R
2. s-jug-brd
3. p.d.: unknown - t.d.: 1659
4. Stoneware type B.1.1.
5. Chocolate-brown glaze
6. -
7. Beardman jug
8. Germany

CE237

1. 2003GHL356 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / Buff body
5. Brown-speckeld glaze with blue splashes
6. Upper part of medaillion:with part of the crown
7. Beardman jug
8. Germany

CE238

1. 2002GHL197 (identical to 2002GHL206) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / Cream body
5. Chocolate-brown glaze 6. -
7. Beardman jug
8. Germany

CE239

1. 2002GHL206 (identical to 2002GHL197) / L
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / Cream body
5. Chocolate-brown glaze6. -
7. Beardman jug
8. Germany

CE240

1. 2002GHL258 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / Cream body
5. Salt glaze, Brown speckled
6. Part of medaillion:rose-crown heart
7. Beardman jug
8. Germany



CE241

1. 2003GHL067 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / cream coloured body
5. Salt glaze / brown speckled 6. -
7. Beardman jug
8. Germany

CE242

1. 2002GHL272 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / Gray body
5. Brown-speckeld glaze
6. -
7. Beardman jug
8. Germany



CE243

1. 2003GHL111 / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / Gray body
5. Salt glaze, Brown glaze
6. -
7. Beardman jug
8. Germany

CE244

1. 2003GHL135 (FOTO=135b) (135a,b,d) / R
2. s-jug-brd
3. p.d.: 1600-1650 / t.d.: 1659
4. Stoneware type B.1.1. / gray body
5. Salt glaze
6. -
7. Beardman jug
8. Germany

CE245

- 1. 2003GHL379a+c / R
- 2. s-jug-brd
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware type B.1.1./ Gray body
- 5. Brown-speckeld glaze 6. -
- 7. Beardman jug
- 8. Germany



CE246

- 1. 2002GHL219b / R
- 2. s-jug-
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware type B.1.1. / Grey body
- 5. Salt glaze 6. -
- 7. Beardman jug
- 8. Germany

CE247

- 1. 2002GHL170 / R
- 2. s-jug-brd
- 3. p.d.: 1600-1650 / t.d.: 1659
- 4. Stoneware type B.1.1. / Grey fired body
- 5. Salt glaze 6. -
- 7. Beardman jug
- 8. Germany

CE248

- 1. 1998GHL016 (part of 2003GHL123) / R
- 2. s-jug
- 3. p.d.: 1650-1700 / t.d.: 1659
- 4. Stoneware, Europe 5. -
- 6. raised
- 7. fragments of jug -identical to 1999GHL008
- 8. Germany



CE249

- 1. 2003GHL123 (part of 1998GHL016 / identical to 1999GHL008) / R
- 2. s-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, Europe Blue
- 5. cobalt glaze
- 6. raised
- 7. jar, fragment
- 8. Germany



CE250

- 1. 2001GHL081 / L
- 2. lid p.d.: unknown - t.d.: 1659
- 4. Stoneware, Europe
- 5. Greyish salt glaze
- 6. raised
- 7. lid
- 8. Europe



CE251

- 1. 2004GHL196 / R
- 2. s-jar
- 3. p.d.: unknown - t.d.: 1659
- 4. Stoneware, Europe
- 5. Salt glaze 6. -
- 7. jar 8. -
- 8. Europe



CE252

- | | | | |
|----|--------------------|----|---|
| 1. | 2004GHL199 / R | | |
| 2. | unidentified | 3. | - |
| 4. | Stoneware, Europe | | |
| 5. | Greyish salt glaze | 6. | - |
| 7. | unidentified | 8. | - |

CE253

- | | | | |
|----|----------------------------|----|---|
| 1. | 2004GHL219 / R | | |
| 2. | s-jug | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Stoneware, Europe | | |
| 5. | undefinable | 6. | - |
| 7. | Shallow bowl | | |
| 8. | Holland | | |



CE254

- | | | | |
|----|----------------------------|----|---|
| 1. | 2004GHL221 / R | | |
| 2. | unidentified | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Stoneware, Europe | | |
| 5. | Brown-speckled glaze | 6. | - |
| 7. | Jar, fragment | | |
| 8. | Europe | | |



CE255

- | | | | |
|----|----------------------------|----|---|
| 1. | 2004GHL235 / R | | |
| 2. | s-jar | | |
| 3. | p.d.: unknown - t.d.: 1659 | | |
| 4. | Stoneware, Europe | | |
| 5. | Brown-speckled glaze | 6. | - |
| 7. | Jar, fragment | | |
| 8. | ? | | |

Porcelain
Porcelain, China

CE256

- | | | | |
|----|--------------------|----|---|
| 1. | 1998GHL052 / R | | |
| 2. | p-jar | | |
| 3. | p.d.: unknown | | |
| 4. | Porcelain, A:China | | |
| 5. | Transparant glaze | 6. | - |
| 7. | Jar? | | |
| 8. | China? | | |



CE257

- | | | | |
|----|--|--|--|
| 1. | 1998GHL029 / L | | |
| 2. | p-bow | | |
| 3. | p.d.: unknown | | |
| 4. | Porcelain type I, A1: light blue | | |
| 5. | Underglaze-blue | | |
| 6. | with overglaze red enamels; base and footring glazed | | |
| 7. | Bowl | | |
| 8. | China- Jingdezhen | | |



CE258

- 1. 1998GHL034 / R
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A1: light blue
- 5. Underglaze blue; bluish glaze
- 6. -
- 7. Bowl
- 8. China- South

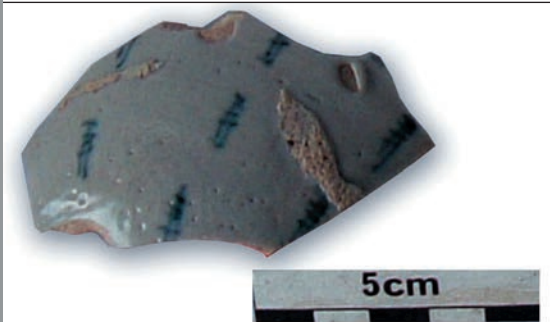


CE259

- 1. 2002GHL157a (identical to 2002GHL157b-c-d-e-g-h) / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A1: light blue
- 5. Underglaze blue dec.;craquele glaze
- 6. 2 concentric bands; squigles on centre;base and footring unglazed
- 7. Bowl
- 8. China- South

CE260

- 1. 2002GHL251 / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A1: light blue
- 5. Underglaze blue; bluish glaze
- 6. -
- 7. Bowl
- 8. China- South



CE261

- 1. 2003GHL005a / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A1: light blue
- 5. Underglaze-blue 6. -
- 7. Bowl
- 8. China- South

CE262

- 1. 2003GHL145 / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A1: light blue
- 5. Underglaze blue; bluish glaze 6. -
- 7. Bowl
- 8. China- South

CE263

- 1. 2003GHL447 (identical to 2003GHL145-2002GHL269) / L
- 2. p-bowl
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A1: light blue
- 5. Bluish glaze-craquele
- 6. exterior: light blue parallel lines interior: floral design;Kiln waste adhered
- 7. Bowl
- 8. China- South

CE264

- 1. 2002GHL269 : identical pieces:2003CHL058 - 2003GHL158-2003GHL145-2003GHL447 / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type I, A2: blue
- 5. Underglaze blue; bluish glaze
- 6. Footring glazed
- 7. Bowl
- 8. China- South

CE265

- 1. 2003GHL110 / L
- 2. unidentified
- 3. p.d.: unknown - t.d.: 1659
- 4. Porcelain type I, A3: monochroom
- 5. light olive-green
- 6. glaze 7. -
- 8. China - South

- CE266
- 2003GHL163 (belongs to 2003GHL245) / L
 - p-bow
 - p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 - Porcelain type I, A3: monochroom
 - Greenish-blue glaze,craquelee
 - Kiln bursts
 - Bowl
 - China- South



- CE267
- 2003GHL245 (belongs to 2003GHL163) / L
 - p-bow
 - p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 - Porcelain type I, A3: monochroom
 - Monochrome-light green-grey
 - grey-bluish glaze
 - Bowl
 - China- South



- CE268
- 2003GHL401 / L
 - unidentified
 - p.d.: unknown - t.d.: 1659
 - Porcelain type I, A3: monochroom
 - light olive-green
 - glaze
 -
 - China - South

- CE269
- 2003GHL413 (identical to: 2003GHL155-one of 1999GHL025) / L

- p-bowl
- p.d.: Qing Dynasty (1644-1911)
- Porcelain type I, A3: monochroom
- Monochrome-light green-grey
-
- Bowl
- China- Jingdezhen



- CE270
- 2004GHL212 / R
 - p-bow-sha
 - p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 - Porcelain type I, A3: monochroom
 - Monochrome-light green-grey
 -
 - Shallow Bowl
 - China- Jingdezhen



- CE271
- 1998GHL051 / R
 - p-bow
 - p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 - Porcelain type I, B1:unglazed centre
 - Transparant glaze
 -
 - Bowl
 - China

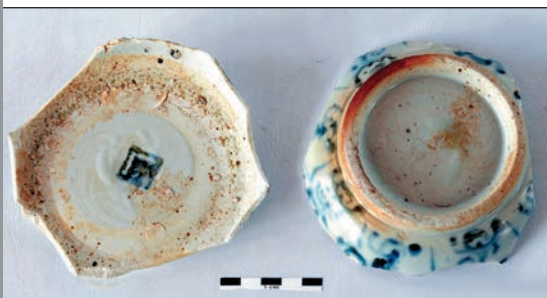


CE272

item removed from the collection

CE273

1. 1999GHL048 / R
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze cobalt blue; transparent glaze
6. -
7. Bowl
8. China- Jingdezhen



CE274

1. 2002GHL216 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue; bluish glaze
6. Repetitive 'stamped' fungus pattern;Footring unglazed;Unglazed ring around centre
7. Bowl
8. China- Jingdezhen



CE275

1. 2002GHL233 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue; bluish glaze
6. Unglazed ring around centre;Footring unglazed;sand adhered to base
7. Bowl
8. China- Jingdezhen



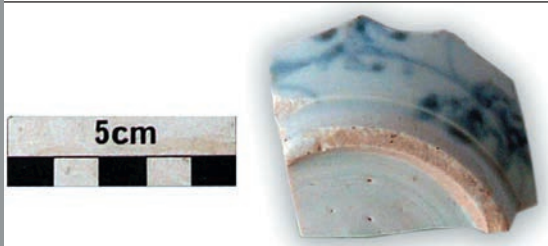
CE276

1. 2002GHL245 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue; bluish glaze
6. Repetitive 'stamped' fungus pattern;Unglazed ring around centre;Footring unglazed
7. Bowl
8. China- Jingdezhen



CE277

1. 2003GHL276 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue; bluish glaze
6. fungus decoration
7. Bowl
8. China- Jingdezhen



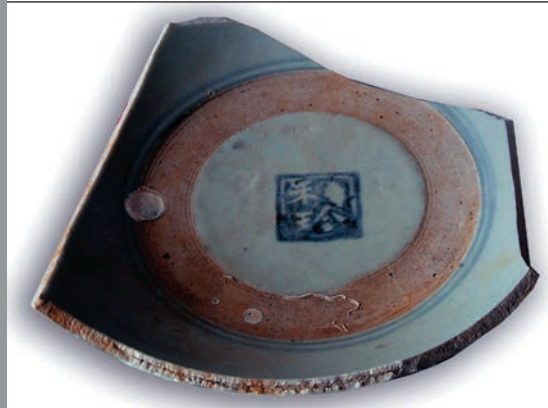
CE278

1. 2003GHL417 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue; bluish glaze
6. stilized fungus pattern;base and footring glazed
7. Bowl
8. China- Jingdezhen



CE279

1. 2003GHL491 / L
2. p-bowl
3. p.d.: Qing Dynasty (1644-1911)
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue;bluish glaze
6. Transfer pattern of stilized 'character' designUnglazed ring around centre;square mark in centre with chinese charactersHigh footring,unglazed
7. High Bowl
8. China- Jingdezhen

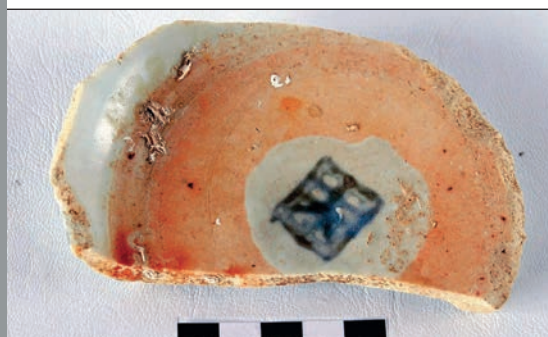


CE280

1. 2003GHL492 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze blue; transparent glaze
6. base and footring glazed
7. Bowl
8. China- Jingdezhen

CE281

1. 2004GHL019 / R
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B1:unglazed centre
5. Underglaze-blue
6. -
7. bowl, fragment
8. China



CE282

1. 2003GHL017 / R
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B2: blue
5. Underglaze -blue
6. -
7. Bowl
8. China- Jingdezhen

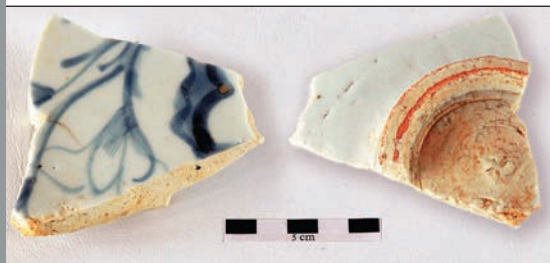
CE283

1. 2003GHL416 / L
2. p-bowl-shallow
3. p.d.: Qing Dynasty (1644-1911)
4. Porcelain type I, B2: blue
5. Freely washed design in underglaze blue;very greenish glaze
6. base and footring unglazed
7. Shallow bowl
8. China



CE284

1. 2004GHL026 / R
2. p-dish
3. p.d.: Qing Dynasty (1644-1911)
4. Porcelain type I, B2: blue
5. Underglaze blue; bluish glaze
6. -
7. dish, fragment
8. China

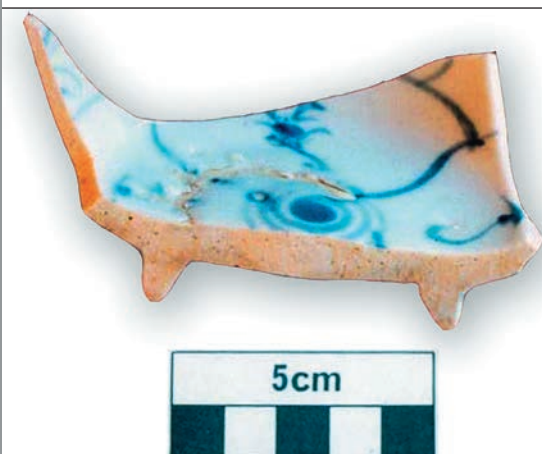


CE285

1. 2002GHL193 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B2: blue
5. Underglaze blue; transparent glaze
6. Squiggly pattern of linesHigh footring,unglazed
7. Bowl
8. China- Jingdezhen

CE286

1. 2001GHL113 / L
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B2: blue
5. Underglaze blue; bluish glaze
6. spiral with fungusbase and footring glazed
7. Bowl
8. China- Jingdezhen



CE287

1. 2004GHL209 / R
2. p-bow-sha
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type I, B2: blue
5. Underglaze blue; bluish glaze
6. -
7. Bowl, fragment
8. China



CE288

1. 2004GHL210 / R
2. p-bow
3. p.d.: after 1659 / t.d.: 2005
4. Porcelain type I, B2: blue
5. Underglaze blue; transparent glaze
6. -
7. Bowl, fragment
8. China

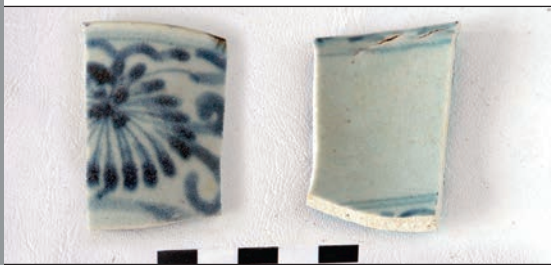
CE289

- 1. 1998GHL054 / L
- 2. p-bow
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish glaze
- 6. -
- 7. Bowl
- 8. China



CE290

- 1. 1998GHL135 / R
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. sunflower type of design
- 7. Bowl
- 8. China- Jingdezhen



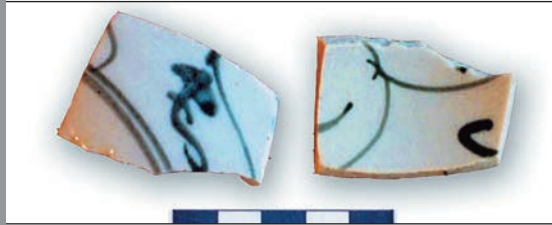
CE291

- 1. 2001GHL114 / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish glaze
- 6. sketchy lines
- 7. Bowl
- 8. China- Jingdezhen

CE292

- 1. 2001GHL116 / L
- 2. p-bow
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze

- 6. fungus and spiral
- 7. Bowl
- 8. China- Jingdezhen



CE293

- 1. 2002GHL009 / 2001GHL116 - 1999GHL-025parts...) / L
- 2. p-bowl
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish glaze
- 6. Stilized 'fungus' pattern; light-blue linesFoot- ring unglazed; Unglazed kiln spots
- 7. Bowl
- 8. China- Jingdezhen



CE294

- 1. 2002GHL196 / L
- 2. p-bow
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type II, A2: bowls
- 5. Underglaze-blue
- 6. -
- 7. Bowl
- 8. China- Jingdezhen

CE295

- 1. 2002GHL230 / L
- 2. p-bow-sha
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish transparent glaze
- 6. Interior: bands of 'comb' design; Footring glazed
- 7. Shallow Bowl
- 8. China- Jingdezhen



CE296

1. 2002GHL231 (identical to 2002GHL230) / R
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type II, A2: bowls
5. Underglaze cobalt blue; transparent glaze
6. -
7. Bowl
8. China- Jingdezhen



CE297

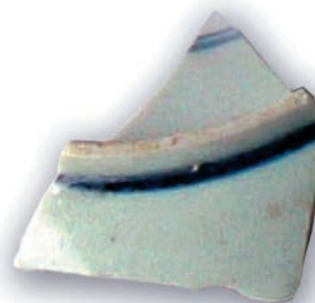
1. 2003GHL058(identical to 2003GHL145-2003GHL269-2003GHL447-2002GHL269) / R
2. p-bow
3. -
4. Porcelain
5. Underglaze blue; bluish glaze
6. -
7. Bowl
8. -

CE298

1. 2003GHL026 / R
2. p-bow
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type II, A2: bowls
5. Underglaze blue; bluish glaze
6. -
7. Bowl
8. China- Jingdezhen

CE299

1. 2003GHL059 / R
2. p-bow-sha
3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type II, A2: bowls
5. Underglaze blue; transparent glaze
6. base and footring glazed
7. Saucer
8. China - Jingdezhen

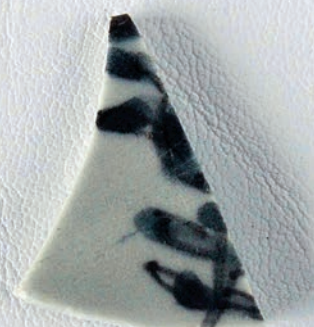


CE300

1. 2003GHL165 / L
2. p-bowl
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, A2: bowls
5. Brown-black glaze
6. -
7. Bowl
8. China- Jingdezhen

CE301

1. 2003GHL494 / R
2. p-cup p.d.: Qing Dynasty (1644-1911) / t.d. 1659
4. Porcelain type II, A2: bowls
5. Underglaze blue; bluish glaze
6. -
7. Bowl, fragment
8. China



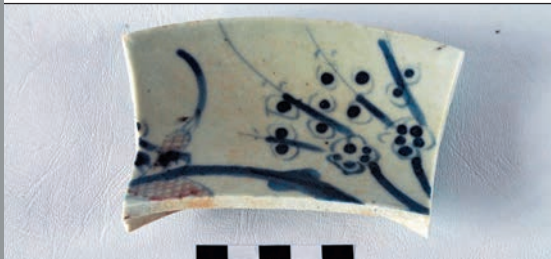
CE302

- 1. 2004GHL001 / R
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish glaze
- 6. -
- 7. Bowl, fragment
- 8. China - Jingdezhen



CE303

- 1. 2004GHL069 / R
- 2. p-bow-sha
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. dish, fragment
- 8. China



CE304

- 1. 2004GHL222 / L
- 2. p-bow-sha
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish glaze
- 6. -
- 7. Shallow Bowl
- 8. China- Jingdezhen



CE305

- 1. 2004GHL223 / R
- 2. p-bow-sha
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; bluish glaze
- 6. -
- 7. Shallow Bowl
- 8. China- Jingdezhen



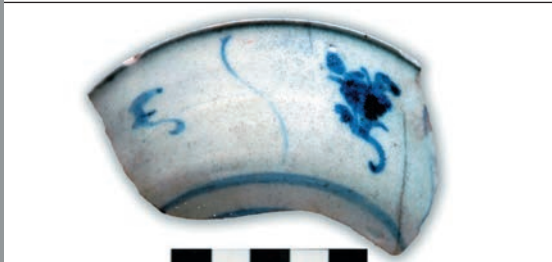
CE306

- 1. 2004GHL259 / R
- 2. p-bow
- 3. p.d.: after 1659
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Bowl
- 8. China



CE307

- 1. 2004GHL290 / L
- 2. p-bow-sha
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Shallow Bowl
- 8. China- Jingdezhen



CE308

- 1. 2003GHL008 / R
- 2. p-bow
- 3. p.d.: after 1659
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Shallow Bowl
- 8. China- Jingdezhen



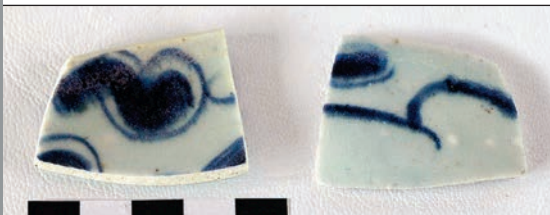
CE309

- 1. 2003GHL493a / R
- 2. p-cup
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A2: bowls
- 5. Underglaze-blue
- 6. -
- 7. Shallow Bowl
- 8. China- Jingdezhen



CE310

- 1. 2004GHL002 / R
- 2. p-cup
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Bowl
- 8. China- Jingdezhen



CE311

- 1. 1998GHL032 / L
- 2. p-bow
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A2: bowls
- 5. Underglaze blue; transparent glaze
- 6. sunflower? or 'flaming wheel'?
- 7. Bowl
- 8. China- Jingdezhen



CE312

- 1. 2003GHL212 identical to 2001GHL115 / L
- 2. p-tbow
- 3. p.d.: Qing Dynasty (1644-1911)
- 4. Porcelain type II, A3; teabowls
- 5. Underglaze blue; clear transparent glaze
- 6. Flowers with stems; Footring glazed
- 7. TeaBowl
- 8. China- Jingdezhen



CE313

- 1. 1998GHL136 / L
- 2. p-tbow
- 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
- 4. Porcelain type II, A3; teabowls
- 5. Underglaze-blue
- 6. -
- 7. TeaBowl
- 8. China- Jingdezhen

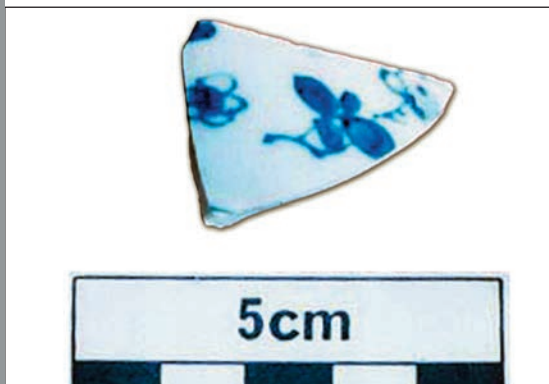
CE314

- 2001GHL008 / R
- p-tbow
- p.d.: Qing Dynasty (1644-1911)
- Porcelain type II, A3; teabowls
- Underglaze cobalt blue;transparent glaze
- Sketchily drawn flowers;band of rosettes around rim;base and footring glazed
- Teabowl
- China



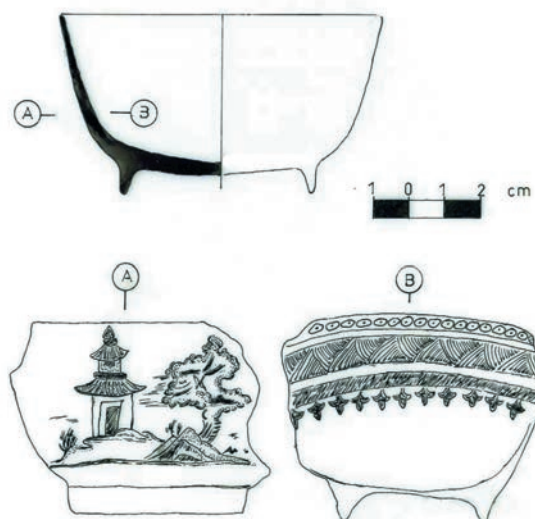
CE315

- 2001GHL115 / L
- p-tbow
- p.d.: Qing Dynasty (1644-1911)
- Porcelain type II, A3; teabowls
- Underglaze blue; transparent glaze
- flowers with stems
- Teabowl ?
- China - Jingdezhen



CE316

- 2002GHL194 / L
- p-tbow
- p.d.: Qing Dynasty (1644-1911)
- Porcelain type II, A3; teabowls
- Underglaze blue;clear transparent glaze
- design of temple and landscape outside;inside has 3 concentric bands with different patterns around rim(waves,crosses and comma's)
- Teabowl
- China



CE317

- 2003GHL025 (part of 2003GHL114) / R
- p-tbow
- p.d.: Qing Dynasty (1644-1911)
- Porcelain type II, A3; teabowls
- Underglaze cobalt blue;transparent glaze
- Dark sprightly Y-design +lines;light bands inside;base and footring unglazed
- TeaBowl
- China- Jingdezhen



CE318

- 2003GHL116 (identical to 2003GHL025) / R
- p-tbow
- p.d.: after 1659
- Porcelain type II, A3; teabowls
- Underglaze blue; transparent glaze
-
- TeaBowl
- China- Jingdezhen



- CE319
1. 2003GHL275 (identical to 2003GHL116) / L
 2. p-tbow
 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 4. Porcelain type II, A3; teabowls
 5. Underglaze-blue
 6. Flowering branches;part of rock?base and footring glazed
 7. Teabowl
 8. China

Porcelain
Porcelain, Export

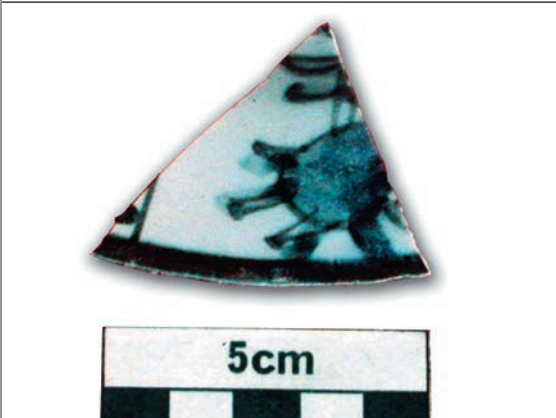
- CE320
1. 2004GHL349(part of 2004GHL241) / R
 2. p-dish
 3. p.d.: 1650-1700 / t.d.: 1659
 4. Porcelain type II, B2: kraak ware
 5. Underglaze-blue
 6. -
 7. Dish
 8. Japan-south



- CE321
1. 2003GHL129 (part of 1999GHL/a+b) / R
 2. p-dish
 3. p.d.: 1650-1700 / t.d.: 1659
 4. Porcelain type III-B, kraak type
 5. Underglaze blue; transparent glaze
 6. panels with dots and panels with sunflowers
 7. Dish
 8. Japan-south



- CE322
1. 1998GHL033 / R
 2. p-bow
 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 4. Porcelain type II, B2: kraak ware
 5. Underglaze blue; transparent glaze
 6. stilized sunflower
 7. Bowl
 8. China- Jingdezhen



- CE323
1. 1998GHL038 / R
 2. p-box
 3. p.d.: Qing Dynasty (1644-1911) / t.d. 1659
 4. Porcelain type II, B2: kraak ware
 5. Underglaze blue; transparent glaze
 6. -
 7. Betelbox
 8. China - Jingdezhen



CE324

1. 2002GHL195 (part of 2003GHL502) / R
2. p-ewer: spout of
3. p.d.: Late Ming Dynasty (1610-1644)
4. Porcelain type II, B2: kraak ware
5. Underglaze blue; transparent glaze
6. 'flame' design
7. -
8. China - Jingdezhen



CE325

1. 2002GHL227 / R
2. p-sau
3. p.d.: Late Ming Dynasty (1610-1644)
4. Porcelain type II, B2: kraak ware
5. Underglaze cobalt blue; transparent glaze
6. Dark blue spotted deer in landscape with rocks; outside around base one concentric line; base and footring glazed
7. Saucer
8. China - Jingdezhen



CE326

1. 2002GHL227 / R
2. p-dish
3. p.d.: Late Ming Dynasty (1610-1644)
4. Porcelain type II, B2: kraak ware
5. Underglaze blue; transparent glaze
6. spotted deer in landscape base and footring glazed
7. Plate
8. China - Jingdezhen

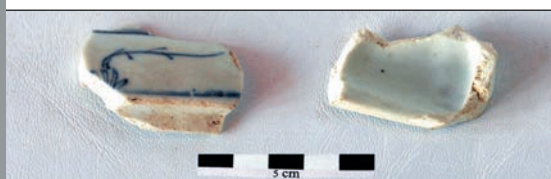
CE327

1. 2003GHL353 (part of 1999GHL025b) / R
2. p-dish
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B2: kraak ware
5. Underglaze cobalt blue; transparent glaze
6. Panels with flowers/dots; centre: daoist symbols + ribbons base and footring glazed
7. Dish
8. Japan-south



CE328

1. 2003GHL392 / R
2. p-box
3. p.d.: Late Ming Dynasty (1610-1644)
4. Porcelain type II, B2: kraak ware
5. Cobalt blue underglaze; transparent glaze
6. part of the flowering stem
7. Betelbox
8. China - Jingdezhen



CE329

1. 2003GHL440 / L
2. p-jar
3. p.d.: Late Ming Dynasty (1610-1644)
4. Porcelain type II, B2: kraak ware
5. Underglaze cobalt blue; transparent glaze
6. band around neck with alternating flowers and symbols; on shoulder: round medaillon with 2 fruits and leaves with diaper pattern in between; neck and body divided with band on which cartouches; the rest has large medaillon
7. Guan-jar; kraak porcelain-antiek
8. China - Jingdezhen

CE330

1. 2003GHL502 (2002GHL195 vermeldt Christine ook) / R
2. p-ewer- p.d.: Late Ming Dynasty (1610-1644)
4. Porcelain type II, B2: kraak ware
5. Underglaze cobalt blue; transparent glaze
6. Rim of small ewer with spout; outside concentric band around rim and 2 bands around neck on which stands an artemesia leaf.
7. Ewer
8. China - Jingdezhen



CE331

1. 2004GHL241(part of 2004GHL349) / R
2. p-sau p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B2: kraak ware
5. Underglaze blue; transparent glaze
6. -
7. Saucer
8. Japan-south



CE332

1. 1998GHL030 / L
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; transparent glaze
6. triangles and sketchy design)
7. Albarello
8. Japan-south



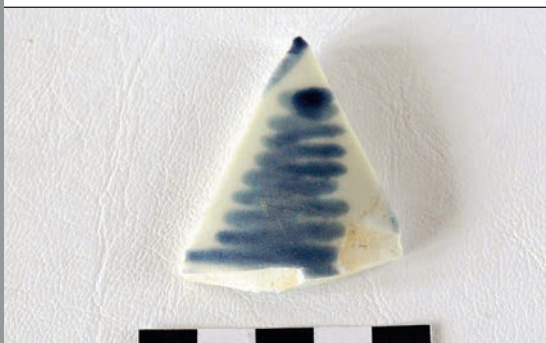
CE333

1. 1998GHL053 / R
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; transparent glaze
6. triangles with part of band with stem
7. Albarello
8. Japan-south



CE334

1. 2002GHL114 (identical to 2003GHL24-2003GHL501) / R
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; transparent glaze
6. -
7. Albarello
8. Japan-south



CE335

1. 2002GHL215 / L
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; transparent glaze
6. -
7. Albarello
8. Japan-south



CE336

1. 2003GHL117 (part of 2003GHL211) / L
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; bluish glaze
6. dots and bands; base and footring glazed Albarello
8. Japan-south

CE337

1. 2003GHL211 (part of: 2003GHL117)-
2002GHL215-2003GHL503) / R
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze cobalt blue; transparent glaze
6. very d.blue design of triangle-pattern with
cloud-wash; inside has no decoration.; base
and footring unglazed
7. Albarello
8. Japan-south



CE338

1. 2003GHL501 / R
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; transparent glaze
6. -
7. Albarello
8. Japan-south

CE339

1. 2003GHL503 / R
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: Albarello
5. Underglaze blue; transparent glaze
6. -
7. Albarello
8. Japan-south



CE340

1. 2004GHL314 / R
2. p-alb
3. p.d.: 1650-1700 / t.d.: 1659
4. Porcelain type II, B3: albarello
5. Off-white glaze
6. triangle with washed design; around neck band
of floral design
7. Albarello
8. Japan-south



CE341

- 1. 2001GHL118 / L
- 2. unidentified
- 3. p.d.: unknown
- 4. Porcelain
- 5. Chocolate-brown glaze
- 6. raised; base and footring glazed
- 7. -
- 8. South-East Asia?



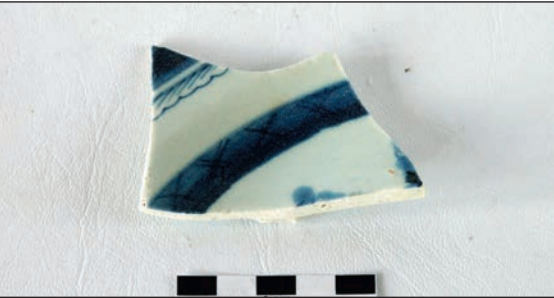
CE342

- 1. 1998GHL120 / R
- 2. p-alb
- 3. p.d.: 1650-1700 / t.d.: 1659
- 4. Porcelain type III-C, Albarello
- 5. Underglaze blue; transparent glaze
- 6. band of stem + flower around neck; V-design
- 7. Albarello
- 8. Japan-south



CE343

- 1. 2002GHL234 / R
- 2. p-dish
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. plate, fragment
- 8. -



CE344

- 1. 2003GHL446 / R
- 2. p-dish
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Transparant glaze
- 6. -
- 7. Saucer, fragment
- 8. -



CE345

- 1. 2003GHL505 / R
- 2. p-tbow
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Teabowl
- 8. ?



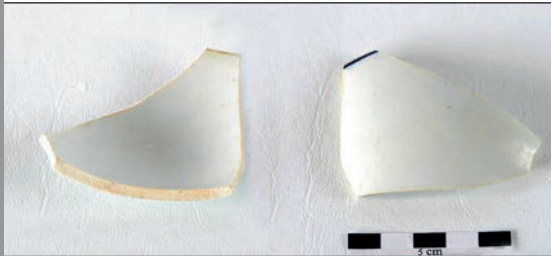
CE346

- 1. 2004GHL003 / R
- 2. p-bow-sha
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Underglaze-blue
- 6. -
- 7. plate, fragment
- 8. Europe



CE347

- 1. 2004GHL051 / R
- 2. unidentified
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Transparant glaze
- 6. -
- 7. Bowl, fragment
- 8. -



CE348

- 1. 2004GHL102 / R
- 2. unidentified
- 3. -
- 4. Porcelain type III: industrial
- 5. Transparant glaze
- 6. -
- 7. -
- 8. -



CE349

- 1. 2004GHL208 / R
- 2. unidentified
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Transparant glaze
- 6. -
- 7. -
- 8. -



CE350

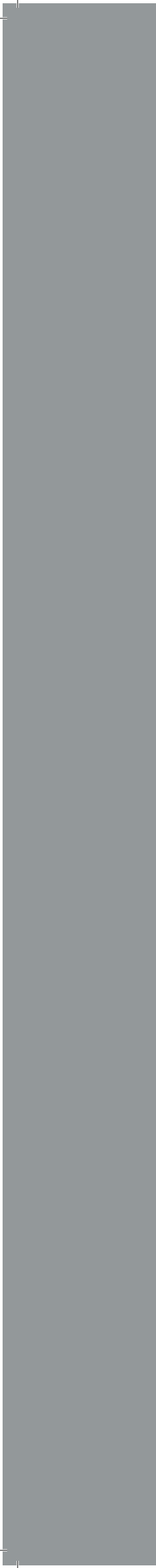
- 1. 2004GHL238 / R
- 2. unidentified
- 3. p.d.: after 1659 / t.d.: 2005
- 4. Porcelain type III: industrial
- 5. Underglaze blue; transparent glaze
- 6. -
- 7. Bowl, fragment
- 8. Europe



CE351

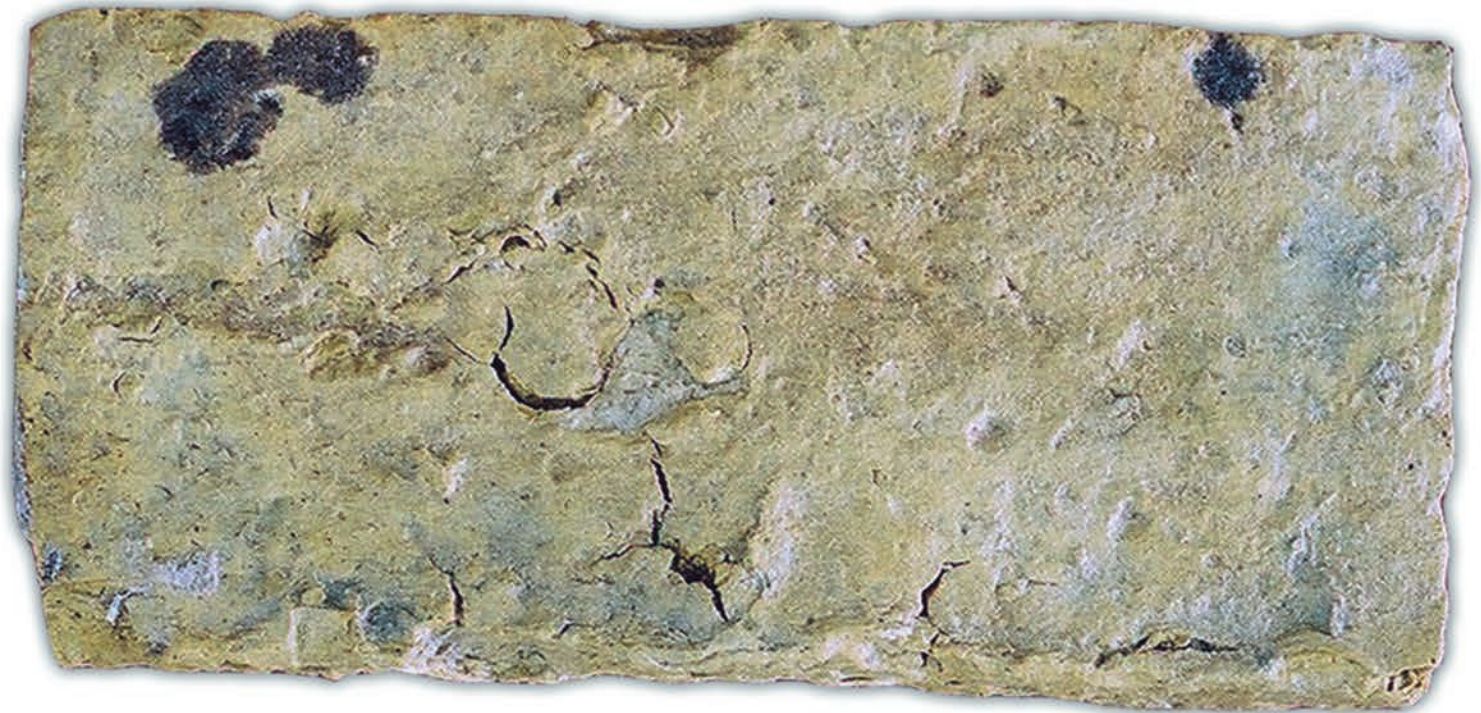
- 1. 2004GHL248 / R
- 2. unidentified
- 3. -
- 4. Porcelain type III: industrial
- 5. Transparant glaze
- 6. -
- 7. unidentified
- 8. -











2002 / GHL / 133
Brick



Building Ceramics

The yellow bricks on board of the *Avondster* are one of the few indications of changes made on board of the English ship *Blessing* after it was captured by the Dutch. This took place during the refitting in Hoorn in 1654 – 1655.

Each year the VOC bought bricks which were used as ballast material on the outward voyage and as building material in Asia. In 1656 Batavia ordered 100,000 bricks from Holland, and 8000 bricks were recovered from the wrecks of the *Batavia* and the *Vergulde Draeck*, which were both lost on their outward voyages from Holland.

Similar bricks are found on other wreck sites in the Bay of Galle. (Green 1977, p. 169; Green 1989, p. 190; Green, Devendra 1993, p. 88)

The yellow bricks from the *Avondster* were neither ballast nor cargo. On Dutch ships the mid-ship section was generally used for crew accommodation and food preparation. The block of twelve bricks show no traces of fire, but it must have been part of the normal fire proof construction of the galley of a Dutch ship as described by *Witsen and Van Yk* (BC004) (*Hoving & Weerdt* 1994, p. 211). This kind of stretcher bond masonry was also found in the *Vergulde Draeck*.

The wooden floor, wall and roof of the galley was sheathed with metal for fire protection (see chapter 4.5). The metal floor was covered by a mixture of sand and salt on which the brick floor was laid. The brick also covered part of the walls.

1500 *Goudse stenen*, one "hoet" lime (970 litre) and 27 "mandjes" (baskets) sand were bought for the masonry of the galley of the *Banten*, built in 1609. (NA, VOC 1.04.11 nr. 14854 fol. 156).

Houses in the Netherlands, where stone is rare and expensive, are built of brick. In the provinces *Holland* and *Utrecht* brick kilns were found along the rivers *Oude Rijn*, *Vliet*, *Hollandse IJssel* and *Utrechtse Vecht*. Here the raw material (clay), cheap fuel (peat) and cheap mass transport by ship were at hand. Other concentrations of brickworks could be found in the northern provinces *Friesland* and *Groningen* and along the *IJssel* in the eastern provinces *Overijssel* and *Gelderland*.

The brick production was stimulated by the growing export of bricks and roof tiles. They were an excellent paying ballast for the ships bound for the Baltic where they were in high demand as building material. Many buildings in cities like Copenhagen, Gdansk or Riga are made of Dutch bricks. They were also exported to the Dutch settlements in the West and East Indies (Dillen 1970, p. 211).

Figure 3.1: The galley of the *Avondster*

Figure 3.2 : Yellow Dutch bricks of the *Avondster*.

The differences in the composition of the clay and the firing temperatures led to a wide variety in colour, size and hardness of the bricks. Customers could choose between different sizes, colours and qualities of bricks and tiles.

The yellow bricks are without doubt "made in the Netherlands", but from which area did they come? These small yellow bricks are commonly called *IJssel-* or *Goudse stenen*, after the production centre along the river *Hollandse IJssel* near *Gouda*. This river flows into the *Lek (Rhine)* on a location which is about 25 kilometers from the sea and where its water level is influenced by the tides. The seawater carries a lot of silt upstream at high tide and is left on the riverbed at low tide. From the year 1500 onwards the silt was dredged and used for making bricks.

The composition of the clay only allowed the production of small bricks, varying from 157/180 x 78/95 x 35/45 mm. in size (Hollestelle 1961, pp. 87 and 122). The yellow colour is the result of the high amount of chalk in the clay. Pure clay gives a white colour, but up to 33% Fe₂O₃ and 67%CaO, the bricks have a light yellow colour and with more than 38% Fe₂O₃ they become a darker yellow and contain more iron red.

The northern province *Friesland* was the second production centre of yellow bricks. The clay, which was dug from a layer at 1,5 - 2 meters below the surface, was fired in kilns in *Leeuwarden*, *Franeker*, *Harlingen*, *Bolsward* and *Sneek*. The quality was the same as those made along the *IJssel*, but the production costs were lower because of the cheaper peat and the shorter transport by ship across the *Zuiderzee*. Holland protected its own production by imposing a high tax on imports from the other provinces. Because the administration of the VOC chamber Hoorn is lost, it is not possible to establish if the bricks were bought from Holland or Friesland. The only conclusion can be that the yellow bricks were made in the Netherlands.



Figure 3.3 : This block of yellow Dutch bricks was a part of the fireproof construction of the galley of the *Avondster*.

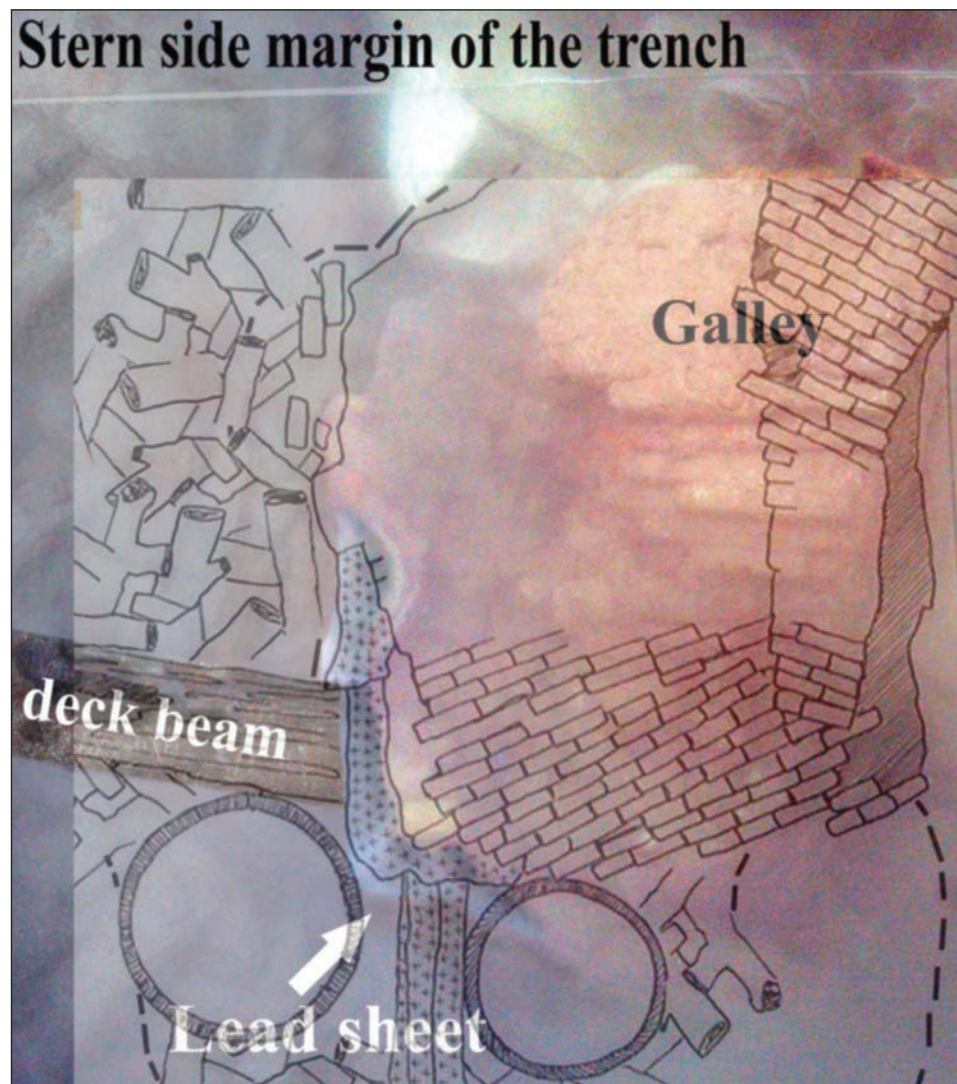


Figure 3.4 : Drawing of bricks of the Galley on the Avondster

A similar story applies to two fragments of blue-and white tiles, which are lost without a photograph. From 1652 onwards the VOC regularly shipped these kind of wall tiles to her office in Batavia, from where they were distributed to several places in Asia. These tiles were not only used in the buildings of the company but also sold to private persons (Bonke 1999, p. 37).

The other excavated building materials, broken bricks, floor and roof tiles, are mainly from the nineteenth and twentieth century.

Catalogue building ceramics

catalogue number

1. inventory number – post tsunami
2. date
3. material
4. colour
5. name
6. provenance

Catalogue Building Ceramics

BC001

1. 1998GHL005 / R
2. 17B-18
3. clay
4. yellow
5. brick, fragment
6. The Netherlands

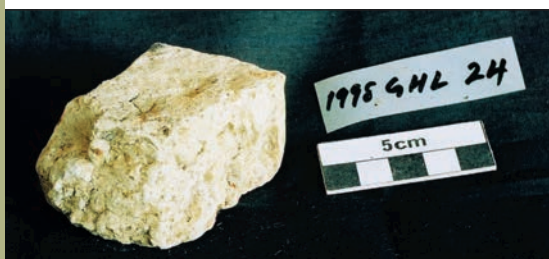


BC002

1. 1998GHL023 / R
2. 17B-18
3. clay
4. yellow
5. brick, fragment
6. The Netherlands

BC003

1. 1998GHL024 / L
2. 17B-18
3. clay
4. yellow
5. bricks, fragment
6. The Netherlands



BC004

1. 1998GHL042 / L
2. 17B
3. clay
4. yellow
5. bricks, block
6. The Netherlands



BC005

1. 1999GHL010 / L
2. 17B-18
3. clay
4. yellow
5. brick
6. The Netherlands



BC006

1. 2002GHL089 / L
2. 17B-18
3. clay
4. yellow
5. brick, fragment
6. The Netherlands



BC007

1. 2002GHL133 / L
2. 17B-18
3. clay
4. yellow
5. brick
6. The Netherlands



BC008

1. 2003GHL462 / L
2. 17B-18
3. clay
4. yellow
5. brick, fragment
6. The Netherlands

BC009

1. 2003GHL463 / R
2. 17B-18
3. clay
4. yellow
5. brick
6. The Netherlands

BC010

1. 2004GHL113 / L
2. 17B-18
3. clay
4. yellow
5. brick, fragment (2)
6. The Netherlands

BC011

1. 1998GHL090 / R
2. -
3. clay
4. pale brown
5. brick, fragment
6. -



BC012

1. 1998GHL128 / R
2. -
3. clay
4. pale brown
5. brick, fragment
6. -



BC013

1. 1999GHL022 / L
2. -
3. clay
4. -
5. brick, complete (9), fragments (6)
6. -



BC014

1. 1999GHL023 / L
2. -
3. clay
4. red
5. brick and floortile, fragments
6. -

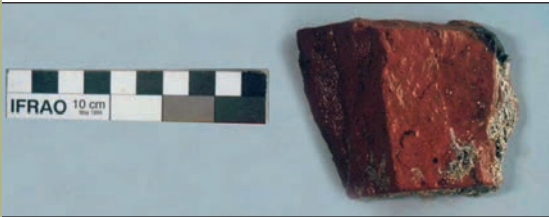


BC015

1.	2002GHL036 / L	2.	-
3.	clay		
4.	red		
5.	brick, fragment	6.	-

BC016

1.	2002GHL090 / L	2.	-
3.	clay		
4.	red		
5.	brick, fragment	6.	-



BC017

1.	2002GHL104 / L	2.	-
3.	clay		
4.	red		
5.	brick, fragment	6.	-



BC018

1.	2002GHL134 / L		
2.	20		
3.	concrete	4.	-
5.	brick	6.	-

BC019

1.	2002GHL135a / L	2.	-
3.	clay	4.	-
5.	brick, fragment	6.	-

BC020

1.	2002GHL135b / L	2.	-
3.	clay	4.	-
5.	brick, fragment	6.	-

BC021

1.	2002GHL137 / L	2.	-
3.	clay	4.	-
5.	brick, fragment	6.	-

BC022

1.	2002GHL138 / L	2.	-
3.	clay	4.	-
5.	brick, fragment	6.	-

BC023

1.	2002GHL139 / L	2.	-
3.	clay	4.	-
5.	brick, fragment	6.	-

BC024

1.	2002GHL176 / L	2.	-
3.	clay	4.	-
5.	brick, fragment	6.	-

BC025

1.	2004GHL281 / L	2.	-
3.	clay		
4.	red		
5.	brick	6.	-



BC026

1.	1998GHL082 / R	2.	-
3.	clay		
4.	pale orange		
5.	tile, fragment	6.	-



BC027

1.	2001GHL021 / L		
2.	17B		
3.	clay		
4.	blue and white		
5.	wall tile, fragment		
6.	The Netherlands		

BC028

- 1. 2003GHL027 / L
- 2. 17B
- 3. clay
- 4. blue and white
- 5. wall tile, fragment
- 6. The Netherlands

BC029

- | | | | |
|----|----------------|----|---|
| 1. | 2001GHL033 / L | 2. | - |
| 3. | clay | 4. | - |
| 5. | tile, fragment | 6. | - |

BC030

- 1. 2001GHL071 / R
- 2. 20
- 3. clay, glazed
- 4. red
- 5. roof tile, fragment
- 6. Sri Lanka (?)



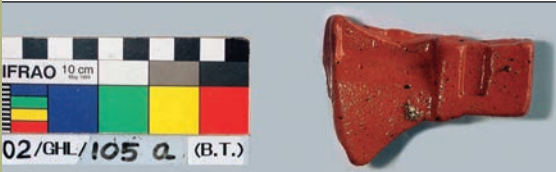
BC031

- | | | |
|----|---------------------|------|
| 1. | 2002GHL080 / R | |
| 2. | 19-20 | |
| 3. | clay | |
| 4. | orange-red | |
| 5. | roof tile, fragment | 6. - |



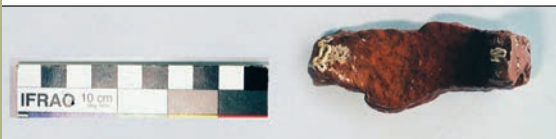
BC032

- 1. 2002GHL105a / L
- 2. 20
- 3. clay, glazed
- 4. red
- 5. roof tile, marked ASO
- 6. Sri-Lanka (?)



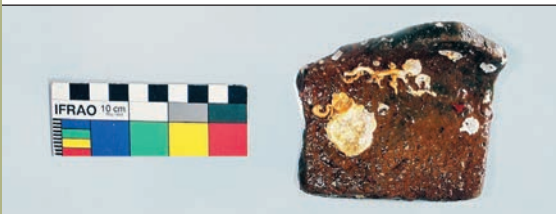
BC033

- | | | | |
|----|---------------------|----|---|
| 1. | 2002GHL105b / L | 2. | - |
| 3. | clay | | |
| 4. | red | | |
| 5. | roof tile, fragment | 6. | - |



BC034

- | | | | |
|----|---------------------|----|---|
| 1. | 2002GHL110 / L | 2. | - |
| 3. | clay | | |
| 4. | red | | |
| 5. | roof tile, fragment | 6. | - |



BC035

- | | | | |
|----|---------------------|----|---|
| 1. | 2002GHL126 / R | 2. | - |
| 3. | clay | | |
| 4. | black-brown | | |
| 5. | roof tile, fragment | 6. | - |

BC036

- | | | | |
|----|----------------|----|---|
| 1. | 2003GHL082 / R | 2. | - |
| 3. | clay | | |
| 4. | reddish-brown | | |
| 5. | roof tile | 6. | - |

BC037

- | | | | |
|----|---------------------|----|---|
| 1. | 2004GHL089 / R | 2. | - |
| 3. | clay | | |
| 4. | orange-brown | | |
| 5. | roof tile, fragment | 6. | - |

BC038

- | | | | |
|----|---------------------|----|---|
| 1. | 2004GHL284 / L | 2. | - |
| 3. | clay | 4. | - |
| 5. | roof tile, fragment | 6. | - |







Metal

The metal objects from the excavation are very different in size and function. Their sizes range from small buckles to a heavy iron anchor. Their functions vary from protecting the ship from human attackers and wood eating parasites to illumination and table use.

In the catalogue they are classified according to the different types of metal: aluminium (Al), copper and bronze (Cu and CuZn), pewter (Sn), lead (Pb) and iron (Fe).

The introductory text focuses on the various functions of a selected group of objects.

Many metal objects could not be identified, because they were covered with a hard shell of corrosion or other incrustations. In a few cases, the concretion was removed by hand to collect the object inside. The remaining unidentified 140 corroded objects, which will probably not always contain metal parts, are described in chapter 15: Concretions.

Armament

An East Indiaman was a merchant ship and not a warship, but she was nevertheless heavily armed. A letter from the president and council at Surat dated January 20th 1648, mentioned that the *Blessing* was designed "as well for war as trade".¹ The sources give no information about the armament of the ship. We only know that on November 27th 1650, Captain Blackman bought four large guns.² After the outbreak of the Anglo Dutch war, gun carriages were sent to the *Blessing*, in order that she may mount the guns that she had in her hold.³ Nevertheless, on the 2nd of March 1653, after eight hours of fighting, the ship was taken by the Dutch.

On August the 2nd 1657, the government in Batavia decided to send a fleet of 8 ships under the subaltern command of Roodthaes and the high command of Rijckloff van Goens to attack the Portuguese in India. One of the ships was the *Avondster* under command of Adriaan Hem with 70 men and 24 metal (bronze) and iron guns.

After three months, Rijckloff van Goens came to the conclusion that the Dutch were too weak to attack the Portuguese. He ordered that the guns of four ships, including the unseaworthy *Avondster*, to be transferred to other ships of the blockade fleet before Goa to increase their fire power. Eleven cannons, including all the metal pieces, were removed from the *Avondster*.

1. EIF Vol. 8; 199 Instructions from the President and Council at Surat to George Oxenden, January 20, 1648 O.C. 2067)

2. A court of Committees for the fourth joined Stock and General Voyage, November 27, 1650 (Court Book, Vol. XXI, p. 48)

3. EIF Vol. 9; 145. The President and Council at Swally Marine to the factors in Persia, December 10, 1652 (O.C. 2298)

Figure 4.1 : 'The Dutch conquest of the island of Mannaar under Van Goens leadership in 1658'. Portuguese and Dutch soldiers fighting. The *Avondster* was among the Dutch ships (on the right). (Baldaeus, Philippus. 'Naauwkeurig beschryvinge van Malabar en Choromandel, – Amsterdam: Johannes Janssonius van Waasberge, en Johannes van Someren, 1672. Part II, p. 148. Universiteitsbibliotheek Vrije Universiteit, afd. Bijzondere collecties, XL.05177)

Figure 4.2: Removing the bullet from the cannon.

Cast-iron cannons

Unfortunately we don't know if the cannon belonged to the original armament of the Blessing or if it came from the stock of the VOC. Bronze cannons were made in foundries all over Europe, but England and Sweden were the only countries able to export cast-iron guns in large numbers. Since the early 17th century the English produced iron guns in the Weald (Sussex). After 1600 there were growing complaints about the deforestation from the burning of charcoal which was used in the many furnaces. This led thirty years afterwards to an energy crisis and a drastic decline in the production of cheap iron cannons in England. The House of Commons prohibited the export of cannons from England and the country lost its position on the international market in arms and even became an importer of iron guns from Sweden. Because the Blessing was an English ship, her owners were not affected by the prohibition on the export of arms and had to choose between cannons made in England and the cheaper Swedish cannons. Unfortunately we can not identify the country of origin of the gun. (Wakeren 1993)

After the transfer in November, the ship was armed with 13 iron cannons: 6 guns shooting cannon balls of 8 pounds, 7 cannons of 6 pounds and one of 5 pounds. It is doubtful if the removed cannons were replaced afterwards.

In the last week of February 1658 the *Avondster* participated in the fight with the Portuguese frigates before Mannar and in the bombardment and conquest of the city. It was the last action during which the ship fired its guns at an enemy before she was lost in 1659.

Iron cannon

We don't know if cannons were raised during the salvage operation after the loss of the ship, but there were at least six cannons left on the site of the *Avondster*. In 2002, one of the cannons was raised with three 500 kilo lift bags and towed to shallow water. The next day, it was raised with a mobile crane and put in a water tank for conservation treatment.

It proved that the gun was ready for action. When the barrel was cleaned, the shot and remains of the wadding and powder-bag were found inside.

The iron cannon, which has no mark or decoration, has a length of 263 centimeters from the muzzle to the base ring and 283 cms. including the cascable. The diameter of the bore is 9,6 cm.

Munitions

After the tsunami, 19 cast iron cannon balls were recovered without their find numbers. This could be the total number of excavated cannon balls, but this can no longer be verified by the find administration.

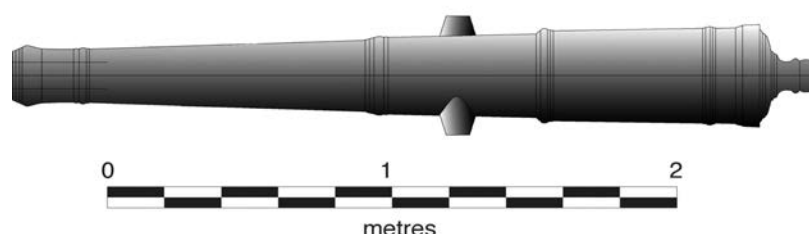


Figure 4.3 A-B: The cannon. (2002GHL175)

Number	Diameter	Average mass (gram)	Amsterdam pound (494.09 gram)
3 cannon balls	7.5 – 7.8 cm	1422 gram	2.8 Amsterdam pound
8 cannon balls	8.5 – 8.8 cm	2234 gram	4.5 Amsterdam pound
8 cannon balls	9.1 – 9.7 cm	3053 gram	6.2 Amsterdam pound

Table 4.1 : Size of cannon balls

They could be used by the seven and five-pounder, but the smaller bullets seem to be out of place. Two *canisters* of shot have been found on the *Avondster*. A canister is cylindrical copper box with a wooden lid, which was filled with normal lead bullets and bullets connected by copper wire, which were very effective in both cutting the rigging and against attackers. It was fired with the cannon.

Two wooden objects related to the cannons were excavated, a part of a gun carriage and a *wooden rammer* (2004GHL155). Both were lost in the tsunami without documentation.

Lead shot

No remains of small calibre firearms have been found on the wreck site, but numerous pieces of lead shot make it possible to get an impression of this armament.



Figure 4.4 A-B : The copper box of the cannister was coorreded and damaged, but still contained the lead bullets



Figure 4.5 : Musket bullets.

At least 250 pieces of lead shot with sizes ranging between 4 and 20 mm diameter were excavated (see table).

At the time of the loss of the *Avondster* the VOC used matchlock muskets of 4 1/2 feet length. According to Van Dam, the calibre was 14 balls (Ø 18,1 mm) in an Amsterdam pound until 1659. They were tested by firing heavier balls of 12 in a pound (Ø 19 mm) to ensure that the gun should not burst in the field. In practice, smaller bullets were often used as these were easier to load when the barrel was dirty (Jongh 1950, pp 91-93, Mey 1993, p. 49, Stapel 1927, I-1 pp. 639-643).

The matchlock musket was a heavy weapon and in the first half of the 17th century, the musketeer used a rest called a *forquet*, to support the barrel. After 1650, the weight was reduced by using a smaller bore, barrels with thinner walls, and lighter stocks. On the illustration of the battle of Mannar in 1658, only two of the four musketeers in front

still used a musket-rest. In 1659, the company followed this development and changed to a proof ball of 14 (18,1mm) and the normal ball of 16 (17,3 mm) in an Amsterdam pound (Hoff 1977, p.23).

Many bullets have an irregular size. They could be fired in a blunderbuss like those found in the *Batavia* (Green 1989, p. 68). The bullets could also be packed in a bag and fired from a cannon.

Another improvement that took place in the second half of the 17th century was the use of paper powder cartridges carried in a cartridge pouch instead of 12 small wooden powder flasks with powder for one shot hanging from the bandolier. The cartridge quickened the loading and with that the firing (Wagner 1980, p. 86). The fabrication of cartridge pouch and paper are mentioned in the requisitions for India in 1653. In 2004, a fragile soft wooden cylindrical rod of approximately 15 cm length and with a diameter of 1,2 cm and partly eroded was found connected with (or fitted into) a flat piece of timber hollowed out along its length on one side with the same dimensions as the rod. The rod was lost in the tsunami. A similar object is described in the *Hollandia Compendium* as a cartridge mandrel, a cylindrical palmwood rod on which cartridges for handguns were rolled The lower end is hollowed out to take the ball when making live cartridges. A brass cylinder is used with the mandrel which is pushed over to make the cartridge (Gawronski, Kist, Stokvis van Boetzelaer 1992, p. 186; written report B. Jeffreys 2005).

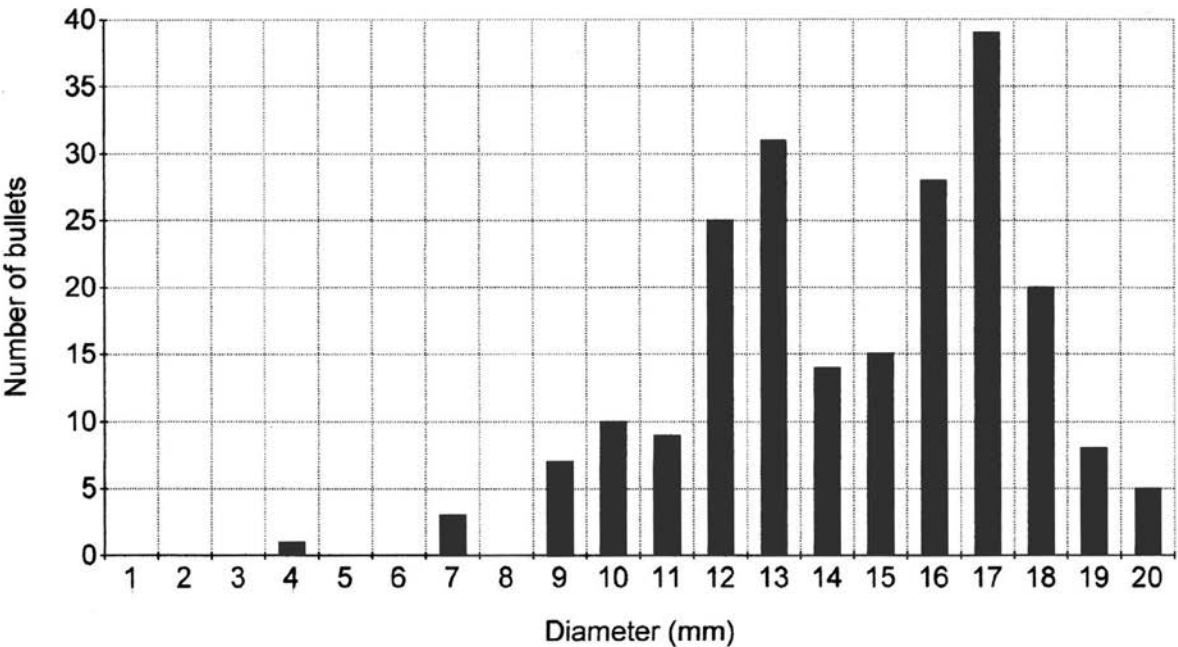


Table 4.2 : The diametre and the number of lead shot., the table shows two peaks: 13 mm (pistol) and 17 mm (musket).



Figure 4.6 : Musketeer with a matchlock musket over his left shoulder and in his left hand the musket rest. Also over his left shoulder a bandolier with 12 wooden powder flasks. From Jacob de Gheyn's drill book which first appeared in 1607 and was reprinted several times using the original plates. (Jacob de Gheyn, *Wapenhandeling van roers, musquetten en de spiessen*. Amsterdam 1607).

Handgrenade

One cast iron grenade was excavated (2002GHL213). It was empty and weighed 1115 gram. Before use, it had to be filled with black powder. A wooden fuse with a slow burning mixture of fine powder, saltpetre and sulphur was glued in the hole with a mix of pitch, resin, turpentine and sulphur and kept in place with rope. The soldier ignited the fuse with a burning match and threw the hand grenade in the direction of the enemy. Identical grenades with and without fuse are known from the wreck of the *Batavia* (Rijksmuseum 1980, p. 21; Green 1989, p. 59).

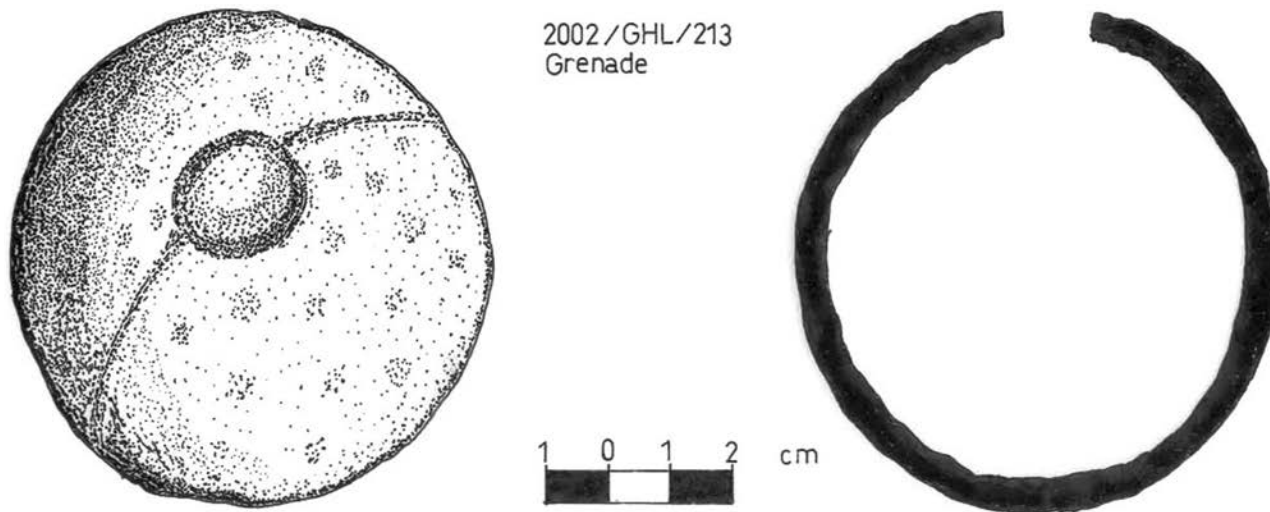


Figure 4.7 : Handgrenade 2002GHL213

The toolbox of the mastergunner

The constable or master gunner on board of the larger ships was responsible for the maintenance and use of the cannons and together with his assistant, the *scheepscorporaal*, took care of the small arms. On a smaller vessel like the *Avondster* there was probably only a master gunner on board. The excavation of the lower section of the stern revealed the location of his workshop.

In December 2004 a wooden toolbox with leather straps (2004GHL357) was excavated and brought ashore. Because of the bad condition it was not possible to open the box before conservation, but a priming pin used to probe and clean the touchhole of a firearm and to pierce cartridges, the handles of some tongs or scissors, a musket ball, and some copper wire could be seen in the concretion. The box, which may have belonged to the constable of the *Avondster*, was lost on Boxing day, but written sources and a similar find from the

Vergulde Draeck give an indication of the utensils inside. On 11 October 1656 the Gentleman XVII ordered that the constable's box should contain the following equipment: (see Table 4.3)

A similar wooden chest was recovered from the *Vergulde Draeck* (1656) wrecked in Western Australia and conserved by the W.A. Museum conservation department (Green 1977, pp. 256-268). The tools included are described as iron punches, iron chisels, long tanged iron tools, iron musket ball moulds, a wooden bradawl handle, a wooden bodkin, iron lock pieces, an iron pincer head, an iron die stock, iron nails, iron hinges, hammers files and chisels.



Figure 4.8 A-B : The toolbox of the mastergunner and detail (2004GHL357).

2 Lb	IJzer draet	Iron wire
2 Lb	Koper draet	<i>Copper wire</i>
8	Kruythoorns	Powder horns
8	Laetpriemen	<i>Priming iron</i>
3	Tashaecken	<i>inspecting hooks</i>
8	Lontstokken	Lint stock
3	Stale boren	Steel borers
6	Boorysers	Steel boring bits
1	Houte ommeslag	<i>Wooden brace</i>
2	Nijp tangen	Pincers
2	Boogh tangen	Pliers
100	Naalden	Needles
12	Vingerhoeden	Thimbles
3 Lb	Grauw garen	Skeins of sail twine
1	Koperen regelpasser	Copper calliper
1	Loot lepel	Lead ladle
3	Houte mosquitjes	Wooden musket-ball mould
8	Soo vylen als raspen	Files and rasps
1	Paar kopere schalen en balck	Copper scales and beam
36 Lb	Gewicht	Weights
1	Kopere talstok	Brass tally-stick
100	Wissernagels	Sponge nails
1	Kopere dissel	Copper adze
	Kruytmate, tot ieder soort van 't geschut	Powder measures for each sort of gun
1	Mate tot ieder soort van 't geschut	Measure for each sort of gun
2	Slonsjes	Safety lantern
2	Kopere kruytlantaerns	Brass powder lanterns
2	Grote kopere kruytrechters	Large brass powder funnels
2	Kleyne	Small bras powder funnels
1	Cogelvorm	Bullet mould
2	Kleermakersscharen	<i>Tailor's scissors</i>
1	Koper panneken	Small brass pan
3	Siften, daeronder 1 van haer	Sieve including 1 made of hair
1	Tonneken salpeter	Small basket salt peter
1	Tonneken zwavel	Small basket sulphur
1	Tonneken kolen	Small basket with coal
1	Tonneken kalck	Small basket with lime
1	Kan met stoop lijnoly	Can of about 2 litres linseed oil
1	Kan met 2 Lbs terpentijnolie	Can of 2 Lb turpentine
1 Lb	Rootaerde	Ruddle
3	Beursvaetjes	Powder barrel with leatherneck

Table 4.3 : Tools of the mastergunner.. The objects identified at the time of the recovery are written in *Italic* Source: Resoluties van Ordinaris en extraordinaris vergaderingen der Heren XVII woensdach den 11 October 1656 (NA, VOC 1.04.01, nr. 150)



Figure 4.9 : Cup weight made in Nuremberg (Germany).

Weights

From the *Avondster* several weights were recovered: two copper cup weights (also called nested cup weights, nesting weights or Nuremberg weights), a small lead conical weight and a lead block weight.⁴

For several centuries Nuremberg in Germany had the monopoly on the production of *cup weights*. The local craftsman combined their experience with the use of water-powered lathes to make these calibrated quality objects. The weights were cast rather coarsely and because almost every city had its own weight, they were later shaped on a lathe until they had the correct weight and fitted together. The container normally has the mark of the maker and after about 1650 all the weights of 1 *lood* (15,44 g) or heavier were marked. They were used all over Europe and in the former European colonies in Africa, America and Asia. Parts of cup weights are common finds on excavation sites in the Netherlands. Other examples are known from the wrecks of the *Batavia* and the *Hollandia* (Green 1989, p. 164; Gawronski, Kist, Stockvis van Boetzelaar 1992, p. 449). There is an important collection of cup weights in the collection of the Rijksmuseum in Amsterdam (Kuile 1986, pp. 243-251).

A cup weight set consists of a set of seven or more cups and a small disc-shaped weight, the so called "filler" or "endpiece". The outer cup is the container in which the other weights are stored. It is fitted with a locking mechanism to prevent the loss of the small weights inside. The smallest weights have the same mass, but every next one weighs twice the one before and all the weights put together inside the container have the same mass as the container. If the weight was based on the Amsterdam pound of 494,09 gram, which is 32 *lood* of 15,44 gram each, it would mean that a set of seven cups weighed respectively: 1/8 *lood*, 1/4 *lood*, 1/2 *lood*; 1 *lood*; 2 *lood* and 4 *lood*.

The excavated cup, which was found empty, was probably a half pound cup weight [2003GHL470]. Inside the container of 8 *lood* were the original cups of 4 - 2 - 1 - 1/2 - 1/4 - 1/8 *lood* and an end piece of 1/8 *lood*. The container itself was made of several parts: the housing, the lid, the hinge, the hinged lid, two connections for the handle and the handle. On top of it is a hallmark, which was difficult to recognize from the photographs. The most likely is the crossed key and arrow, which was the mark of Nuremberg weight-maker George Schüller or Schiller. He became master in 1633 and was still active in 1667 (Wittop Koning, Houben 1980, pp. 109 and 111).

4. With thanks to Mr. Ritzo Holtman, editor "Met en Wegen".

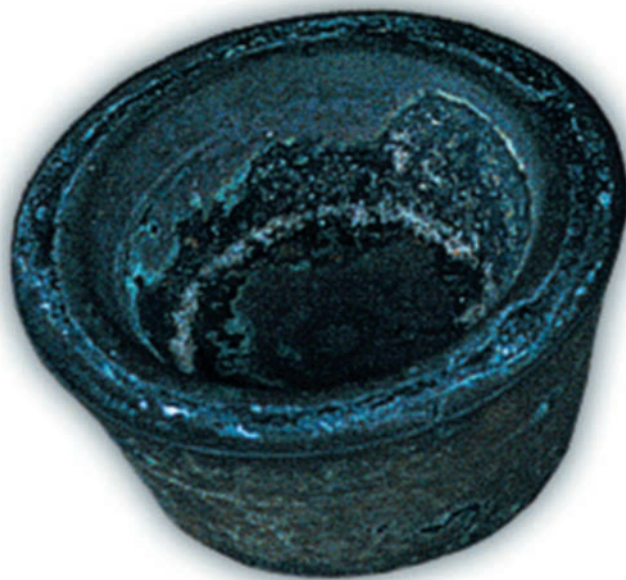


Figure 4.10 : In 1999 this separate cup of a cupweight was found.

During an underwater survey of the site, a separate cup weight [1999GHL014] was found, which could have been one of the missing set.

Both weights mentioned before were lost on Boxing Day, but the other ones were recovered from the debris after the disaster.

The small cone shaped weight is made of lead [2004GHL068]. It is 12 mm high with a flat bottom (Ø 26 mm) and flat top (Ø 23 mm). The scratches III or VI on top can be an indication of its original mass, which is 57grams or 1/8 pound of 4 lood. (Green 1977, 211).

The recovered lead block weight can only be seen as a coarse product compared with the fragile cup weight [2004GHL293]. The centre point in the middle of the weight and the faded number 8 on top of it show that it was cast inside the container of a cup weight of 8 pounds.

Two marks are struck on the top of this weight. The hallmark is an oval with a crowned coat of arms with a horn. The coat of arms is easy to recognize because is the symbol of the city of Hoorn, which in Dutch means horn. It was not only a town with a chamber of the VOC, but also the harbour where the *Avondster* was refitted during her only visit to the Netherlands. The ship arrived there in 1654 and left in march 1655.

The letters A and C beside the crown could be the initials of the municipal inspector of weights and measures, but unfortunately their names are unknown in this period. Research in the archives of Hoorn did not give any new information.

The numbers on each side of the coat of arms raise other questions. It *can* be read as number 2 or the mirrored letter S. In 1560, the municipal government ordered the use of a year letter which followed the ABC. This year mark was used until 1616, which was followed by a period with variable intervals from 2 until 7 years. From archival research it is known that the R was used in 1652 and the S in 1656, but it is not known when this change of the letter took place (Appel 2002).

The other mark on the weight is nothing more than two scratches and can be read as the roman number II with some imagination. Its mass of 930 grams corresponds almost with two *handelspond* (commercial mass of 467,6 g) from Hoorn: 935 g (Verhoef 1989, p. 39; Wittop Koning, Houben 1980, pp. 67-68; Nipper 2004, pp. 343-346). This is surprising because the Gentleman XVII ordered the use of the Amsterdam pound, or in modern terms 494,09 g, as the standard unit of weight. It is clear that there was a difference between the official instructions and the reality.



Figure 4.11 : Lead block weight made with the coat of arms of the city Hoorn. (2004(GHL293).

Lighting

There are at least eleven different types of lanterns on the equipment list of 1656: compass lamps, copper powder lanterns, lamps for the sick, safety lanterns and stern lamps. The list does not mention if these were oil lamps or used for candles.

3	slonsjes	dark lanterns
6	sijckenlampen	lamps for the sick
4	compaslampen	compass lamps
4	driekante lampen	three cornered lamps
6	pijpkens daartoe	chimneys for above
12	diepe houten lantaarns	deep lanterns wood
2	slonsjes	dark or safety lanterns
2	kopere kruytlantaarns	brass powder lanterns
8 lb	reusel	Lard
	ijzers om lantarens op te hangen	irons to hang lanterns on
3	lantarens om achterop te staan	stern lanterns
1	provoost lantaren	provost lantern
2	toe lantaern	closed lantern
1	open lantaern	open lantern
1	kruit slons	powder lantern
30 lb	talck	Tallow
2	smaltonnen reusel	small barrels lard for the whole ship

Table 4.4 Lamps on board of a VOC ship (1656). Source: Resoluties van Ordinaris en extraordinaris vergaderingen der Heren XVII woensdach den 11 October 1656 (NA, VOC 1.04.01, nr. 150)

Oil lamps

In Holland the Company bought different kinds of lamp fuel, which did not leave archaeological remains, but which can be traced in the archives. On board were eight *halve aemen* of 64 mengelen "traen" for lamps for the whole ship. Traen or whale-oil was commonly used. It burned well, but smelled bad. In Asia the empty stock was replaced by oil made from coconut.

This excavated oil lamp with three wicks is probably identical to the one of four *driekante lampen*, three cornered lamps, on the *lijst of the bottelierskist* in the equipment of 1656. The lamp was filled with oil by the central hole on top of it. The cap to close it is missing. The



Figure 4.12 : Hanging oil lamp with three wicks (2003GHL038).



Figure 4.13 : Primitive oil lamp (2004GHL307).

funnels for the wicks which were mentioned in the list as separate parts of the lamps, were not recovered. There were two possibilities of using this lamp:

- Hanging from a hook by the wire handle on top of the lamp.
- To keep the lamp horizontal by compensating the movement of the ship with a suspension construction.

The lamp was mounted on a tube with an U-shaped fitting. The ends of the arms were attached to a gimble-ring and a lead counter weigh kept it horizontal (2004GHL278). Similar suspension lamps are known from the *Witte Leeuw* (1613), the *Batavia* (1629), the *Vergulde Draeck* (1656) and the *Hollandia* (1743) (Green 1977, p. 189; Green 1989, pp. 76-77).

This irregular square lead tray can be a primitive oil lamp of which the spout shaped corners were used for the wicks (2004GHL307). Similar improvised oil lamp, must have been very common. They are known from Nova Zembla (1596), and from the 18th centuries VOC ships *Hollandia* and *Amsterdam* (Braat et al., 1998, p. 227).

Candleholder

A candle could only be used indoors or inside a lantern, because the wind easily blows out the fire. The Company supplied a large East Indiaman with the following amount of candles:

- 80 lb ronte kaersen voor het hele schip (round candles for the whole ship)
- 80 lb heele wasse kaersen voor het hele schip (whole wax candles for the whole ship)
- 80 lb haelf wasse kaersen voor het hele schip (half wax candles for the whole ship)

The candles made of white wax were the most expensive (18 till 20 *stuiver* a Lb).

This brass candleholder from the *Avondster*, which was made of several parts, was recovered incomplete (2003GHL243). It can be compared with the complete examples from the *Vergulde Draeck*, which are made of four parts (Green 1977, pp. 190-193). Of this candle only the damaged stem and -perhaps- a part of the foot remained (2003GHL118). The separate wax tray, the lower part of the stem and the foot are missing. It is also possible that the candle had a solid base with wax tray like the candlestick from the *Batavia*.

This pewter fragment is too damaged to say if it is the foot or the wax tray of a candlestick. The shape and size indicate that it was made in Portugal. Did the Dutch take it from a church or a convent in one of the conquered Portuguese cities on Ceylon or South India?



Figure 4.14 : Fragment of a candleholder (2003GHL243)



Figure 4.15 : Fragment of a candleholder (2003GHL118)

Candles have the disadvantage that the wick never completely burned. The wick becomes charred and the candle started smoking and dripping. This was prevented by cutting the wick with a special scissor, the candle snuffer. The little box on top of it prevented that the hot end of the wick fell on the floor. Snuffers are rather common finds on excavations of contemporary houses in the Netherlands and on Dutch shipwrecks. They were made in several places in western Europe. The brass one from the *Avondster* bears the unidentified mark of its maker E.W. (2003GHL244).

The way a snuffer was used to cut off the end of the wick, is illustrated in Emblemata nr. 23 of Jacob Cats (published in 1632). The edifying text warns the reader not to cut too much of the wick, because he will extinguish the fire and only get smoke and a bad smell or never take more than your share, because that will give you the best profit of life.

Jacob Cats (1577-1660) was the most popular Dutch writer of the 17th century and without doubt someone on board of the *Avondster* knew his edifying texts. Today his work is almost forgotten.

Copper and lead sheathing

After a long time at sea, the hull of the ship was covered with barnacles and seaweed, which grew on the hull, reduced the speed and damaged the wood. Especially the wood eating shipworm, *Teredo Navalis*, in particular did enormous damage.

To prevent this, the submerged hull had to be cleaned of the incrustations or of repair at regular intervals. This was done

by careening the ship. The cannons, inventory and cargo were removed. The vessel was laid ashore and hoven down by means of tackles attached to the mastheads. Other tackles under the ships keel were used to control the angle of heel. The normally submerged hull was cleaned with scratchers and burning torches. After one side had been cleaned the ship was floated off at the tide, turned around and the other side could be careened. A smaller ship could be moored in the shallows, and left high and dry when the tide fell.

The use of fire was not without danger. In 1615 the yacht Hoorn of the expedition of Schouten and Le Maire caught fire during the cleaning of the hull on the beach of Puerto Deseado in Argentina. Because it was low tide, it was impossible to extinguish the fire with buckets with seawater. The powder exploded and the burning ship was lost. A survey by Argentinian and Dutch archaeologists recovered in 2004-2005 many small artefacts fragments spread all over the site by the explosion, but found no remains of the wreck.

Many methods have been tried to protect the underwater ship against incrustations and the damage by the shipworm. One of the most common protections was by doubling the oak hull with an outer hull of softer wood like pine. The outer hull was painted with a mixture of white-lead and harpui (a mixture of resin, blubber and sulphur). A layer of tar and cow hair between the two layers should give an extra protection against the aggressive shipworm.

Another possibility was to cover the hull with metal sheaths. The old Greeks and Romans already used lead to protect the wooden hull of their ship. Lead was also used by the Spanish



Figure 4.16 A: Candle snuffer from the *Avondster*.



Figure 4.16 B. The use of the snuffer is illustrated in the Emblemata of Jacob Catz (1623).

in the 16th and the English in the 17th century.

There are several written sources which mention that from the early 17th century onwards of the VOC ships were already protected parts of the underwater ship with copper sheaths. A post in the bookkeepers journal of the building of the *Bantam* (1609) mentioned that copper was used for the sheathing of the sternpost, the rudder and the galley (NA, VOC1.04.01, nr. 14854, fol. 156). The chamber Zeeland paid in 1627 Govert Jansz van Heuvel for the copper sheathing of the stern, keel and rudder of the ship *Frederick Heyndrick*. The bill of £ 821.6.11 also included the copper sheaths of galley and bread chamber and copper utensils for the cock and the steward (N.A. VOC 1.04.01, nr.13793, fol. 34v). The coppering of the sternpost by Dutch shipbuilders was archaeological confirmed by finds from the *Vergulde Draeck* (1656) (Green 1977, p. 206).

It was not before the second half of the 18th century that it became common to cover the entire underwater hull with copper sheaths. The first ship with a coppered hull was the British frigate *Alarm* in 1761. Between 1770 and 1780 it was widely introduced in Europe (Lemmers 1996, 65 and note 32). Several pieces of copper and lead sheathing were recovered during the excavations of the *Avondster*. According to the location of the finds these came from the underwater ship or from the galley. A third possibility, that these are parts of the sheathing which protected the bread chamber against vermin, is unlikely because this room was on a lower deck and is not excavated.

The copper sheaths have many nail holes, but they were found without iron nails. The combination of copper, iron and sea-



Figure 4.18 : Copper sheathing, possibly a part of the stern post (2004GHL277)

water led to galvanic corrosion due to the electrolytic interaction between copper and iron. The rudder in particular with its many iron pintles, braces and hoops was very vulnerable for corrosion (Hoving, Weerdt 1994, p.211). From the second half of the 18th century onwards, the shipbuilders understood that there should be no contact between copper and iron and developed several construction methods to prevent this.

The wooden construction of the galley was sheathed with metal for fire protection. Most of the time copper was used, but there are also references of tin or even lead. The locations of many small metal fragments from the *Avondster* are an indication that her galley was covered with a lead sheathing. This was laid on the wooden deck, covered with a mixture of sand and salt and a floor of bricks. (see also chapter building materials).



Figure 4.17 : Careening. Engraving of Reinier Nooms alias Zeeman (1623–1664). (Maritiem Museum Rotterdam, inv.nr.P193–12)

Small copper and brass objects

Barber's bowl

A barber's bowl or barber's basin is a round or oval dish used in shaving. It has a broad rim with a semicircular opening which fits the neck, so as to allow the chin to reach in the bowl. The one from the *Avondster* (1999GHL045) is made of copper, but there are similar basins from pewter or ceramic. The copper ones were made in Aix la Chapelle in Germany and Dinant in the Southern Netherlands (today Belgium) (Ratelband 1953, p. XCVIII).

A barber's bowl belonged to the normal equipment of the surgeon or chirurgijn, who was the medical man on board. He had followed a training of five years as apprentice and servant in the medical guild. His practical training work started with shaving and bleeding after which he was allowed to work as a barber. After a continued medical training and a final test he was allowed to practice as a surgeon.

The VOC accepted a surgeon only on board of their ships after he had passed an exam before the learned *doctor medicinae* of the chamber. The doctor had followed a theoretical medical study at a university and treated internal diseases with a wide range of medicines. His social position was much higher than that of the surgeon, who did the practical handwork (Leuftink 1963, p.10). On board the surgeon combined his medical work with shaving. The medicines were provided by the company, but the surgeon had to use his own instruments. Shaving is not mentioned in his official instructions and he probably earned some extra money from it.



Figure 4.19 : Barbers's Bowl 1999GHL045.

Belt slides and buckles

Three brass buckles, five belt slides and two belt ends were found as a part of a leather belt or bandolier (see Chapter 11).

The double oval buckles are cast with a central bar dividing the frame into two parts. The tang is looped over the bar. This is very common type, which is well known from many excavations in the Netherlands (Baart, Krook, Lagerwij 1977, p. 173; Hasselt 1993, pp. 411–412). Identical ones are found in the *Vergulde Draeck* (1656) and the *Lastdrager* (1653) (Green 1977, p. 180–181; Sténuit 1977, p. 455).

The same can be said of the undecorated double oval belt slide, which was found in its original position around the belt and with the end still in it.

The decorated belt slides and the ditto ends are both functional as decorative. Besides the two slides mentioned above, a similar one was already found during the survey of the site in 1998 (1998GHL010).

These brass fittings in the shape of a fleur-de-lys have been made for at least thirty years because three similar ones were found in the *Batavia* (1629)). An other example is known from the *Lastdrager* lost in 1653 (Green 1989, p. 175; Sténuit 1977, p. 455).

An unidentified object

This unidentified brass object was found during the underwater survey of the wreck site in 1996. Because it was not seriously studied before the tsunami this photograph is the only available documentation. It could be a small lock. (1996GHL004)

Spoons and other pewter artefacts

According to the resolution of the VOC on 11th October 1656, the equipment list of the mess of a *retourschip* of 250 man includes 400 wooden spoons and 20 pewter spoons for the cabin of the *schipper*.⁵

This choice between wood and pewter was not only based on the social difference between the common sailors before and the gentleman behind the mast but also on the difference in price between the two materials. In 1751, the chairman of the Pewtermaker's guild wrote to the mayor of Amsterdam that the use of a pewter spoon was uncommon for an ordinary sailor and also too expensive for the shipping company. In poor rural areas of the Netherlands, wooden spoons were still made and used until the nineteen twenties (Klijn 1987, p. 22). Its Asian counterpart are the spoons made of coconut shell, which are excavated on the wreck site and are still available in the local shops of Galle.

5 With thanks to Mr. and Mrs. Beekhuizen, antiquaries in Amsterdam.

Figures 4.20 A: Buckle. (2004GHL315a) and 4.20 B: buckle with leather belt (2004GHL315b)

Figure 4.21 : Beltslide with decoration in the shape of a fleur-de-lys.

Figure 4.22 : Belt ends in the shape of a fleur de lys.

Figure 4.23 : Unidentified brass object, perhaps a small lock. (1996GHL004)

Figure 4.24 : Excavated pewter spoons and plate.





Figure 4.25 : Pewter mark crowned Tudor rose (2003GHL236).

During the excavation campaigns, nine pewter and one copper spoons were found. Five were lost during the tsunami. The most common are the plain undecorated pewter spoons with a drop shaped bowl and a six-sided stem. This seems to be the ones bought by the VOC. They were not specially designed for the company, but cast with the normal moulds. Many comparable spoons were excavated from cesspits in Dutch towns.

On three of the 13 excavated pewter objects, the crowned rose mark was still visible. It is possible that on other spoons the marks were too damaged to be recognized. The Tudor rose is a quality mark, which was taken over from English pewter to enable Dutch pewter to compete with the imports from England. It was first mentioned in Antwerp in 1523, and was in universal use in the North Netherlands from 1550 onwards. It was soon combined with the maker's mark (often his initials) and came virtually always to be accompanied by a crown (Dubbe 1978, p. 108). Of two of the three marks the initials (IH and WVS) can be read, but the names behind the initials are unknown.

One person used his private spoon and carved his personal mark in the bowl. (2003GHL236) (Figure 4.27)



Figure 4.27: Personal mark carved in the bowl of pewter spoon 2003GHL236.

Figure 4.28 : Copper spoon 2002GHL132.



Figure 4.26 : Pewter spoon with horse-hoof handle. (2004GHL305)

Two other spoons are not standard and can also be seen as personal belongings. A silver spoon was in the 17th century a popular status symbol. Who could not afford it, bought the same model in pewter and polished it to look like a silver one. A good example is the spoon with the horse-hoof handle. These popular spoons were made in silver and pewter in several towns in The Netherlands in the 17th century (Klijn 1987, p. 88). This was probably not the case with the only excavated copper spoon, which has a very uncommon shape. It looks like an old Roman spoon and could come from a country in the Mediterranean area. It could be that this one was "found" in the house of a Portuguese after the conquest of a town by the VOC. (2002GHL132)

The value of a pewter spoon is shown by the fact that two pewter spoons, which had lost their original handle, but were repaired by drilling holes in the bowl before affixing four small copper nails and a wooden handle.

Knives and forks are not mentioned in the regulations. On land and on board it was common that everybody used his own knife. Before the end of the seventeenth century large two-pronged forks were used to take meat out of the pan





Figure 4.29 : Pewter jug made in Amsterdam.

and as a carving aid.

Common people ate with their fingers instead with a fork. Towards the end of the century the upper classes started to use smaller forks but it took a long time before this was imitated by other social classes. In many parts of Asia it is still normal to use your fingers

Other pewter objects of the *Avondster* Jug made in Amsterdam

In 1999 two parts of the same pewter jug were excavated. The object is incomplete because the lid with the mark inside and the handle are missing (1999GHL009). Many jugs of this type were cast in Amsterdam around 1600. Their characteristics are the neck, the big belly and the noddled foot. The foot is a part of the body and can contain liquid. A similar jug was found in the remains of the winter camp of Barentz and Heemskerk on Nova Zembla from 1596 (Braat et al. 1998, p. 231, Dubbe 1978, p. 107). At the time of the loss of the *Avondster* this type of jug was already old fashioned.

A pewter Jar.

The use of this small and unmarked pewter jar is difficult to establish because of its damage (1999GHL16). It is possible

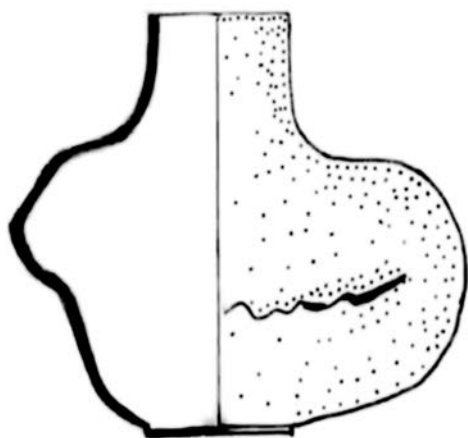


Figure 4.30 : The lid of a pewter mustard pot.

that it is a small jug for medical oil and belonged to the equipment of the *chirurgijn*. Another suggestion is that he used this object as a cupper for bleeding (Gawronski, Kist, Stockvis-van Boetzelaar 1992, p. 234 nr 2.17).

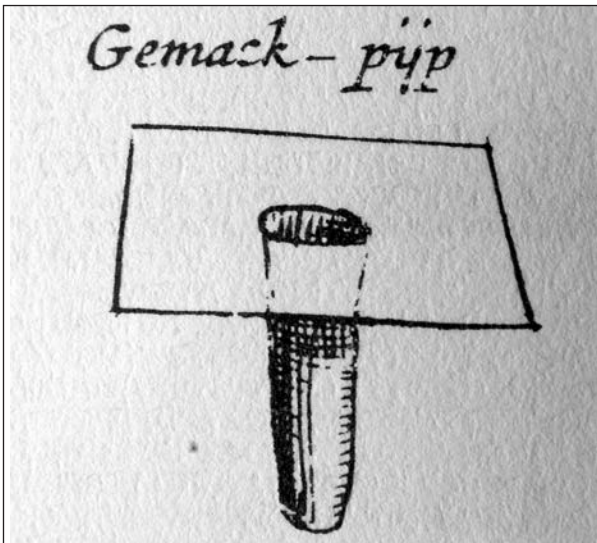
Lid of a Mustard-pot

Mustard was a very popular spice in the 16th and 17th century. It was made by grinding the seed of a mustard plant (*Brassica*) with vinegar and adding spices, sugar or salt. On board it was given as given as condiment with for example the stockfish.

The mustard was kept in a special pewter pot with an opening for a small spoon in the lid (Molen, Dongen 1986, 41). This excavated pewter object without decorated knob, but with an opening on top is the lid of a mustard-pot. The hinge is missing and the pot itself was never found. A typical object for the table of the *schipper* (2003GHL160)



Figure 4.31 A-B : A small pewter jar. (199GHL16a)



Lead scupper

According to *Witsen* the sea water running over the orlopdeck and the upperdeck was carried off by wooden pipes in the ships wale. On English warships of the 18th century waterways, rounded long timber which faired the deck in the sides of the ship to remove water ended in lead pipes, the so called scuppers, leading to the outside of the hull. In both constructions, a leather or canvas trump over the end of the pipe prevented water returning (Dodds, Moore 1984, 87).

Water that finally entered the bilge was removed with the pumps, which drained the water on the deck. From there, it disappeared via the pipes mentioned before.

Another possibility is that the lead pipe was used to remove waste water into the sea. A similar object is illustrated in the book of Witsen and described as lead *gemaks pijpen*, waste pipes of the conveniences. There were two places on board where the crew could do their needs. The ordinary sailors had to sit outside on the beak of the ship. The convenience of the captain and the officers was build in a bank in the cabin and covered with a wooden *dexel* (cover) (Hoving & Weerdt 1994, pp. 205-207). On board of the *Avondster* a wooden stopper was used. A third possibility is that this pipe was a part of the construction of the galley and used to remove the water after cleaning the floor.

Iron anchor

Anchors were made of the best quality of Swedish and Spanish iron, which were welded together to combine the best properties of both metals. The first was stiff and strong and the second tough, but weak and flexible. Because the safety of the ship in dangerous situations often depended on her anchor, it was tested before use on board. The government of Amsterdam ordered that every new anchor should first be weighed in the weigh house. Then it was hoisted up two feet by its ring and dropped on an old cannon on the floor. The municipal inspectors controlled if the anchor didn't burst or bent. If this was not the case, the smith received a certificate which allowed him to sell the anchor (Yk 1697, 215-220).

Every ship had four anchors on board: the big plechtanker, which was used when the smaller daily anchor was not heavy enough. The tui-anker was used as the daily anchor alone was not enough. The kedje was used to shift the ship when there was no wind. The boat and the sloop had a grapnel, a small anchor with four arms. There were often some spare anchors stored below deck (Hoving, Weerdt 1994, p. 222). One anchor was recovered from the site (2002GHL187). It still has the iron ring for the rope, but the wooden stock is no longer there. The square part of the shaft and an iron cross bar show the location of this missing part.

The excavated part of an iron shaft with a ring can be a part of the small anchor of the boat or sloop (2003GHL371). Because the shaft is broken it is also possible that it is a heavy ringbolt.

Figure 4.32 A-C : Lead scupper excavated with its wooden stopper.

Figure 4.32 D : A picture of the same scupper from on a 17th century book (Witsen, 1671).

This lead pipe was found with the wooden stopper still in place (2003GHL191). Its function is clear: to carry off water, but where was it used?

Figure 4.33 : The anchor of the *Avondster* in a temporary conservation tank.(2002GHL187)

Figure 4.34 : This broken iron shaft with its ring can be a part of a small anchor. (2003GHL371).

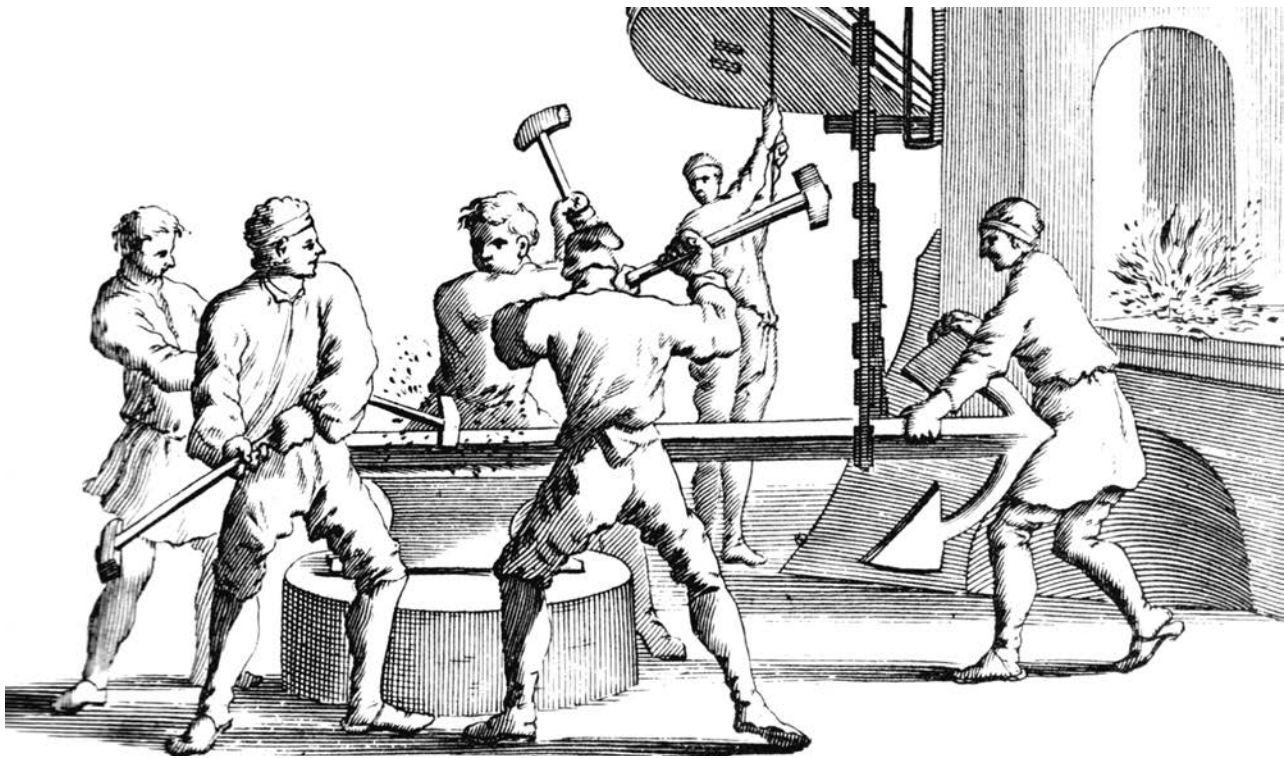


Figure 4.35 : Smiths forging an anchor. From: Van Yk 1679, 176.

Iron cauldron

There are six different sizes of cauldrons mentioned on the equipment list of the cooks requirements in 1656. The list doesn't mention if they were made of brass or iron. In the 16th century, the common cauldron for preparing food was made of cast brass. It had a handle and three feet and could be placed in the fire or hang above it. They were made in the Netherlands and North West Germany (Ruempol, Dongen 1991, p. 289; Kuile 1986). Since the 17th century they were replaced by the cheaper cast iron cauldrons with three feet and a handle and were made in Germany.

These cauldrons were common objects, but because of the corrosion most are lost and today they are rare among the artefacts excavated on land and in shipwrecks. These kind of objects are not often mentioned in the literature. In Bourtange a similar cauldron, to the 17th -19th century was excavated. Another one is known from an excavation in Maaseik (Belgium), but that was dated in the 19th or 20th

century (Heymans 1989, p. 264; Hasselt 1993, pp. 442 - 444). Our cauldron, which is in a very bad condition, has three little legs, which are common in ceramic cauldrons from the same period (2003GHL255). The outer diameter of the rim is about 25.5 cm, but the corrosion makes it difficult to measure its exact dimensions. It is anyhow smaller than the cauldrons on the list of kitchen equipment mentioned before. The cauldron has a lid trough and two ears for fastening a handle, but both the handle and the lid are missing. In the galley, they were placed on the fire on an iron trivet or hung by hooks above the fire.

Catalogue metal

catalogue number

- 1 inventory number - post tsunami
- 2 date
- 3 measurements
- 4a material

Al	aluminium
Cu=	copper
Cu / Zn	bronze
Sn	Pewter
Fe	iron
Pb	lead
- 4b manufacturing
- 5 miscellaneous
- 6 name
- 7 provenance
- 8 literature



Figure 4.36 : A cast iron cauldron corroded beyond recognition after 350 years under water.

Catalogue Metal

ME001

1.	1996GHL004 / L		
2.	1640-1659	3.	-
4a.	Cu / Zn		
4b.	cast	5.	-
6.	Lock		
7.	-	8.	-



ME002

1.	1998GHL009 / R		
2.	1640-1659	3.	-
4a.	Cu/Zn		
4b.	cast	5.	-
6.	nail		
7.	-	8.	-



ME003

1.	1998GHL010 / R		
2.	1640-1659		
3.	4.8 x 1.1 x 1.5 cm		
4a.	Cu/Zn		
4b.	cast		
4b.	-	5.	-
6.	belt slide		
7.	-	8.	-



ME004

1.	2004GHL315a3 / L		
2.	17b - 17c	3.	-
4a.	Cu		
4b.	cast		
5.	Part of leather belt 2004GHL315a2		
6.	belt slide		
7.	The Netherlands		
8.	Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.		

ME005

1.	2004GHL315a4 / L		
2.	17b - 17c	3.	-
4a.	Cu		
4b.	cast		
5.	with fragment of leather belt		
6.	buckle	7.	-
8.	Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.		



E006

1.	2004GHL315b3 / L		
2.	17b - 17c	3.	-
4a.	Cu		
4b.	cast		
5.	Part of leather belt 2004GHL315b2		
6.	buckle		
7.	-		
8.	Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.		

ME007

1.	2004GHL315b4 / L		
2.	17b - 17c	3.	-
4a.	Cu		
4b.	cast		
5.	Part of leather belt 2004GHL315b2		
6.	belt slide		
7.	-		
8.	Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.		

ME008

1. 2004GHL315b5 / L
2. 17b - 17c 3. -
- 4a. Cu
- 4b. cast
5. with fragment of leather belt
6. buckle
7. -
8. Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.



ME009

1. 2004GHL315b6 / L
2. 17b - 17c 3. -
- 4a. Cu
- 4b. cast
5. with fragment of leather belt
6. buckle
7. -
8. Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.



ME010

1. 2004GHL315b7 / L
2. 17b - 17c
3. -
- 4a. Cu
- 4b. cast
5. with fragment of leather belt, identical to 2004GHLb8, fleur de lis decoration
6. buckle
7. -
8. Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.



ME011

1. 2004GHL315b8 / L
2. 17b - 17c 3. -
- 4a. Cu
- 4b. cast
5. identical to 2004GHLb7, fleur-de lis decoration
6. belt end
7. -
8. Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.

ME012

1. 2004GHL315b9 / L
2. 17b - 17c 3. -
- 4a. Cu
- 4b. cast
5. with fragments of leather belt 2004GHL315b
6. beltslide
7. -
8. Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.

ME013

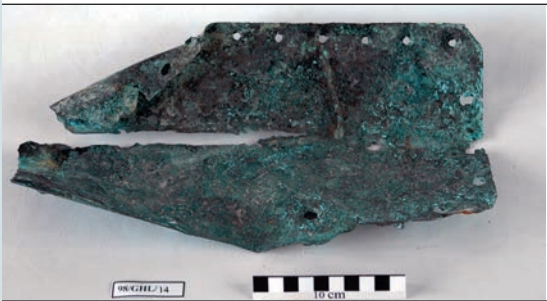
1. 2004GHL315c3 / L
2. 17b - 17c 3. -
- 4a. Cu
- 4b. cast
5. Part of leather belt 2004GHL315c2
6. belt slide
7. -
8. Baart e.a. 1977, 173; Green 1977, 180-181; Stenuit 1977, 455.



- ME014
- | | | | |
|-----|----------------------------------|----|---|
| 1. | 2004GHL315c4 / L | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Cu | | |
| 4b. | cast | | |
| 5. | Part of leather belt 2004GHL315c | | |
| 6. | belt slide | | |
| 7. | - | | |
| 8. | Green 1977, 455; Green 1989, 175 | | |



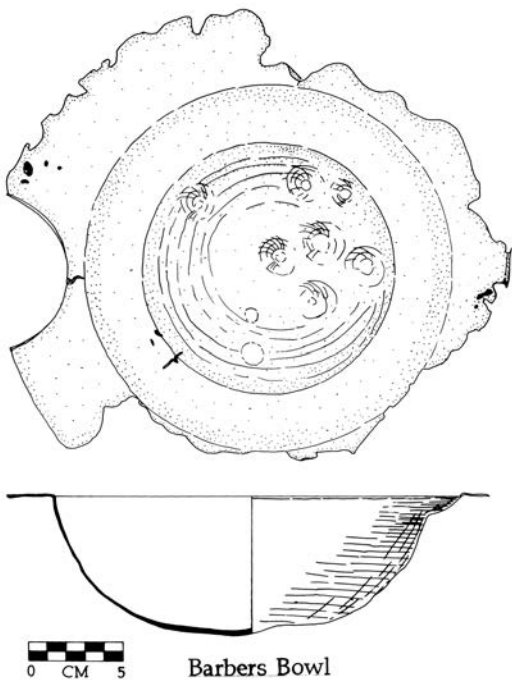
- ME015
- | | | | |
|-----|----------------------------|----|---|
| 1. | 1998GHL014 / L | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Cu | | |
| 4b. | cast | 5. | - |
| 6. | sheath, fragment | | |
| 7. | England or The Netherlands | | |
| 8. | - | | |



- ME016
- | | | | |
|-----|---|----|---|
| 1. | 1999GHL014 / L | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Cu/Zn | | |
| 4b. | cast, turned | | |
| 5. | can be part of set 2003GHL470 | | |
| 6. | cup weight | | |
| 7. | Germany (Nurnberg) | | |
| 8. | Green 1989, 164; Gawronski e.a. 1992, 449 | | |

- ME017
- | | | | |
|-----|----------------|----|---|
| 1. | 1999GHL045 / R | | |
| 2. | 17a-17c | 3. | - |
| 4a. | Cu | | |

- | | | | |
|-----|---|----|---|
| 4b. | chased | 5. | - |
| 6. | barbers bowl | | |
| 7. | Germany (Aix la Chapelle) or Belgium (Dinant) | | |
| 8. | Green 1989, 96-97; Ratelband 1953, XCVIII | | |

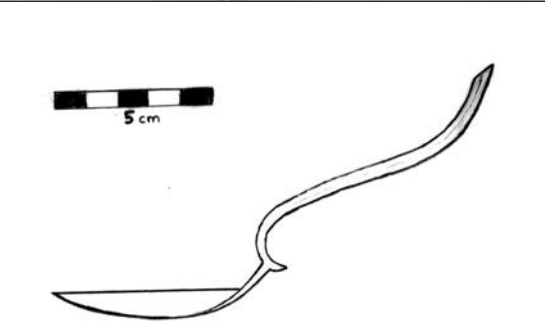


- ME018
- | | | | |
|-----|----------------|----|---|
| 1. | 2002GHL082 / R | | |
| 2. | 20B-21a | | |
| 3. | diam. 25.8 | | |
| 4a. | Al | | |
| 4b. | chased | 5. | - |
| 6. | plate | | |
| 7. | - | 8. | - |



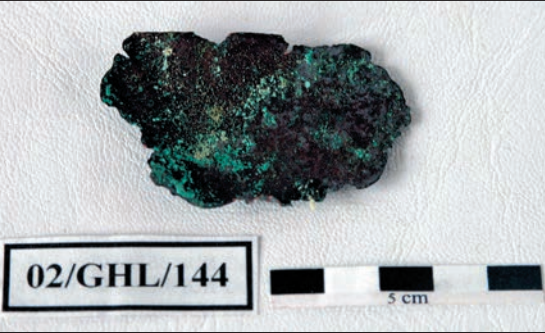
ME019

- | | | | |
|-----|------------------|---------|---|
| 1. | 2002GHL132 / R | | |
| 2. | 1640-1659 | | |
| 3. | 15.6 x 4.5 x 0.0 | Cu / Zn | |
| 4b. | cast | 5. | - |
| 6. | spoon | | |
| 7. | Southern Europe? | | |
| 8. | - | | |



ME020

- | | | | |
|-----|----------------------------|----|---|
| 1. | 2002GHL144 / R | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Cu | | |
| 4b. | cast | 5. | - |
| 6. | sheath, fragment | | |
| 7. | England or The Netherlands | | |
| 8. | - | | |



ME021

- | | | | |
|-----|----------------------------|----|---|
| 1. | 2003GHL037 / R | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Cu | | |
| 4b. | cast | 5. | - |
| 6. | sheath, fragment | | |
| 7. | England or The Netherlands | | |
| 8. | - | | |

ME022

- | | | | |
|-----|------------------------------------|----|---|
| 1. | 2003GHL038 / R | | |
| 2. | 1640-1659 | | |
| 3. | diam. 13.0 x 0.0 x 0.0 | | |
| 4a. | Cu | | |
| 4b. | - | 5. | - |
| 6. | oil lamp | 7. | - |
| 8. | Green 1977, 189; Green 1989, 76-77 | | |



ME023

- | | | | |
|-----|------------------|-------|---|
| 1. | 2003GHL070 / R | | |
| 2. | 1640-1659 | | |
| 3. | diam. 0.3 x 40.5 | Cu/Zn | |
| 4b. | cast, drawn | 5. | - |
| 6. | wire | | |
| 7. | - | 8. | - |



ME024

- | | | | |
|-----|------------------------|--|--|
| 1. | 2003GHL118 / R | | |
| 2. | 17b - 17c | | |
| 3. | 9.9 x 9.2 x 3.3 | | |
| 4a. | Cu / Zn | | |
| 4b. | cast | | |
| 5. | foot or waxholder form | | |
| 6. | candle holder | | |
| 7. | Portugal | | |
| 8. | Van Zeller 1955, 144 | | |



ME025

1.	2003GHL224a / R		
2.	1640-1659	3.	-
4a.	Cu/Zn		
4b.	cast	5.	-
6.	mount		
7.	-	8.	-



ME026

1.	2003GHL224b / R		
2.	1640-1659	3.	-
4a.	Cu		
4b.	cast	5.	-
6.	sheath, fragment		
7.	England or The Netherlands		
8.	-		

ME027

1.	2003GHL243 / R		
2.	-	3.	-
4a.	Cu/ Zn		
4b.	cast	5.	-
6.	candle	7.	-
8.	Green, 1977, 186-193; Green `989, 613.		



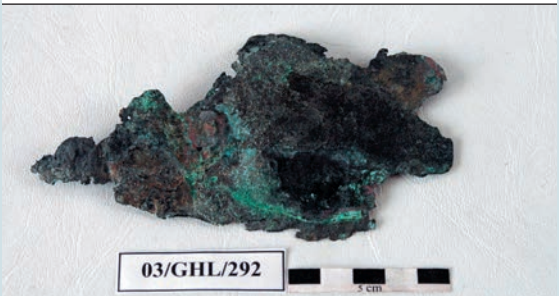
ME028

1.	2003GHL244 / R		
2.	1640-1659		
3.	--x 18.6 x 6.6		
4a.	Cu		
4b.	cast		
5.	merk:EW		
6.	candle snuffer		
7.	North West Europe		
8.	Bangs 1995, 367 nr. 164		



ME029

1.	2003GHL292 / R		
2.	1640-1659	3.	-
4a.	Cu		
4b.	cast	5.	-
6.	sheath, fragment		
7.	England or The Netherlands		
8.	-		



ME030

1.	2003GHL470 / L		
2.	1650-1659	3.	-
4a.	Cu/Zn		
4b.	cast, turned		
5.	mark crossed key and arrow can be part of same set as 1999GHL014		
6.	cup weight		
7.	Nurnberg (Germany)		
8.	Wittop Koning, Houben 1980, 109 and 111		



ME031

1.	2003GHL472 / R		
2.	1640-1659	3.	-
4a.	Cu/Zn		
4b.	cast	5.	-
6	nail, fragment		
7.	-	8.	-



ME032

1.	2004GHL022 / R		
2.	1640-1659	3.	-
4a.	Cu/Zn		
4b.	cast	5.	-
6	nail, fragment		
7.	-	8.	-

ME033

1.	2004GHL023 / R		
2.	1640-1659	3.	-
4a.	Cu/Zn		
4b.	cast	5.	-
6	nail, fragment		
7.	-	8.	-



ME034

1.	2004GHL030 / R		
2.	1640-1659	3.	-
4a.	Cu		
4b.	cast	5.	-
6.	sheath, fragment		
7.	England or The Netherlands		



ME035

1.	2004GHL277 / R		
2.	1640-1659	3.	-
4a.	Cu		
4b.	cast	5.	-
6.	sheath		
7.	England or The Netherlands		
8.	-		



ME036

1.	2004GHL278 / R		
2.	1640-1659		
3.	-- x-- x--		
4a.	Cu / Zn		
4b.	cast, rivetted		
5.	-		
6.	gimbal ring of suspension lamp		
7.	-		
8.	Green1987,189;Green 1989; Gawronski e.a.1992, 432		



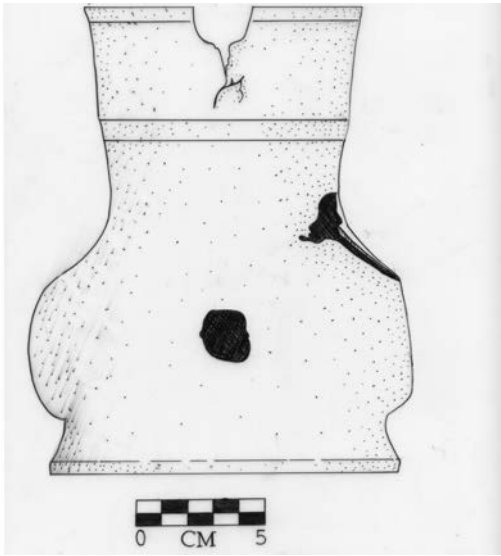
ME037

- | | | | |
|-----|-------------------|----|---|
| 1. | 2004GHL329 / R | | |
| 2. | 1640-1659 | | |
| 3. | 2.6 x 1 x 17.74a. | Sn | |
| 4b. | cast | 5. | - |
| 6. | handle | | |
| 7. | - | 8. | - |



ME038

- | | | | |
|-----|---|----|---|
| 1. | 1999GHL009A (lower part) + 1999GHL009B (upper part) / R | | |
| 2. | 1600-1659 | | |
| 3. | 13.7 x 15.5x 18.3 | | |
| 4a. | Sn | | |
| 4b. | cast | 5. | - |
| 6. | jug | | |
| 7. | The Netherlands (Amsterdam) | | |
| 8. | Dubbe 1978, 215; Baart e.a.1977, 342 | | |



ME039

- | | | | |
|-----|-----------------|----|---|
| 1. | 1999GHL016A / R | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Sn | | |
| 4b. | cast | 5. | - |
| 6. | oil jar | | |
| 7. | - | 8. | - |



ME040

- | | | | |
|-----|-----------------|----|---|
| 1. | 2001GHL019a / R | | |
| 2. | 1640-1690 | 3. | - |
| 4a. | Sn | | |
| 4b. | cast | 5. | - |
| 6. | sheath | | |
| 7. | - | 8. | - |



ME041

- | | | | |
|-----|-----------------|----|---|
| 1. | 2001GHL019b / R | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Sn | | |
| 4b. | cast | 5. | - |
| 6. | sheath | | |
| 7. | - | 8. | - |



ME042			
1.	2002GHL186 / R		
2.	17b - 17c	3.	-
4a.	Sn		
4b.	cast	5.	-
6.	spoon	7.	-
8.	Green 1989,153		



ME043			
1.	2003GHL036 / R		
2.	-	3.	-
4a.	Sn		
4b.	cast	5.	-
6.	spoon		
7.	-	8.	-

ME044			
1.	2003GHL160 / R		
2.	1600-1659	3.	-
4a.	Sn		
4b.	cast	5.	-
6.	mustard cup, lid		
7.	The Netherlands	8.	-



ME045			
1.	2003GHL234 / L		
2.	1640-1659	3.	-
4a.	Sn		
4b.	cast	5.	-
6.	spoon		
7.	-		
8.	Green 1989, 153		

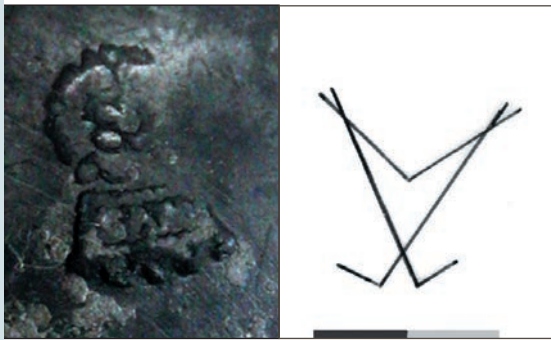


ME046			
1.	2003GHL235 / L		
2.	1640-1659	3.	-
4a.	Sn		
4b.	cast		
5.	mark: crowned rose with letters IH		
6.	spoon		
7.	-	8.	-



ME047

- 1. 2003GHL236 / R
- 2. 1640-1659 -- x
- 3. 181 x 58
- 4a. Sn
- 4b. cast
- 5. mark: crowned rose with letters WVS and personal mark
- 6. spoon
- 7. The Netherlands
- 8. Klijn 1987, 55



ME048

- 1. 2003GHL237 / R
- 2. 1640-1659
- 3. -- x-- x 60 mm
- 4a. Sn
- 4b. cast
- 5. repaired with nails
- 6. spoon, fragment of bowl
- 7. The Netherlands
- 8. Klijn 1987, 57



ME049

- 1. 2003GHL241a (bowl) + 2003GHL241b (stem) / R
- 2. 1640-1659
- 3. -- / -- / 67
- 4a. Sn
- 4b. cast
- 5. mark possible eroded
- 6. spoon with six sided stem
- 7. The Netherlands
- 8. Klijn 1987, 55



ME050

- 1. 2003GHL344 / R
- 2. 1640-1659
- 3. -
- 4a. Sn
- 4b. cast
- 5. -
- 6. spoon, fragment of six sided stem
- 7. -
- 8. -



ME051

- 1. 2003GHL474 / R
- 2. 1640-1659
- 3. -
- 4a. Sn
- 4b. cast
- 5. -
- 6. spoon, fragment of bowl
- 7. The Netherlands
- 8. -

ME052

- 1. 2004GHL305 / R
- 2. 1640-1659
- 3. -- x 17 x 54
- 4a. Sn
- 4b. cast horse hoof stem, mark corroded
- 5. -
- 6. spoon
- 7. The Netherlands
- 8. Klijn 1987, 96; Ruempol and Van Dongen 1991, 200-201



ME053

- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL007 / L | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket balls | | |
| 7. | - | 8. | - |



ME054

- | | | | |
|-----|--------------------|----|---|
| 1. | 1998GHL021 / L | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket balls (118) | | |
| 7. | - | 8. | - |



ME055

- | | | | |
|-----|---------------------------|----|---|
| 1. | 1998GHL044 / R | | |
| 2. | 17b - 17c | | |
| 3. | irregular shape and sizes | | |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |

- | | | | |
|----|--------------|----|---|
| 6. | musket balls | | |
| 7. | - | 8. | - |

ME056

- | | | | |
|-----|------------------|----|---|
| 1. | 1998GHL045 / R | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket ball (20) | | |
| 7. | - | 8. | - |



ME057

- | | | | |
|-----|-----------------|----|---|
| 1. | 1998GHL076 / L | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket ball (2) | | |
| 7. | - | 8. | - |



ME058

- | | | | |
|-----|-----------------|----|---|
| 1. | 1999GHL004B / R | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket balls | | |
| 7. | - | 8. | - |



ME059

1.	2001GHL012c / L		
2.	17b - 17c	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	musket ball		
7.	-	8.	-

ME060

1.	2002GHL019a / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath?		
7.	-	8.	-



ME061

1.	2002GHL019b / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath?		
7.	-	8.	-



ME062

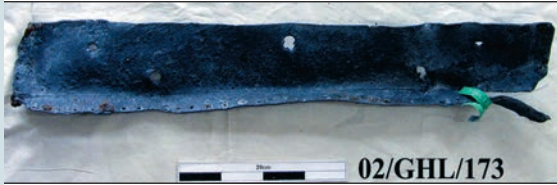
1.	2002GHL049 / R		
2.	17b - 17c	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	musket ball		
7.	-	8.	-

ME063

1.	2002GHL067a / R		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath?		
7.	-	8.	-

ME064

1.	2002GHL173 / R		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath?		
7.	-	8.	-



ME065

1.	2002GHL174a / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath		
7.	-	8.	-



ME066

1.	2002GHL244 / R		
2.	17b - 17c		
3.	diam. 21(54 gram)		
4a.	Pb		
4b.	cast	5.	-
6.	musket ball		
7.	-	8.	-

ME067			
1.	2003GHL019a / R		
2.	17b - 17c	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	musket balls		
7.	-	8.	-

ME068			
1.	2003GHL019b / R		
2.	17b - 17c	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	musket balls (3)		
7.	-	8.	-

ME069			
1.	2003GHL019c / R		
2.	17b - 17c		
3.	diam.14 and 16		
4a.	Pb		
4b.	cast	5.	-
6.	musket balls (2)		
7.	-	8.	-

ME070			
1.	2003GHL019d / R		
2.	17b - 17c		
3.	diam. 1,5 cm		
4a.	Pb		
4b.	cast	5.	-
6.	musket balls (2)		
7.	-	8.	-

ME071			
1.	2003GHL055 / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	musket balls (81)		
7.	-	8.	-

ME072			
1.	2003GHL136 / R		
2.	17b - 17c		
3.	diam. 17-19 mm		
4a.	Pb		
4b.	cast	5.	-
6.	musket balls with bar (3)		

7.	The Netherlands	8.	-
----	-----------------	----	---

ME073			
1.	2003GHL146b / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath, possible a part of the galley		
7.	-	8.	-

ME074			
1.	2003GHL191 (stop) + 2003GHL191 (scupper) / R		
2.	1640-1659		
3.	L 29.1, diameter pipe outside 10,1 / inside 9.3		
4a.	Pb and wood		
4b.	-		
5.	-		
6.	scupper with wooden stop		
7.	-		
8.	Hoving e.a.1994, 206-207		



ME075			
1.	2003GHL210a-210b-210c-210d		
2.	17b - 17c	3.	-
4a.	Pb		
4b.	-	5.	-
6.	canister with bullets		
7.	-	8.	-



ME076

- | | | | |
|-----|------------------|----|---|
| 1. | 2003GHL226b / R | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | sheath, fragment | | |
| 7. | - | 8. | - |

ME077

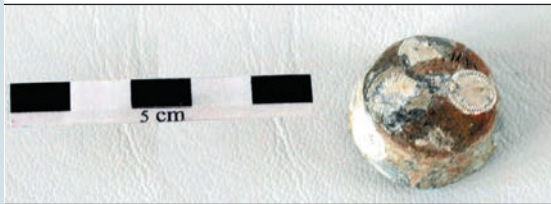
- | | | | |
|-----|------------------|----|---|
| 1. | 2003GHL226c / R | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | sheath, fragment | | |
| 7. | - | 8. | - |

ME078

- | | | | |
|-----|----------------------|----|---|
| 1. | 2003GHL406 / R | | |
| 2. | 17b - 17c | | |
| 3. | diam.17 mm (30 gram) | | |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket balls (2) | | |
| 7. | - | 8. | - |

ME079

- | | | | |
|-----|--|----|---|
| 1. | 2004GHL068 / R | | |
| 2. | 1640-1659 | | |
| 3. | diameter base 2.6 / top 2.3 / high 1.2 (57 gram) | | |
| 4a. | Pb | | |
| 4b. | cast | | |
| 5. | on top:III of VI | | |
| 6. | weight | | |
| 7. | - | 8. | - |



ME080

- | | | | |
|-----|------------------|----|---|
| 1. | 2004GHL096 / R | | |
| 2. | 1640-1690 | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | sheath, fragment | | |
| 7. | - | 8. | - |



ME081

- | | | | |
|-----|--|----|---|
| 1. | 2004GHL178 / R | | |
| 2. | 17b - 17c | | |
| 3. | diam. 1.7 (23 gram); diam. 1.8 (33 gram) | | |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket balls (2) | | |
| 7. | - | 8. | - |

ME082

- | | | | |
|-----|------------------------------------|----|---|
| 1. | 2004GHL225 / R | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb with Cu wire | | |
| 4b. | cast | 5. | - |
| 6. | musket balls with and without wire | | |
| 7. | The Netherlands | | |
| 8. | - | | |

ME083

- | | | | |
|-----|----------------|----|---|
| 1. | 2004GHL288 / R | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | Pb | | |
| 4b. | cast | 5. | - |
| 6. | musket ball | | |
| 7. | - | 8. | - |



- ME084
- 1. 2004GHL293 / R
 - 2. 1653-1655
 - 3. diameter 5.4 - 6.0 / high 3.5 (weigh 929 gram)
 - 4a. Pb
 - 4b. cast
 - 5. mark: 1. crowned coat of arms of Hoorn with letters A-C; 2. II
 - 6. weight
 - 7. Hoorn (The Netherlands)
 - 8. Wittop Koning, Houden 1980, 67-68; Nipper 2004, 343-346.



- ME085
- 1. 2004GHL307 / R
 - 2. 1640-1659
 - 3. 11.0 x 10.0 x 2.0
 - 4a. Pb
 - 4b. cast
 - 5. -
 - 6. oil lamp
 - 7. The Netherlands
 - 8. Braat e.a. 1988, 227



- ME086
- 1. 2004GHL335 / L
 - 2. 17b - 17c
 - 3. -
 - 4a. Pb
 - 4b. cast
 - 5. -
 - 6. musket ball
 - 7. -
 - 8. -

- ME087
- 1. 2004GHL336 / R
 - 2. 17b - 17c
 - 3. diam. 1.7 (weigh 25 gram)
 - 4a. Pb
 - 4b. cast
 - 5. -
 - 6. musket ball?)
 - 7. -
 - 8. -

- ME088
- 1. 1998GHL046 / R
 - 2. 1640-1690
 - 3. -
 - 4a. Fe
 - 4b. forged
 - 5. -
 - 6. nail, fragment
 - 7. England or The Netherlands
 - 8. -



- ME089
- 1. 1998GHL075 / R
 - 2. 17b - 17c
 - 3. -
 - 4a. Fe
 - 4b. cast
 - 5. -
 - 6. canon ball?
 - 7. -
 - 8. -

- ME090
- 1. 1998GHL112 / R
 - 2. 1640-1659
 - 3. -
 - 4a. Fe
 - 4b. forged
 - 5. -
 - 6. nail?
 - 7. -
 - 8. -



ME091

1.	1999GHL004A / R		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon ball		
7.	Europe	8.	-

ME092

1.	2001GHL074 / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon ball		
7.	Europe	8.	-

ME093

1.	2001GHL076 / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon balls (5)		
7.	Europe	8.	-



ME094

1.	2001GHL119 / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon ball		
7.	Europe	8.	-

ME095

1.	2001GHL120 / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon ball		
7.	Europe	8.	-



ME096

1.	2001GHL130a-b-c / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon balls (3)		
7.	Europe	8.	-

ME097

1.	2001GHL131a-b-c / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon balls (3)		
7.	-	8.	-

ME098

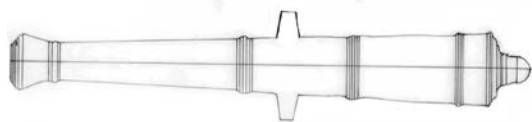
1.	2001GHL069 / L		
2.	17b - 17c	3.	-
4a.	Fe		
4b.	cast	5.	-
6.	canon balls (3)		
7.	Europe	8.	-

ME099

1.	2002GHL175b / R		
2.	1640-1658	3.	-
4a.	Fe		
4b.	cast		
5.	found inside canon 2002GHL175a		
6.	canon ball?)		
7.	-	8.	-

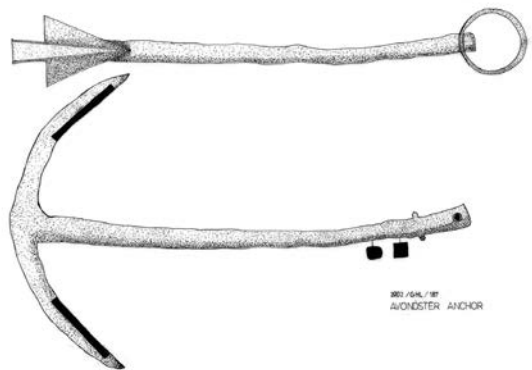
ME100

- 1. 2002GHL175a / R
- 2. 1640-1658
- 3. Long 283.0 (including cascable); diameter bore 9.6
- 4a. Fe
- 4b. cast
- 5. Loaded with charge 2002GHL175c and canonball 2002GHL175a
- 6. canon
- 7. England or Sweden
- 8. -



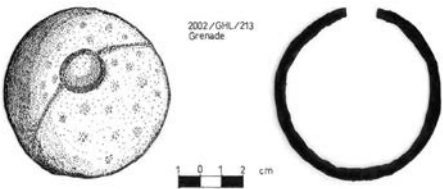
ME101

- 1. 2002GHL187 / R
- 2. 1640-1659
- 3. -
- 4a. Fe
- 4b. forged
- 5. wooden stock is missing
- 6. anchor
- 7. England or The Netherlands
- 8. -



ME102

- 1. 2002GHL213 / R
- 2. 1640-1659
- 3. diam. 7.8; weigth 1115 gram
- 4a. Fe
- 4b. cast
- 5. -
- 6. grenade
- 7. -
- 8. Green 1989,59; Rijksmuseum 1980, 21



ME103

- 1. 2003GHL134a / L
- 2. 17b - 17c
- 3. -
- 4a. Fe
- 4b. cast
- 5. -
- 6. canon ball
- 7. Europe
- 8. -



ME104

- 1. 2003GHL255 / R
- 2. 17a - 17c
- 3. diam 25.5 / 14.
- 4a. Fe
- 4b. -
- 5. cast, handle missing, much corrosion
- 6. cauldron
- 7. -
- 8. Lenting e.a 1993, 442.

ME105

- 1. 2003GHL371 / R
- 2. -
- 3. -
- 4a. Fe
- 4b. forged
- 5. -
- 6. bar with ring (part of an anchor?)
- 7. -
- 8. -

ME106

1.	2003GHL529 / R		
2.	-	3.	-
4a.	metal	5.	-
6.	unidentified		
7.	-	8.	-

ME107

1.	2003GHL486 / R		
2.	1640-1659	3.	-
4a.	Cu		
4b.	-	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME108

1.	1999GHL019 / L		
2.	-	3.	-
4a.	Pb		
4b.	-	5.	-
6.	unidentified		
7.	-	8.	-



ME109

1.	2001GHL050z / L		
2.	1640-1659	3.	-
4a.	metal		
5.	with wooden planking and 10 iron bolts		
6.	sheat		
7.	England or The Netherlands		
8.	-		

ME110

1.	2002GHL048 / L		
2.	1640-1659	3.	-
4a.	Fe		
4b.	forged	5.	-
6.	nail		
7.	-	8.	-

ME111

1.	2002GHL091 / L		
2.	-	3.	-
4a.	Fe		
4b.	forged	5.	-
6.	nail		
7.	-	8.	-

ME112

1.	2002GHL185 / L		
2.	-	3.	-
4a.	Fe		
4b.	-	5.	-
6.	nail		
7.	-	8.	-

ME113

1.	2003GHL216a / L		
2.	-	3.	-
4a.	Fe		
4b.	-	5.	-
6.	nail, fragment		
7.	-	8.	-

ME114

1.	2003GHL216b / L		
2.	-	3.	-
4a.	Fe		
4b.	-	5.	-
6.	nail, fragment		
7.	-	8.	-

ME115

1.	2003GHL226a / L		
2.	-	3.	-
4a.	Pb		
4b.	-	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME116

1.	2003GHL258 / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME117

1.	2003GHL291 / L		
2.	-	3.	-
4a.	Cu/ZN		
4b.	-	5.	-
6	unidentified		
7.	-	8.	-

ME118

1.	2003GHL320 / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	cast	5.	-
6	sheath,fragment		
7.	-	8.	-

ME119

1.	2003GHL322 / L		
2.	1640-1659	3.	-
4a.	Cu		
4b.	-	5.	-
6.	sheath		
7.	-	8.	-

ME120

1.	2004GHL324 / L		
2.	-	3.	-
4a.	Cu/ZN		
4b.	-	5.	-
6.	hinge or handle		
7.	-	8.	-

ME121

1.	2003GHL304a / L		
2.	1640-1659	3.	-
4a.	metal		
4b.	-	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME122

1.	2003GHL304b / L		
2.	-	3.	-
4a.	metal		
4b.	-	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME123

1.	2003GHL304c / L		
2.	-	3.	-
4a.	metal		
4b.	-	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME124

1.	2003GHL146a / L		
2.	1640-1659	3.	-
4a.	Pb		
4b.	-		
5.	Possible part of the galley		
6.	sheath, fragment		
7.	-	8.	-

ME125

1.	2003GHL456 / L		
2.	1640-1659	3.	-
4a.	Cu		
4b.	cast	5.	-
6.	sheath, fragment		
7.	-	8.	-

ME126

1.	2003GHL512 / L		
2.	-	3.	-
4a.	Fe		
4b.	-	5.	-
6.	nail		
7.	-	8.	-

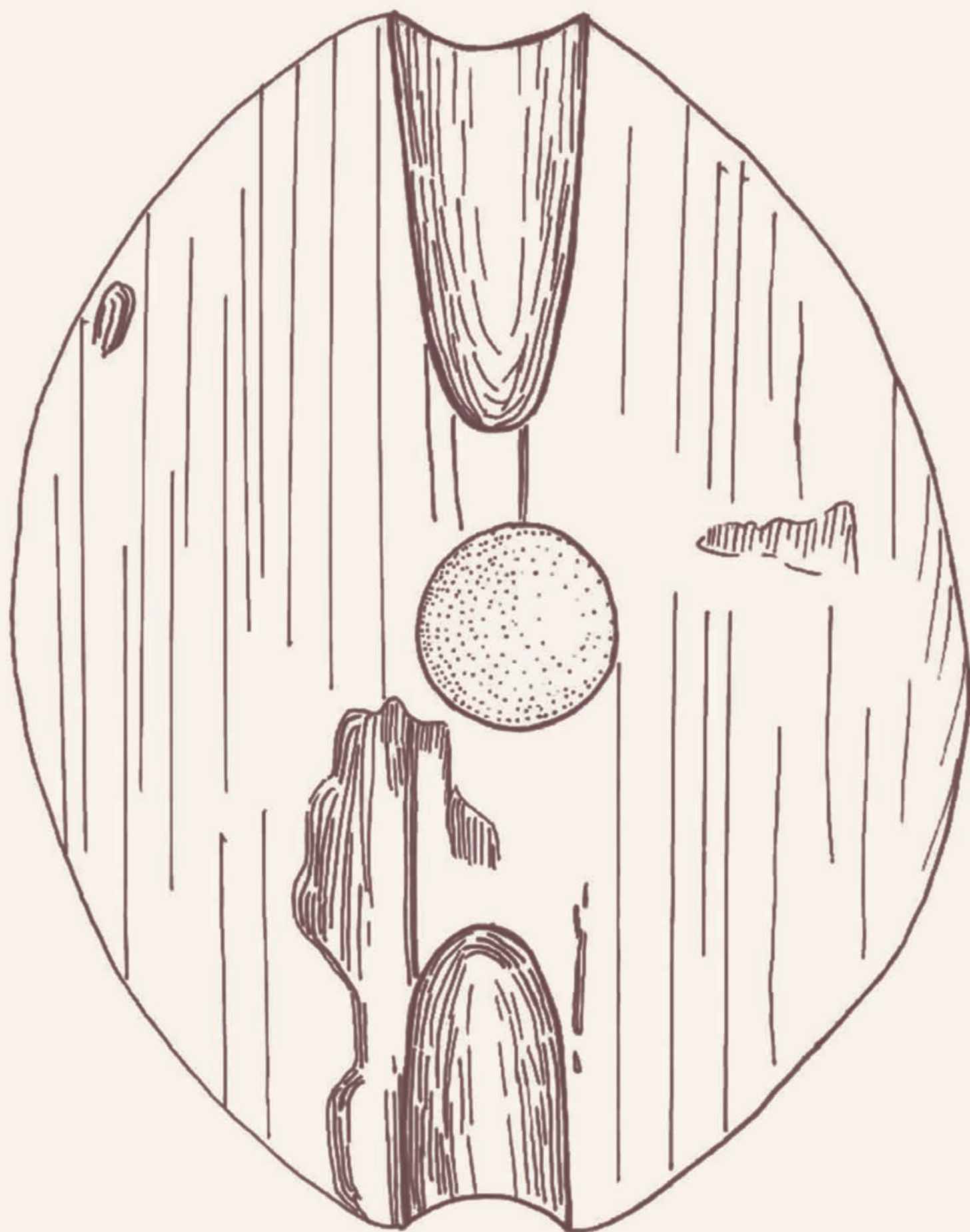
ME127

1.	2004GHL005 / L		
2.	-	3.	-
4a.	Fe		
4b.	-	5.	-
6.	unidentified		
7.	-	8.	-

ME128

1.	2004GHL240 / L		
2.	1640-1659	3.	-
4a.	Cu		
4b.	-	5.	-
6.	sheath		
7.	-	8.	-





Pully Block - 1999GHL034

Figure 5.1 : A pulley block of the Avondster (1999GHL034)

Soo't niet en slúit, Het leckter úit .



De banden van aandachtig leeven
 En't heilich Woord van God ge geeven
 Die moeten 't eedel Zielen Nat
 int menslick herte dicht beslúiten ,
 Of anders droop'er't Wijntie búiten ,
 En liet de Mens een leedig Vat

Wood

The condition of the wood of the wreck depends on the situation after the loss of the ship. As long as the wood is covered by sediments, it is protected against aggressive animals. Mollusks like the *Teredo Navalis* and other animals begin with destroying the wood as soon as it is uncovered, and after a short time, the wood is completely perforated and falls into pieces.

The main part of the more than 300 registered wooden objects, like fragments of planks, were so seriously damaged, that proper determination was impossible. In one case, the wooden block could only be recognized because of the shape of the concretion of the iron chain around it (2004GHL242). The main part of these damaged objects is mentioned in the catalogue without extensive description or even a photograph.

The remaining wooden objects, the parts of the rigging and the packing material, are described in the following chapters.



Wooden Blocks

On a three mast sailing ship, several hundred blocks and dead eyes were used to connect and lead the ropes of the standing and running rigging.

A block consisted of three pieces: first the shell, which was made of elm or ash, was mortised out to admit up to four sheaves. *Lignum vitae* was the best type of wood for the sheave. It was not only very hard but also self greasing because it contained a kind of fat oil. It could be shaped by means of a frame saw and turned on a lathe.

The sheaves were held in place by a pin, which allowed them to spin. The pins were made of *lignum vitae*, *buxus*, ebony or iron.

The block maker used an axe to shape the block of wood into a block. An auger was used to bore the mortises in the shell. The hole was cleaned with a mortice chisel and a burr chisel. The pinhole was bored out with a brace and bit. With a rasp and a spoke shave all the sharp edges of the block were rounded. Finally, the shell was scored with a gouge to make a hollow

Figure 5.2 : The cooper (De Kuiper), Johannes en Caspaars Luyken, Het Menselyk bedryf. Amsterdam. 1694. Collection Amsterdams Historisch Museum

Figure 5.3 Wood damaged by shipworms 2001GHL066



Figure 5.4 : This wooden signboard from 1694 shows the different objects made by a block maker in Rotterdam. While two men work with a long auger to make the shaft of a wooden pump, the man on the right used his axe to make a block. The boy is collecting the chips. On the wall different tools, blocks and tops. Under the pump a gun carriage. (Collectie Historisch Museum Rotterdam, inv.nr. 11320)

to hold the rope stop by which the block was attached to the rigging (Dodds, Moore 1984, p. 118). The sheave was put in place and the block was ready to use.

Dead eyes, which had no moving parts but only three or four holes for the ropes, were made in the same way as normal blocks.

The wooden signboard of the block maker in the Historisch Museum in Rotterdam, shows that he not only made blocks, dead eyes, parrel beads or other parts of the rigging but also pumps, gun carriages and even tops.

The excavation uncovered about 30 parts of blocks and other wooden rigging elements. Several wooden objects were complete and still in a very good condition after three and a half centuries under water. Others were damaged or there were only parts like a sheave left. In one case the wood has disappeared but the block could be reconstructed by the shape of the corroded iron around it.

After the tsunami, at least four different types of blocks could be reconstructed from the remaining artefacts, photographs and drawings:



Blocks with one sheave

These were the most common blocks used to move the parts of the running rigging.

Snatch block

A snatch block is a large block with a shiver in it and a notch cut through one of the cheeks, by which they reeve a rope into . It is also to reeve the rope in quickly, as by this notch they may reeve the middle part of a rope into the block without passing it in through the end, which would take longer. It is usually fastened with a strap around the main-mast close to the upper deck and is chiefly used for the fall of the winding tackle, which is reeved into that block, and so brought to the capstan (Manwaring 1922, II p. 28).

Dead Eyes

Dead eyes were used to were to keep pressure on the stays and shrouds of the standing rigging to hold the mast, yards, spars and the bowsprit in place. They had no sheaves, but had three holes through which the lanyards were passed. The lower dead eye was fitted with an iron eye which was connected to the chain plates attached to the outside of the hull.

Parrel beads

A parrel bead is a circular piece of wood, hollowed in the centre to take a rope. They separate the wooden ribs of a parrel. The bullseyes and the smooth inner edge of the ribs bore up

against the mast so that the yard would slide easily up and down when it was swayed up or struck down. The parrel beads also provided an easy turn when the yard was braced to the wind (Kemp 1976, pp. 118 and 701).

Wooden Packing Material

This chapter describes the wooden packing material found at the Avondster site. Because all the objects were lost during the tsunami before they could be studied in detail, the text relies mainly on photographs and literature.

Barrels

Barrels or casks were the most common containers for the shipment of bulk commodities untill the 20th century.

Coopering, the making and repairing of wooden vessels, has always been the work of a professional craftsman. It takes an apprentice five year to learn how to make a good barrel. The first year the boy earned 30 cents a week and at the end of his apprenticeship, he got 150 cents a week from his master.

A barrel consists of three major structural elements: staves, heads and hoops. A stave is a curved, wooden plank made to fit tightly on two other staves to form the sides of a barrel. The head is the circular end of a barrel made up of one or more pieces of timber. Hoops are narrow strips of wood or iron placed around the circumference of the barrel (Staniforth 1987, p. 22).

The cooper on board of an East Indiaman of 154 feet had the following tools at his disposal:

1	bankschroef	bench vice
1	speerhaak	beak iron
1	strijkbank	jointer
7	beslaghoopen	truss hoops
3	croosen	crozes
1	schroodboor	bunghole auger
2	schaafbeitels	cutting irons
1	baars	coopers axe
1	schaav	shave
3	snymessen	draw-knives
2	passers	compasses
1	holmes	hollowing knife
2	hoeptangen	---
2	drijvhamers	hoop hammer
1	drevelboor	dowel bit
1	kraanboor met 2 doppen	taphole auger with 2 bits
2	ophaalders	iron rivets
1	omslag	brace
1	gatschijv	punch
5	dissels	adzes

Table 5.1. Tools of the cooper of a VOC ship. Source: Yk 1697, p. 277.

There were also bundles of hoops in store.

The making of a barrel

The staves were sawn from planks which had been cleft from a tree. The staves and lids excavated from the Amsterdam, which was lost in 1749, were made of oak (*Quercus* sp.) and the hoops of split willow twigs (*Salix* sp.).

The cooper started with preparing the rough staves by hewing them with the cooper's axe into the correct shape. The outside of the stave is made slightly convex with the heading knife, and the inside shaped with a round bladed draw knife. In a cask, the staves are narrower at the ends instead of the middle, and this shape is obtained with the use of a side axe and a draw knife.

The dressed staves are arranged inside an iron raising hoop, which is a part of the cooper's toolkit, until a complete circle is formed. A wider truss hoop was placed over the other one and beaten down with a hammer and hoop-drivers till it enclosed the cask tightly. The cask had the appearance of a truncated cone. The staves were held in place by the iron raising hoop on the top and the tusk hoop prevented it splaying outwards.

To make the timber pliable for further work, the staves were wetted and the cask turned upside down over a burning cresset. This softens the wood and the staves can be bent toward each other. They are held in place by beating down truss hoops. As soon as the cask had its definitive shape, the truss hoops were replaced by hoops made of iron or willow.

The ends of the staves were now trimmed with an adze to form the chime. The outer edge was smoothed with a topping plane. Next, the heads groove had to be made. First an incision with a hollow knife was made at the right place and then the groove cut with a croze.

Various shaves were used to smoothen both the interior and exterior of the cask. The tap hole was bored with an auger and stopped with a bung.

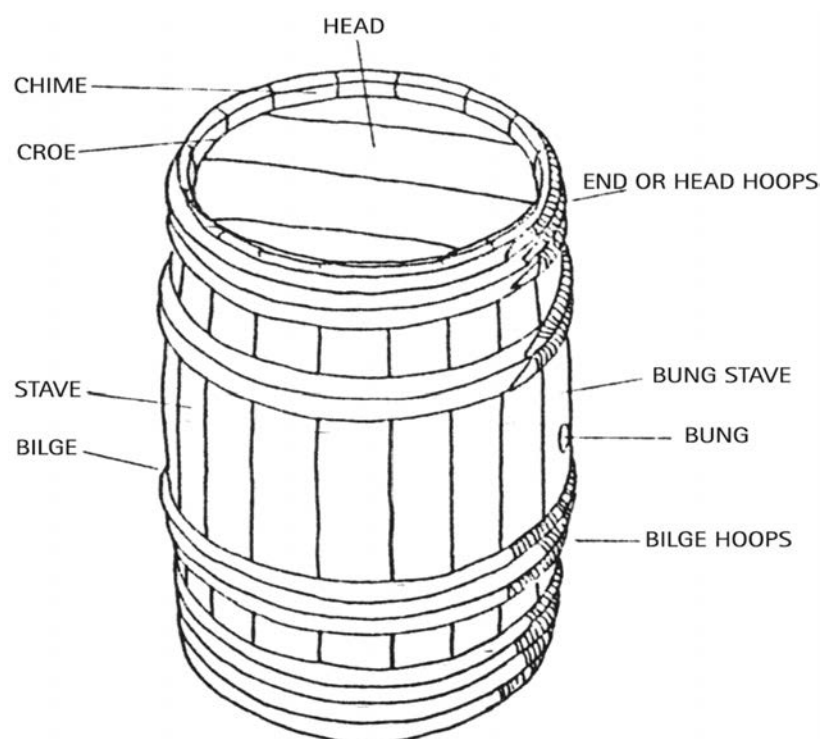


Figure 5.5 : Typical cask.

The head consists of several oak planks held together with wooden dowel pegs, which fit in holes in the planks made with a dowel-bit. A pair of compasses were used to draw a circle with the size of the head on the planks. The cooper saws out the circle and then uses a heading knife for the edges, and an adze to cut the head till it fitted in the croze.

The temporary chime hoops at both ends of the cask are released, and the heads eased into position. The cooper uses a heading vice screwed in the wood to keep the head in place and prevent it from falling into the barrel. The work is finished by fitting the remaining permanent (iron) hoops using a hammer and a driver (Gerant Jenkins, Salaman 1964, 128-133, Hulst 1987, 73-85; Seymour 1984, 86-95).

Cooperage for the VOC

The VOC used a huge amount of casks and other cooperage products in different but standardized sizes for the shipping of food, water, equipment and trade goods. These were not made by the company, but bought from local coopers in Holland. Several cooperies were specialized and made only one or two types of products.

The coopers in the warehouse of the VOC filled casks with meat, bread, wine, nails or all the other goods used during the voyage and in Asia, carefully closed the head, and put a mark on the cask. According to Van Dam, this was done with red or black ink, but carved or branded marks were also common.

Special care was taken with the stowage of the barrels. The standardization of their sizes made the stowage easier, but nevertheless it often happened that barrels of different sizes were placed on each other in such a way that they rested on their "belly" with leakage as result. According to the instructions, the big water barrels (legger) would be put at the bottom of the hold on top of a layer of dunnage and if necessary resting on wooden supports. The same precautions would have been taken with the next layer of smaller barrels on top of it. Wooden supports would keep the "belly" of a barrel 3/4 inch free from the other ones (Stapel 1927, I-1 p. 527).

On board of VOC ships of 150 feet, there was normally one master and two junior-coopers, but on the smaller Avondster, it is more likely that there was only one cooper. The company paid a junior 14 guilders a month and a master 16 guilders.

The cooper was, together the steward, responsible for the opening of the barrels with food and the closing and maintenance of the barrels, casks etc.

In the hot climate of the tropics, there was much repair work to do, because the barrels started leaking. Empty water barrels

were often filled with seawater. This was not only done to prevent leakage, but also to stabilize the ship by compensating the lost weight. The result was that the salt water spoiled the wood of the expensive barrels (Bonke 1999, p. 94).

Many wooden barrels and the iron concretions of the barrel hoops have been found near the galley of the Avondster. Most are broken but some are intact and have been left on the site.

The salvaged parts of wooden barrels consists of 120 fragments of single staves and heads. Almost all staves showed traces of either wooden or iron hoops. Sometimes small pieces of dunnage or a rope were found in the concretions on the wood. The fragments were too small to make a reconstruction of the casks as was done with the finds from the Amsterdam (lost in 1749) (Hulst 1987).

In March 2003, a wooden tub or open barrel was lifted intact from the site (2003GHL300), and moved to the MAU building for treatment. It was lost during the tsunami on Boxing day, but before that happened the conservation team made more than 100 photographs.

The head of the tub is made of four planks, which are 1 cm thick.

They are joined together by wooden nails. The diameter of the head is, -measured on the photos- 50 cm. The head shows incisions, but it is not known if this is an indication of the weight or the mark on the list of the cargo. About 40 cm of the staves and remains of the iron hoop were still extant. The tub contained pine resin. Pines are not found on Sri Lanka. Pine resin was mixed with sulphur and fibres such as animal hair and used for caulking joints and also used between layers of planking for protection against marine organisms.

Many barrels were surrounded with wooden branches and

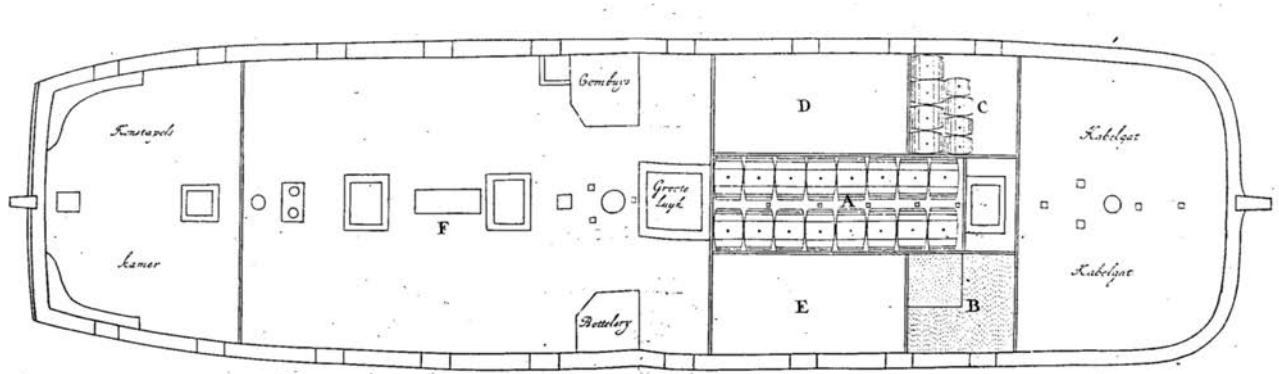


Figure 5.6 : Plan of the VOC ship Waterlant, c. 1690, Nationaal Archief, Collectie Hudde.

off-cuts, believed to be the dunning for packing the spaces between the barrels to prevent movement. There was also firewood found near the galley, identified from its impractical shapes and traces of burning. It is possible that the dunning wood ended as firewood.

Bamboo, which is one of the most important plants in the daily life of people in Asia, is the Malay name of grasses which belongs to the subfamily of Bambusiudeae. The stems of this fast growing tropical plant are hard but flexible and pliable. Bamboo is used for many things like building material for houses and bridges, water pipes and wicker-work. The young shoots of the plant are eaten. On the wreck site, several small pieces of bamboo were found. The VOC sometimes exported bundles of bamboo to Europe, where the stems were used to make walking sticks etc., but it is more likely is that on board it was used as dunning or as rope (bindrotting).

An artefact, spotted on the seabed during the last diving campaign, is probably a basket made of wickerwork. Bamboo baskets were used as packing material in South East Asia for many centuries. Even today, both bamboo wickerwork baskets and boxes made of plastic are used on markets to transport all kinds of merchandise. These baskets were so common and cheap that they were thrown away when worn out. The basket from the Avondster was not excavated and is still in situ after the tsunami.

Catalogue Wood

catalogue number

1 inventory number -status

2 date

3 measurements

4a material

4b manufacture

5 miscellaneous

6 name

7 provenance

8 literature

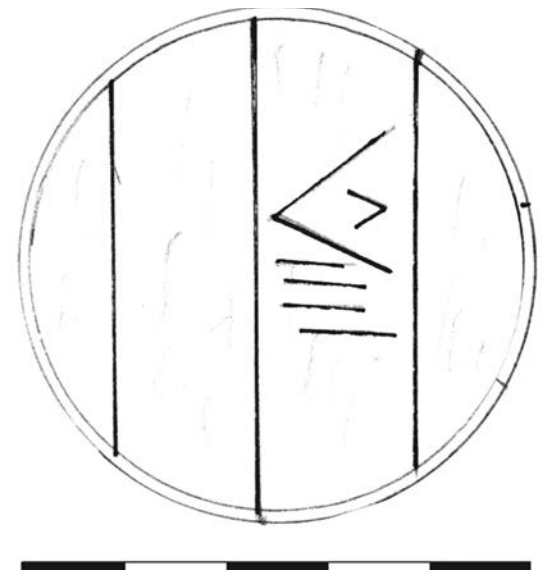
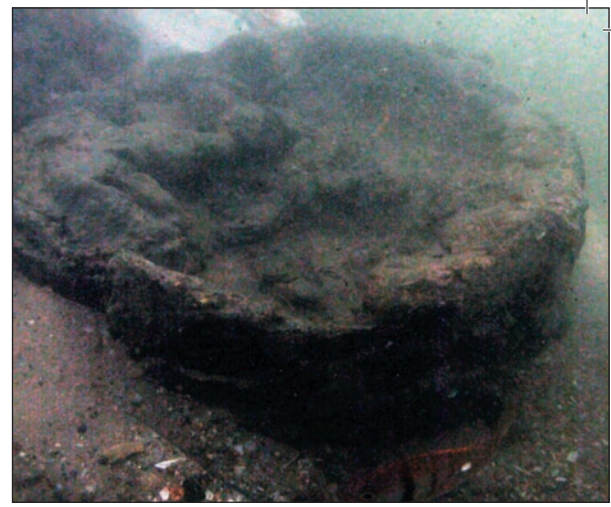


Figure 5.7 : The tub in situ. (2003GHL300)

Figure 5.8 : The excavated tub is prepared for the conservation.

Figure 5.9 : Mark on wooden tub (2003GHL300)

Figure 5.10 : A wickerwork basket in situ on the seabed.

Catalogue Wood

W0001

1. 1998GHL017a / L
2. 1640-1659
3. -
- 4a. wood and iron
- 4b. sawn, chiselled
5. -
6. block, single sheave pulley for rope ca. 15 mm diameter
7. England or The Netherlands
8. Manwaring 1922, 202; Witsen 1690,103



W0002

1. 1998GHL041 / R
2. 1640-1659
3. -
- 4a. wood and iron
- 4b. sawn, chiselled
5. two metal repair strips on each side of the larger part (to prevent splitting?)
6. block, snatchblock for rope ca. 35 mm diameter, broken sheave missing
7. England or The Netherlands
8. Manwaring 1922, 238; Witsen 1690,131, 352



W0003

1. 1999GHL034 / R
2. 1640-1659
3. -
- 4a. wood
- 4b. sawn, chiselled
5. -

6. block, single sheave pulley for rope 15 - 20 mm diameter
7. England or The Netherlands
8. Manwaring 1922, 100 Witsen 1690,103



W0004

1. 2001GHL005a / L
2. 1640-1659
3. block 17 x 15 x 7.5 cm; sheave ca.12 cm diameter
- 4a. wood
- 4b. sawn, chiselled
5. -
6. block, single sheave pulley for rope ca. 2 cm diameter
7. England or The Netherlands
8. Manwaring 1922, 110,202; Witsen 1690,103



W0005

1. 2001GHL006a / L
2. 1640-1659
3. 11.8 x 9.7 x 4.6 cm
- 4a. wood
- 4b. sawn, chiselled
5. -
6. block, single sheave pulley for rope ca. 1.5 cm diameter
7. England or The Netherlands
8. Manwaring 1922, 110,202; Witsen 1690,103

W0006

1. 2001GHL006b / L
2. 1640-1659
3. -- x 9.8 x -- cm; sheave ca. 5 cm diameter
- 4a. wood
- 4b. sawn, chiselled
5. -
6. block, single sheave pulley
7. England or The Netherlands
8. Manwaring 1922, 110,202; Witsen 1690,103



W0007

1. 2001GHL006c / L
2. 1640-1659
3. 9.4 x 9.0 x 3.5 cm
- 4a. wood
- 4b. sawn, chiselled
5. -
6. dead eye with 3 holes for rope of ca. 1.5 cm diameter
7. England or The Netherlands
8. Manwaring 1922, 138; Witsen 1690, 131



W0008

1. 2001GHL007a / L
2. 1640-1659
3. 18.2 x -- x 6.6 cm
- 4a. wood
- 4b. sawn, chiselled
5. match 2001GHL007c
6. block, fragment
7. England or The Netherlands
8. -



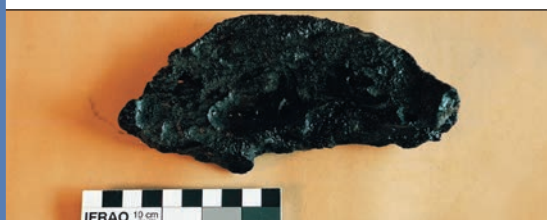
W0009

1. 2001GHL007b / L
2. 1640-1659
3. diam. ca. 5 cm
- 4a. wood
- 4b. turned
5. -
6. sheave, fragment
7. England or The Netherlands
8. -



W0010

1. 2001GHL007c / L
2. 1640-1659
3. --x -- x 1.7 cm
- 4a. wood
- 4b. sawn
5. match 2001GHL007a
6. block, fragment
7. England or The Netherlands
8. -



W0011

1. 2001GHL011 / L
2. 1640-1659
3. ca. 9 cm diameter
- 4a. wood
- 4b. sawn, chiselled
5. -
6. dead eye with 3 holes for rope ca. 1.5 - 2.0 cm
7. England or The Netherlands
8. Manwaring 1922, 138, Witsen 1690,131



W0012

1. 2001GHL012a / L
2. 1640-1659
3. oval ca. 9.3 - 9.5 cm, thick ca. 4 cm
- 4a. wood
- 4b. sawn, chisseld
5. with rope 2002GHL012b
6. dead eye with 3 holes for rope ca. 1 cm
7. England or The Netherlands
8. Manwaring 1922, 138, Witsen 1690,131



W0013

1. 2001GHL013a (block fragment),2001GHL013b (cheek fragment) 2001GHL013c (cheek fragment) / L
2. 1640-1659
3. diam. sheave ca. 12 cm
- 4a. wood
- 4b. sawn, chiselled
5. -
6. block, single sheave pulley, incomplete
7. England or The Netherlands
8. Manwaring 1922, 100, 202, Witsen 1690, 103



W0014

1. 2001GHL014 / L
2. 1640-1659
3. sheave ca. 7.5 cm diameter
- 4a. wood
- 4b. sawn, chisselled
5. -
6. block, single sheave pulley, incomplete, peg and sheave still in place
7. England or The Netherlands
8. Manwaring 1922, 100, 202, Witsen 1690, 103



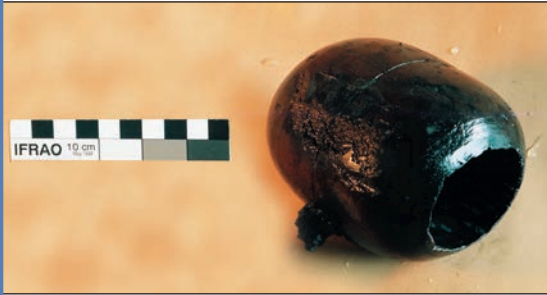
W0015

1. 2001GHL015 / L
2. 1640-1659
3. 18.0 x 5.5 cm; hole 5.4 cm
- 4a. wood (lignum vitae)
- 4b. turned
5. -
6. sheave
7. England or The Netherlands
8. Manwaring 1922, 224; Witsen 1690, 203



W0016

1. 2001GHL016 / L
2. 1640-1659
3. 12.0 x -- ; hole 4.8 - 5.5 cm diameter
- 4a. wood
- 4b. turned
5. -
6. truck
7. England or The Netherlands
8. -



W0017

1. 2001GHL017a1 (cheek); 2001GHL017a2 (cheek); 2001GHLa3 (sheave); 2001GHLa4 (fragment); 2001GHLa5 (fragment) / L
2. 1640-1659
3. -
- 4a. wood
- 4b. sawn, chiselled
5. -
6. block, single sheave pulley, incomplete
7. England or The Netherlands
8. Manwaring 1922, 100, 202, Witsen 1690, 103



W0018

1. 2001GHL027 / L
2. 1640-1659
3. ca.18 x -- x -- cm
- 4a. wood
- 4b. sawn, chiselled
5. -
6. block. single sheave pulley
7. England or The Netherlands
8. Manwaring 1922, 100,202; Witsen1690,103.

W0019

1. 2002GHL056 / R
2. 1640-1659
3. dead eye 24.8 cm diameter
- 4a. wood and iron,
- 4b. sawn, chiselled
5. -
6. dead eye with 3 holes for rope ca. 20 mm and iron chains
7. England or The Netherlands
8. Manwaring 1922, 100,202; Witsen1690,103.



W0020

1. 2004GHL242 / L
2. 1640-1659
3. -
- 4a. wood and iron
- 4b. -
5. wood completely disappeared, shape kept in iron concretion
6. dead eye with iron frame
7. England or The Netherlands
8. Witsen 1690, 102.



W0021

1. 2004GHL345 / L
2. 1640-1659
3. ca. 10.5 cm diameter
- 4a. wood (lignum vitae)
- 4b. turned
5. -
6. sheave
7. England or The Netherlands
8. Manwaring 1922, 224; Witsen 1690, 203



W0022

1. 2001GHL017b / L
2. 1640-1659
3. -
- 4a. wood
- 4b. - 5. -
6. block, fragment
7. England or The Netherlands
8. -

W0023

1. 2002GHL210 / L
2. 1640-1659
3. -
- 4a. wood
- 4b. - 5. -
6. block
7. England or The Netherlands
8. -

W0024

1. 2002GHL211 / L
2. 1640-1659
3. -
- 4a. wood
- 4b. - 5. -
6. sheave
7. England or The Netherlands
8. -

W0025

1. 2003GHL125 / L
2. 1640-1659
3. ca.18.2 cm diameter, thick 4.2 cm
- 4a. wood
- 4b. - 5. -
6. sheave
7. England or The Netherlands
8. -

W0026

1. 2003GHL273 / L
2. 1640-1659
3. 17.0 x 11.6 x -- ; hole 2.5 cm diameter
- 4a. wood
- 4b. - 5. -
6. cheek of a block
7. England or The Netherlands
8. -

W0027

1. 2003GHL583 / L
2. 1640-1659
3. -
- 4a. wood
- 4b. - 5. -
6. block, complete
7. England or The Netherlands
8. -

W0028

1. 2001GHL050a / L
2. - 3. -
- 4a. wood
- 4b. - 5. -
6. rigging, fragment
7. - 8. -

W0029

1. 2001GHL050b / L
2. - 3. -
- 4a. wood
- 4b. - 5. -
6. rigging, fragment (?)
7. - 8. -

W0030

1. 1998GHL017b / L
2. - 3. -
- 4a. wood
- 4b. sawn
5. totally decayed
6. wood, 2 pieces
7. - 8. -



W0031

1. 1998GHL026 / L
2. - 3. -
- 4a. wood
- 4b. - 5. -
6. handle? cylindrical shaped
7. - 8. -



- W0032
- | | | | |
|-----|--|----|---|
| 1. | 1998GHL037 / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | cut | | |
| 5. | - | | |
| 6. | wood, block part in the centre removed | | |
| 7. | - | 8. | - |

- W0033
- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL057 / R | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | cut | | |
| 5. | decayed | | |
| 6. | wood, piece | | |
| 7. | - | 8. | - |

- W0034
- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL100 / R | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | decayed | | |
| 6. | wood, piece | | |
| 7. | - | 8. | - |



- W0035
- | | | | |
|-----|-----------------|----|---|
| 1. | 1998GHL101 / R | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | sawn | | |
| 5. | decayed | | |
| 6. | plank, fragment | | |
| 7. | - | 8. | - |



- W0036
- | | | | |
|-----|---|----|---|
| 1. | 1998GHL102 / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | surface has a line bordering in white, slightly decayed | | |
| 6. | wood, piece | | |
| 7. | - | 8. | - |



- W0037
- | | | | |
|-----|------------------|----|---|
| 1. | 1998GHL125 / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | slightly decayed | | |
| 5. | black surface | | |
| 6. | wood, piece | | |
| 7. | - | 8. | - |



- W0038
- | | | | |
|-----|-----------------|----|---|
| 1. | 1999GHL026 / L | | |
| 2. | - | 3. | - |
| 4a. | wood and copper | | |
| 4b. | - | 5. | - |
| 6. | handle | | |
| 7. | - | 8. | - |



W0039			
1.	2001GHL003 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood,fragment		
7.	-	8.	-



W0040			
1.	2001GHL048 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0041			
1.	2001GHL050c / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0042			
1.	2001GHL050d / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0043			
1.	2001GHL050e / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0044			
1.	2001GHL050f / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0045			
1.	2001GHL050g / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0046			
1.	2001GHL050h / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0047			
1.	2001GHL050i / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0048			
1.	2001GHL050j / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	on side about 7 square nail holes		
6.	wood, fragment		
7.	-	8.	-

W0049

1.	2001GHL050k / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	worn		
6.	block, fragment		
7.	-	8.	-

W0050

1.	2001GHL050l / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0051

1.	2001GHL050m / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0052

1.	2001GHL050n / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragmen		
7.	-	8.	-

W0053

1.	2001GHL050o / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0054

1.	2001GHL050p / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0055

1.	2001GHL050q / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0056

1.	2001GHL050r / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0057

1.	2001GHL050s / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	metal corrosion on flat surface		
6.	wood, fragment		
7.	-	8.	-

W0058

1.	2001GHL050t / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	with holes		
6.	wood, fragment		
7.	-	8.	-

W0059

1.	2001GHL050u / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		

W0060

1.	2001GHL050v / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0061

1.	2001GHL050w / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0062

1.	2001GHL050x / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	one side concretion		
6.	wood, fragment		
7.	-	8.	-

W0063

1.	2001GHL050y / L		
2.	-	3.	-
4a.	wood	4b.	-
5.	very worn		
6.	wood, fragment		
7.	-	8.	-

W0064

1.	2001GHL058d / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	covered with thin layer of iron		
6.	wood, fragment		
7.	-	8.	-

W0065

1.	2001GHL058e / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0066

1.	2001GHL058f / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0067

1.	2001GHL058g / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0068

1.	2001GHL058h / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0069

1.	2001GHL058i / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0070

1.	2001GHL058j / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0071

1.	2001GHL058k / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0072

1.	2001GHL058l / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0073			
1.	2001GHL058m / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0074			
1.	2001GHL065a / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	fire wood ?		

W0075			
1.	2001GHL065b / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood with bark, possible fire wood		
7.	-	8.	-

W0076			
1.	2001GHL066 / L		
2.	-	3.	-
4a.	wood	4b.	-
5.	very worn		
6.	wood, fragment		
7.	-	8.	-



W0077			
1.	2001GHL067 / L		
2.	1640-1659		
3.	-		
4a.	wood	4b.	-
5.	one side with caulking material or hair and nail holes		
6.	wood, fragment		
7.	-	8.	-

W0078			
1.	2001GHL068 / L		
2.	-- x 5 x-- cm	3.	-
4a.	wood		
4b.	-		
5.	with iron remains		
6.	wood, fragment		
7.	-	8.	-

W0079			
1.	2001GHL072 / L		
2.	-- x 4.2 x 2.2 cm		
3.	-		
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-



W0080			
1.	2001GHL073 / L		
2.	1640-1659	3.	-
4a.	wood		
4b.	-	5.	-
6.	tree nail or peg		
7.	-	8.	-



W0081			
1.	2001GHL075 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	fire wood?		
7.	-	8.	-



W0082

1.	2001GHL077 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0083

1.	2001GHL082k / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0084

1.	2001GHL084 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0085

1.	2001GHL091 / L		
2.	17b - 17c		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood with bark, possible fire wood		
7.	-	8.	-



W0086

1.	2001GHL108 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment with hole		
7.	-	8.	-

W0087

1.	2001GHL109a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0088

1.	2001GHL109b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0089

1.	2001GHL109c / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0090

1.	2001GHL109d / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0091

1.	2001GHL109e / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0092			
1.	2001GHL126 / L		
2.	17b - 17c		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, possible firewood		
7.	-	8.	-

W0093			
1.	2001GHL127a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0094			
1.	2001GHL127b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0095			
1.	2001GHL127c / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0096			
1.	2001GHL127d / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0097			
1.	2002GHL007 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0098			
1.	2002GHL029 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0099			
1.	2002GHL162a / L		
2.	1640-1659	3.	-
4a.	wood		
4b.	-		
5.	with chaulking hair attached		
6.	wood, fragment of hull		
7.	-	8.	-

W0100			
1.	2002GHL162b / L		
2.	1640-1659	3.	-
4a.	wood	4b.	-
5.	with chaulking hair attached		
6.	wood, fragment of hull		
7.	-	8.	-

W0101			
1.	2001GHL162b / L		
2.	1640-1659	3.	-
4a.	wood	4b.	-
5.	with chaulking hair attached		
6.	wood, fragment		
7.	-	8.	-

W0102			
1.	2001GHL090a / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, possible firewood		
7.	-	8.	-

W0103			
1.	2001GHL090b / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood with bark, possible firewood		
7.	-	8.	-

W0104

1.	2002GHL030 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, possible firewood		
7.	-	8.	-

W0105

1.	2002GHL064 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0106

1.	2002GHL065 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, fragment		
7.	-	8.	-

W0107

1.	2002GHL066 / L		
2.	17b - 17c	3.	-
4a.	firewood		
4b.	-	5.	-
6.	wood		
7.	-	8.	-

W0108

1.	2002GHL178 / R		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood with bark, dunning		
7.	-	8.	-

W0109

1.	2002GHL179 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	dunning		
7.	-	8.	-

W0110

1.	2002GHL180 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	dunning		
7.	-	8.	-

W0111

1.	2002GHL181 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood with bark, dunning		
7.	-	8.	-

W0112

1.	2002GHL182 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	dunning		
7.	-	8.	-

W0113

1.	2002GHL183ab / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	dunning		
7.	-	8.	-

W0114

1.	2002GHL184 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	dunning		
7.	-	8.	-

W0115

1.	2003GHL198 / L		
2.	17b - 17c	3.	-
4a.	wood		
4b.	-	5.	-
6.	dunning or firewood		
7.	-	8.	-

W0116			
1.	2003GHL239 / L		
2.	17b - 17c	3.	-
4a.	wood, yellow		
4b.	-	5.	-
6.	dunning, sample		
7.	-	8.	-

W0117			
1.	2003GHL240 / L		
2.	17b - 17c	3.	-
4a.	wood, reddish brown		
4b.	-	5.	-
6.	dunning, sample		
7.	-	8.	-

W0118			
1.	2002GHL188 / L		
2.	1640-1659	3.	-
4a.	wood		
4b.	-	5.	-
6.	treenail or peg		
7.	-	8.	-

W0119			
1.	2002GHL252 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, , fragment		
7.	-	8.	-

W0120			
1.	2003GHL176 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0121			
1.	2003GHL178 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0122			
1.	2003GHL179 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0123			
1.	2003GHL219 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0124			
1.	2003GHL223 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0125			
1.	2003GHL302 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0126			
1.	2003GHL306 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0127			
1.	2003GHL312 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0128

1.	2003GHL369 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0129

1.	2003GHL387 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	wood, unidentified		
7.	-	8.	-

W0130

1.	2001GHL044a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0131

1.	2001GHL044b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0132

1.	2001GHL045 / L	1640-1659	
2.	-	3.	-
4a.	wood		
4b.	-		
5.	with caulking material and hair on one side		
6.	plank, fragment		
7.	-	8.	-



W0133

1.	2001GHL046a / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	with scarf on one side		
6.	plank, fragment		
7.	-	8.	-

W0134

1.	2001GHL046b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0135

1.	2001GHL047 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0136

1.	2001GHL049 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0137

1.	2001GHL058a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-



W0138			
1.	2001GHL058b		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0139			
1.	2001GHL058c / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0140			
1.	2001GHL064a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-



W0141			
1.	2001GHL064b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0142			
1.	2001GHL088		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	with 6 iron fasteners		
6.	plank, fragment		
7.	-	8.	-

W0143			
1.	2001GHL089 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-



W0144			
1.	2001GHL092 / L		
2.	-	3.	-
4a.	wood		
4b.	-		
5.	with nailhole and metal concretion		
6.	plank, fragment		
7.	-	8.	-

W0145			
1.	2001GHL093a / L		
2.	1640-1659		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank possible from the bulkhead, fragment		
7.	-	8.	-



W0146			
1.	2001GHL093b / L		
2.	1640-1659		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank possible from the bulkhead, fragment		
7.	-	8.	-



W0147

1.	2001GHL096		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0148

1.	2001GHL097 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0149

1.	2001GHL125a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0150

1.	2001GHL125b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0151

1.	2001GHL137		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0152

1.	2001GHL138		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0153

1.	2001GHL139 / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0154

1.	2002GHL006a / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0155

1.	2002GHL006b / L		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	plank, fragment		
7.	-	8.	-

W0156

1.	2002GHL061 / R		
2.	-	3.	-
4a.	wood	4b.	-
5.	with several nail holes		
6.	plank, fragment		
7.	-	8.	-

W0157

1.	2002GHL062 / R		
2.	1640-1659		
2.	-	3.	-
4a.	wood	4b.	-
5.	one side caulking material attached, nail holes		
6.	plank, fragment		
7.	-	8.	-

W0158

- | | | | |
|-----|--------------------|----|---|
| 1. | 2002GHL063a / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | with one nail hole | | |
| 6. | plank, fragment | | |
| 7. | - | 8. | - |

W0159

- | | | | |
|-----|-----------------|----|---|
| 1. | 2002GHL095a / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | - | 5. | - |
| 6. | plank, fragment | | |
| 7. | - | 8. | - |

W0160

- | | | | |
|-----|-----------------|----|---|
| 1. | 2002GHL095b / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | - | 5. | - |
| 6. | plank, fragment | | |
| 7. | - | 8. | - |

W0161

- | | | | |
|-----|-----------------|----|---|
| 1. | 2002GHL095c / L | | |
| 2. | - | 3. | - |
| 4a. | wood | | |
| 4b. | - | 5. | - |
| 6. | plank, fragment | | |
| 7. | - | 8. | - |

W0162

- | | | | |
|-----|---------------------|----|---|
| 1. | 2001GHL005b / L | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | wood | | |
| 4b. | - | 5. | - |
| 6. | small stanchion (?) | | |
| 7. | - | 8. | - |

W0163

- | | | | |
|-----|---------------------|----|---|
| 1. | 2001GHL005c / L | | |
| 2. | 1640-1659 | 3. | - |
| 4a. | wood | | |
| 4b. | - | 5. | - |
| 6. | small stanchion (?) | | |
| 7. | - | 8. | - |

W0164

- | | | | |
|-----|--|----|---|
| 1. | 2002GHL200 / L | | |
| 2. | 1640-1659 | | |
| 3. | inner length 92 cm; outerlength 135 cm | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | lodging knee | | |
| 7. | England | 8. | - |

W0165

- | | | | |
|-----|----------------|----|---|
| 1. | 2002GHL201 / L | | |
| 2. | 1640-1659 | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | knee, fragment | | |
| 7. | - | 8. | - |

W0166

- | | | | |
|-----|----------------|----|---|
| 1. | 2002GHL202 / L | | |
| 2. | 1640-1659 | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | knee, fragment | | |
| 7. | - | 8. | - |

W0167

- | | | | |
|-----|--------------------|----|---|
| 1. | 2003GHL279 / L | | |
| 2. | 1640-1659 | | |
| 3. | - | | |
| 4a. | wood and iron | | |
| 4b. | - | | |
| 5. | with 2 iron hinges | | |
| 6. | ladder, fragment | | |
| 7. | - | 8. | - |

W0168

- | | | | |
|-----|----------------|----|---|
| 1. | 2003GHL530 / L | | |
| 2. | 1640-1659 | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | tree nail | | |
| 7. | - | 8. | - |

W0169

1. 2004GHL155 / L
2. 1640-1659
3. 110 mmlong, hole in middle 45 mm diameter
- 4a. wood and natural fiber
- 4b. -
5. fragments of 3 shroud cables through the hole
6. rammer
7. -
8. -

W0170 > W0174

1. 2002GHL115a; 2002GHL115aa;
2002GHL115ab; 2002GHL115ac;
2002GHL115ad / R
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. -
6. staves and cora of a barrel, fragment
7. -
8. -

W0175

1. 2002GHL115ae / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. with concretion with dunnagetimber
6. staves of a barrel, fragment
7. -
8. -

W0176 > W0179

1. 2002GHL115af; 2002GHL115ag; 2002GH-
L115ah; 2002GHL115ai / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. -
6. staves of a barrel, fragment
7. -
8. -

W0180

1. 2002GHL115b / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. match with 2002GHL115c
6. staves of a barrel, fragment
7. -
8. -

W0181

1. 2002GHL115c / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. match with 2002GHL115b and 2002GHL115d
6. staves of a barrel, fragment
7. -
8. -

W0182

1. 2002GHL115d / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. match with 2002GHL115c
6. staves of a barrel, fragment
7. -
8. -

W0183 > W0184

1. 2002GHL115e / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. -
6. staves of a barrel, fragment
7. -
8. -

W0184

1. 2002GHL115f / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. match with 2002GHL115g
6. staves of a barrel, fragment
7. -
8. -

W0185

1. 2002GHL115g / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. match with 2002GHL115f
6. staves of a barrel, fragment
7. -
8. -

W0186 > W0189

1. 2002GHL115h; 2002GHL115i; 2002GHL115j;
2002GHL115k / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. -
6. staves of a barrel, fragment
7. -
8. -

WO190

- | | | | |
|-----|------------------------------|-----|---|
| 1. | 2002GHL115l / L | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | wood | 4b. | - |
| 5. | match 2002GHL115m | | |
| 6. | staves of a barrel, fragment | | |
| 7. | - | 8. | - |

WO191

- | | | | |
|-----|-----------------------------------|-----|---|
| 1. | 2002GHL115m / L | | |
| 2. | 17b - 17c | 3. | - |
| 4a. | wood | 4b. | - |
| 5. | match 2002GHL115l and 2002GHL115f | | |
| 6. | staves of a barrel, fragment | | |
| 7. | - | 8. | - |

WO192 > WO204

- | | | | |
|-----|---|--|--|
| 1. | 2002GHL115n; 2002GHL115o; 2002GHL115p;
2002GHL115q; 2002GHL115r; 2002GHL115s;
2002GHL115t; 2002GHL115u; 2002GHL115v;
2002GHL115w; 2002GHL115x; 2002GHL115y;
2002GHL115z / L | | |
| 2. | 17b - 17c | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | staves of a barrel, fragment | | |
| 7. | - | | |
| 8. | - | | |

WO205 > WO215

- | | | | |
|-----|--|--|--|
| 1. | 2002GHL163a; 2002GHL163aa; 2002GHL163ab;
2002GHL163ac; 2002GHL163ad; 2002GHL163ae;
2002GHL163af; 2002GHL163ag; 2002GHL163ah;
2002GHL163ai; 2002GHL163aj / L | | |
| 2. | 17b - 17c | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | staves of a barrel, fragment | | |
| 7. | - | | |
| 8. | - | | |

WO216 > WO239

- | | | | |
|----|--|--|--|
| 1. | 2002GHL163b; 2002GHL163c; 2002GHL163d;
2002GHL163e; 2002GHL163f; 2002GHL163g;
2002GHL163h; 2002GHL163i; 2002GHL163j; | | |
|----|--|--|--|

2002GHL163k; 2002GHL163l; 2002GHL163m;
2002GHL163n; 2002GHL163o; 2002GHL163p;
2002GHL163q 2002GHL163r; 2002GHL163s;
2002GHL163t; 2002GHL163u; 2002GHL163v;
2002GHL163w; 2002GHL163x; 2002GHL163y
/ L

- | | |
|-----|------------------------------|
| 2. | 17b - 17c |
| 3. | - |
| 4a. | wood |
| 4b. | - |
| 5. | - |
| 6. | staves of a barrel, fragment |
| 7. | - |
| 8. | - |

WO240 > WO254

- | | | | |
|-----|--|--|--|
| 1. | 2002GHL164a; 2002GHL164aa; 2002GHL164ab;
2002GHL164ac; 2002GHL164ad; 2002GHL164ae;
2002GHL164af; 2002GHL164ag; 2002GHL164ah;
2002GHL164ai; 2002GHL164aj; 2002GHL164ak;
2002GHL164al; 2002GHL164am; 2002GHL164an
/ L | | |
| 2. | 17b - 17c | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | staves of a barrel, fragment | | |
| 7. | - | | |
| 8. | - | | |

WO255 > WO278

- | | | | |
|-----|---|--|--|
| 1. | 2002GHL164b; 2002GHL164c; 2002GHL164d;
2002GHL164e; 2002GHL164f; 2002GHL164g;
2002GHL164h; 2002GHL164i; 2002GHL164j;
2002GHL164k; 2002GHL164l; 2002GHL164m;
2002GHL164n; 2002GHL164o; 2002GHL164p;
2002GHL164q; 2002GHL164r; 2002GHL164s;
2002GHL164t; 2002GHL164u; 2002GHL164w;
2002GHL164x; 2002GHL164y; 2002GHL164z / L | | |
| 2. | 17b - 17c | | |
| 3. | - | | |
| 4a. | wood | | |
| 4b. | - | | |
| 5. | - | | |
| 6. | staves of a barrel, fragment | | |
| 7. | - | | |
| 8. | - | | |

W0279 > W0292

1. 2003GHL214a; 2003GHL214b; 2003GHL214c;
2003GHL214d; 2003GHL214e; 2003GHL214f;
2003GHL214g; 2003GHL214h; 2003GHL214i;
2003GHL214j; 2003GHL214k; 2003GHL214l;
2003GHL214m; 2003GHL214n / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. -
5. -
6. staves of a barrel, fragment
7. -

8. -

W0293

1. 2003GHL300 / L
2. 17b - 17c
3. -
- 4a. wood
- 4b. coopered
5. filled with pine resin, with mark
6. tube
7. Europe

8. -

W0294

1. 2004GHL357 / L
2. 17b - 17c
3. -
- 4a. wood and leather
- 4b. -
5. complete with tools
6. toolbox, probably of the mastergunner
7. -
8. Green 1977, 256-268



W0295

1. 1999GHL015 / R
2. -
3. -
- 4a. wood and iron
- 4b. -
5. -
6. part of a row with iron parts
7. -

8. -

W0296

1. 2001GHL020 / L
2. -
3. -
- 4a. wood and iron
- 4b. -
5. -
6. unknown
7. -

8. -

W0297

1. 2001GHL050aa / L
2. -
3. -
- 4a. wood and iron
- 4b. -
5. -
6. unknown
7. -

8. -

W0298

1. 2002GHL097 / L
2. 1640-1659
3. xx
- 4a. wood and iron
- 4b. -
5. -
6. unknown, possible part of rigging of the ship
7. -

8. -

W0299

1. 2003GHL298 / L
2. -
3. -
- 4a. wood and iron
- 4b. -
5. -
6. barrel, fragment
7. -

8. -

W0300

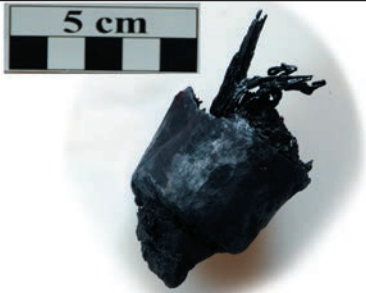
1. 2003GHL299 / L
2. -
3. -
- 4a. wood and iron
- 4b. -
5. -
6. unknown
7. -

8. -

W0301

1. 2004GHL295 / L
2. -
3. -
- 4a. wood (and iron?)
- 4b. -
5. -
6. unknown
7. -

8. -



W0302			
1.	2001GHL120 / R		
2.	-	3.	-
4a.	wood burnt		
4b.	-	5.	-
6.	charcoal, piece		
7.	-	8.	-
W0303			
1.	2002GHL068 / R		
2.	-	3.	-
4a.	wood burnt		
4b.	-	5.	-
6.	charcoal, piece		
7.	-	8.	-
W0304			
1.	2003GHL323 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D01		
7.	-	8.	-
W0305			
1.	2002GHL100a / L		
2.	-	3.	-
4a.	bamboo		
4b.	-		
5.	with cutmark		
6.	dunning		
7.	-	8.	-
W0306 > W0309			
1.	2002GHL100b; 2002GHL100c; 2002GHL100d; 2002GHL100e / L		
2.	-	3.	-
4a.	bamboo		
4b.	-	5.	-
6.	dunning		
7.	-	8.	-

W0310			
1.	2003GHL324 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D02		
7.	-	8.	-
W0311			
1.	2003GHL325 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D04		
7.	-	8.	-
W0312			
1.	2003GHL326 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D05		
7.	-	8.	-
W0313			
1.	2003GHL327 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D14		
7.	-	8.	-
W0314			
1.	2003GHL328 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D15		
7.	-	8.	-
W0315			
1.	2003GHL329 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D17		
7.	-	8.	-

W0316

1.	2003GHL330 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D20		
7.	-	8.	-

W0317

1.	2003GHL331 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D22		
7.	-	8.	-

W0318

1.	2003GHL332 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D24/26		
7.	-	8.	-

W0319

1.	2003GHL333 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D25		
7.	-	8.	-

W0320

1.	2003GHL334 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D30		
7.	-	8.	-

W0321

1.	2003GHL335 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D31		
7.	-	8.	-

W0322

1.	2003GHL336 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D35		
7.	-	8.	-

W0323

1.	2003GHL337 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D36		
7.	-	8.	-

W0324

1.	2003GHL338 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D41		
7.	-	8.	-

W0325

1.	2003GHL339 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D43		
7.	-	8.	-

W0326

1.	2003GHL340 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D45		
7.	-	8.	-

W0327

1.	2003GHL341 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D47		
7.	-	8.	-

W0328			
1.	2003GHL342 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D48		
7.	-	8.	-

W0329			
1.	2003GHL343 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D50		
7.	-	8.	-

W0330			
1.	2003GHL345 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D08		
7.	-	8.	-

W0331			
1.	2003GHL346 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D42		
7.	-	8.	-

W0332			
1.	2003GHL347 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D38		
7.	-	8.	-

W0333			
1.	2003GHL348 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D07		
7.	-	8.	-

W0334			
1.	2003GHL349 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D27		
7.	-	8.	-

W0335			
1.	2003GHL350 / R		
2.	-	3.	-
4a.	wood		
4b.	-	5.	-
6.	sample D19		
7.	-	8.	-





De Lyn draaier.

De ganch is slecht, Maar'twerck is recht.



Den Broomen Zyn verkeerden wandel,
 In't oog van hem, die't niet verstaat,
 Bedrijft nochtans een goeden handel,
 Die in het Onweer komt te baat;
 Dan blijft het levens Schip behouwen,
 Aan Zyn gevlochte kaabel touwen.

Rope

In 2001, a coil of rope was discovered in the bow section. The rope appeared to be well preserved, but it proved to be quite fragile. This was the reason that only a small quantity of rope was recovered to give the conservators an opportunity to establish storage and treatment of the material. The remainder was left undisturbed. In 2004 a large coiled rope was excavated and recovered from where it was lying on the lower deck timber planks.

Every year, the VOC needed kilometres of rope of varying diameter for the rigging of their ships. In five of the six towns, the VOC had their own rope walk. Only Hoorn, where the Avondster was refitted in 1654, bought the rope from a private rope walk in town (Bonke, Bossaers 2004, p. 79).

Ropes are made by twisting hemp yarns together. The best quality raw material came from Italy, but most of the hemp used by the company was bought in the Baltic area. The hemp from Riga was almost as good as the Italian type. On the third place came hemp, which was imported from the north Russian harbour Archangel (Hoving, Weerdt 1994, p. 48).

The bundle of hemp was drawn through a wooden block with iron pins, called a hatchel, to separate the fibres. These were then spun into yarn. The fibres were tied to the hooks of the spinning wheel or rope jack that was kept in motion by a boy. The yarn was connected with the jack and rope maker walked backward, paying out the hemp from around his waist. T - shaped posts with a row of hooks were placed along the ropewalk to prevent the yarn from tangling or becoming dirty. The yarn was wound up on reels.

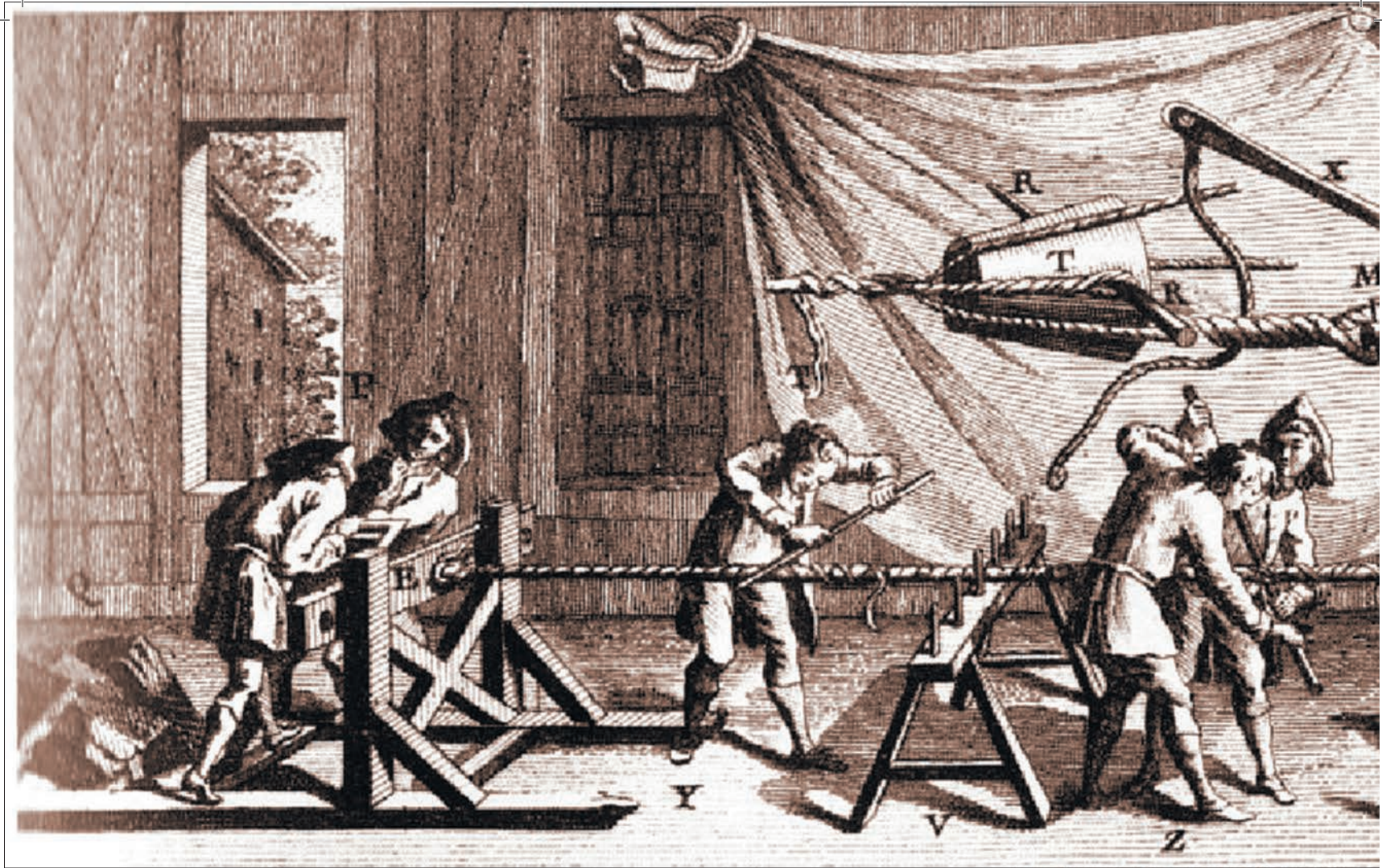
The number of yarns used in the next step depended on the diameter of the rope. The yarns were tied to each of the three hooks, which were powered by a larger wheel. When these groups of yarn or strands were all in place, they were placed at the other side of the ropewalk connected with a sledge with a heavy contra weight. Everything was now ready for winding. The rope maker took a conical wooden block with three grooves and placed it close to the sledge to stop the strands from getting tangled. The strands were twisted together, in the opposite direction of the twist of the yarns. This is the reason why a rope doesn't unravel. The length of the rope was now reduced to two-thirds of its original length.

The heavier the rope, the more ropes were twisted together to make one strong cable. After a certain diameter, it was no longer possible to use the wheel. This was done by three men turning whirls at one end of the ropewalk and two men standing on the sledge and together one whirl on the other side of the rope.

The heaviest rope was the anchor cable, which was made by eight men. For the main anchor of largest East Indiaman, a heavy cable of 120 vadem (200 metres), a diameter of 15 cm and a weight 8000 pound before conservation was used. The cable was made of three strands, each strand made of 3 ropes and each rope of 3 twists or strands (Horsley 1978, p. 292; Dodds, Moore 1984, pp. 32-33).

Figure 6.1: Rope factory, Sri Lanka 2003

Figure 6.2: Dutch ropewalk. Johannes en Caspaares Luiken. Het Menselijk bedrijf, Amsterdam 1694. Collection Amsterdams Historisch Museum

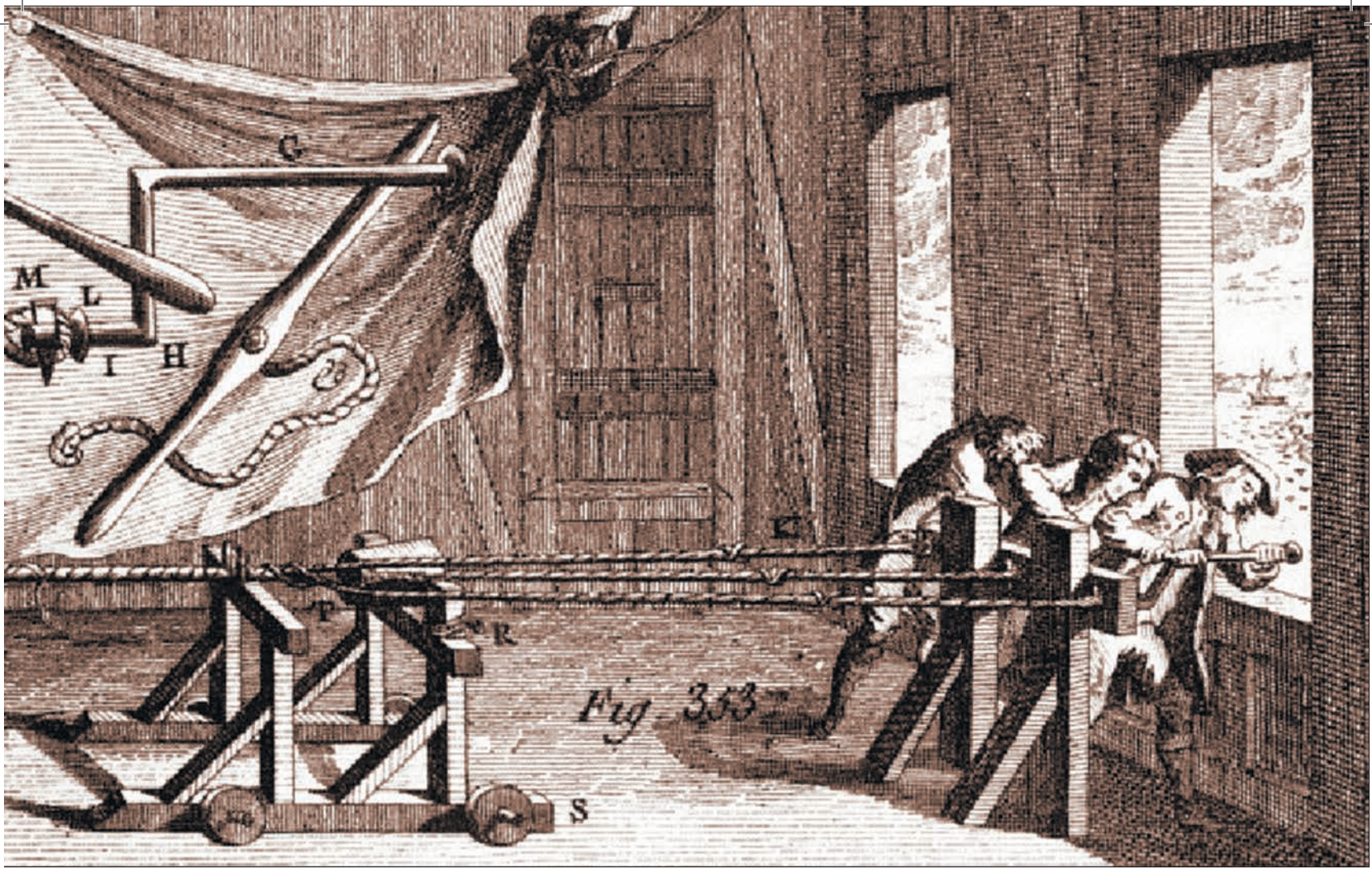


There was a ropewalk in Galle at the time the Avondster was lost, which probably made the heaviest ropes for the ships. The main difference is the fibre, because the ropes are made from coconut fibre instead of hemp. The lighter ropes were ordered in the Netherlands. At the end of the 17th century the VOC ropewalk in Coromandel (India) also made lighter ropes of Asian hemp. The way in which ropes were made in the past can still be seen in Sri Lanka.

Much of the rope was treated with Swedish or Russian tar to preserve it. The rope was first put in a hot stove to dry and than put in a kettle with tar of 100°C. It stayed there two till four hours because the rope should be thoroughly impregnated with the tar, before it was removed from the kettle. The final weight of the impregnated anchor cable was 9500 pounds. Not all rope was tarred, because a tarred rope was between 20 and 33 % less stronger than one without.



Figure 6.4 : Rope 2001GHL002



The ends of some excavated ropes are served, which means that the end was bound with a smaller rope for protection. The best example to show the way ropes were treated is fragment : 2001GHL002. It has a diameter of ca 5.0 cm and is 3 (?) stranded right hand laid. It is wormed with ca 0.6 cm, 3 strand, right hand laid rope and served with ca 0.8 cm, 2 strand, left hand laid marline.

Old rope was not thrown away, but used to make oakum for caulking the ship or the yarn was used for repairing sails. The excavated decayed fragments of fibre are probably pieces of old rope used as chaulking material. The same can be said about the hair, which was also found on wood recovered from the wreck site.

Catalogue Rope

catalogue number

1 inventory number - post tsunami

2 material

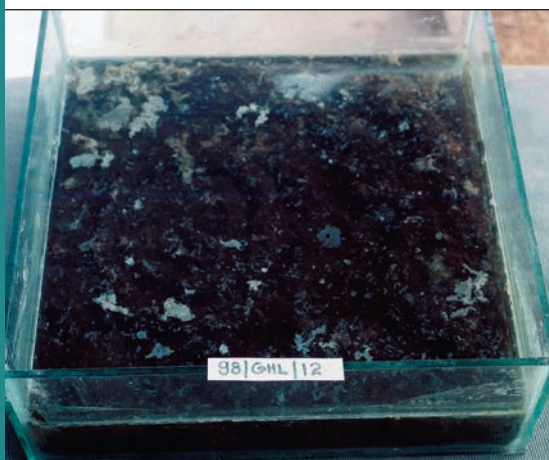
3 name

4 miscellaneous

Catalogue Rope

FI001

1. 1998GHL012 / L
2. fiber, vegetable
3. rope?
4. totally decayed



FI002

1. 1999GHL005 / L
2. fiber
2. fiber?
4. dark green colour

FI003

1. 1999GHL031 / L
2. fiber
3. rope?
4. unidentified fragment



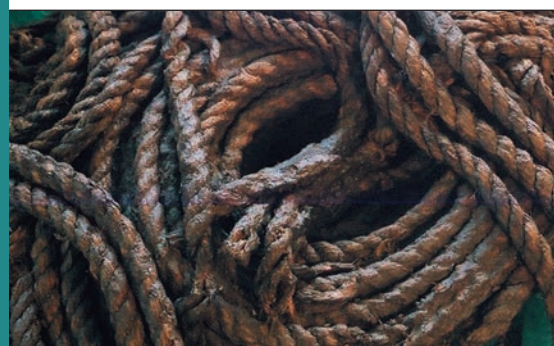
FI004

1. 1999GHL032 / L
2. fiber
3. rope?
4. unidentified fragment



FI005

1. 2001GHL001 / R
2. fiber, vegetable
3. rope, coiled, 2 cm diameter, 3 (?) strands right hand laid
4. -



FI006

1. 2001GHL002 / L
2. fiber, vegetable
3. rope, fragment, 5 cm diameter, 3 (?) strands right hand laid
4. wormed with 3 strand, right hand laid rope 0.6 cm diameter and served with 2 strands, left hand laid marling 0.8 cm diameter



FI007

1. 2001GHL012b / L
2. fiber, vegetable
3. rope, fragment 1.5 cm diameter, 3 strand, right hand laid
4. found around dead eye 2001GHL12a



FI008

1. 2001GHL018 / L
2. fiber, vegetable
3. rope, fragment, right hand laid
4. -



FI009

1. 2001GHL026 / L
2. fiber, vegetable
3. rope, fragment, left hand laid
4. -



FI010

1. 2001GHL031 / L
2. fiber, vegetable
3. rope, fragment
4. -

FI011

1. 2001GHL032 / L
2. fiber, vegetable
3. rope, fragment
4. -

FI012

1. 2001GHL050ab / L
2. fiber, vegetable
3. yarn, fragment
4. -

FI013

1. 2001GHL050ac / L
2. fiber, vegetable
3. yarn, fragment
4. -

FI014

1. 2001GHL059 / L
2. fiber, vegetable
3. rope, 3 pieces, each long 8 cm
4. -

FI015

1. 2001GHL099 / L
2. fiber, animal
3. hair, chaulking material
4. -

FI016

- 1. 2002GHL001 / L
- 2. fiber
- 3. hair or caulking material
- 4. -

FI017

- 1. 2002GHL075 / L
- 2. fiber, vegetable
- 3. rope, fragment
- 4. -

FI018

- 1. 2002GHL100f / L
- 2. fiber, vegetable
- 3. yarn
- 4. wrapped around 2002GHL100d and 2002GHL100e

FI019

- 1. 2002GHL102 / L
- 2. fiber, artificial
- 3. rope?
- 4. -

FI020

- 1. 2002GHL165 / R
- 2. fiber, vegetable
- 3. rope long 62 cm,thick 9.0 cm, consist of 3 strands each about 3.3 cm thick
- 4. part of hawser

FI021

- 1. 2002GHL174b / L
- 2. fiber
- 3. caulking material
- 4. -

FI022

- 1. 2003GHL126 / R
- 2. fiber
- 3. caulking material
- 4. -

FI023

- 1. 2003GHL150 / L
- 2. fiber
- 3. caulking material
- 4. -

FI024

- 1. 2003GHL227 / L
- 2. fiber, hemp?
- 3. fiber
- 4. -



FI025

- 1. 2003GHL282 / L
- 2. fiber
- 3. fiber
- 4. -

FI026

- 1. 2004GHL114 / R
- 2. fiber, vegetable
- 3. rope
- 4. -

FI027

- 1. 2004GHL175 / L
- 2. fiber, vegetable
- 3. rope
- 4. -

FI028

- 1. 2004GHL319 / R
- 2. fiber, vegetable
- 3. rope
- 4. -



Figure 6.5 : Rope under conservation 2001GHL001









Stone and Coal

In 1998, the bed stone of a hand mill was found (1998GHL036), and in 2003 the missing running stone was discovered (2003GHL582). All the wooden parts of the mill are missing and we don't know if there was a complete mill or if only the stones were on board. Both stones are complete, with the exception of the iron parts, which are corroded.

The stone of the mill is made of basalt-lava, a strong and porous volcanic stone, which came from the Eifel area near Mayen in Germany. After the corn was put between the stones, the runner stone was turned by a handle which was put in a hole on top of the stone. The corn was ground between the two stones till it became flour. The stones were dressed, which means that grooves were cut in the stone to get a better result. At regular intervals, the grooves had to be sharpened with a special hammer. In the bed stone is a hole through which the flour was collected. A test has shown that with a similar hand-mill, after about 15 minutes of grinding, 1 kilo of wheat became 0,8 kg fine flour.

In 17th century Holland, hand mills for making flour were no longer used in households, because all the grain was grinded in wind mills. Even Batavia provided a water powered mill for the local bakers to make flour for their bread.

That hand mills were used on ships can be seen in the collection of the Maritiem en Juttersmuseum in Oudeschild in the Netherlands, which has several hand-mills from contemporary shipwrecks.

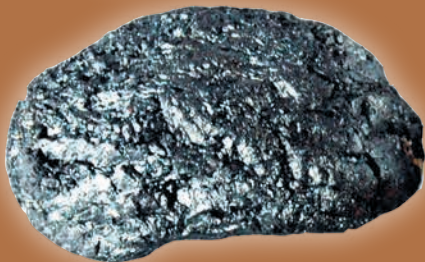
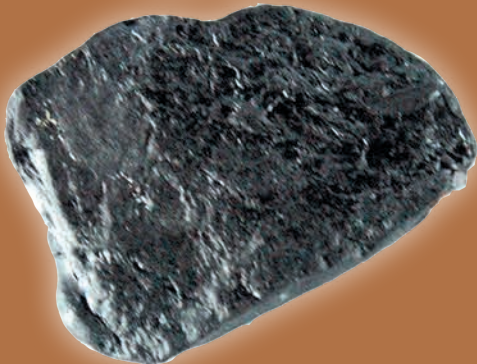
The Avondster took part in the conquest by the VOC of the Portuguese settlements in India and Ceylon. In the train of the army were artisans, merchants, inn-keepers and settlers who took care of the daily supply and the provisions of the soldiers. From studies of the organisation of the armies of the Thirty Years War (1618-1648), it is known that hand mills belonged to the standard equipment of bakers following the soldiers. There is no study of the logistics of the VOC at war, but it is very well possible that the Avondster mill was originally used to make the daily bread of the European soldiers in the army.

What was the function of the black basalt stone (2004GHL 322)? The plaster on the bottom of the stone suggests that was a floor tile. Possibly the flat stone was later reused as a grinding stone to prepare medicines.

The pebbles found in the wreck were part of the ballast. It is not known where the pebbles came from, but there is a historic source which shows that local material was used as ballast. In September 1657, the ships along the coast of Goa, including the Avondster, were ordered to change their sand ballast which was loaded in Batavia to stone ballast. The Leeuwin was ordered to sail to Wingurla and change her own ballast and return with ballast stones for the Z.Zee and the Avondster. When the ship returned, it seemed that the cargo of stones was not enough. On October the 2nd, the Avondster set sail to Wingurla to load the stone ballast

Figure 7.1 : Grinding stone (?); 38.8 x 38.8 x 3.6 cm, 2004GHL322

Figure 7.2 : Hand mill, runnerstone, 2003GHL582 on top of 1998GHL036, hand mill, bedstone, Germany (Eiffel) (see also Figure 7.5)



and on October 9th, the ship returned to the fleet (SLNA 1/3378 15.101657). This incident shows that the ship took local stones as ballast.

Three lost pieces of schist, a crystalline metamorphic rock in which the component minerals are arranged in parallel layers, were probably used as whetstones to sharp knives and utensils.

Good quality European coal was indispensable for a smith to make a fire in his forge, which was hot enough to forge an anchor. Especially in Batavia, where the five forges at the shipyard on Onrust were always busy with the repair work for all the ships arriving, sailing and leaving Asia, there was always a shortage of coal. The company tried in vain to find coalmines in Asia. In the sixteen fifties they opened a mine on Formosa (Taiwan), but the quality of the coal was disappointing. Asia relied on the import from Europe.

In the Netherlands, where peat was the common fuel, there were no coal mines. Coal was imported from England (Newcastle and Sunderland) and from places near the Firth of Forth in Scotland. The main part of the coal went to Rotterdam, from where it was distributed to other places in the country.

Every outgoing ship of the VOC carried coal for use on board and for supplying the stations in Asia. As there was always a shortage of coal, it often occurred that Cape Town took more coal than its official share. Up to the end of the VOC in 1795 there was always a shortage of coal.

Catalogue stone and coal

catalogue number

- 1 inventory number - post tsunami
- 2 measurements
- 3a material
- 3b manufacturing
- 4 name
- 5 provenance

Figure 7.3 : Coal found at the Avondster site



Figure 7.4 : Working with the hand mill



Figure 7.5 : 1998GHL036 ; hand mill, bedstone; Germany (Eiffel)

Catalogue stone and coal

ST001

- 1. 1998GHL036
- 2. diam. 36 cm / 10 cm
- 3a. basalt
- 3b. cut, dressed
- 4. hand mill, bedstone
- 5. Germany (Eiffel)



ST002

- 1. 2003GHL582
- 2. diam. 30 cm / 10.3 cm
- 3a. basalt
- 3b. cut, dressed
- 4. hand mill, runnerstone
- 5. Germany (Eiffel)



ST003

- 1. 2004GHL322
- 2. 38.8 x 38.8 x 3.6 cm
- 3a. basalt
- 3b. cut
- 4. grinding stone (?)
- 5. -



ST004

- 1. 1998GHL071
- 2. -
- 3a. stone
- 3b. -
- 4. ballast stone (?)
- 5. -



ST005

- 1. 1998GHL072
- 2. -
- 3a. stone
- 3b. -
- 4. ballast stone (?)
- 5. -



ST006

- 1. 2001GHL078a
- 2. -
- 3a. stone
- 3b. -
- 4. ballast stone (?)
- 5. -



- ST007
- 1. 2001GHL078b
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. ballast stone (?)
 - 5. -



- ST008
- 1. 2001GHL078c
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. ballast stone (?)
 - 5. -



- ST009
- 1. 2001GHL078d
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. ballast stone (?)
 - 5. -



- ST010
- 1. 2001GHL078e
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. ballast stone (?)
 - 5. -



- ST011
- 1. 2003GHL1072
 - 2. -
 - 3a. schist
 - 3b. -
 - 4. whetstone
 - 5. -

- ST012
- 1. 2003GHL181
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. ballast stone (?), 2 pieces
 - 5. -

- ST013
- 1. 2003GHL217
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. ballast (?)
 - 5. -

- ST014
- 1. 2003GHL578
 - 2. -
 - 3a. stone
 - 3b. -
 - 4. whetstone
 - 5. -

- ST015
- 1. 2004GHL013
 - 2. -
 - 3a. schist
 - 3b. -
 - 4. stone
 - 5. -



- ST016
- 1. 2001GHL057a
 - 2. -
 - 3a. coal
 - 3b. -
 - 4. coal, piece
 - 5. Europe



- ST019
- 1. 2001GHL063a
 - 2. -
 - 3a. coal
 - 3b. -
 - 4. coal, piece
 - 5. Europe



- ST017
- 1. 2001GHL057b
 - 2. -
 - 3a. coal
 - 3b. -
 - 4. coal, piece
 - 5. Europe



- ST020
- 1. 2001GHL063b
 - 2. -
 - 3a. coal
 - 3b. -
 - 4. coal, piece
 - 5. Europe

- ST021
- 1. 2001GHL129
 - 2. -
 - 3a. coal
 - 3b. -
 - 4. coal, piece
 - 5. Europe



- ST018
- 1. 2001GHL057c
 - 2. -
 - 3a. coal
 - 3b. -
 - 4. coal, piece
 - 5. Europe

- ST022
1. 2002GHL014a
 2. -
 - 3a. coal
 - 3b. -
 4. coal,piece
 5. Europe



- ST023
1. 2002GHL014b
 2. -
 - 3a. coal
 - 3b. -
 4. coal, piece
 5. Europe

- ST024
1. 2002GHL028a
 2. -
 - 3a. coal
 - 3b. -
 4. coal, piece
 5. Europe



- ST025
1. 2002GHL028b
 2. -
 - 3a. coal
 - 3b. -
 4. coal, piece
 5. Europe



- ST026
1. 2002GHL028c
 2. -
 - 3a. coal
 - 3b. -
 4. coal, piece
 5. Europe



- ST027
1. 2002GHL028d
 2. -
 - 3a. coal
 - 3b. -
 4. coal, piece
 5. Europe



- ST028
1. 2002GHL107
 2. -
 - 3a. coal
 - 3b. -
 4. coal, piece
 5. Europe

ST029

- 1. 2002GHL108
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST030

- 1. 2002GHL148
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST031

- 1. 2002GHL172
- 2. -
- 3a. coal or charcoal
- 3b. -
- 4. coal or charcoal, piece
- 5. -



ST032

- 1. 2003GHL054
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST033

- 1. 2003GHL079a
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST034

- 1. 2003GHL079b
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST035

- 1. 2003GHL106a
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST036

- 1. 2003GHL106b
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST037

- 1. 2003GHL106c
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST038

- 1. 2003GHL106d
- 2. -
- 3a. coal
- 3b. -
- 4. coal, piece
- 5. Europe

ST039

- 1. 2003GHL140
- 2. -
- 3a. coal
- 3b. -
- 4. coal, 3 pieces
- 5. Europe



ST040

1. 2003GHL147
2. -
- 3a. coal
- 3b. -
4. coal, 5 pieces
5. Europe

ST041

1. 2003GHL151
2. -
- 3a. coal
- 3b. -
4. coal, 3 pieces
5. Europe



ST042

1. 2003GHL182
2. -
- 3a. coal
- 3b. -
4. coal, 3 pieces
5. Europe



ST043

1. 2003GHL305
2. -
- 3a. coal
- 3b. -
4. coal, piece
5. Europe

ST044

1. 2003GHL386
2. -
- 3a. coal
- 3b. -
4. coal, piece
5. Europe

ST045

1. 2003GHL437
2. -
- 3a. coal
- 3b. -
4. coal, piece
5. Europe

ST046

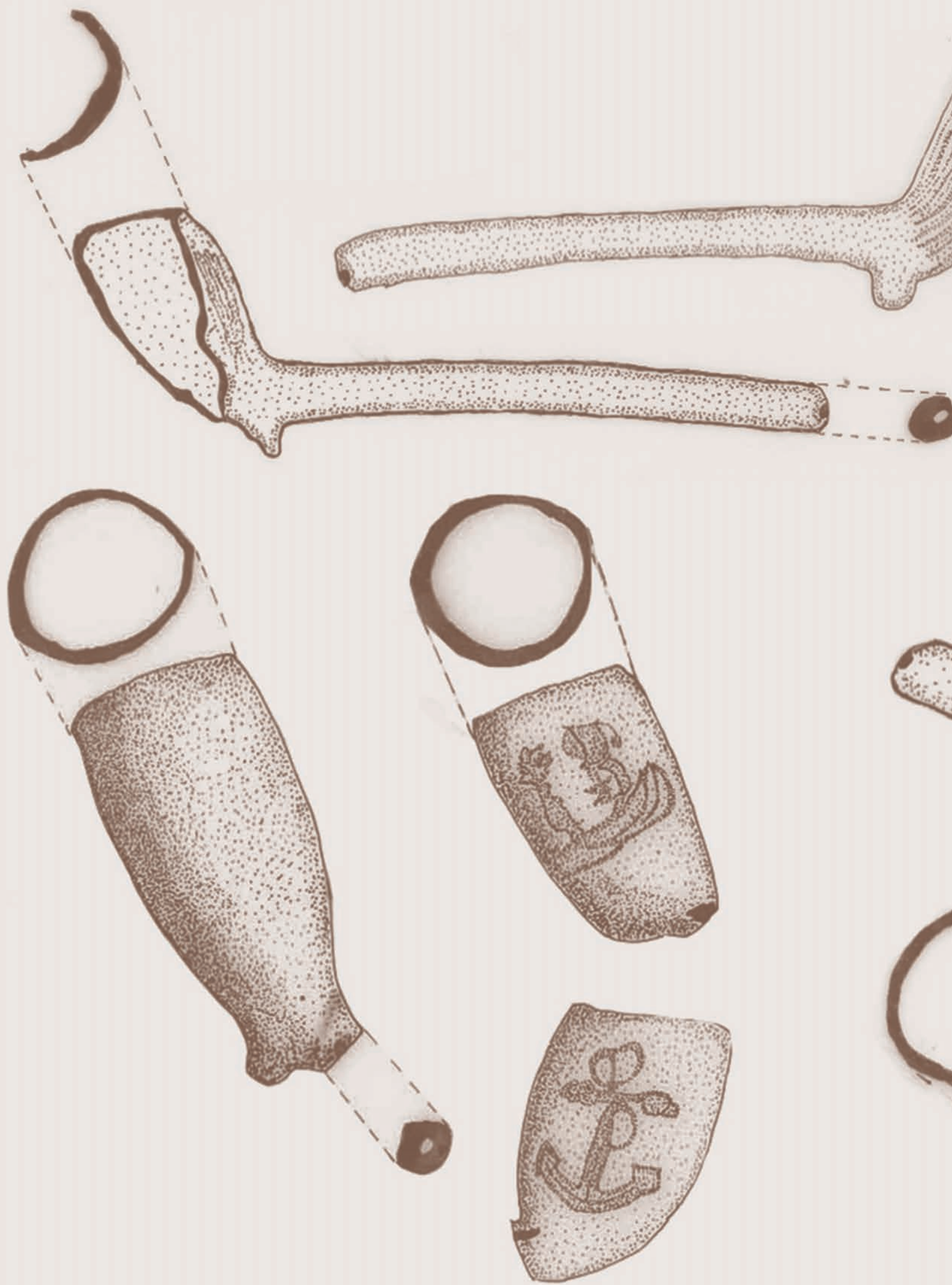
1. 2003GHL464
2. -
- 3a. coal
- 3b. -
4. coal, 2 pieces
5. Europe

ST047

1. 2003GHL575
2. -
- 3a. coal
- 3b. -
4. coal, piece
5. Europe

ST048

1. 2004GHL021
2. -
- 3a. coal
- 3b. -
4. coal, piece
5. Europe







Tobacco pipes

Sailors and soldiers were the first social group that started smoking tobacco in the middle of the 16th century.¹ English soldiers, who served in the Netherlands under the count of Leices-ter in 1585-1586, gave an important impulse to smoking.

During the first Dutch voyage to Asia nine years later, smoking was still a novelty and was not mentioned in the regulations. The first reference to it on an East Indiaman was found in the regulations on the use of fire on board of the ships during the voyage of Steven van der Hagen (1599-1601). It stipulated that smoking was not allowed between the evening prayer and the morning prayer. The growing popularity of tobacco can be seen in the decision in 1612 to place a burning match or lamp before the mast, where smokers could light their pipes. In 1617, sailors were only allowed to smoke tobacco during the day in the *boevennet* and in front of the main mast (Ketting 2002, pp. 82-83).

Many sailors carried spare pipes, copper tobacco boxes or even several rolls of tobacco in their sea chest. Pipes and tobacco were even part of the basic equipment of the chest that an orphan house gave to pupils, who joined the VOC.

When the *Avondster* was lost in 1659, smoking had become a common habit. During the excavation, 96 find numbers with fragments of clay pipes were registered. Most of the finds were fragments of stems but, based on the number of the pipe bowls, a minimum number of at least 34 different pipes could be counted. Several fragments were weathered by the movement of the water.

After the tsunami, five pipe bowls and one fragment of a pipe stem were recovered. Nine pipes could be studied from photographs or drawings available, but in more than one case the damage of the artefact and the quality of the picture left us with many unanswered questions about the dating, marks or other characteristics of the pipe.

The dating of the pipes ranges from the first half of the 17th century (TP010) until the 1920s (TP003 and TP008). This gives an indication of the continuing use of the site as a roadstead by ships with an international crew of sailors buying their smoking utensils in harbour towns of different countries. The site is so close to the shore that it is used as a waste dump by the local town dwellers.

Three pipes date from the same period as the *Avondster*. Two pipes have the common bi-conical shape (TP001, TP011) and the third has an elbow shape (TP005). This particular form is a Dutch export product based on American native pipes. It is rare in Europe, but very common on colonial sites in America, and shipwrecks in the Caribbean (Higgins 1997, pp. 134). This is one of the few examples of this type found on a Dutch site in Asia.

1. Thanks to Don Duco of the *Pijpenkabinet* in Amsterdam.

Figure 8.1: Various tobacco pipes of the *Avondster* site.

Figure 8.2: Sailor returned from the East Indies c. 1700. A. Allard – *Atlas van Stolk*, Rotterdam



Figure 8.3 : Tobacco pipe 2004GHL292



Figure 8.4 : Tobacco pipe 1999GHL002

The pipes from the 18th century are Dutch or English. Two decorated pipes made in Great Britain from the first half of the 19th century seem at the first sight to reflect the occupation of the island by the British in 1795 (TP006 – TP007). Because the production and trade in clay pipes was a very international business, much more research is necessary to study the history of smoking pipes in 19th century Ceylon.

The clay pipe became an industrial mass product, which could not prevent that it lost the competitive struggle with the wooden pipe, the cigar and especially the cigarette. The two pipes made between 1860 and 1920 reflect these changes. One clay pipe has a surface treatment, which makes it look like a wooden pipe (TP008). The bowl on the other one has nostalgic maritime decorations: an anchor and three men in a rowing boat (TP003). It is made somewhere in Western Europe but the factory is not known. A sailor smoked it at a time when, with the construction of a deep water harbour in Colombo, the use of the roadstead of Galle came to an end.

Catalogue tobacco pipes

catalogue number

1. inventory number – post tsunami
2. date
3. type /shape
- 4a. material
- 4b. manufacturing
- 4c. decoration
5. miscellaneous
6. name
7. provenance
8. literature

Catalogue tobacco pipes

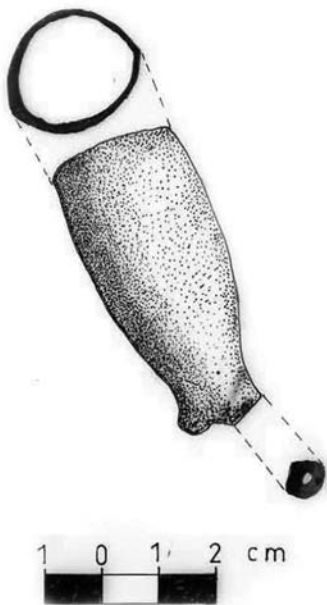
TP001

- 1. 1996GHL008A / L
- 2. 17B
- 3. bi-conical
- 4a. clay, white
- 4b. -
- 4c. no decoration
- 5. -
- 6. tobacco pipe, bowl and 3 fragments of stem
- 7. The Netherlands
- 8. Duco 1987, 33



TP002

- 1. 1999GHL002A / R
- 2. 1740-1770
- 3. ovoid
- 4a. clay, white
- 4b. -
- 4c. no decoration
- 5. -
- 6. tobacco pipe
- 7. The Netherlands
- 8. Duco 1987, 27



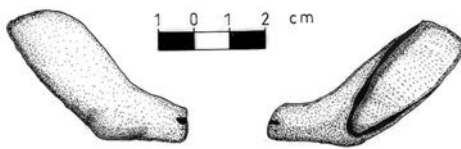
TP003

- 1. 1999GHL002B / R
- 2. 1880-1920
- 3. curved bowl
- 4a. clay, white
- 4b. coarse fabric
- 4c. 1. boat with three man / 2. anchor
- 5. -
- 6. tobacco pipe, bowl Western Europe
- 8. Duco 2004, 119



TP004

- 1. 1999GHL024 / L
- 2. 1690-1760
- 3. -
- 4a. clay, white
- 4b. -
- 4c. no decoration
- 5. -
- 6. tobacco pipe, bowl with 2 fragments of stem
- 7. England (?)
- 8. -



TP005

- 1. 2001GHL110 / L
- 2. 1635-1690
- 3. elbow shaped
- 4a. clay, white
- 4b. -
- 4c. no decoration
- 5. -
- 6. tobacco pipe
- 7. The Netherlands
- 8. Duco 1987, 35; Higgins 1997, 135



TP006

- | | | |
|-----|--------------------------------|-------|
| 1. | 2001GHL111 / L | |
| 2. | 1790-1860 | |
| 3. | fluted | |
| 4a. | clay, white | 4b. - |
| 4c. | petal beneath stylised flowers | |
| 5. | - | |
| 6. | tobacco pipe | |
| 7. | England (?) | 8. - |



TP007

- | | | |
|-----|----------------|-------|
| 1. | 2001GHL112 / L | |
| 2. | 1800-1850 | |
| 3. | fluted | |
| 4a. | clay, white | 4b. - |
| 4c. | petals | 5. - |
| 6. | tobacco pipe | |
| 7. | England (?) | 8. - |



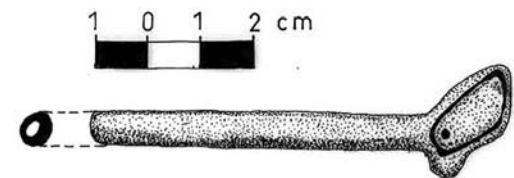
TP008

- | | | |
|-----|---------------------------------|------|
| 1. | 2002GHL069 / R | |
| 2. | 1860-1920 | 3. - |
| 4a. | clay, white | |
| 4b. | lacquered | |
| 5. | no decoration T.D. (?) | |
| 6. | tobacco pipe | |
| 7. | Great Britian / The Netherlands | |
| 8. | - | |



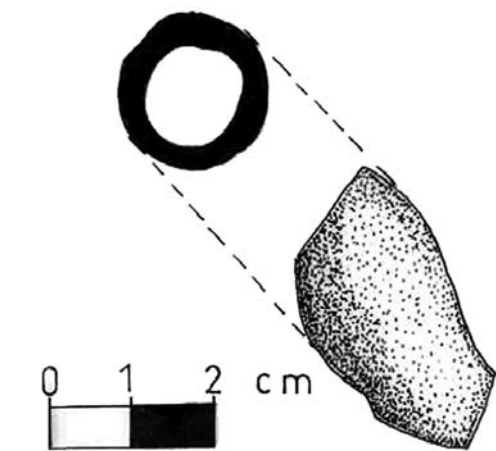
TP009

- | | | |
|-----|----------------|--|
| 1. | 2002GHL198 / L | |
| 2. | 17-18 | |
| 3. | - | |
| 4a. | clay, white | |
| 4b. | - | |
| 4c. | no decoration | |
| 5. | - | |
| 6. | tobacco pipe | |
| 7. | Europe | |
| 8. | - | |



TP010

- | | | |
|-----|--------------------------------|--|
| 1. | 2002GHL204 / L | |
| 2. | 17A | |
| 3. | bi-conical | |
| 4a. | clay, white | |
| 4b. | - | |
| 4c. | no decoration | |
| 5. | - | |
| 6. | tobacco pipe, fragment of bowl | |
| 7. | The Netherlands / England | |
| 8. | Duco 1987, 33 | |



TP011

- | | | |
|-----|------------------------|-------|
| 1. | 2003GHL533 / R | |
| 2. | 17-18 | 3. - |
| 4a. | clay, white | 4b. - |
| 4c. | no decoration | |
| 5. | mark damaged | |
| 6. | tobacco pipe, fragment | |
| 7. | Europe | 8. - |



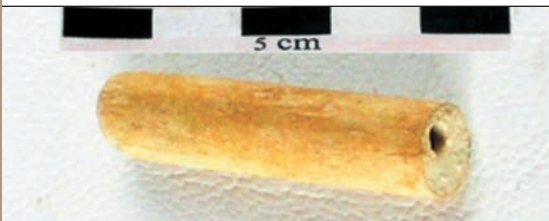
TP012

- | | | | |
|-----|--------------------|-----|---|
| 1. | 2003GHL573 / L | | |
| 2. | 1740-1770 | | |
| 3. | ovoid | | |
| 4a. | clay, white | 4b. | - |
| 4c. | no decoration | 5. | - |
| 6. | tobacco pipe, bowl | | |
| 7. | The Netherlands | | |
| 8. | Duco1987,27 | | |



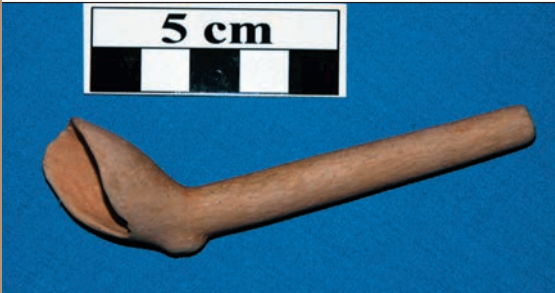
TP013

- | | | | |
|-----|--------------------------------|-----|---|
| 1. | 2004GHL106 / R | | |
| 2. | 17-18 | 3. | - |
| 4a. | clay, white | 4b. | - |
| 4c. | no decoration | 5. | - |
| 6. | tobacco pipe, fragment of stem | | |
| 7. | Europe | | |
| 8. | Duco 1987 | | |



TP014

- | | | | |
|-----|-----------------|-----|---|
| 1. | 2004GHL280 / L | | |
| 2. | 1650-1660 | | |
| 3. | bi-conical | | |
| 4a. | clay, white | 4b. | - |
| 4c. | no decoration | 5. | - |
| 6. | tobacco pipe | | |
| 7. | The Netherlands | | |
| 8. | Duco 1987, 33 | | |



TP015

- | | | | |
|-----|-------------------------|-----|--------------|
| 1. | 2004GHL292 / L | | |
| 2. | 1705-1725 | | |
| 3. | funnel shaped | | |
| 4a. | clay, white | 4b. | - |
| 4c. | no decoration | 5. | mark damaged |
| 6. | tobacco pipe | | |
| 7. | The Netherlands (Gouda) | | |
| 8. | Duco 1987, 27 | | |



TP016

- | | | | |
|-----|---|-----|---|
| 1. | 2002GHL239 / L | | |
| 2. | - | 3. | - |
| 4a. | clay, white | 4b. | - |
| 4c. | - | 5. | - |
| 6. | tobacco pipe, fragment of stem and bowl | | |
| 7. | - | 8. | - |

TP017

1.	2002GHL240 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP018

1.	2002GHL268 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl		
7.	-	8.	-

TP019

1.	2002GHL278 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP020

1.	2003GHL009 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP021

1.	2003GHL010 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP022

1.	2003GHL028 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, complete		
7.	-	8.	-

TP023

1.	2003GHL029 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobaccopipe, bowl		
7.	-	8.	-

TP024

1.	2003GHL030 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, bowl		
7.	-	8.	-

TP025

1.	2003GHL031 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, bowl		
7.	-	8.	-

TP026

1.	2003GHL032 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, bowl		
7.	-	8.	-

TP027

1.	2003GHL033 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP028

1.	2003GHL034 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP029

1.	2003GHL072 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, bowl		
7.	-	8.	-

TP030

1.	2003GHL073 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, bowl		
7.	-	8.	-

TP031

1.	2003GHL074 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP032

1.	2003GHL075 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP033

1.	2003GHL076 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP034

1.	2003GHL077 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP035

1.	2003GHL078 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP036

1.	2003GHL112 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP037

1.	2003GHL113 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP038

1.	2003GHL141 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP039

1.	2003GHL142 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP040

1.	2003GHL166 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl and stem		
7.	-	8.	-

TP041

1.	2003GHL167 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl and stem		
7.	-	8.	-

TP042

1.	2003GHL175 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP043

1.	2003GHL204 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP044

1.	2003GHL205 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP045

1.	2003GHL206 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl		
7.	-	8.	-

TP046

1.	2003GHL254 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP047

1.	2003GHL354 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP048

1.	2003GHL367 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl		
7.	-	8.	-

TP049

1.	2003GHL445 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment		
7.	-	8.	-

TP050

1.	2003GHL447 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment		
7.	-	8.	-

TP051

1.	2003GHL469 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment		
7.	-	8.	-

TP052

1.	2003GHL488 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, stem with fragment of bowl		
7.	-	8.	-

TP053

1.	2003GHL509 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP054

1.	2003GHL534 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP055

1.	2003GHL536 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP056

1.	2003GHL537 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP057

1.	2003GHL538 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP058

1.	2003GHL539 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP059

1.	2003GHL550 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP060

1.	2003GHL565 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP061

1.	2003GHL566 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP062

1.	2003GHL567 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP063

1.	2003GHL568 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP064

1.	2004GHL007 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem and bowl		
7.	-	8.	-

TP065

1.	2004GHL008 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP066

1.	2004GHL031 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP067

1.	2004GHL032 / L		
2.	-	3.	-
4a.	clay	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP068

1.	2004GHL033 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP069

1.	2004GHL034 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP070

1.	2004GHL035 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP071

1.	2004GHL036 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP072

1.	2004GHL037 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP073

1.	2004GHL104 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP074

1.	2004GHL105 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP075

1.	2004GHL115 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP076

1.	2004GHL116 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c.	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP077

1.	2004GHL117 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP078

1.	2004GHL118 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP079

1.	2004GHL119 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP080

1.	2004GHL138 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP081

1.	2004GHL139 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP082

1.	2004GHL140 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP083

1.	2004GHL141 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP084

1.	2004GHL142 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP085

1.	2004GHL143 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP086

1.	2004GHL144 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP087

1.	2004GHL145 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP088

1.	2004GHL146 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP089

1.	2004GHL169 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl		
7.	-	8.	-

TP090

1.	2004GHL170 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of bowl		
7.	-	8.	-

TP091

1.	2004GHL172 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment		
7.	-	8.	-

TP092

1.	2004GHL194 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, 9 fragments of stem and 1 of bowl		
7.	-	8.	-

TP093

1.	2004GHL195 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem with dotted line		
7.	-	8.	-

TP094

1.	2004GHL205 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, complete		
7.	-	8.	-

TP095

1.	2004GHL206 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, 7 fragments of stem		
7.	-	8.	-

TP096

1.	2004GHL215 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem and bowl		
7.	-	8.	-

TP097

1.	2004GHL227 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem and bowl		
7.	-	8.	-

TP098

1.	2004GHL264 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem		
7.	-	8.	-

TP099

1.	2004GHL265 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, fragment of stem and bowl		
7.	-	8.	-

TP100

1.	2004GHL266 / L		
2.	-	3.	-
4a.	clay, white	4b.	-
4c	-	5.	-
6.	tobacco pipe, bowl with fragment of stem		
7.	-	8.	-







Glass

Prior to the tsunami, 133 glass finds were registered in the find administration. After the disaster, 51 (38%) were recovered from the debris, and 82 (62 %) registered as lost. There was a photographic record of 11 of the lost artefacts, and the rest was lost leaving no more documentation than the short description in the data base. All the shards including those items subsequently lost in the tsunami came from broken bottles. No complete specimen was found but the fragments belonged to at least 83 different bottles.

As mentioned in the introduction, the location of the wreck before the coast can be compared to a garbage dump, which had been used for centuries. The bottles excavated on the site of the *Avondster* can be dated from the late 17th till the late 20th century. Several of them can be compared to the 22 bottles brought to the surface by divers during the underwater survey of the Bay of Galle in 1992 (Green & Devendra 1993, p. 87).

Until now, the only type of bottle excavated from a sunken East Indiaman from before 1675, is the square case bottle, which were stored in a wooden box. One case bottle is excavated, but there is some doubt about its origin. Other fragments of case bottles like the bottle necks and the pewter screws, which were used to close the bottles, have not been found on the *Avondster* site nor on other wrecks in the Bay of Galle (Horst 1991; Green 1989, p. 173).

The only glass object, which certainly came from the *Avondster*, is probably a part of a small medicine bottle.



Figure 9.1: Seal on a perfume bottle: BELAIR DE GUILLIR. (2003GHL256)

Figure 9.2: Wine bottle.

Figure 9.3: The neck of a small medicine bottle.

There are a few shards of late 17 or 18th century wine bottles, probably made in the Netherlands or England.

The main part of the glass finds coincide with the invention in 1821 by the Englishman Henry Ricketts of a patented bottle mould, which made it possible to make bottles of exact the same capacity. It was the first step in a long process of mechanisation, which accelerated after the invention of the half automatic bottle making machine in 1887. The first automatic bottle making machine was developed in the United States in 1906 (Soetens 1999, pp. 35 and 343-374).

The collection gives a good sample of the different glass containers used in 19th and 20th century Sri Lanka, but they are less important for the study of the Avondster.

Find number 2002GHL229 represents the most common type of bottle. (Figure 9.4) Because of the damage, it is not possible to identify the use of all the different bottles, but there are a few exceptions. There are at least five bottles of dark green glass with an identical rim and neck shape. Their shape goes back to the introduction of the patented bottle by Ricketts in 1821. Until today these bottles of dark coloured glass are used for port, madeira and sherry (Soetens 1999, pp. 35-37). Other bottles with long necks once contained wine, beer or soda-water.

Two damaged small late 19th or 20th century bottles were once filled with perfume. One is made of blue glass, which still has its original shining colour (2004GHL150). The other one has a seal with the text BELAIR DE GUILLIR. The maker of this perfume has not been identified. (2003GHL256, Figure 9.1).

Catalogue glass

catalogue number

1. inventory number - status
2. date
3. measurements
- 4a. material
- 4b. colour
- 4c. decoration
5. manufacturing
6. name
7. provenance
8. literature

Catalogue glass

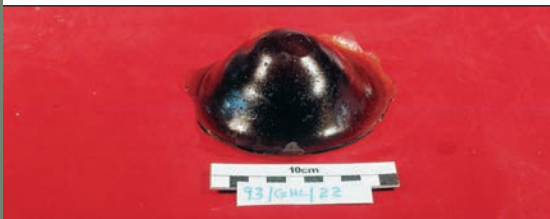
GL001

- | | | | |
|-----|---------------------|------|---|
| 1. | 1993GHL019 / R | | |
| 2. | 17-19 | | |
| 3. | base 10.4 x 10.4 cm | | |
| 4a. | glass | | |
| 4b. | dark green | | |
| 5. | blown in mould | case | |
| 6. | bottle | | |
| 7. | The Netherlands | 8. | - |



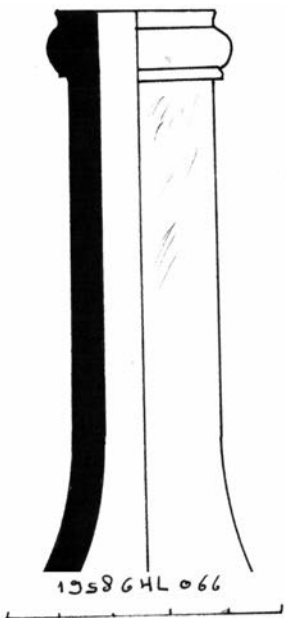
GL002

- | | | | |
|-----|----------------|----|---|
| 1. | 1993GHL022 / L | | |
| 2. | 17-19 | 3. | - |
| 4a. | glass | | |
| 4b. | dark green | | |
| 5. | pontil mark | | |
| 6. | wine bottle | | |
| 7. | Europe | 8. | - |



GL003

- | | | | |
|-----|----------------|--|--|
| 1. | 1998GHL066 / R | | |
| 2. | 19-20 | | |
| 3. | - | | |
| 4a. | glass | | |
| 4b. | dark green | | |
| 5. | - | | |
| 6. | wine bottle | | |
| 7. | Europe | | |
| 8. | - | | |



GL004

- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL067 / L | | |
| 2. | 20 | 3. | - |
| 4a. | glass | | |
| 4b. | dark green | 5. | - |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



GL005

- | | | | |
|-----|----------------------|----|---|
| 1. | 1998GHL077 / L | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | dark green | | |
| 5. | kicked base, moulded | | |
| 6. | wine bottle | | |
| 7. | Europe | 8. | - |



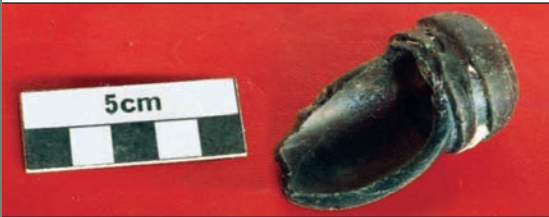
GL006

- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL117 / L | | |
| 2. | 19 | 3. | - |
| 4a. | glass | | |
| 4b. | dark green | | |
| 5. | moulded | | |
| 6. | wine bottle | | |
| 7. | Europe | 8. | - |



GL007

- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL118 / L | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | dark green | 5. | - |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



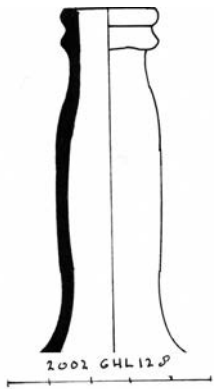
GL008

- | | | | |
|-----|----------------|----|---|
| 1. | 1999GHL020 / L | | |
| 2. | 19B-20 | 3. | - |
| 4a. | glass | | |
| 4b. | green | 5. | - |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



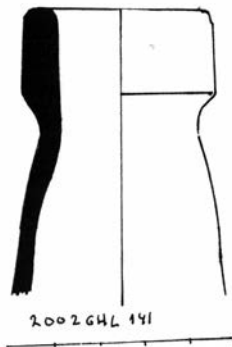
GL009

- | | | | |
|-----|----------------------|--|--|
| 1. | 2002GHL128 / R | | |
| 2. | - | | |
| 3. | - | | |
| 4a. | glass | | |
| 4b. | green | | |
| 5. | kicked base, moulded | | |
| 6. | wine bottles (3) | | |
| 7. | Europe | | |
| 8. | - | | |



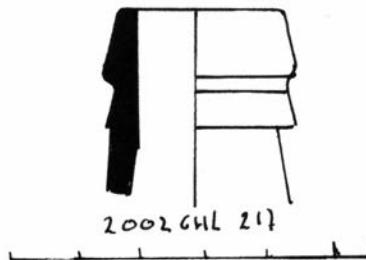
GL010

- | | | | |
|-----|----------------|----|---|
| 1. | 2002GHL141 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | colourless | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



GL011

- | | | | |
|-----|----------------|----|---|
| 1. | 2002GHL217 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | olive green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



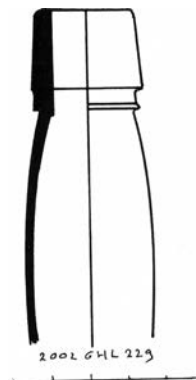
GL012

- | | | | |
|-----|----------------|----|---|
| 1. | 2002GHL228 / L | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | olive green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



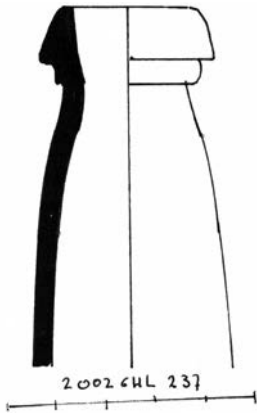
GL013

- | | | | |
|-----|---------------------|--|--|
| 1. | 2002GHL229 / R | | |
| 2. | 19-20 | | |
| 3. | - | | |
| 4a. | glass | | |
| 4b. | dark green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | | |
| 8. | Soetens 1999, 35-39 | | |



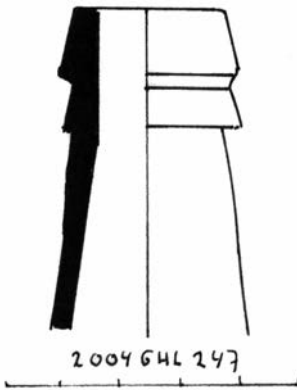
GL014

- 1. 2002GHL237 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



GL015

- 1. 2002GHL247 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. olive green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



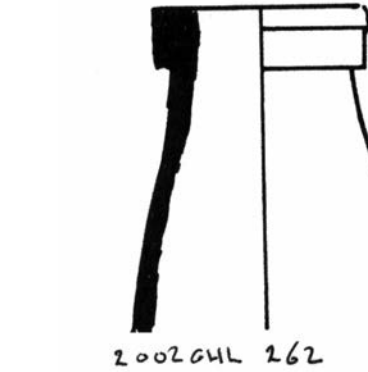
GL016

- 1. 2002GHL248 / R
- 2. 20
- 3. -
- 4a. glass
- 4b. colourless
- 5. with letters ..DOW... and ... S ..,moulded
- 6. bottle
- 7. Europe
- 8. -



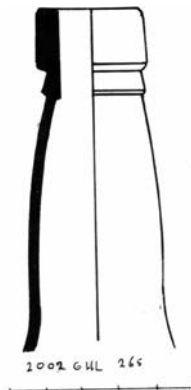
GL017

- 1. 2002GHL262 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



GL018

- 1. 2002GHL265 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. Soetens 1999, 35-39



GL019

- 1. 2002GHL277 / L
- 2. 19-20
- 3. -
- 4a. glass
- 4b. colourless
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



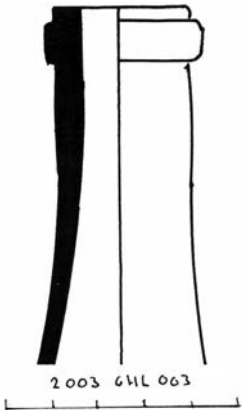
GL020

- 1. 2002GHL279 / L
- 2. 19-20
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



GL021

- 1. 2003GHL003 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



GL022

- 1. 2003GHL004 / R
- 2. -
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



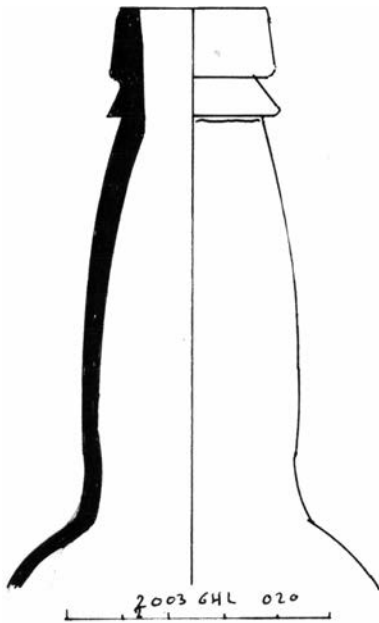
GL023

- 1. 2003GHL007 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. dark green
- 5. contact moulded, two vertical seams
- 6. bottle
- 7. Europe
- 8. -



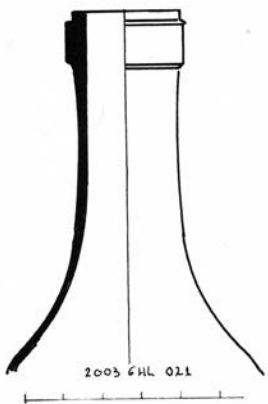
GL024

- 1. 2003GHL020 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. wine bottle (Port, Sherry or Madeira)
- 7. Europe
- 8. Soetens 1999, 35-39



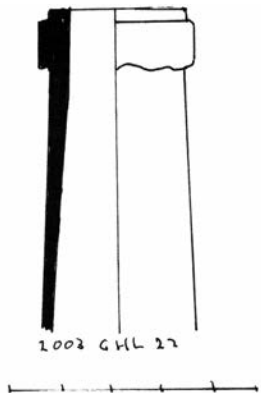
GL025

- 1. 2003GHL021 / R
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



GL026

- 1. 2003GHL022 / R
- 2. 20
- 3. -
- 4a. glass
- 4b. light green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -

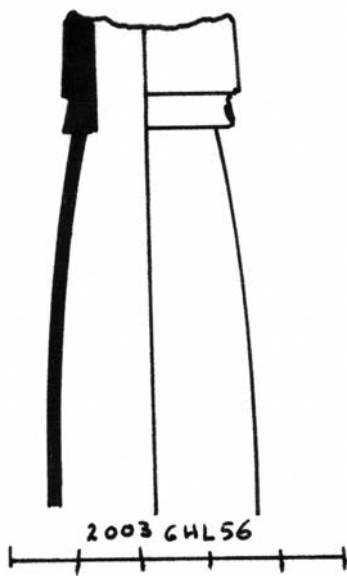


GL027

- | | | | |
|-----|----------------|----|---|
| 1. | 2003GHL023 / R | | |
| 2. | 20 | 3. | - |
| 4a. | glass | | |
| 4b. | colourless | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |

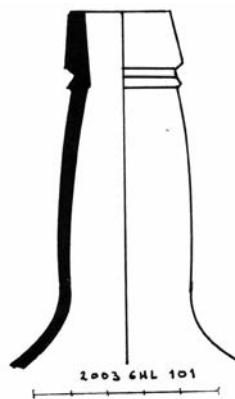
GL028

- | | | | |
|-----|-------------------------------------|----|---|
| 1. | 2003GHL056 / R | | |
| 2. | 20 | 3. | - |
| 4b. | glass | | |
| 4b. | light green | | |
| 5. | moulded | | |
| 6. | wine bottle (Port, Sherry, Madeira) | | |
| 7. | Europe | | |
| 8. | Soetens 1999, 35-39 | | |



GL029

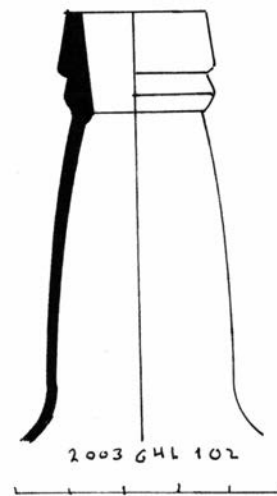
- | | | | |
|-----|----------------|--|--|
| 1. | 2003GHL101 / R | | |
| 2. | - | | |
| 3. | - | | |
| 4a. | glass | | |
| 4b. | green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | | |
| 8. | - | | |



GL030

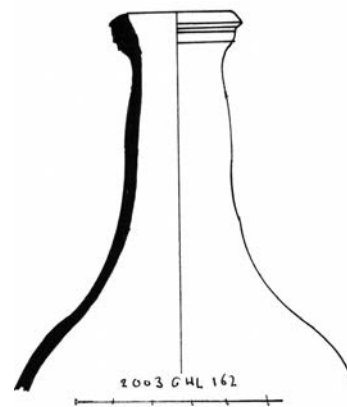
- | | | | |
|-----|----------------|----|---|
| 1. | 2003GHL102 / R | | |
| 2. | 20 | 3. | - |
| 4a. | glass | | |

- | | | | |
|-----|-------------------------------------|--|--|
| 4b. | green | | |
| 5. | moulded | | |
| 6. | wine bottle (Port, Sherry, Madeira) | | |
| 7. | Europe | | |
| 8. | Soetens 1999, 35-39. | | |



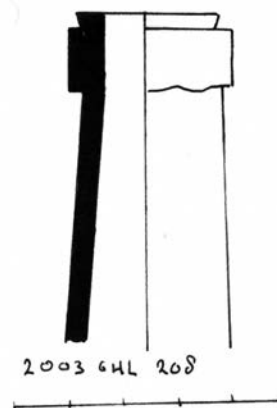
GL031

- | | | | |
|-----|----------------------------|----|---|
| 1. | 2003GHL162 / R | | |
| 2. | 18a | 3. | - |
| 4a. | glass | | |
| 4b. | green | 5. | - |
| 6. | wine bottle | | |
| 7. | England or The Netherlands | | |
| 8. | Horst 1991, 243. | | |



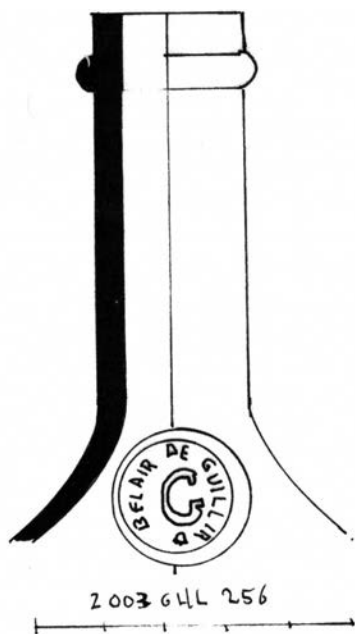
GL032

- | | | | |
|-----|----------------|--|--|
| 1. | 2003GHL208 / R | | |
| 2. | 19-20 | | |
| 3. | - | | |
| 4a. | glass | | |
| 4b. | green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | | |
| 8. | - | | |



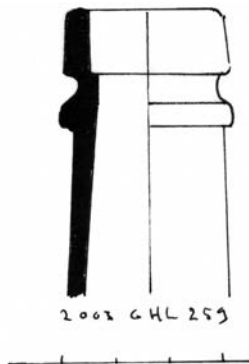
GL033

- 1. 2003GHL256 / R
- 2. 20
- 3. -
- 4a. glass
- 4b. light green
- 5. seal: BELAIR DE GUILLIR, moulded
- 6. perfume bottle
- 7. Europe
- 8. -



GL034

- 1. 2003GHL259 / R
- 2. 19-20
- 3. -
- 4a. glass
- 4b. light green
- 5. moulded
- 6. bottle
- 7. Europe



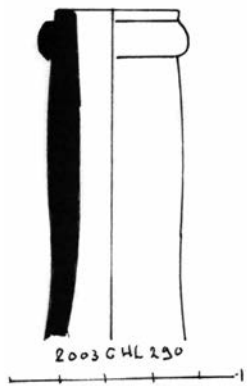
GL035

- 1. 2003GHL268 / R
- 2. 19-20
- 3. base diam. 8.6 cm
- 4a. glass
- 4b. green
- 5. -
- 6. bottle
- 7. Europe



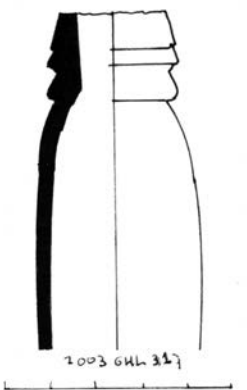
GL036

- 1. 2003GHL290 / R
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



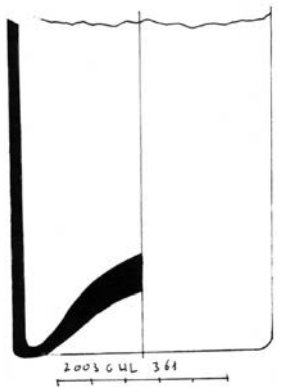
GL037

- 1. 2003GHL317 / R
- 2. -
- 3. -
- 4a. glass
- 4b. dark green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



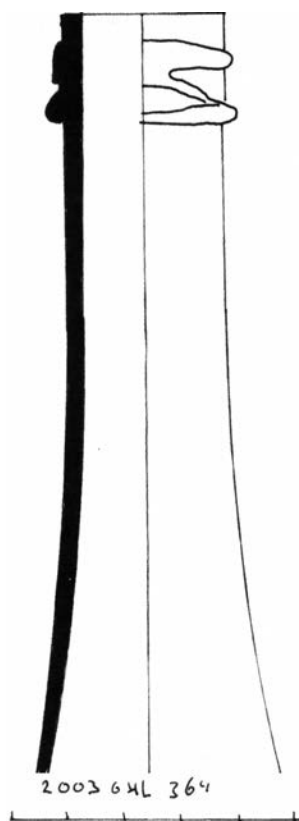
GL038

- 1. 2003GHL361 / R
- 2. -
- 3. -
- 4a. glass
- 4b. -
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



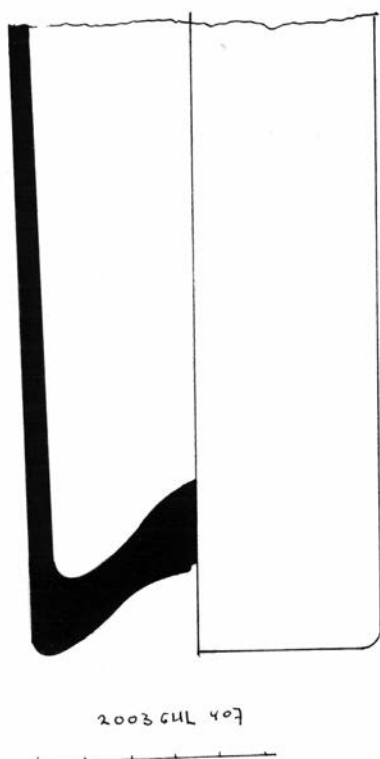
GL039

- 1. 2003GHL364 / R
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. moulded
- 6. bottle
- 7. Europe
- 8. -



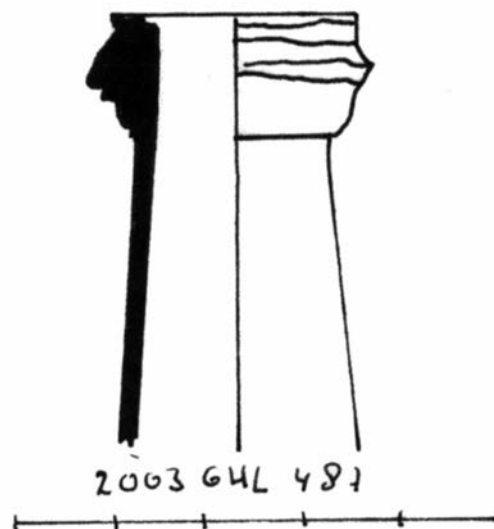
GL040

- | | | | |
|-----|------------------------|----|---|
| 1. | 2003GHL407 / R | | |
| 2. | 20 | 3. | - |
| 4a. | glass | | |
| 4b. | light green | | |
| 5. | kicked bottom, moulded | | |
| 6. | wine bottle | | |
| 7. | Europe | 8. | - |



GL041

- | | | | |
|-----|----------------|----|---|
| 1. | 2003GHL487 / R | | |
| 2. | 18-19 | 3. | - |
| 4a. | glass | | |
| 4b. | light green | 5. | - |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



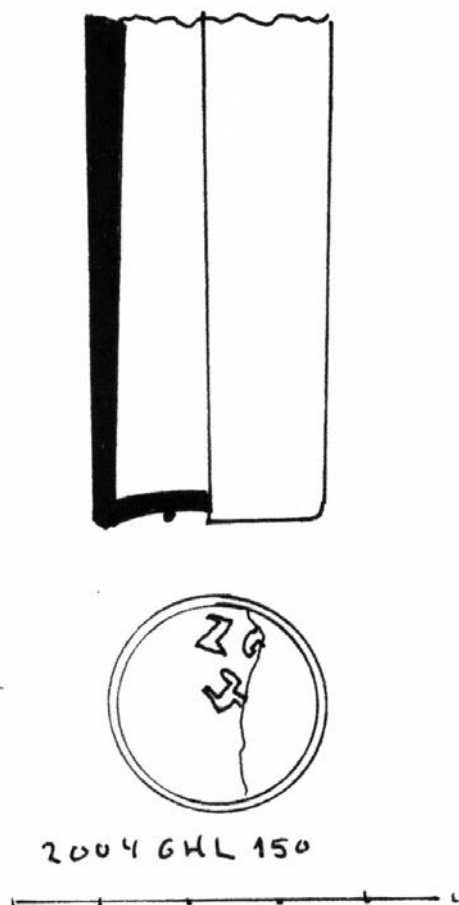
GL042

- | | |
|-----|----------------|
| 1. | 2003GHL571 / L |
| 2. | 17-18 |
| 3. | - |
| 4a. | glass |
| 4b. | - |
| 5. | - |
| 6. | bottle |
| 7. | Europe |
| 8. | - |

GL043

- | | |
|-----|---|
| 1. | 2004GHL150 / R |
| 2. | 20 |
| 3. | - |
| 4a. | glass |
| 4b. | cobalt blue |
| 5. | damaged mark on bottom, contact moulded, two vertical seams |
| 6. | perfume bottle |
| 7. | Europe |
| 8. | - |





GL044

- | | | | |
|-----|---------------------|----|---|
| 1. | 2004GHL152 / R | | |
| 2. | 20 | 3. | - |
| 4a. | glass | | |
| 4b. | green | | |
| 5. | moulded | | |
| 6. | bottle, 2 fragments | | |
| 7. | Europe | | |

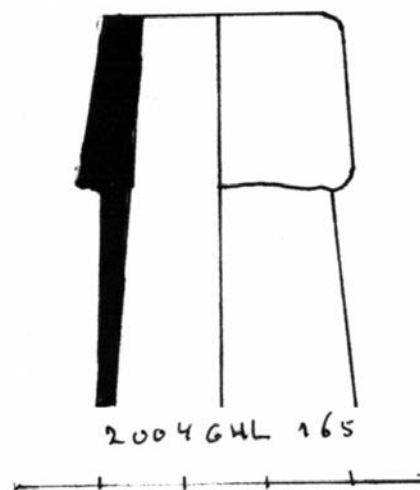


GL045

- | | | | |
|-----|----------------|----|---|
| 1. | 2004GHL164 / R | | |
| 2. | 18 | 3. | - |
| 4a. | glass | | |
| 4b. | green | 5. | - |
| 6. | wine bottle | | |
| 7. | Europe | 8. | - |

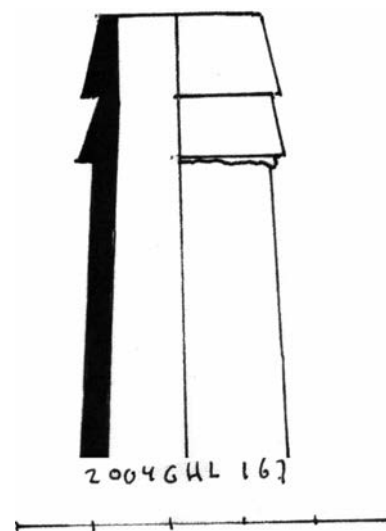
GL046

- | | | | |
|-----|----------------|----|---|
| 1. | 2004GHL165 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



GL047

- | | | | |
|-----|----------------|----|---|
| 1. | 2004GHL167 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | light green | | |
| 5. | moulded | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



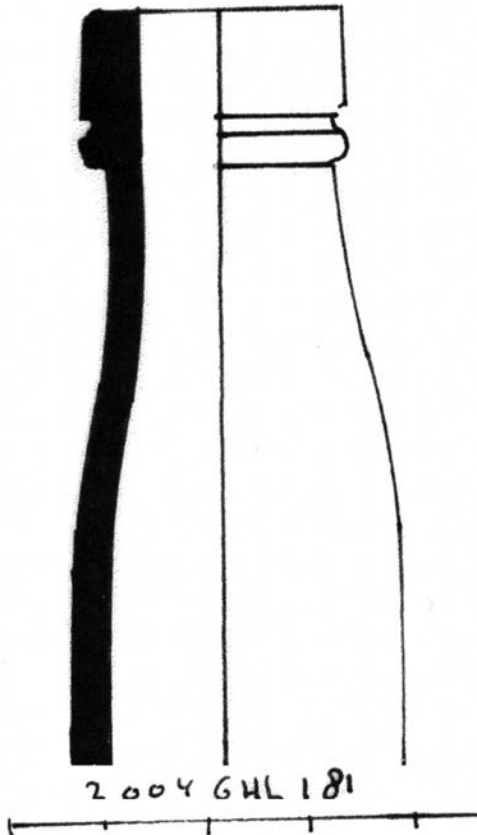
GL048

- | | | | |
|-----|----------------------------|----|---|
| 1. | 2004GHL168 / R | | |
| 2. | 18 | 3. | - |
| 4a. | glass | | |
| 4b. | light green | | |
| 5. | pontil mark | | |
| 6. | wine bottle | | |
| 7. | The Netherlands or England | | |
| 8. | - | | |



GL049

- | | | | |
|-----|--|----|---|
| 1. | 2004GHL181 / R | | |
| 2. | 20 | 3. | - |
| 4a. | glass | | |
| 4b. | colourless, contact moulded,two vertical seams | | |
| 5. | - | | |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



GL050

- | | | | |
|-----|------------------------------------|----|---|
| 1. | 2004GHL182 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | green | 5. | - |
| 6. | bottle, fragment of mouth and neck | | |
| 7. | Europe | 8. | - |



GL051

- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL068 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | dark green | 5. | - |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



GL052

- | | | | |
|-----|----------------|----|---|
| 1. | 1998GHL069 / R | | |
| 2. | 19-20 | 3. | - |
| 4a. | glass | | |
| 4b. | light green | 5. | - |
| 6. | bottle | | |
| 7. | Europe | 8. | - |



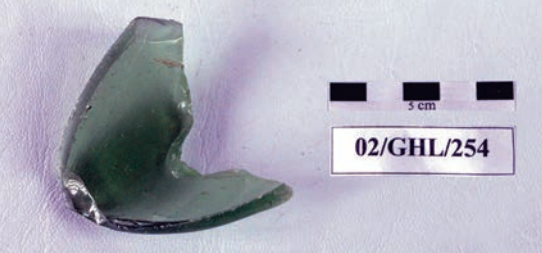
GL053

1.	2002GHL218 / R		
2.	-	3.	-
4a.	glass		
4b.	dark green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-



GL054

1.	2002GHL254 / R		
2.	20	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-

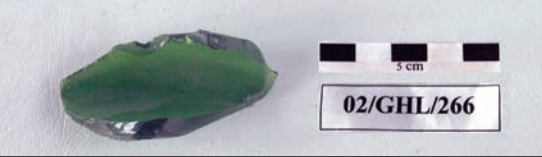


GL055

1.	2002GHL264 / R		
2.	20	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-

GL056

1.	2002GHL266 / R		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-



GL057

1.	2002GHL267 / R		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-



GL058

1.	2003GHL057 / R		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of body		
7.	Europe		



GL059

1.	2003GHL321 / R		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-

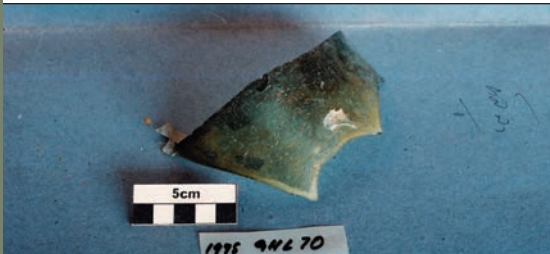
GL060

1.	2003GHL535 / R		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-



GL061

1.	1998GHL070 / L		
2.	-	3.	-
4a.	glass		
4b.	dark green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-



GL062

1.	1998GHL078, 1998GHL079, 1998GHL080, 1998GHL095-099 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, 5 fragments of body		
7.	-	8.	-

GL063

1.	1998GHL086 / L		
2.	-	3.	-
4a.	glass		
4b.	-	5.	-
6.	bottle, fragment		
7.	-	8.	-

GL064

1.	2001GHL023 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	Europe	8.	-



GL065

1.	2001GHL061 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-



GL066

1.	2002GHL140 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-

GL067

1.	2003GHL359 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-

GL068

1.	2003GHL360 / L		
2.	-	3.	-
4a.	glass	5.	-
6.	bottle, fragment of body		
7.	-	8.	-

GL069

1.	2003GHL362 / L		
2.	-		
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of base		
7.	-	8.	-

GL070

1.	2003GHL363 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL071

1.	2003GHL365 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL072

1.	2003GHL366 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL073

1.	2003GHL368 / L		
2.	-	3.	-
4a.	glass	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL074

1.	2003GHL373 / L	2.	-
3.	base diam. 8.8 cm		
4a.	glass		
4b.	green		
5.	kicked up base		
6.	bottle, fragment of base		
7.	-	8.	-

GL075

1.	2003GHL377 / L	2.	-
3.	base diam. 8.0 cm		
4a.	glass		
4b.	dark green		
5.	kicked up base		
6.	bottle, fragment of base		
7.	-	8.	-

GL076

1.	2003GHL378 / L		
2.	-		
3.	base diam 6.4, long 24.5 cm		
4a.	glass	4b.	-
5.	kicked up base		
6.	bottle		
7.	-	8.	-

GL077

1.	2003GHL389 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment base		
7.	-	8.	-

GL078

1.	2003GHL390 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL079

1.	2003GHL403 / L		
2.	-	3.	-
4a.	glass		
4b.	-	5.	-
6.	bottle, fragment		
7.	-	8.	-

GL080

1.	2003GHL404 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL081

1.	2003GHL408 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL082

1.	2003GHL409 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL083

1.	2003GHL410 / L		
2.	-		
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL084

1.	2003GHL411 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL085

1.	2003GHL426 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL086

1.	2003GHL427 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-

GL087

1.	2003GHL438 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL088

1.	2003GHL443 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of base		
7.	-	8.	-

GL089

1.	2003GHL451 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL090

1.	2003GHL452 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of neck		
7.	-	8.	-

GL091

1.	2003GHL453 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of neck		
7.	-	8.	-

GL092

1.	2003GHL471 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL093

1.	2003GHL480 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-

GL094

1.	2003GHL481 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL095

1.	2003GHL540 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL096

1.	2003GHL541 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL097

1.	2003GHL542 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of base		
7.	-	8.	-

GL098

1.	2003GHL544 / L		
2.	-	3.	-
4a.	glass		
4b.	white	5.	-
6.	unknown		
7.	-	8.	-

GL099

1.	2003GHL545 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL100

1.	2003GHL563 / L		
2.	-	3.	-
4a.	glass		
4b.	-	5.	-
6.	bottle, fragment		
7.	-	8.	-

GL101

1.	2003GHL564 / L		
2.	-	3.	-
4a.	glass		
4b.	-	5.	-
6.	bottle, fragment		
7.	-	8.	-

GL102

1.	2003GHL569A / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	unknown, fragment of body		
7.	-	8.	-

GL103

1.	2003GHL569B / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	unknown, fragment of body		
7.	-	8.	-

GL104

1.	2003GHL569C / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	unknown, fragment of body		
7.	-	8.	-

GL105

1.	2003GHL571(?) / L		
2.	17-18	3.	-
4a.	glass		
4b.	green	5.	-
6.	medicine bottle, fragment of mouth		
7.	-	8.	-



GL106

1.	2003GHL572 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth		
7.	-	8.	-

GL107

1.	2004GHL024 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle (?), body		
7.	-	8.	-

GL108

1.	2004GHL056 / L		
2.	-	3.	-
4a.	glass		
4b.	green		
6.	bottle, fragment of neck		
7.	-	8.	-

GL109

1.	2004GHL057 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL110

1.	2004GHL058 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of body		
7.	-	8.	-

GL111

1.	2004GHL059 / L		
2.	-	3.	-
4a.	glass		
4b.	-	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL112

1.	2004GHL060 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, 2 fragments of body		
7.	-	8.	-

GL113

1.	2004GHL061 / L		
2.	-	3.	-
4a.	glass		
4b.	light green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL114

1.	2004GHL062 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL115

1.	2004GHL063 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL116

1.	2004GHL064 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL117

1.	2004GHL065 / L		
2.	-	3.	-
4a.	glass		
4b.	green	5.	-
6.	bottle, fragment of mouth and neck		
7.	-	8.	-

GL118

- 1. 2004GHL066 / L
- 2. -
- 3. -
- 4a. glass
- 4b. light green
- 5. -
- 6. bottle, fragment of base and body
- 7. -
- 8. -

GL119

- 1. 2004GHL070 / L
- 2. -
- 3. -
- 4a. glass
- 4b. opaque
- 5. -
- 6. bottle, fragment of mouth
- 7. -
- 8. -

GL120

- 1. 2004GHL071 / L
- 2. -
- 3. -
- 4a. glass
- 4b. opaque
- 5. -
- 6. bottle (?), fragment of body
- 7. -
- 8. -

GL121

- 1. 2004GHL101 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle (?), fragment of body
- 7. -
- 8. -

GL122

- 1. 2004GHL112a / L
- 2. -
- 3. -
- 4a. glass

- 4b. light green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL123

- 1. 2004GHL112b / L
- 2. -
- 3. -
- 4a. glass
- 4b. light green
- 5. -
- 6. bottle, fragment of body
- 7. -
- 8. -

GL124

- 1. 2004GHL147 / L
- 2. -
- 3. -
- 4a. glass
- 5. -
- 6. bottle, fragment of neck
- 7. -
- 8. -

GL125

- 1. 2004GHL148 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of neck and shoulder
- 7. -
- 8. -

GL126

- 1. 2004GHL166 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of mouth
- 7. -
- 8. -

GL127

- 1. 2004GHL202 / L
- 2. -
- 3. base diam.10.3 cm
- 4a. glass
- 4b. -
- 5. -
- 6. bottle, fragment of base
- 7. -
- 8. -

GL128

- 1. 2004GHL203 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL129

- 1. 2004GHL204 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL130

- 1. 2004GHL216 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL131

- 1. 2004GHL217 / L
- 2. -
- 3. -
- 4a. glass

- 4b. green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL132

- 1. 2004GHL218 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL133

- 1. 2004GHL224 / L
- 2. -
- 3. -
- 4a. glass
- 4b. brown
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL134

- 1. 2004GHL258 / L
- 2. -
- 3. -
- 4a. glass
- 4b. light green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -

GL135

- 1. 2004GHL263 / L
- 2. -
- 3. -
- 4a. glass
- 4b. green
- 5. -
- 6. bottle, fragment of mouth and neck
- 7. -
- 8. -







Bone and Antler

During the excavation, 18 bones, including two parts of a human skull, and one piece of antler were found. The remains of the skull were locked in an iron cupboard in the office and were only slightly damaged during the tsunami, but the other objects were lost.

Human skull

A human skull was found in 1999 in what appeared to be an undisturbed 17th century layer. This was a surprise, as eye-witness accounts of the shipwreck recorded no casualties. Was it a stowaway, a lady of the port or an early salvage diver?

The skull was examined by professor Ravindra Fernando of the Department of Forensic Medicine and Toxicology of the University of Colombo in 2003.¹ His conclusions were:

The anterior part of the human skull from the Avondster consisted of:

1. Frontal bone
2. Part of the right temporal bone
3. Both orbits (on the left floor of the orbit and frontal process of maxilla which forms the lateral wall of the orbit is detected but present)
4. Maxilia
5. Nasal bone
6. Hard Palate.

It is dry, flake, and brittle with considerable erosion, which is compatible with prolonged burial or as, in this case immersion. in water.

The skull is likely to be of a male due to the prominent orbital ridges, shape and margins of orbits and nasal aperture. The age is approximately 30 - 40 years due to the non-union of soft palate to hard palate and the coronal suture.

There are no visible injuries. It was not possible to comment to the racial group (since the teeth and jaw are missing) or cause of death.

During the diving campaign later in 2003 another part of the skull was recovered.

1. University of Colombo Department of Forensic Medicine and Toxicology . Report of the skull recovered from the "Avondster", Production nr. 1067/RP/2003

Figure 10.1 - 4: Human skull, Avondster (1999GHL033)

Bones

Because the 16 bones, which were kept in a box in the storeroom, were lost by the tsunami, it was not possible to establish if these bones were of human or animal origin.

Several bones had cut marks and most likely came from the butchered and salted beef, which belonged to the provisions of the ship. Others were butchered animal bones from the modern garbage which was washed onto the site.

The catalogue does not include small bones (possibly rodent), which were found after sieving the mud that was washed from the excavated coiled rope. The bones were retained for analyse, but lost before registration in the tsunami.



Figure 10.5 : Bone fragments

Antler: medicine or trophy?

Unfortunately the deer horn found in 1999 was lost and questions about whether the deer was European or Asian cannot be answered. Maybe the deer horn was a trophy from a hunting party, but there is another possibility.

Instructions for surgeons on board of the ships leaving from Holland to Asia from 1739 contained both general instructions for hygiene on board, treatment of the sick as well as a list of the medicines and instruments in the surgeons chest. One of the ingredients is *Rasurae Cornu Cervi*, filings of deer horn. It was used as *Spiritus Corni Cervi*, which is given as a liquid in the case of slow colds and obstinate fevers, sleeping sickness, scurvy, and dizziness. The medicine was also available as *Salis Volatil Corni Servi*, a volatile mixture of the ashes of deer horn, alcohol and oil. The horn was bought from pharmacies in Holland for 28 stuivers / Lb. (Gawronski, Kist & Stockvis - van Boetzelaar 1992, pp. 216 and 228; Gawronski 1996, p. 221). Another interesting possibility is that the antler was used for the preparation of traditional Chinese medicine.

Catalogue bone and antler

catalogue number

1. inventory number - status
2. name

Catalogue bone and antler

BA001

- 1. 1999GHL033 / R
- 2. skull, human fragment

BA002

- 1. 2003GHL434 / R
- 2. skull, human fragment

BA003

- 1. 2001GHL056a / L
- 2. bone, fragment

BA004

- 1. 2001GHL056b / L
- 2. bone, fragment

BA005

- 1. 2001GHL056c / L
- 2. bone, fragment

BA006

- 1. 2001GHL056d / L
- 2. bone, fragment

BA007

- 1. 2001GHL070 / L
- 2. bone, fragment, possible modern



BA008

- 1. 2001GHL083 / L
- 2. bone, fragment

BA009

- 1. 2002GHL010 / L
- 2. bone

BA010

- 1. 2002GHL103 / L
- 2. bone

BA011

- 1. 2002GHL129 / L
- 2. bone, inside black, outside grey

BA012

- 1. 2002GHL158 / L
- 2. bone, animal jaw with three teeth

BA013

- 1. 2002GHL159 / L
- 2. bone

BA014

- 1. 2002GHL167 / L
- 2. bone

BA015

- 1. 2003GHL220 / L
- 2. bone, shoulder blade of animal

BA016

- 1. 2003GHL439 / L
- 2. bone

BA017

- 1. 2003GHL441 / L
- 2. bone

BA018

- 1. 2003GHL442 / L
- 2. bone

BA019

- 1. 1999GHL027 / L
- 2. antler



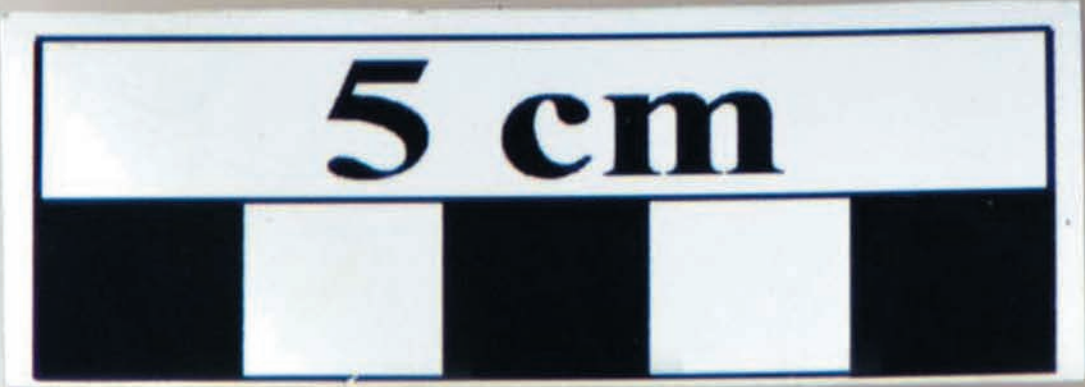




Figure 11.1 : Fragment of leather belt (2004GHL294)



Figure 11.2: Fragments of belt or bandeleer (2004GHL315a)

315a1 fragment of leather belt

315a2. fragment of leather belt with brass belt slide (315a3)

315a4. brass buckle with fragment of leather belt

Leather

The leather objects from the excavation were parts of shoes, belts and small fragments. The artefacts were being conserved in the laboratory and were lost when the tsunami hit the building. This happened before the types of leather were determined.

Belt or Bandolier?

During the 2004 campaign, fragments of leather belts were found at two occasions. The first was a damaged fragment of a leather belt without buckle (2004GHL294). The other 13 fragments were found in context with the master gunners or ships' corporal locker. They probably belong to the same object. Because the objects are lost, they are numbered according to the numbers of the photographs (315a-b-c). For the metal parts see the metal catalogue.



Figure 11.3: Fragments of belts (2004GHL315b)

315b1 fragment of leather belt

315b2 fragment of leather belt with brass buckle (315b3) and belt slide (315b4)

315b5 buckle with fragment of leather belt

315b6 buckle with fragment of leather belt

315b7 belt end in the shape of a fleur-de-lys with fragment of leather belt

315b8 belt end in the shape of a fleur-de-lys

315b9 belt slide in the shape of two fleur-de-lys (315b12)



Figure 11.4: Fragments of a belt. (2004GHL315c)

315c-1 fragment of leather belt

315c-2 fragment of leather belt with 315c-3 brass buckle

315c-4 belt slide in the shape of two fleur-de-lys

The nine fragments of leather and the nine brass fittings (3 buckles, 5 slides and 2 ends) can be components of the same bandolier or sword belt. This kind of equipment can be seen on the picture of a musketeer in the previous chapter about armament.

The brass buckles are identical to those from the *Vergulde Draeck* (1656) and the *Lastdrager* (1653). They are also known from many excavations in the Netherlands (Green 1977, pp. 180-181; Sténuit 1977, p. 455, Baart e.a. 1977, 173; Hasselt 1993, 411-412).

Shoes

In 2003 and 2004, fragments of leather shoes were excavated. The first fragment, the sole of a shoe, was lost before a photo was made (2003GHL148).

The other incomplete leather shoe was found and photographed before it was lost in the tsunami of Boxing day 2004. There were five damaged fragments of the vamp, the sole and the heel. The heel was made of at least thirteen layers of leather held in place by nine wooden pegs (2004GHL328).

Because of the loss of the artefacts ,it is not possible to reconstruct the fastening, probably with a boot -lace. Comparable shoes are known from several excavations in the Netherlands (Goubitz 1993, p. 526).

Leather fragments

The photo of a small triangular fragment of leather excavated in 2003 shows holes of sewing needles (2003GHL148). The other fragment could be a part of a belt (2004GHL294). See also 2004GHL315B (toolbox) wood with leather and metal.

Catalogue leather

catalogue number

- 1 inventory number - status
- 2 date
- 3 material
- 4 miscellaneous
- 5 name



Figure 11.5 : Fragments of a shoe. (2004GHL338)

Catalogue leather

LE001

1. 2003GHL148 / L
2. -
3. Leather
4. -
5. shoe, fragment of the sole



LE002

1. 2004GHL289 / L
2. -
3. Leather
4. -
5. triangular fragment with needle holes



LE005

1. 2004GHL315a2 / L
2. 17b-17c
3. Leather
4. with copper belt slide 2003GHL315a3
5. belt, fragment



LE003

1. 2004GHL294 / L
2. 17b-17c
3. Leather
4. -
5. belt, fragment



LE006

1. 2004GHL315b1 / L
2. 17b-17c
3. Leather
4. -
5. belt, fragment



LE004

1. 2004GHL315a1 / L
2. 17b-17c
3. Leather
4. -
5. belt, fragment

LE007

1. 2004GHL315b2 / L
2. 17b-17c
3. Leather
4. with buckle 2004GHL315b3 and slide 2004GHL315b4
5. belt, fragment



LE008

1. 2004GHL315c1 / L
2. 17b-17c
3. Leather
4. -
5. belt, fragment



LE009

1. 2004GHL315c2 / L
2. 17b-17c
3. Leather
4. with belt slide 2004GHL315c3
5. belt, fragment



LE010

1. 2004GHL315b9 / L
2. 17b-17c
3. Leather
4. with brass belt slide and buckle
5. belt, fragment

LE011

1. 2004GHL315c12 / L
2. 17b-17c
3. Leather
4. with brass belt slide and buckle
5. belt, fragment

LE012

1. 2004GHL315c13 / L
2. 17b-17c
3. Leather
4. with brass buckle
5. belt, fragment

LE013

1. 2004GHL328 / L
2. 17b-17c
3. Leather and wood
4. -
5. shoe, 5 fragments (sole, heel and vamp)



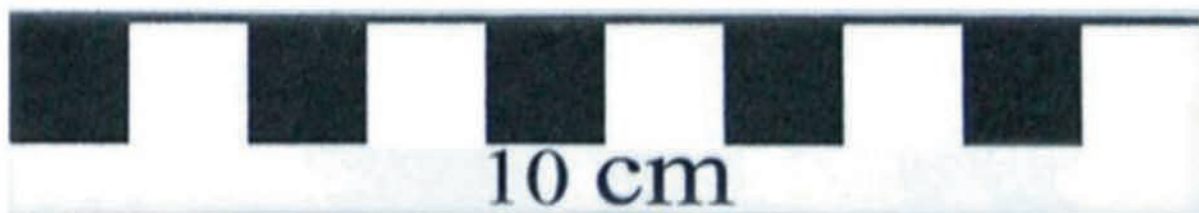




Figure12.1: Chanka shells (A/Ts/2005GHL049)



Chanka shell and turtle

Objects of two tropical sea animals, the chanka shell and the hawks bill turtle, were found in the Avondster.

Chanka shell

The VOC became famous because of her trade in spices between Asia and Europe. In reality the company built an extensive trading network in Asia reaching from South Africa to Japan and from Yemen to Timor. This network made it possible to deal in every commodity that could be bought in one country and sold with profit elsewhere in Asia.

On the wreck site 45 shells of the species *Turbinella pyrum* (Linnaeus 1758) were found. This mollusc lives in shallow water in the Bay of Bengal and around Sri Lanka, but is not recorded around Galle.¹ How did they get on board of the ship?

On 9 September 1658, the Avondster left Negapatnam in Coromandel for Bengal with 991 baskets with chank shells in her hold. According to Van Dam, a basket normally contained 120 shells ((NA VOC 1.04.02, p. 227; Stapel 1932, vol. II-2 p. 391). Were the excavated shells a forgotten or stolen part of this cargo or a personal souvenir from of a member of the crew?

The VOC traded in these shells because they are used in the religious ceremonies in Hindu and Buddhist temples. The Dutch called these shells *chianco* after the old generic name *Xancus*. This sacred conch is one of the four symbols of the god Vishnu or his incarnations for example, Krishna and represents the origin of existence. The other symbols of the god are the wheel (time), the mace (authority) and the lotus (perfection).

In the hand of the god of wealth, Hubera or Jambhale, the conch symbolises one of the treasures of the earth.

In the temples, the shells were used as containers for holy water. If the point of the shell is removed it can be used as a musical instrument, the sound of which can drive away evil spirits (Kana-Devilee, Uterwijk 1996, p. 54).

Left-handed specimens are particularly rare and very valuable. All the 45 shells found on the wreck are right-handed.

The length of the shells varies between 9.5 and 16.8 cm (average 12.3 cm) After the tsunami 30 shells were recovered from the debris of the building, but in only two cases it was possible to trace back the original registration number. The other shells without number are registered as *lost* in the catalogue, but are still in the collection.

¹ Information from Mr. Dharma Sri Kandamby of the Galle Maritime Museum, who was formerly curator zoology of the Colombo Museum.

Figure 12.2: Chanka shell

Turtle

In the 17th and 18th centuries objects made of the shell of the hawksbill turtle (*Eretmochelys imbricata*), which lives in tropical and subtropical seas, were very much in vogue. The mottled brown and yellow shell was put in boiling water to make it soft. Under pressure it was easy to mould or to connect with other pieces of shell. Turtle was used to make small luxury products like combs, tobacco or snuff boxes. It was also glued on tables and frames of mirrors (Brongers 1967, p. 108).

The two turtle shell combs from the Avondster have on one side coarse teeth and on the other side fine teeth. The fine teeth were used to remove lice from hair and the other side was used as a normal comb.

During the 1998-1999 survey, the combs were found together with objects like a barber plate and ointment jars. Suggestions that the combs were specially made as a part of the equipment of the ships surgeon annex barber are wrong.

The sailors lived on board in cramped dirty spaces and lice were a plague. They were so common that many were worried if they didn't have them. Someone must be very ill - they believed - if he was free of lice.

But lice were also common in the 16th and 17th century households in the Netherlands and broken lice combs are often found in archaeological excavations of cesspits (Clevis, Smit 1990, p. 94, 135; Ostkamp, Bitter 1998, p. 117). They were normally made of box wood, bone or horn, but there are also many examples of more expensive materials like ivory. The two lice-combs from the Avondster are made of turtle shell. Comparable combs from the same material are also known from the wreck of the Oosterland, which was lost in the Table Bay in 1697 (Wirz 2004, 136).

Catalogue Chanka shell and turtle

catalogue number

1 inventory number - post tsunami

2 name

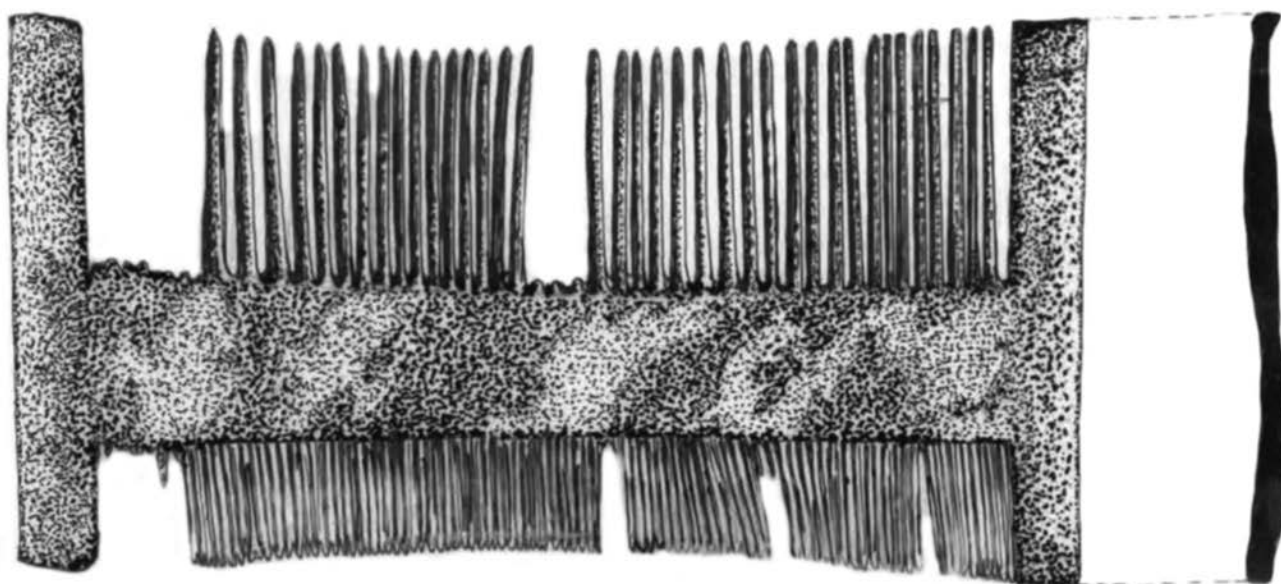


Figure 12.3: Combs made of turtle shell (1998GHL056 and 1998GHL035)

Catalogue Chanka shell
and turtle

SA001

- 1. 2001GHL022 / R
- 2. Concha shell (Turbinella pyrim L)

SA002

- 1. 2003GHL238 / L
- 2. Concha shell (Turbinella pyrim L)



SA003

- 1. 2004GHL097 / L
- 2. Concha shell (Turbinella pyrim L)

SA004

- 1. 2004GHL228 / R
- 2. Concha shell (Turbinella pyrim L)



SA005

- 1. 2004GHL270 / L
- 2. Concha shell (Turbinella pyrim L) 24 shells



SA006

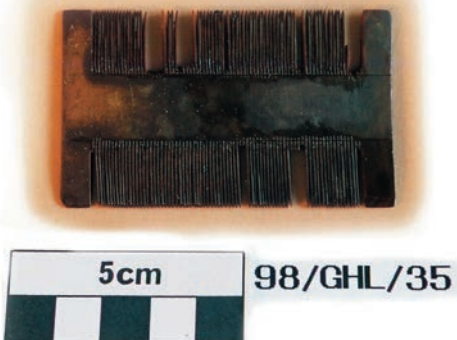
- 1. 2004GHL271 / L
- 2. Concha shell (Turbinella pyrim L) 8 shells

SA007

- 1. 2004GHL272 / L
- 2. Concha shell (Turbinella pyrim L) 9 shells

SA008

- 1. 1998GHL035 / L
- 2. Turtle shell comb



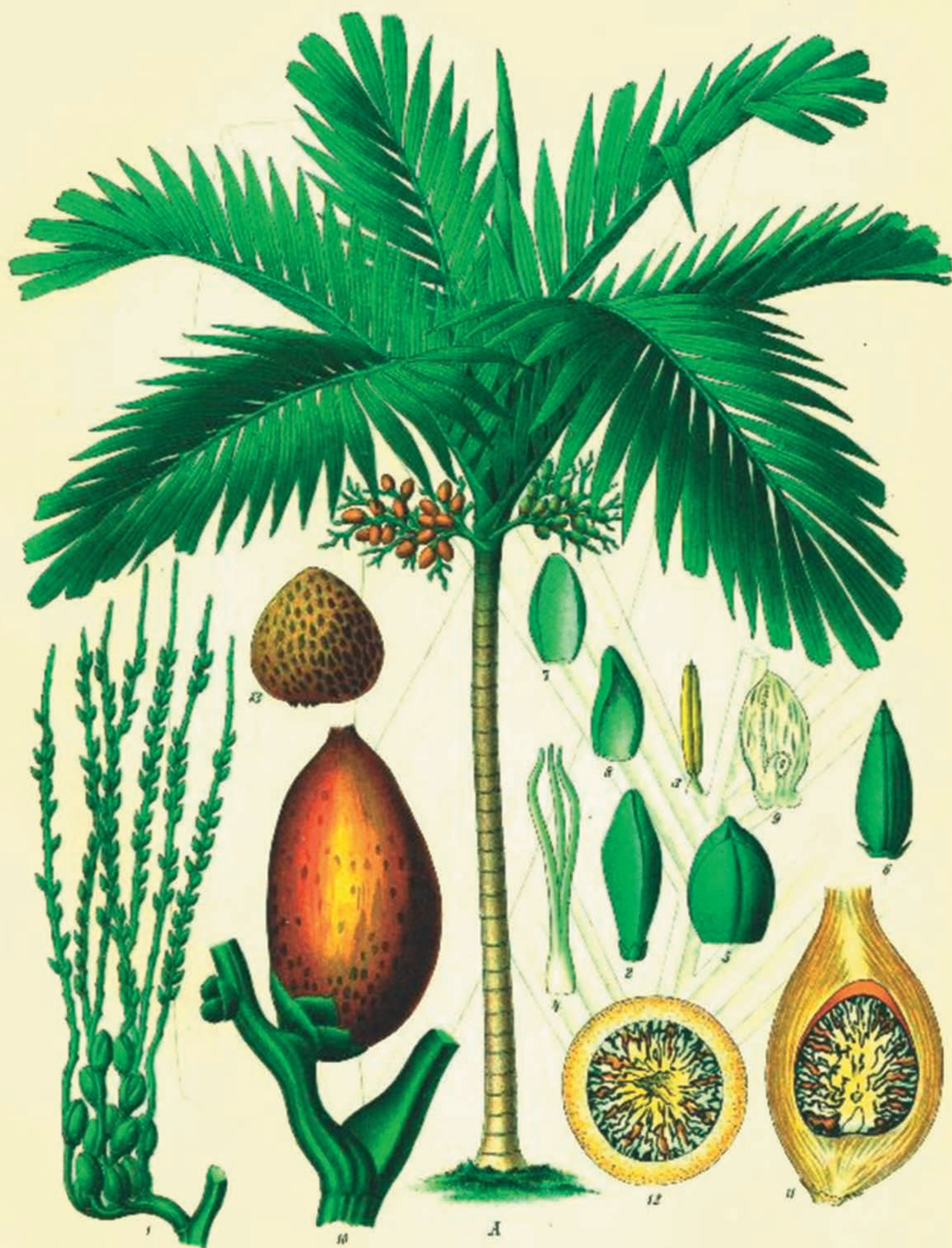
SA009

- 1. 1998GHL056 / L
- 2. Turtle shell comb









Arca Catechu L.

Fruit

Jan Huyghen van Linschoten, who stayed five years in Goa in India, wrote the first Dutch book about Asia. His *Itinerario* (1596) is illustrated with 36 pictures about the clothes and habits of the people, ships, fauna, flora etc. The public wanted to know everything about far away Asia. In 1604 the bookseller Cornelisz Claesz published a separate book with 30 pictures and a short summary in Latin of the descriptions in the *Itinerario*. Four pages of these icons represent trees and fruits from India and Malacca. Not only the famous spices, like pepper or ginger for which the Dutch came to Asia, but also many other plants unknown in Europe like bamboo, banana, water apple, durian, mangosteen, cashew, pine-apple or jack fruit are illustrated. The remains of three plants mentioned by Van Linschoten - araca, bamboo and coconut - were found on board of the *Avondster*.

Araca Nut

In June 1659, the *Avondster* was loading a cargo of areca nuts for India in the harbour of Galle, when the rope of her anchor broke and the ship was lost. The nuts have been found on the wreck site.

The VOC wanted the monopoly on the trade in areca nuts, but it was almost impossible to realise their claim.

The Areca palm (*Areca catechu* L., family N.O. Palmaceae) probably originated in Malaysia or the Philippines, but is now widely cultivated in all the warmer parts of Asia. The graceful plant is cultivated for its yellow-red fruits, containing a brownish conical seed. Its seed contains a large quantity of tannin, also gallic acid, a fixed gum oil, a little volatile oil, lignin and various saline substances.

The nut was the main ingredient of the commonly chewed *sirih* or *betel* quid. In English the name *betel* was already customary in the 18th century. The Dutch preferred the term *pinang* and in the 19th and 20th century Indonesians called it *sirih*. The habit of chewing betel was widespread in Asia long before the Europeans arrived. It is already mentioned in Chinese sources from the 9th or 10th century.

The nut was cut in small pieces, rolled inside a betel palm leaf, rubbed over with lime and chewed. This mixture is a mild slightly hallucinating and refreshing stimulant. It stains the mouth and saliva red, which regularly shocked overseas visitors. The Sinhalese were equally disconcerted: in 1505, the Portuguese were drinking red wine but the Sinhalese reported to the King of Kotte that the foreigners were drinking blood.

Figure 13.1: One of four pictures of tropical fruits in the Icones (1604). From left to right: coconut (Cocco/Coquos), banana (Indische vyghe boom) and a betel nut palm (Arecca) with pepper (Peeper) growing around it (Boogaart 2000, 103).

Figure 13.2: Areca catechu L. / Betel-Nut Palm. UB Braunschweig E-Buch - Köhler's Medizinal-Pflanzen in naturgetreuen Abbildungen mit kurz erläuterndem. Pabst, G. Gera-Untermhaus : Fr. Eugen Köhler, 1887. Band 2 Signatur: 3202-0948.

For several centuries the exchange of betel played an important part in the social communication between Asians as a symbol of courtesy, honour and friendship. According to Wouter Schouten (1676) no banquet ended, before the host offered his guests areca or pinang on a golden silver or at least copper plate. Some Dutchmen in the service of the VOC, like the clergy man and writer François Valentijn (1656-1727), took to the habit of chewing betel. It was however more common for European man to smoke tobacco.

Amongst the European women living in Batavia, the use of betel was considered inappropriate. In 17th century Europe, it was the custom for women to paint their lips red, and it was difficult for them to accept that the black teeth and red lips caused by the betel represented the beauty ideal of the Asian ladies. The majority of the women who married VOC employees, were however, born in Asia and were accustomed to chew betel since their youth. When they saw coloured prints of French ladies with red lips, they came to the conclusion that the French 'betel' was better than the Asian. Among the Asian population, chewing sirih was very common until it was replaced in the twentieth century by smoking cigarettes. (Breet 2003, p. 176; Bruijn, Raben 2004, p. 169).

Coconut

The coconut tree (*Cocos nucifera* L., a member of the Aracaceae family) grows to a height of 30 meters. It seems to be native to southeast America and reached Sri Lanka via Polynesia, New Guinea and Malaysia. When the first Europeans arrived, it was a common plant in South East Asia.

In 1595, Van Linschoten described that the natives used every part of the coconut palm. The trunk was used to make boats, the leaves to make sails and roof covers and ropes were made from the fibre of the nut. The nut itself was used as beaker or as a ladle. The water inside the nut was a good drink, which could be kept for a long time and was very useful for sailors. The pulp was food for servants. It was also possible to make oil, vinegar, wine or sugar from the coconut. Until today almost every part of the coconut palm is used by the people of Sri Lanka. So it is not surprising that at the wreck site six parts of coconuts have been found. Two coconut shells were used as ladle by making holes in the shell and adding a wooden stem with copper nails.

Catalogue fruit

catalogue number

1 inventory number - post tsunami

2 name

Catalogue fruit

- PL001

1. 2002GHL155 / L

2. arecanut
- PL002

1 2003GHL115 / L

2 arecanut
- PL003

1 2002GHL096a / L

2 coconut
- PL004

1 2002GHL096b / L

2 coconut
- PL005

1 2002GHL096c / L

2 coconut
- PL006

1 2002GHL143 / L

2 coconut
- PL007

1 2002GHL171 / L

2 coconut
- PL008

1 2003GHL231 / L

2 coconut, part of a ladle with 2 holes
- PL009

1 2003GHL278 / L

2 coconut, part of a laddle with 2 copper nails
- PL010

1 2003GHL280 / L

2 coconut

Figure 13.3 Areca Palm









Miscellaneous

Several excavated objects do not belong to one of the categories mentioned before or could not be identified. Many of these were covered with a hard shell of corrosion or other incrustations. The concretion was manually removed from a limited number of objects, but in most cases this time consuming work had to wait until the future. The remaining 140 concretions were stored in the MAU building at the harbour. Many were lost in the tsunami. Other concretions, which were recovered afterwards and stored in the new building, had lost the tape with the find number. Because of the nature of these objects, it is not possible to find back their original number.

The findbook of the 2004 campaign was lost in the tsunami before the registration of the objects in the database. The numbers of the recovered artefacts of the 2004 campaign showed that at least 57 objects were from the 2004 campaign were lost together with the find administration. The list of missing numbers is given in this catalogue

Catalogue miscellaneous

catalogue number

- 1 inventory number - post tsunami
- 2 name

Figure 14.1: Miscellaneous

Figure 14.2: Artefacts, mainly wood, some with concretion

Catalogue Miscellaneous

MI001

1. 1998GHL013 / R
2. pacing, 20B fiber (asbestos)

MI002

1. 1999GHL008A / R
2. corck, bark of cork oak

MI003

1. 2002GHL016 / L
2. unidentified object, stone or glass

MI004

1. 2002GHL175c / L
2. gunpowder charge found in barrle canon
2002GHL175a

MI005

1. 2003GHL177 / L
2. unidentified object

MI006

1. 2003GHL257 / L
2. unidentified object, probably concreted
silt inside bottle

MI007

1. 2003GHL281 / L
2. unidentified object, metal and wood

MI008

1. 2003GHL527 / L
2. number expired

MI009

1. 1993GHL116 / L
2. concretion, Fe

MI010

1. 1998GHL006 / L
2. concretion, Fe with wood

MI011

1. 1998GHL008 / L
2. concretion, Fe



MI012

1. 1998GHL025 / L
2. concretion, Fe



MI013

1. 1998GHL035A / L
2. concretion

MI014

1. 1998GHL043 / L
2. concretion, 3 fragments



MI015

1. 1998GHL103 / L
2. concretion

MI016

1. 1998GHL104 / L
2. concretion



MI017

1. 1998GHL105 / R
2. concretion (stave-bullet?)



MI018

1. 1998GHL106 / L
2. concretion



MI01. 19

1. 1998GHL107 / L
2. concretion



MI020

1. 1998GHL108 / R
2. concretion



MI021

1. 1998GHL109 / L
2. concretion



MI022

1. 1998GHL110 / L
2. concretion, Fe (pipe?)



MI023

1. 1998GHL111 / L
2. concretion

MI024

1. 1998GHL113 / L
2. concretion

MI025

1. 1998GHL114 / L
2. concretion

MI026

1. 1998GHL115 / L
2. concretion

MI027

1. 1998GHL116 / L
2. concretion, Fe



MI028

1. 1999GHL011 / L
2. concretion



MI029

1. 1999GHL012 / L
2. concretion

MI030

1. 1999GHL013 / L
2. concretion



MI031

1. 1999GHL016 / L
2. concretion, Fe with wood

MI032

1. 1999GHL029
2. concretion, Fe

MI033

1. 1999GHL030 / R
2. concretion, Fe (sheet?)



MI034

1. 2001GHL010 / L
2. concretion



MI035

1. 2001GHL024a / L
2. concretion

MI036

1. 2001GHL024b / L
2. concretion, Fe

MI037

1. 2001GHL034 / R
2. concretion, Fe (one end ring-shaped)

MI038

1. 2001GHL035 / L
2. concretion, metal

MI039

1. 2001GHL036 / L
2. concretion, metal

MI040

1. 2001GHL037 / L
2. concretion, metal

MI041

1. 2001GHL038 / L
2. concretion, metal

- MI042
1. 2001GHL039
 2. concretion, metal

- MI043
1. 2001GHL040 / L
 2. concretion, Fe (nail?)

- MI044
1. 2001GHL041 / L
 2. concretion, metal

- MI045
1. 2001GHL042 / L
 2. concretion, metal (sheet?)

- MI046
1. 2001GHL043 / L
 2. concretion, metal

- MI047
1. 2001GHL055
 2. concretion (stave-bullet?)

- MI048
1. 2001GHL060 / L
 2. concretion

- MI049
1. 2001GHL079 / L
 2. concretion, Fe

- MI050
1. 2001GHL080 / L
 2. concretion, iron



- MI051
1. 2001GHL082a / L
 2. concretion, Fe (bolt?)



- MI052
1. 2001GHL082b / L
 2. concretion (stave-bullet?)

- MI053
1. 2001GHL082c / L
 2. concretion , fragment of wood attached

- MI054
1. 2001GHL082d / L
 2. concretion ,fragment of wood attached

- MI055
1. 2001GHL082e / L
 2. concretion, metal

- MI056
1. 2001GHL082f / R
 2. concretion, metal

- MI057
1. 2001GHL082g / L
 2. concretion (stave-bullet?)

- MI058
1. 2001GHL082h / R
 2. concretion, fragment of wood attached

- MI059
1. 2001GHL082i / L
 2. concretion

- MI060
1. 2001GHL082j / L
 2. concretion (stave-bullet?)

- MI061
1. 2001GHL085 / L
 2. concretion, Fe

MI062

- 1. 2001GHL086 / R
- 2. concretion, Fe

MI063

- 1. 2001GHL087 / L
- 2. concretion, Fe

MI064

- 1. 2001GHL095 / L
- 2. concretion, metal

MI065

- 1. 2001GHL098 / L
- 2. concretion (stave-bullet?)

MI066

- 1. 2001GHL100 / L
- 2. concretion, Fe

MI067

- 1. 2001GHL101 / L
- 2. concretion, metal

MI068

- 1. 2001GHL102 / L
- 2. concretion, metal

MI069

- 1. 2001GHL103 / L
- 2. concretion, metal

MI070

- 1. 2001GHL121 / L
- 2. concretion, metal

MI071

- 1. 2001GHL122 / L
- 2. concretion, metal

MI072

- 1. 2001GHL123 / L
- 2. concretion, metal

MI073

- 1. 2001GHL124 / L
- 2. concretion, metal

MI074

- 1. 2001GHL132
- 2. concretion,bolt with wood

MI075

- 1. 2001GHL133 / L
- 2. concretion, metal

MI076

- 1. 2001GHL134 / L
- 2. concretion, metal



MI077

- 1. 2001GHL135
- 2. concretion, metal

MI078

- 1. 2001GHL136
- 2. concretion, metal

MI079

- 1. 2002GHL003 / L
- 2. concretion

MI080

- 1. 2002GHL004 / L
- 2. concretion

MI081

- 1. 2002GHL005 / R
- 2. concretion

MI082

- 1. 2002GHL017 / L
- 2. concretion, metal

MI083

- 1. 2002GHL018 / L
- 2. concretion, metal

MI084

1. 2002GHL020 / L
2. concretion, metal

MI085

1. 2002GHL021 / L
2. concretion, metal

MI086

1. 2002GHL022 / R
2. concretion, metal

MI087

1. 2002GHL023 / R
2. concretion, metal

MI088

1. 2002GHL024 / R
2. concretion, metal

MI089

1. 2002GHL025 / R
2. concretion, metal

MI090

1. 2002GHL026 / R
2. concretion, metal

MI091

1. 2002GHL037 / L
2. concretion, Pb (musketball?)

MI092

1. 2002GHL038 / L
2. concretion, Pb (musketball?)

MI093

1. 2002GHL039 / L
2. concretion, metal (nail?)

MI094

1. 2002GHL040 / L
2. concretion, Fe (nail?)



MI095

1. 2002GHL042 / R
2. concretion, iron and wood

MI096

1. 2002GHL043a / R
2. concretion, metal

MI097

1. 2002GHL043b / L
 2. concretion, metal
- L

MI098

1. 2002GHL044 / R
2. concretion, metal (nail)

MI099

1. 2002GHL045 / R
2. concretion, metal and wood

MI100

1. 2002GHL046
2. concretion, metal

MI101

1. 2002GHL047
2. concretion, metal

MI102

1. 2002GHL050 / L
2. concretion, metal

MI103

1. 2002GHL051 / L
2. concretion, metal

MI104

1. 2002GHL052 / R
2. concretion, metal

MI105

1. 2002GHL053 / R
2. concretion with wood

MI106

1. 2002GHL057 / L
2. concretion, metal (bolt?)

MI107

- 1. 2002GHL058 / L
- 2. concretion, metal (bolt?)

MI108

- 1. 2002GHL059 / L
- 2. concretion, metal (bolt?)

MI109

- 1. 2002GHL060 / L
- 2. concretion, metal (bolt?)

MI110

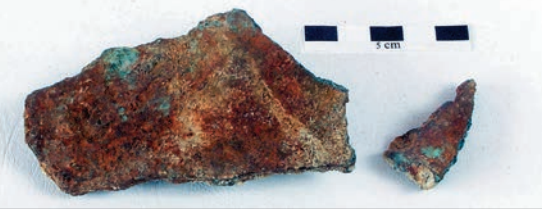
- 1. 2002GHL098 / L
- 2. concretion

MI111

- 1. 2002GHL099 / L
- 2. concretion

MI112

- 1. 2002GHL122 / R
- 2. concretion, metal (Cz?)



MI113

- 1. 2002GHL156 / R
- 2. concretion, Fe

MI114

- 1. 2002GHL157c / L
- 2. concretion, metal

MI115

- 1. 2002GHL163z / R
- 2. concretion, traces of wood

MI116

- 1. 2002GHL164v / R
- 2. concretion, metal

MI117

- 1. 2002GHL199 / L
- 2. concretion, Fe (fastening or bolt)

MI118

- 1. 2002GHL208 / R
- 2. concretion, Fe

MI11. 19

- 1. 2003GHL071a / R
- 2. concretion, metal

MI120

- 1. 2003GHL071b / R
- 2. concretion, metal

MI121

- 1. 2003GHL133 / L
- 2. concretion, metal (2 canonballs?)

MI122

- 1. 2003GHL152 / R
- 2. concretion

MI123

- 1. 2003GHL161 / L
- 2. concretion

MI124

- 1. 2003GHL183 / L
- 2. concretion, metal (bolt?)

MI125

- 1. 2003GHL184
- 2. concretion, metal (sheet?)

MI126

- 1. 2003GHL185 / L
- 2. concretion, metal

MI127

- 1. 2003GHL186 / L
- 2. concretion, metal

MI128

- 1. 2003GHL187 / L
- 2. concretion, metal

MI129

- 1. 2003GHL188 / L
- 2. concretion, metal

MI130

1. 2003GHL189 / L
2. concretion, metal

MI131

1. 2003GHL192 / R
2. concretion, Cu? (sheet?)

MI132

1. 2003GHL193 / L
2. concretion, metal

MI133

1. 2003GHL207 / L
2. concretion, metal (sheet?)

MI134

1. 2003GHL213 / R
2. concretion, metal (hoop of barrel?)

MI135

1. 2003GHL215 / L
2. concretion, metal

MI136

1. 2003GHL218 / L
2. concretion

MI137

1. 2003GHL222 / L
2. concretion, metal

MI138

1. 2003GHL264 / L
2. concretion

MI139

1. 2003GHL287
2. concretion, Cu , (sheet?)

MI140

1. 2003GHL289 / L
2. concretion

MI141

1. 2003GHL400 / L
2. concretion, metal

MI142

1. 2003GHL473 / L
2. concretion, Fe, (2 canonballs?)

MI143

1. 2003GHL537 / L
2. concretion

MI144

1. 2004GHL100 / R
2. concretion ?



MI145

1. 2004GHL156 / L
2. concretion

MI146

1. 2004GHL158 / L
2. concretion

MI147

1. 2004GHL267 / L
2. concretion (nail fragment?)

MI148

1. 2004GHL286 / L
2. concretion

MI149

1. 2004GHL287 / L
2. concretion

MI150

1. 2004GHL025 / L
2. object and registration lost in tsunami

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