

# ZUYTDORP

## A report on the situation to date (June 1990)

By: Mike McCarthy  
Zuytdorp Project Leader

Diving Team: Geoff Kimpton (Dive Leader), Mike McCarthy (Archaeologist), Pat Baker (Photographer) and Jon Carpenter (on-site conservator)

Conservators: Dr Ian MacLeod: Head Department of Materials Conservation and Restoration (Corrosion Chemist); Dr Ian Godfrey Curator of Conservation; Alan Kendrick Conservator (Organics); Vicki Richards Conservator (Metal); Jon Carpenter On Site Conservator-Iron Conservator; Carmela Corvaia, Conservator (Ceramics); Fairlie Sawday (Interdepartmental liaison).

Researchers (Departmental): Jeremy Green: Head Department of Maritime Archaeology, Artefact Analysis and History; Myra Stanbury, Artefact Analysis and Curator of Artefacts.

External Consultants: Dr Phillip Playford, Director Geological Survey, History; Mr Stan Wilson, Numismatist; Dr C. De Heer, Model Maker and Dutch-English Translation; Mr Stanley Hewitt, Artist and Draughtsman; Ms Kate Morse, Prehistorical Archaeology; Ms Fiona Weaver, Historical Archaeologist; Dr Geoffrey Dean, Medical Research.

# Contents

Project Aims	3
Staff	3
Background	4
Results	
<b>FIELDWORK</b>	
Sea	5
Land	6
Public Issues	6
Data on early visits	6
<b>HISTORICAL RESEARCH</b>	
Jeremy Green	7
Phillip Playford	9
Jim de Heer	19
Stan Wilson	19
Stanley Hewitt	19
Myra Stanbury	21
<b>Technical Reports</b>	
Photographic : Pat Baker	25
Site Plans and Orthophotographs	26
Status of the Artefact Collection : Stanbury	28
<b>Conservation</b>	
Organics : Alan Kendrick	29
Non-ferrous : Vicki Richards	31
<b>Summary of Fieldwork</b>	34
<b>Conclusions</b>	37
<b>Recommendations</b>	38
<b>Appendices</b>	
Zuytdorp : The Search Continues.	

## Project Aims (since 1986)

- (A) To investigate the wreck and associated land camps of the VOC Ship *Zuytdorp* (1702-1712) in order to help ascertain the causes of the loss of the vessel and the fate of its survivors.
- (B) In so doing, to recover as much as possible of the material that serves to attract divers and collectors to the site such that it will not be lost or destroyed and to help ensure that the site will not be unnecessarily disturbed by others. In this manner the site can be better managed for the sake of the wreck, campsites, the artefacts themselves and in due course for bona fide visitors to the site.
- (C) To compile all the available written, anecdotal, film and other material on the *Zuytdorp* and its survivors.
- (D) To analyse, catalogue, conserve the artefacts found and to display them with appropriate background information in suitable repositories in the region and in provincial centres.
- (E) To conduct on-going research into the *Zuytdorp* and its contents and crew for the purposes of better understanding the vessel, its purposes and its people.
- (F) To publish the findings of the inquiry and activities outlined above at all available levels, through all available media and for all walks of life.
- (G) To establish a site(s) management plan and to ensure that the area is stabilized such that further buried or submerged information or artefacts are not lost and to cater for the growing desire from members of the general public to visit the area
- (H) To examine Aboriginal sites in the vicinity of the wreck, seeking evidence as to whether the survivors interacted or lived with the local Aborigines.
- (I) To facilitate geneological-medical research aimed at determining whether survivors interbred with the Aborigines.

## Staff (since 1986)

Continuing investigations into the loss of the VOC ship *Zuytdorp* (1712) and examinations of the site are centred around the following areas and with those involved indicated in bold face.

1. Compilation of record of activities on the site pre 1959 : **Playford.**
2. Continuing Archival Research : **deHeer/Green/Playford.**
3. Examination of the wreck itself : **Baker/Carpenter/Kimpton/McCarthy.**
4. Recovery of Material from the Wreck : **Kimpton/McCarthy.**
5. Examination of the survivors and Aboriginal, campsites and material remains:**McCarthy/Morse/Playford/Weaver.**
5. Search for evidence of the movement of survivors away from the area of the wreck site:  
**Cooley/Lamara/McCarthy and staff/Miller/Playford**
6. Conservation of Artefacts Recovered: **MacLeod and Staff**
7. Record of all diving activities on the site since 1964, **McCarthy**
8. Cataloguing and drawing of artefacts : **Green/ McCarthy/Stanbury/Sawday,**
9. Illustrations and plans of Site :**Dept of Land Administration/ Hewitt/ Kimpton/ McCarthy**
10. Development of a site management plan, **McCarthy,** and stabilization of the area  
**McCarthy/Lamara**

## Project Aims (since 1986)

# Background

## Aboriginal Activities

The presence of what appear to be shell middens in the immediate vicinity of the *Zuytdorp* wreck site lead to the conclusion that there was an Aboriginal occupation of the area adjacent to the site before, and possibly during or after the untimely arrival of the Dutch in 1712.

Aboriginal presence at all or any of these times is a significant and major factor to be considered in any investigation of the fate of survivors of the *Zuytdorp* as hypothesised by Dr Playford in his monograph. If subsequent to the loss of the vessel, Aboriginal occupation of the area would be expected to have resulted in considerable modification of the original land site and in the transport and modification of useful artefacts found therein.

## European Activities

Dr Playford records that wreckage was discovered in April 1927 by a stockman, Tom Pepper, but that its presence did not become common knowledge for many years. He also records a *Sunday Times* expedition in 1941 and details his own visits to the site in conjunction with *WA Newspapers* in 1954 and 1958. Colour and black & white film of these expeditions have been located by Dr. Playford and Museum staff.

These expeditions, and Playford's research form the basis of a 1959 article which, to this day, remains the definitive work on the mystery of the *Zuytdorp* and its survivors after they were wrecked. Dr C. deHeer completed an excellent representation of the *Zuytdorp* and placed it on loan to the W.A. Museum.

Since Dr Playford's expeditions, there have been in excess of 25 known visits to the area with the aim (or result) of investigation, search or recovery for public purposes.

There have also been in the region of hundreds of recreational visits to the site and immediate area and an unknown number of unauthorised dives on the wreck itself.

The latter is no surprise given the proximity of the site to Kalbarri and the (comparitively) large number of professional fishermen with diving gear operating in the area at any one time. There are three recorded instances of looting on the site: 1971, 1978 and 1982 and indications of considerably more illegal activity.

## Diving

Much has been written and said on the dangers and difficulties in working this site on any but an opportunistic basis when the weather is right, and this does not need repeating here. A factor needing consideration, however, is that wave action and current combine with associated suspended sand to reduce visibility even on good working days, and this, combined with what appear to be cyclic sand deposits, serve to inhibit a complete inspection of the site even on reasonable diving days. The latter phenomenon was noted on successive expeditions led by Tom Brady in 1964 and 1967 and is recorded in WA Museum colour photographs taken in 1977. Wreck site plans have been produced by Brady (1964), Robinson (1968), Bingham (1971) and Green (1984). These vary in accuracy and coverage by virtue of the aims set by the recorder and the conditions prevailing at the times of recording.

The WA Museum's involvement with the wreck up to 1986, when the current team was mobilised, centred on the removal of coin with a view to reducing the attractiveness of the site to looters. It has met with mixed results though two most successful recoveries of material (mainly coin) were made (on air) one by Bingham/Kimpton et al. in 1971 and the other by Green/ Kimpton et al. in 1978. The WA Museum was assisted in its work by a number of individual people and agencies including the owner of Murchison House Station who provided a Quadropod frame and bulldozed an access road to the site.

The only other known significant recoveries of material from the wreck are those by Cramer et al. of three eroded swivel guns in 1964, by Robinson et al. of an excellent brass swivel gun and by Jones et al. of one eroded swivel gun on an illegal dive somewhere around 1982. All but two of the Cramer guns are now on display in the WA Museum.

A WA Museum team of Kimpton and McCarthy dived (on snorkel) twice in May 1986 and recovered a small amount of coin and the remains of one small breech loading swivel gun. A brief search was also made of the area to seaward of the wreck and a dive made (on snorkel) underneath the reef platform inshore of the site, with a view to examining the reef structure and assessing the potential for artefacts lying in the caves. The basis of an accurate site plan was also made in preparation for future expeditions and includes as much of the information above as can be fairly recorded.

During 1986 visit a reassessment of methods of working the site and of safety procedures was made by Kimpton and McCarthy. With this aim in mind, old and new contacts were re-established on site and at Kalbarri with a view to early warning and advice on potentially good conditions. It became apparent that many rock lobster boats frequented the area of the wreck and were prepared to operate as 'mother boats' for the museum's fast 6m. workboat. With Kalbarri as a base, this enabled the team to be 'on-site' in around an hour of departure, complete with all the equipment required for the excavation and for the removal of large material such as cannon and anchors off the site.

A significant, (but possibly not substantial), deposit of wreck material was also located and documented on the scree slope adjacent to the site. This included fastenings, hoop fragments, bottle sherds, shells and what appears to be a fragment of a spectacle, or telescope lens. There was also found, ample evidence of previous and recent visits and digs by unknown persons, (most likely metal detector equipped souvenir hunters), in this and other areas. Photographic records taken underwater on this 1986 visit when compared with that of the Museum's 1977 visit shows the area of known coin concentration to be substantially reduced and significantly less attractive to recreational divers, looters and the like. Wave action and suspended sand particles regrettably prevented an examination of areas of the wreck site other than the coin rock area during the 1986 visit. These activities were followed up by a concerted two seasons of work on the wreck site itself and on the land camps opposite with the following results.

## RESULTS (Fieldwork since 1986)

### SEA:

1. A substantial recovery of excellent and varied coin from the coin rock area and in particular a region lying just inshore of the 'old carpet of silver' now known as the 'armoury concretion', being a source of visible coin and artefacts apparently more diverse than those in the old 'carpet' region. Allied to these recoveries, recorded on a site plan has been the recovery of concretions and amazingly fragile material from the same area, e.g. ceramic and glassware; musket fragments and accoutrements; brassware; pewter plate; ivory/bone combs and personal items.
2. The recovery of 1 x 8 pounder English cannon and one 4.5 metre long anchor. The latter shows clear signs of damage during the loss of the vessel and now the largest anchor to be recovered by this Department and is of significant display potential.

#### Note:

Even though rarely covered in sand the wreck remains undiveable on most occasions. From observations made since April 1986 and the compilation of data on dives since 1964 it is clear that the *Zuytdorp* site is subject to seasonal scouring of summer sand deposits. These serve in spring, summer and autumn to cover substantial deposits known to contain lead ingots, very rich concretions, cannon and other items. These lie apart from the area known as the 'carpet of silver' at coin rock that has received most attention to date, and which only rarely lies covered in sand but which suffers from being undiveable on most occasions. This 'new' area of interest lies to seaward and in deeper (and therefore safer) water. Unlike the coin area, it normally becomes 'at risk' (by exposure) only in the late autumn and early winter, at the end of the rock lobster season, i.e. late April early June. It is, however, rich, accessible and to date, only briefly assessed and when visible.

A WA Museum team of Kimpton and McCarthy dived (on snorkel) twice in May 1986 and recovered a small amount of coin and the remains of one small breech loading swivel gun. A brief search was also made of the area to seaward of the wreck and a dive made (on snorkel) underneath the reef platform inshore of the site, with a view to examining the reef structure and

## Land

- (i) The location, investigation and exploratory excavation of all known 18th century land sites resulting in the recovery of a wide range of 18th century material from previously heavily worked deposits indicating human, and most likely, wreck survivor activity
- (ii) The identification of midden sites as Aboriginal of a date  $4630 \pm 87$  BP and  $4000 \pm 78$  BP.
- (iii) The location of previously unknown gnammas holes near the site capable of holding water supplies.
- (iv) The location and assessment of wreck material on the reeftop south of the site and inland.
- (v) The location and examination of 'lost' soaks and waterholes capable of sustaining life.
- (vi) The beginning of an aerial photographic-based plan of the wreck site underwater and the adjacent land area involving a surveyor, Ross White and the Department of Land Administration. (Phil Smythe chief liaison). Orthophotographs to 1:500 and 1:1000 have been produced, along with sections through the site from the top of the cliff to a point several hundred metres to the seaward of the wreck. Stanley Hewitt has completed work on a preliminary site plan and on sections through the site as it would have appeared soon after the wrecking in 1712. All artefacts found on the land and sea can now be plotted. Those found in the past will also be located on the wreck site plan and on the orthophotographs produced by the dept. of Land Administration where possible.
- (vii) The near completion of a site clean-up of Museum debris at the site
- (viii) The development of a management plan.

### Public Issues

Displays of material recently recovered have been presented and more are anticipated.

Smaller articles and reports are underway. A 'Your Museum' type information pamphlet on the site has been published and is attached. Being in press for a substantial length of time, an update of that is now required.

A major publication will be commenced when the work outlined in this report is completed.

The Kalbarri townfolk have assisted greatly. Our public image with them is good and the assistance given by them is being returned in full.

A good relationship has been established with the CALM area manager with a view to facilitating a viable land site management plan such that the *Zuytdorp* land camps can be managed by the Museum within the framework of the encircling Zuytdorp National Park.

### Compilation of Data on earlier visits

Film of visits conducted to the present day has been located and copied, (including one in colour and black and white of the 1939 expedition located by Dr Playford). All press releases and articles from 1939 to the present are being sought and most of the early 'pioneers' have been interviewed. Unfortunately, Robinson and Pepper are deceased. Early site plans including those of Brady, Bingham and Robinson have been obtained. A past and current (i.e. 1939-1988) photographic collection is also being amassed. The W.A. Museum holds files on all of its earlier activities since the wreck was found.

# Results

## Historical Research (1986-1990)

### (i) Research by Jeremy Green

During 1988–89 I visited the Algemeen Rijksarchief in Den Haag to check up on additional research items related to the *Zuytdorp*. I had the list of archival sources that had been already sighted so that the search was involved in two aspects. Firstly to identify the RGP numbers of the existing material (the Rijksarchief has recently renumbered) and secondly to locate any new material that may be relevant.

During this period, five separate days, I worked in conjunction with Mr Robert Parthesius, checking the material. The following is the list of documents sighted:

#### KA10459 loose paper

Rollen van de aakomst en't vertrek der scheepen soo van onse Heeren Principalen als andere Europeaanse Natien dwelke Immiddels der legtyde en na het vertreck der retourscheepen van de eerste en tweede besendingh deses jaars 1712 dit Gouvernement hebben aangedaen

Zuyddorp Martinus Weervliet	38 Stucken	6 cassen	27 july 1711 uut Zeeland	286
met koppen	den 13 dec? aan StTome	den 4 Jan van daan vertrocken	112 doden	22
sieken	23 gearriveert	22 April vertrocken	Batavia	
Casteel de Goede Hoop den 4 April 1713				

#### Un-numbered folio

't Schip Zuid-dorp debt voor de volgen de seerdings en andree gecsten 't zerdt des 24 maart laatl dat uyt 't Patria hier ter reede is scheenen dussessivelyk uit de magna Zynen genooten tot heden dat zyn reyselna Batavia staat te svonderen namenlyke:

Voor de gecontract Slagters is aan 8 cayuytsgasten en 150 gem op d bodem beschyden tot sending den strct

There follows a list of goods taken on to the *Zuytdorp*.

Wy ondergesz verslaaren en certificeeren by deesen dat dit voorengem beestiaal 't geen wy by ons aanweesen alhier hebben genooten is geweest goed en dengd zaam lees als meede de groente en moeskruyden aan ons verstrct in teken der waarheyd hebben wy deese met onse gewoone handtkenning bekragtigt Int Casteel de Goede Hoop 15 April 1712

#### Notulen van de resolutien. jan.1695 Dec.1701.

##### Kamer Zeeland (ARA 7253)

2 december 1700.

"D'heeren van equipagie werden geautoriseert het schip Zuytdorpe te bouwen soo als hier voort gedragen, en voort soo verre vant regelement af te gaen".

#### Brieven en Papier van de Caap overgekomen met de Retour vloot ontsangen 9 April 1713

##### KA10549 No 73

Bellevliet

sailed with Zuyddorp 27 July 1711

52 deg 30 min

28 Aug 59deg 44min

5 Sept 53 deg 18 min

1 Oct schipper onderkoopman & oppersturman came on board

22 Oct clean inside with powder and vinegar 5deg N of line

3 Nov schipper, onderk & ostur

6 Dec saw Africa

11 Dec St Tomee

9 Jan Cape Lopo Gonsalves  
16 depart  
27 March Cape (Z arrived 4 - 5 days before)

### ARA 33.

#### Minuut resolutien van xvii, 1698-1701

woensdag 15 september 1700.

"dat wijders bij de camers sullen worden opgeseten en aengetimmert resp. schepen teweten(?) bij de camer van Amsterdam twee van lengte van 145 voeten idder en een van 130 voeten. bij de kamer van Zeeland een van 160 voeten bij de camer van delft een van 130 voeten en bij de kamer Rotterdam een van 123 (?) ende van 145 voeten.

### ARA 11336

#### Notulen van de heren van de equipage.

7 july 1701

"Is door mij ondersz. aangenomen:

het schip Zuytdorp alle het beeldewerck tot voorsz. schip nodig volgens het besteck bij de baas timmerman gemaakt. En soo het niet komt te accordeeren met voorsz. besteck dat dan het selve weder om sal vermaken en de onkosten daar van dragen tonikouds(?) desen geteijckent In middels 7 july 1701 (signature)"

folio 16

"dese voorsz. beeldsnijder is met de vooren genoemde perfecte heeren gecontracteerd voor de tijt van vijf jaeren om comp. scheepen te snijden als volgt:

Een schip van 160 voet voor f.70.-

Een dito van 145 „ „ f.60.-

Een dito „ 130 „ „ f.40.-

de fleuyten sullen buyten dit accoort wesen."

### General Comments

The most important document was the log of the *Belvliet* which sailed in convoy with the *Zuytdorp*. This account may explain why the *Zuytdorp* had so many deaths. The account shows that the two ships were convoyed *Achter om*, departing 27 July but only reaching the same latitude after circumnavigating the British Isles (59° 44' N) on 5 September. The ships sighted Africa 6 December and went to Cape Gonslaves and Sao Tomeé for water and provisions. The sickness and death on the *Belvliet* graphically demonstrate the problems with spending a long period of time in the Gulf of Guinea. Because the vessels took such a long time in the North Atlantic they ran out of food and water and were obliged to take on cattle and water.

There is also a list of equipment loaded on board the *Zuytdorp* at the Cape of Good Hope and various other short references that are not on our lists. Additionally, there was several references to the *Zuytdorp* heving been built under an abnormal charter. The latter item is being researched further by Robert Parthesius.

The *Belvliet* Journal has been transcribed and is away being copy edited, the Rhijdsarchief are microfilming the relevant documents. I have also requisitioned a microfilm of the Inventory of the Rijdsarchief which will be an important research tool for the future.

Robert Parthesius would like to continue this work because he has interests in this period in relation to the *Amsterdam*, and he will be passing on information from time to time.

### Lead Trade

I contacted Mensun Bound and found out that the Metal Trade Conference Proceedings have not been published. He put me in contact with the Derbyshire Lead Mining Museum who I have corresponded with. I now have several papers relating to the lead ingot trade and when I get on to doing the work on the ingots I will write to see if they can assist. They, in return would like a small sample of the lead in order to build up a data base on lead types. Again I will deal with this later.

## (ii) Research by Dr Phillip Playford

Since completing my original research on the *Zuytdorp*, which led to identification of the wreck and the publication in 1959 of "The wreck of the *Zuytdorp*", I have maintained a close interest in the wreck, making trips to the site in 1962 and 1974, and visiting the Algemeen Rijksarchief in The Hague and relevant museums in Holland on three occasions, most recently in 1989. In late 1986 Mike McCarthy invited me, as the original researcher on the *Zuytdorp*, to assist the Museum by carrying out further historical research on the wreck. The following summarizes some of the results of this recent research.

### ARCHIVAL RESEARCH

I began correspondence in 1987 with relevant personnel in The Netherlands, Indonesia, and South Africa, including the following: Dr B J Slot of the Algemeen Rijksarchief, The Hague, Professor Jaap Bruijn of Leiden University, Ms Helma van de Wetering of Leiden University, Mr Leo Arkveld of the Maritiem Museum Prins Hendrik, Rotterdam, Dr Arnold Leuftink of Hoog-Keppel, Ms Dra Soemartinia of the Arsip Nasional, Jakarta, Air Vice Marshal I S Wirjopsapetro of Jakarta, Dr Christiaan de Jonge of Jakarta, Dr Mohamed Untung of Bandung, and Mr David McLennan, Dr G C de Wet, and Mr A S Schoeman of the State Archives Service, Cape Town.

I also visited the Netherlands in October 1989, to hold discussions with Professor Bruijn, Dr Slot, and Mr Arkveld, and to locate and examine further documents.

As a result of this correspondence and visit I have obtained a voluminous amount of material, including copies of the most significant manuscripts dealing with the *Zuytdorp*, its successive voyages, and disappearance. These documents have now been skilfully translated by Dr C. (Jim) de Heer.

The documents from The Netherlands have been obtained principally in microfilm, although some photocopies and large negatives (of maps) have also been provided. Most of the material from Jakarta and Cape Town has been obtained as photocopies, although some documents in the Arsip Nasional are too fragile for copying and have had to be provided as transcripts.

The V.O.C. files containing the *Zuytdorp* documents in the Algemeen Rijksarchief had never been microfilmed before, and this was therefore done at my request. The archives regulations require that microfilm of a particular document can only be obtained by filming the whole of the V.O.C. file in which it occurs. Consequently a considerable amount of filming was necessary to obtain the required information.

Space will not permit me to outline all the new data and interpretations, but several of the more interesting aspects can be summarized as follows:

The voyage to the Cape: In November 1987 Professor Bruijn advised that in preparing a list of documents on the *Zuytdorp* at the Algemeen Rijksarchief on my behalf, he had found the log of the *Belvliet*, a ship that had accompanied the *Zuytdorp* throughout most of its voyage to the Cape. In July 1988 I arranged for this log (with the other documents) to be microfilmed at the Algemeen Rijksarchief, and they were then passed to Dr de Heer for translation. The log is an account of the voyage of the *Belvliet* between The Netherlands and Cape Town, from 28 July 1711 to 27 February 1712. The route followed is shown on Figure 1.

This voyage to the Cape was exceptionally prolonged, resulting in a huge number of deaths on both ships. The *Belvliet* lost 60 of its complement of 161, including the skipper and the commander of the soldiers, 24 were hospitalized at the Cape, and 2 deserted at the island of Sao Thome. The *Zuytdorp* lost 112 of its total of 286, 22 were hospitalized at the Cape, and 8 deserted at Sao Thome. Deaths on the *Belvliet* began in the seventh week out of port, and continued at an average of nearly one per week for the next 16 weeks until the ship arrived at the island of Sao Thome in the Gulf of Guinea. On leaving the island the frequency of deaths rose steeply, to an average of more than 7 per week for the next 4 weeks before levelling off to about 2 per week for the rest of the voyage.

The skipper of the *Belvliet* died 6 weeks after leaving Sao Thome, and the log records that they flew the flag at half mast and "between 11 and 12 hours gave the dead body of the deceased skipper Dirck Blaauw a seaman's burial, fired 22 guns in all, and carried him three times around the ship".

The primary reason for the extremely slow voyage of these ships to the Cape, and the resulting large number of deaths, is that they departed from normal sailing orders by turning east while still north of the equator, sailing to the African coast and the Gulf of Guinea, and calling at the island of Sao Thome and the Cape de Lopez Gonsalves. This detour must have prolonged the voyage to the Cape by at least two months.

Ships of the company were instructed to proceed to the equator along a defined sea lane south of the Cape Verde Islands, known as the *wagen weg* (wagon way) or *wagenspoor* (wagon track). They were then supposed to sail south to south-southwest across the Atlantic, before turning east for a straight run to the Cape.

The two ships entered the *wagen weg* at its northern end on 8 October 1711, and had a very slow voyage south, drifting over to its eastern limit (Figure 1). A decision to leave this sea lane at 4° north latitude and sail into the Gulf of Guinea was made jointly by the skippers and senior officers of the *Belvliet* and *Zuytdorp* on 3 November. Surprisingly, the reason for this decision is not recorded in the log. The dangers of entering the Gulf of Guinea were well known, and there must have been a compelling reason why the two skippers decided to take this course of action. It may well have been related to a high incidence of scurvy among the crews of both ships, and a perceived need to obtain fresh food and drinking water from the Portuguese settlement at Sao Thome in the Gulf of Guinea.

However, the result was disastrous; the log shows that most deaths on the *Belvliet* during the voyage to the Cape occurred while in the Gulf (40 out of a total of 60 deaths), especially in the four weeks following the visit to Sao Thome. Many of these deaths probably resulted from the ravages of tropical malaria, contracted during the stay at Sao Thome, together with the debilitating effects of scurvy.

It must have been a similar story on the *Zuytdorp*. The surgeon of another ship, *d'Unie*, which was lying at anchor when the *Zuytdorp* arrived at the Cape, recorded that "The ship *Zuiddorp* called, about 8 months from Zeeland, having had 114 dead by scurvy, hot diseases, and raging fevers. The Chief-surgeon and both his mates had jumped overboard in their delirium and ragings, notwithstanding all conceivable precautions".

The two ships parted company near the African coast on 29 January, 13 days after leaving the Cape de Lopez Gonsalves. The *Belvliet* then sailed southwest into the mid Atlantic, reaching, on 29 February, a position that it might have attained at least two months earlier had it stayed with the approved route south of the equator. The ship then sailed east at around 34° south latitude, reaching the Cape on 27 March 1712. The *Zuytdorp* had arrived there (presumably by a similar route) four days earlier.

Speculation on reasons for the loss of the *Zuytdorp*: In 1713, after the *Zuytdorp* was judged to have been lost, rumours circulated in Cape Town that the ship had been lost as a consequence of inadequate provisioning at the Cape prior to the ship's departure for Batavia. This accusation was strenuously denied by the Undermerchant Willem Helot, who gave his superiors at the Cape a detailed list of the provisions he had furnished to the ship.

He further recorded that the *Zuytdorp* left the Cape with 200 people "and thus 86 eaters fewer than the number with which they put to sea (from Zeeland)..and...must have had on board such a copious supply of victuals that she was able to undertake the voyage from here with perfect confidence.....Now it is almost certain that the aforesaid ship *Zuiddorp* has been lost at sea through heavy weather or through negligence or ill management, or has foundered elsewhere, seized by mutineers, or through a relapse of the crew's health, who upon their arrival here were most extremely ill, and could have fallen into such a weakened and impotent state that the ship could no longer be properly directed and thus had to be surrendered to the mercy of the sea and winds, of which vicissitudes there are numerous examples".

An affidavit presented to the Court of Justice in Cape Town on this matter indicated that while at the Cape the skipper of the *Zuytdorp*, Marinus Wijsvliet, had "vaunted that he still had sufficient provisions for the voyage to Batavia and needed little or nothing else". Another person had then replied "that is no wonder, for on the voyage he has ill-treated his people and has given them all but nothing to eat". It was further testified that Wijsvliet was accused of having stolen or denied meat to his people, to which he responded "I was sparing with the provisions at the beginning of the voyage and I have had many deaths, but henceforth on the voyage between this place and Batavia I shall prove that I am an honest man and issue plentiful rations to the people."

### THE "SUNDAY TIMES" EXPEDITION OF 1941

When I first heard about the wreck from Tom Pepper he informed me that there had been an expedition to the site in 1939, sponsored by the "Sunday Times". He said that it had included the Commissioner of Police, David Hunter, who had threatened legal action against him if he did not relinquish the "figurehead". Tom Pepper also mentioned that Victor Courtney had been the journalist on the expedition.

In 1988-89 I made extensive enquiries regarding this expedition, initially to no avail, but by an intricate route I eventually discovered that it was held in May 1941, not 1939. The surviving participants and Tom Pepper had remembered the expedition as having been "just before the War", i.e. in 1939, whereas it was actually held in the year that Japan entered the war - 1941. This error illustrates the fact that the war really began for most Australians when Japan attacked Pearl Harbour.

I have determined the names of all of those who took part in this expedition, with one exception, the truck driver. Some of them were prominent Perth identities. Those who participated were: J J Simons (founder of the Young Australia League and joint owner of the "Sunday Times"), Ennemond Faye (a leading member of the Mining Industry and son-in-law of Claude De Bernales), Victor Courtney (another joint owner of the "Sunday Times"), David Hunter (Commissioner of Police), Claude McKinlay (a prominent photographer and car-rally driver), Hugh Drage (a pastoralist of Northampton and formerly of Murchison House), Robert Cook (a cadet journalist), Charlie Mallard (Mrs Lurlie Pepper's father, who acted as guide), and an unidentified truck driver, who worked as a miner with the De Bernales group. Faye and Cook are the only survivors today (unless the truck driver is still alive).

I managed to locate and copy photos of the expedition taken by McKinlay, and a movie film (partly in colour) taken by Faye and McKinlay. I sent a video copy of the movie to Faye, who now lives in Bristol, and visited him there in 1989 to discuss the expedition. He was delighted to receive the video, as for family reasons he had been unable to see the film since 1941, and it now allowed him to "show his grandchildren that he was young once". All persons seen in the film, with the exception referred to above, have been identified, including Aboriginal children at Northampton and individual camels (by name) at Gee Gie Outcamp!

It was a remarkable achievement for the party to have driven to within a few miles of the wreck using conventional 2-wheel-drive vehicles (one of them a sedan car owned by Simons). They were able to spend only one day at the site, after an exhausting walk through the thick tea-tree scrub. They believed that the wreck was buried beneath rubble at the foot of the cliff, and had intended blasting to reach it. However, although they carried gelignite on their long walk to the site, they forgot the detonators!

### THE "SUNDAY TIMES" EXPEDITION OF 1941

When I first heard about the wreck from Tom Pepper he informed me that there had been an expedition to the site in 1939, sponsored by the "Sunday Times". He said that it had included the Commissioner of Police, David Hunter, who had threatened legal action against him if he did not relinquish the "figurehead". Tom Pepper also mentioned that Victor Courtney had been the journalist on the expedition.

## PORPHYRIA VARIEGATA - WAS IT INTRODUCED TO AUSTRALIA BY A ZUYTDORP SURVIVOR?

In July 1988 I received a letter from a woman (a university college lecturer) in Santa Cruz, California, who said that she had intended writing to me for several years. She had met and married a part-Aboriginal man from Shark Bay when they were in Papua New Guinea. While there he had developed symptoms of the metabolic disease Porphyria, which made him extremely ill. He recovered, only to die not long afterwards of a heart attack.

After his death she consulted a book entitled "The porphyrias, a story of inheritance and environment", by Dr Geoffrey Dean, and from her husband's symptoms she deduced that he had a form of the disease known as Porphyria variegata. This is a genetically linked type that is largely confined to the Afrikaner population of South Africa. Essentially all cases there can be traced back to one Dutch couple, Gerrit Jansz and Ariaantje Jacobs, who married at Cape Town in 1688.

The woman and her part-Aboriginal husband visited Shark Bay some years ago, and while there she acquired my publication on the *Zuytdorp*. It later occurred to her that her husband's disease may have been introduced to the Aborigines of the area by a survivor of the *Zuytdorp* who had joined the ship in Cape Town.

I contacted Dr Dean, the authority on Porphyria, who lives in Dublin. He confirmed that on the medical information provided the part-Aboriginal must have had Porphyria variegata, and expressed strong interest in the hypothesis that it was taken to Australia in 1712 by a survivor of the *Zuytdorp*.

Dr Dean has since made two visits to Cape Town to determine whether a son of Gerrit Jansz could have joined the *Zuytdorp* at the Cape. Unfortunately there is no extant listing of the new crew (approximately 40 persons) who joined the *Zuytdorp* there. However, Dr Dean has found that the Cape census of 1695 showed that Gerrit Jansz had two sons, of whom only one is known to have been born to his wife Ariaantje. That son remained at the Cape throughout his life. Dr Dean now suspects that the second son was an illegitimate child, possibly coloured, who was born prior to Gerrit's marriage to Ariaantje in 1688. Could he have joined the *Zuytdorp* in 1712, survived the wreck, and introduced Porphyria variegata to the Aborigines of Shark Bay?

Dr Dean and I are proposing that a genealogical-medical research project be undertaken to determine whether living relatives of this part-Aboriginal man have Porphyria variegata, and to establish its lineage. It seems likely that this man's mother, at least, **had the disease, and that it might possibly be traced back** to his great grandmother, a full-blood Aboriginal woman who died in about 1912.

Discussion indicates that the Department of Medicine at the University of Western Australia may be interested in promoting such a research project in the near future.

## FIELD EVIDENCE THAT THE SURVIVORS MIXED WITH THE ABORIGINES

In my 1959 publication I outlined evidence to suggest that survivors of the *Zuytdorp* may have lived with the local Aboriginal people, of the Mangala and Nanda Tribes.

This evidence consisted firstly of a report in the Perth Enquirer and Commercial News of 12 May 1869 that an Aborigine had brought a coin (a silver ducaton, clearly from the *Zuytdorp*), to Von Bibra's station (presumably Tamala). It had been picked up at a well named Woonah-ra-car-ra, 20 miles south of Shark Bay.

The second piece of evidence was Daisy Bates' claim that Aborigines she had seen on the Murchison and Gascoyne Rivers had European, indeed Dutch, features.

A third line of evidence, of which I was not aware when I wrote my 1959 paper, is recorded in the diary of George Fletcher Moore for 11 July 1834, and the Perth Gazette of the following day. Aborigines had come in to Perth with a story about a wreck situated some 30 days' walk north of Perth. The story had come from "Wayl men", and it was deduced that the site was in the vicinity of Shark Bay. The wreck was said to have been on an exposed coast, and there was silver money strewn on the shore for several yards "as thick as seed vessels under a gum tree". The surf broke with great force where the money was lying, and the "Wayl men" were able to pick up coins as each breaker retreated.

This description closely matches the situation at the *Zuytdorp* site when it was first seen by Tom Pepper; at that time there were still many coins on the wave-swept shoreline platform.

The authorities in Perth decided that this story from the Aborigines referred to a recent wreck, and they organized several search expeditions, without success. However, it now seems highly likely that this story, related in 1834, was derived from the wreck of the *Zuytdorp*, 122 years previously.

I have been intrigued by this story for some years, especially as I knew that the principal Aboriginal encampment near the wrecksite (50 km to the north) had been at a native well known as "Wale". It seemed likely to me that Moore's "Wayl men" were from this place.

Wale Well was developed many years ago by Tamala Station to water sheep, but it is now abandoned, and the site is still relatively undisturbed. Many Aboriginal artefacts remain, including grindstones composed of the following rock types: Tumblagooda Sandstone from the Murchison River area, 100 km to the south-southeast; garnet granulite and dolerite from the Northampton Block, 140 km to the southeast; and quartzite from the Yarrowalya Formation of the Badgeradda Range area, 170 km to the east. Some of the grindstones that were carried by the Aborigines over these distances are very heavy - one composed of Tumblagooda Sandstone weighs 16 kg, and must have been carried about 100 km from its source in the Murchison River area.

I believed that there was an excellent chance of finding evidence of survivors of the *Zuytdorp* at this major waterhole, where so many Aborigines (probably the so-called "Wayl" people) used to congregate, and consequently I organized a visit there with Mike McCarthy, Tony Cockbain, and Bob Sheppard on 12-13 April 1990. We took four metal detectors and spent several hours on a reconnaissance examination of the site.

This search proved to be very successful. Within about two hours of starting the search Tony Cockbain detected a beautifully preserved brass tobacco-box lid, 10 cm below the surface, not far from the well. This lid is inscribed with the name 'Leyden' (the Leiden of modern Holland), together an stylized representation of the town (see Figure 2). It is virtually identical in design to another tobacco-box lid, inscribed 'Leydn' (sic) and with a closely similar depiction of the town, that was recovered from the wreck of the *Zeewijk* (1727). There is therefore no doubt that the lid found at Wale Well is of 18th-century Dutch origin, and must have been derived from the *Zuytdorp*.

This tobacco-box lid is almost undamaged, and it must have been carried to the waterhole, some 50 km from the *Zuytdorp* wreck, by one of the survivors. If it had been transported there by an Aborigine it would certainly have been a lot more battered.

In addition, not far from this site, we found an ancient grave, exposed below a moving sand dune, which has a rectangular border of large stones (see Figure 3). This form of burial has not been recorded elsewhere among the Aborigines, and it may suggest European influence, although the skeleton itself is most likely Aborigine, as it is accompanied by a bailer-shell water carrier. Could the grave be that of one of the Dutchmen's wives or children?

This locality near Wale Well, known as Carcurra, was an Aborigine burial ground, although most of the skeletons have been eroded away during the past 20 years by moving sand in a major blowout that now covers the area.

There is clearly an urgent need for a program of archaeological research in the area surrounding the *Zuytdorp* wreck, to find evidence of the movement of the survivors, who may have been the first Europeans to live for any prolonged period in Australia. Moreover, as mentioned earlier, there may be genetic evidence that some of their direct descendants are still living today.

27 AUG.

NOORD OCEAN

VLISSINGEN

27 JULY 1711

DEATH #1

27 SEPT.

#2

WAGON WEG

27 OCT.

#6

27 DEC.

SÃO THOME

CAPE DE LOPEZ

27 NOV.

#14

GONSALVES

27 JAN.

AFRICAANSE

LEAVE ZUYTDORP

#46

DEATH OF SKIPPER

27 FEB.

#53

DE SPAENSE of

27 SEPT.

#2

WAGON WEG

#6



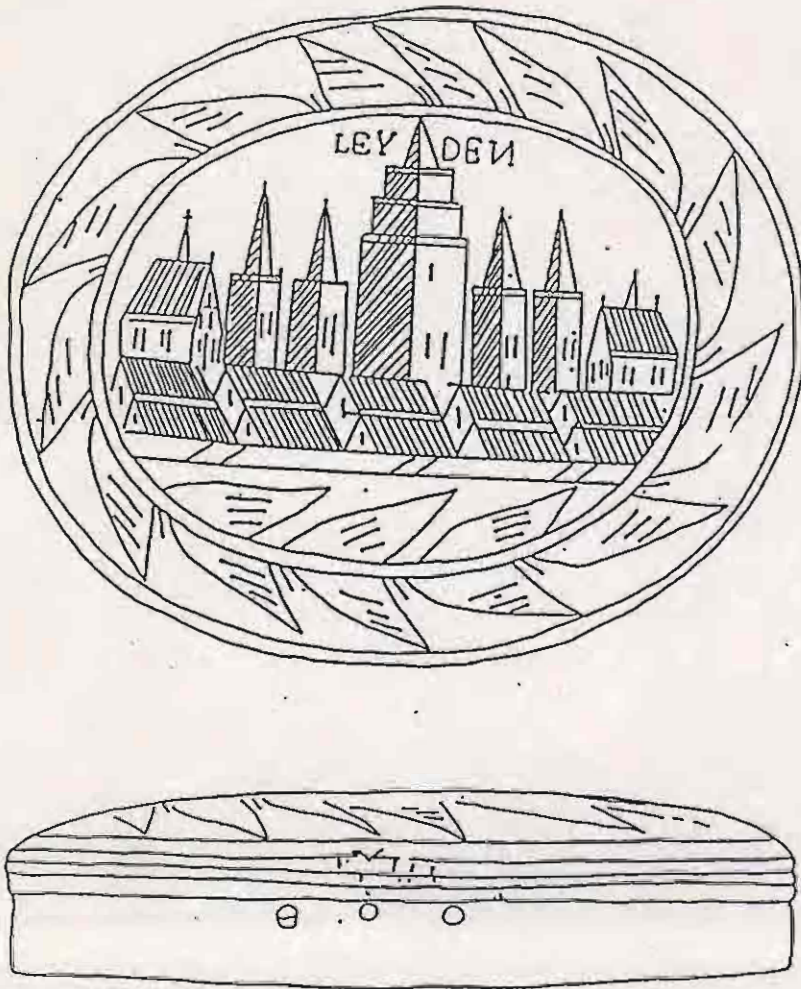
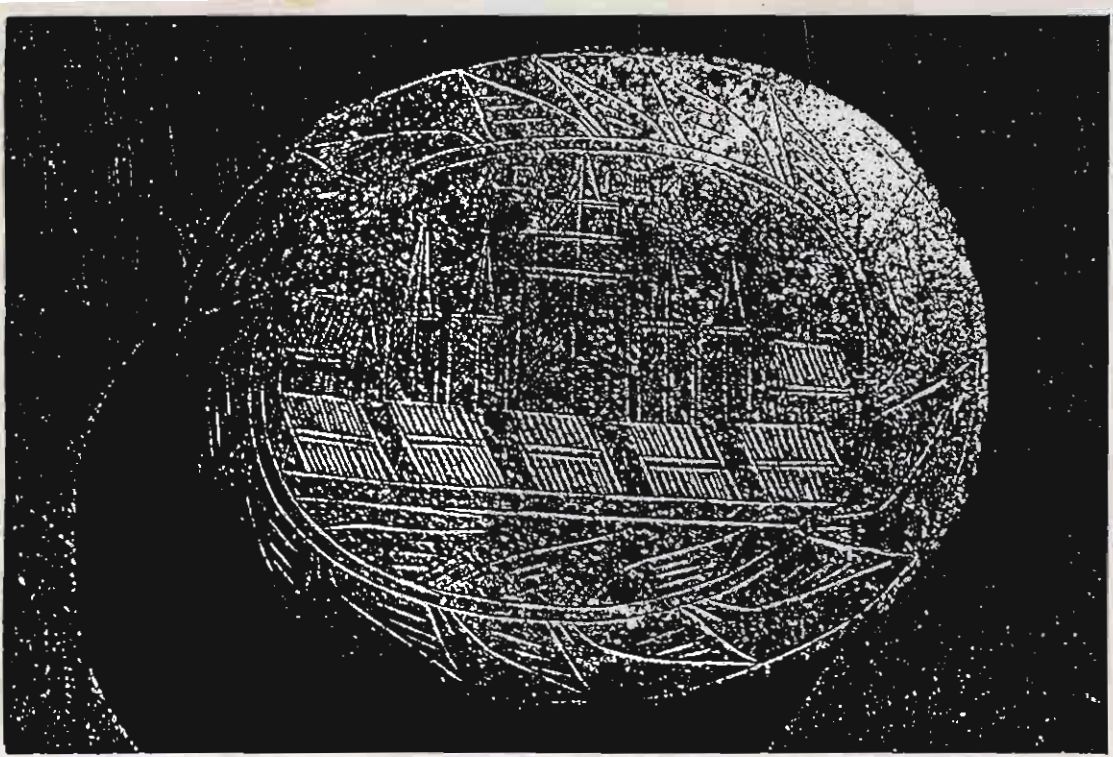


Figure 2: Tobacco-box lid found at a depth of 10 cm below the ground surface at Wale Well. This is believed to have been carried there by a survivor of the *Zuytdorp*.

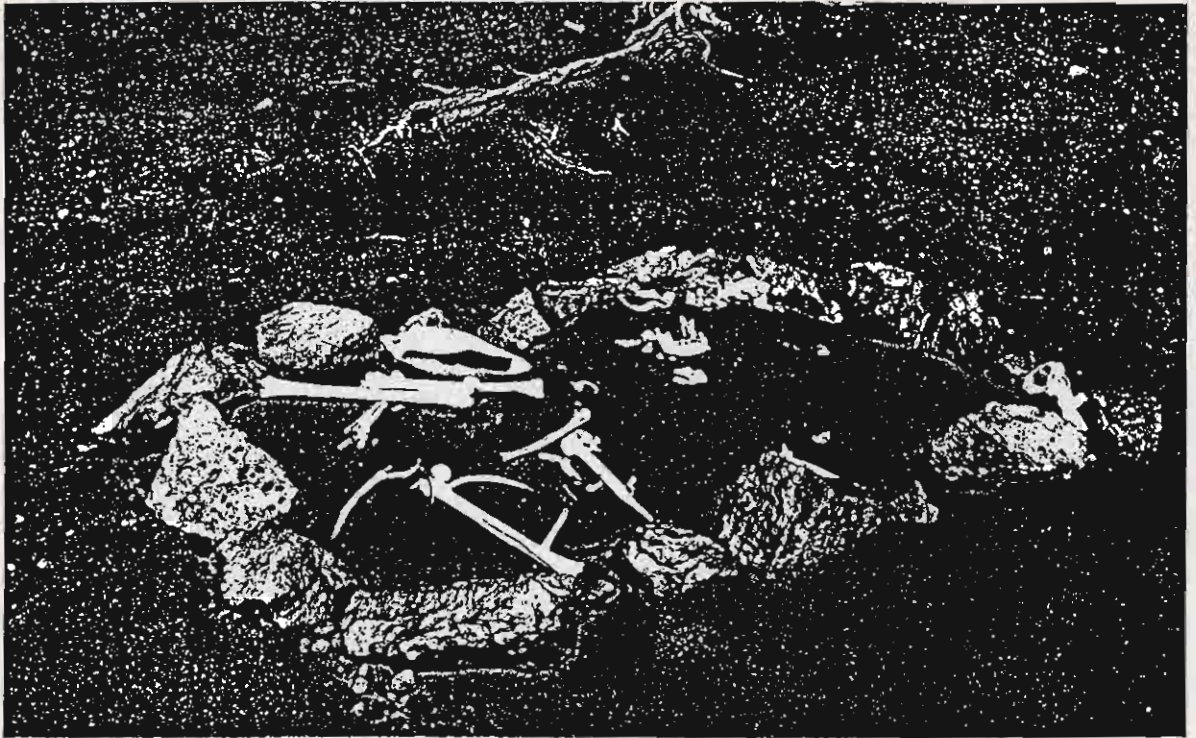


Figure 3: Grave exposed by moving sand at Carcurra, near Wale Well. Note the rectangular shape of the grave, the border of large stones, and the bailer-shell water carrier (top left centre) beside the skeleton.

### (iii) Research by Dr de Heer

My part in the publication will be principally concerned with the model of the ship *Zuytdorp* as the basis for a discussion of the ships of the Zeeland Chamber of the VOC generally, and specifically of those built and employed at the end of the 17th and the beginning of the 18th centuries.

The model is the result of a comparative study of a variety of documentary and pictorial source material. The result has been a conjectural construction of a ship model that could fit into the time span in which the *Zuytdorp* was employed. This material will be fully discussed and illustrated in the paper which will be submitted in due course. Examples of the sources consulted are the works of Witsen and Van Ijk, paintings Bakhuysen and Van de Velde, models at the Rijksmuseum and Maritime Museum in Amsterdam and the Maritime Museum Prins Hendrik in Rotterdam.

My other activity has been mainly concerned with providing assistance to Dr Playford in evaluating VOC files and translating any that were relative to the research into the career of the vessel and into the events leading up to the eventual disaster. The journal of the flute ship *Belviet* which sailed in *Zuytdorp*'s company in 1711, and was in fact the flagship, was found to be of importance since it provides an insight into the cause of the sorry condition in which *Zuytdorp* (and *Belviet* as well) arrived at the Cape of Good Hope.

Publication of this journal is now being considered.

### (iv) Research by Mr Stan Wilson Numismatics of the *Zuytdorp* Coin Collection

Mr report to date covers the publication 'Coins from the *Zuytdorp* Wreck' printed in the *Journal of the Australian Numismatic Society*, Vol.1 of 1986. It lists the information recorded in our registers and an illustrated article on progress in recovery and identification of the coins. New information obtained from the Hague and from Numismatists at the Royal Cabinet of Coins in Leiden by correspondence and a visit to Holland a few years ago has put a different light on the old facts and figures.

It is now proposed to use this new material to rewrite the old articles and to incorporate further data obtained from recent recoveries of a wide variety of coins from the wreck. This is my project for the calendar year 1990 and I look forward with pleasure to consultation with such old friends as Philip Playford and several others involved in the work many years ago.

### (v) Graphics and Research by Mr Stanley Hewitt

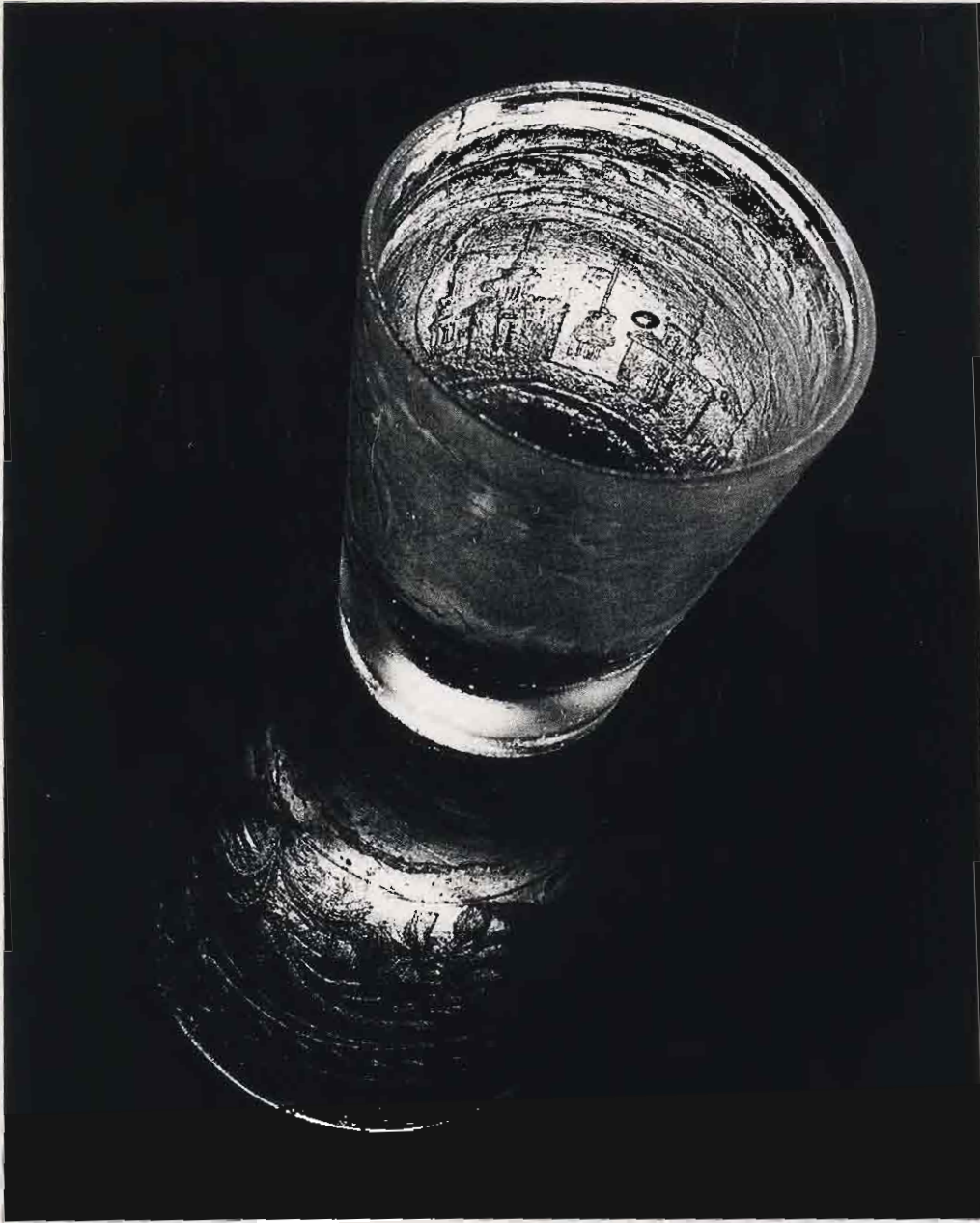
Mr Hewitt has completed three illustrations of the *Zuytdorp* in the moments immediately preceding and immediately after the wreck of the vessel. These are based on Mr Hewitt's analysis of the results outlined above and from an examination of Dr Playford's earlier monograph.

Mr Hewitt has also taken the museum's wrecksite plans which were produced by Mr Kimpton, and has superimposed these on reef top and seabed plans provided by the Department of Land Administration on the basis of aerial photography conducted since 1986.

Mr Hewitt has also taken those sections through the site provided by the Department of Land Administration and superimposed on these sections of the vessel drawn to scale. These illustrate how possible it was for survivors to bridge the relatively small gap between the wreck and the reef opposite.

### (iii) Research by Dr de Heer

FIGURE 4  
The ornate glass recovered in 1987



## (VI) Research by Myra Stanbury

### Navigational dividers from the VOC ship *Zuytdorp*: preliminary observations and discussion.

In 1987, the upper sections of fifteen brass dividers and one arm fragment were recovered from the wreck site and subsequently conserved. The collection has been examined and preliminary drawings made of representative examples. Observations indicate the presence of two different forms of dividers: one with an octagonal and one with a round upper section. Of the total collection, nine of the dividers are of the octagonal variety and six of the round form. In addition, five different types of ornamental decoration have been identified, with and/or without a maker's mark. Based on form and decorative attributes, the dividers have currently been grouped as follows:

#### Group A

ZT 3341, 3349, 3350, 3352.

Octagonal upper section with three stamped sets of concentric circles in a triangular fashion (on two opposing faces). The same decoration is found on a similar pair of dividers from the *Batavia* (BAT 3171) (Green, 1989: 93).

#### Group B

ZT 3343

Octagonal upper section with two stamped sets of concentric circles (on two opposing faces), and star on one lateral face (the opposite side is eroded).

#### Group C

ZT 3345

Octagonal upper section with two stamped sets of concentric circles (on two opposing faces), and a wide open *fleur-de-lys* in shield, possibly with the initial 'I' in the top right hand corner (the other corner is worn), on one lateral face. The *fleur-de-lys* appears stamped on dividers from the *Lastdrager* flanked by the initials 'II' (J or I). Sténuit (1974: 234-35) suggests that this could refer to the Janszoon family who used the *fleur-de-lys* as a housemark in the 17th and early 18th century. There is no conclusive evidence, however, that the family were in fact instrument makers and further research is required before this mark can be attributed to this manufacturer.

A set of four *fleur-de-lys* in a diamond shape are stamped on two astrolabes from the *Batavia* (BAT 394 and BAT 3720)(Green, 1989: 84 & 86).

#### Group D

ZT 3346, 3348, 3355 (?)

Octagonal upper section with two stamped sets of concentric circles (on two opposing faces). A similar pair of dividers but stamped also with the Coat of Arms of the City of Amsterdam have been found on the *Batavia* (BAT 3320) (Green 1989: 93).

#### Group E

ZT 3342, 3344, 3347, 3351, 3353, 3354

Round upper section with two stamped sets of concentric circles on two opposing faces and one stamped concentric ring on the other pair.

With the exception of ZT 3354, which is slightly smaller variant of the other examples, all the dividers in this group appear to have been cast to a standard size and pattern. Immediately below the concentric ring decoration at the top of the arms are small semi-circular notches. These notches are absent from the dividers in Groups A - D. It would appear that their purpose

was to allow the point of a splicing tool to be introduced between the legs of the dividers to pry them open if they became too stiff (Sténuît, 1974: 234).

### General observations

All the dividers, despite their incompleteness (i.e. loss of the wrought iron points) and varying degrees of wear due to corrosion, demonstrate a high quality of craftsmanship. In three instances, expert conservation treatment has enabled the hinges to be mobilised allowing the upper section to be opened out. It was noted by Sténuît (1974: 232) that the central blade of the three-bladed leg of the *Lastdrager* dividers was independently set-in and not cut from the same piece of metal. The dividers from the *Zuytdorp* also exhibit this feature (see ZT 3348 & 3349), the central blade in these instances being only 1 mm thick.

### Discussion

This collection of navigational dividers is representative of the types of instruments featured on Dutch maps and paintings of the sixteenth to eighteenth centuries, and recovered from the wreck sites of other VOC ships of this period.

The dividers were excavated from a single location ('divider hole') on the wreck site (see site plan). Such a concentration of similar objects in one area is archaeologically significant and poses an interesting question: were the dividers part of the ship's inventory for use on board, or were they part of a cargo intended for Batavia or some other Dutch settlement in the East Indies?

It is known that consignments of navigational instruments were shipped to the Indies on board VOC ships as supplies for the settlements (Morzer Bruyns, 1988 pers. comm). Some 80 brass navigational dividers of four different types were found on the VOC flute *Lastdrager*, lost in 1653 (Sténuît, 1974: 232ff). Of these, 72 similar pairs were deemed to be cargo. From Sténuît's illustrations (1974: Fig 14, pairs 8-11), the *Zuytdorp* dividers would appear to conform to this 'general type', described by Aubin (1702) as: 'straight compasses ...used by shipwrights and pilots' (Sténuît, 1974: 232). As with the *Zuytdorp* finds, this group contained some examples with round rather than octagonal upper sections (Sténuît, 1974, Fig. 14, pairs 8 and 9).

The *Lastdrager* compasses were also found to be concentrated in one area. All of type 11 were embedded in a mass of 'exceptionally hard magma'. When carefully excavated, however, it was noted that the dividers lay in paralleled positions, indicating tight and careful packaging (Sténuît, 1974: 232). Although the wrought iron points had corroded away, an imprint had been left *in situ* enabling a reconstruction of the complete dividers to be made.

Whether the *Zuytdorp* dividers were noted to be aligned in parallel, (or any regular way), when recovered, which may indicate that they were packed in a container, is not presently known. Such information, if available, would be extremely important as it could lead to a more probable determination of whether the dividers were cargo items. Without this data, however, only a tentative conclusion can be drawn: based on the comparative data available from the *Lastdrager* site, the close archaeological association on the *Zuytdorp* site of two types of navigational dividers suggests that these were part of a cargo consignment rather than for use on board ship.

### References

- Green, Jeremy N., 1989,  
*The AVOC Retourschip Batavia Wrecked Western Australia 1629. Excavation report and artefact catalogue.* British Archaeological Reports, Oxford, BAR International Series 489.
- Morzer Bruyns, W., 1988, Curator, Nederland Scheepvaart Museum, Personal communication.
- Sténuît, R., 1974,  
 Early relics of the VOC trade from Shetland. The wreck of the flute *Lastdrager* lost off Yell, 1653. *The International Journal of Nautical Archaeology*, 3.2: 213-256.

### Lead ingots

Quantities of lead were requisitioned annually for transportation to the East Indies by the *Trasmerani* and used as a splicing tool to be introduced between the legs of the dividers to pry them open if they became too stiff (Sténuît, 1974: 234).

### General observations

All the dividers, despite their incompleteness (i.e. loss of the wrought iron points) and varying degrees of wear due to corrosion, demonstrate a high quality of craftsmanship. In

reflection of the purpose for which the lead was required, i.e. trading purposes, building projects and ballast for trimming ships.

Over one hundred lead ingots of varying design and with a wide variety of markings have been recovered from the wreck of the VOC ship *Campen*, wrecked off the Needles rocks (near the Isle of Wight) off the south coast of England in 1627. These finds have been weighed and classified into ten groups, (plus one 'unclassified' group), on the basis of the correlation between weight, length, breadth and depth, and the type of marks and/or absence of the latter. Drawings of one example from each group illustrate the range of shape, size, and markings.

Although pre-dating the *Zuytdorp*, the data available from the *Campen* study serves as a valuable database for comparative analysis of the *Zuytdorp* lead ingots.

### Reference articles relating to lead ingots

- Craddock, P.T. and Hook, D.R., 1987,  
Ingots from the sea: The British Museum collection of ingots. *The International Journal of Nautical Archaeology*, 16.3: 201-206.
- Gomez, Olga Vallespin, 1986,  
The Copper Wreck (Pecio del Cobre). *The International Journal of Nautical Archaeology*, 15.4: 305-322. (For lead ingots see pp 317-321,
- Larn, Richard, (Ed.), 1985,  
The wreck of the Dutch East Indiaman *Campen* on the Needles rocks Isle of Wight, 1627 - Part 2. *The International Journal of Maritime Archaeology*, 14.2: 97-118.
- Price, R., Muckelroy, K. and Willies, L., 1980,  
The *Kennemerland* site. A report on the lead ingots. *The International Journal of Nautical Archaeology*, 9: 7.25
- Sténuit, R., 1974,  
Early relics of the VOC trade from Shetland. The wreck of the Fluit *Lastdrager*, lost off Yell, 1653. *The International Journal of Nautical Archaeology*, 3.2: 213-57.
- Willies, L., 1980,  
Technical and organisational development of the Derbyshire lead industry. Leicester PhD thesis.

### Cartridge cases

ZT 3278, 3971

In 1984 and 1985 thirteen complete and six incomplete cartridge cases were recovered from the wreck of the VOC ship *Amsterdam*, wrecked off Hastings, England in 1727. These cases are similar to that from the *Zuytdorp*, consisting of a slightly bent copper case covered with leather and with a leather lid. One example from the *Amsterdam* also has a leather belt with a copper buckle still *in situ*. The cases contained twelve cartridges each. These cartridges consist of a series of vertical copper pipes.

A brief report on the conservation and restoration of one of these cartridge cases is given in the 1986 report on the *Amsterdam* project (Gawronski, 1987: 25-26). Illustrations are also given in Marsden (1974:175-75).

### References

- Marsden, Peter, 1974,  
*The wreck of the Amsterdam*. Hutchinson, London.
- Paardekooper, M., 1987,  
Conservation of the finds: general survey and preliminary results - leather. In J.H.G. Gawronski (Ed.), *V.O.C. Schip Amsterdam 1986. Annual Report of the VOC-Ship "Amsterdam" Foundation 1986*. Amsterdam.

### Pewter chalice (or ewer)

Over one hundred lead ingots of varying design and with a wide variety of markings have been recovered from the wreck of the VOC ship *Campen*, wrecked off the Needles rocks (near the Isle of Wight) off the south coast of England in 1627. These finds have been weighed and classified into ten groups, (plus one 'unclassified' group), on the basis of the correlation between weight, length, breadth and depth, and the type of marks and/or absence of the latter. Drawings of one example from each group illustrate the range of shape, size, and markings.

Although pre-dating the *Zuytdorp*, the data available from the *Campen* study serves as a valuable database for comparative analysis of the *Zuytdorp* lead ingots.

The stamp represents an angel and the ewer appears to be made by I(saak) Tiffeneau. He was one of three brothers, Huguenot refugees, to work in Amsterdam. The[y] married three sisters on the 5th of September [July ?] 1692, when Isaak was 32 years old; this is compatible with the date of the loss of the Zuytdorp.

**Figure 5**  
**Dr C. de Heer's model of the Zuytdorp**



# Technical Reports

## (A) Illustrative Material

(i) Photographic Collection, Maritime Archaeology Department :  
Patrick Baker

### Colour Transparencies

Underwater	1977	ZUY/A/1-25
Underwater	1978	ZUY/A/26-49
Underwater	1986	ZUY/A/51-70
Underwater	1987	ZUY/A/71-100
Underwater	1988	ZUY/A/101-276
Expedition, Land	1976?	ZUY/B/1-31
Expedition, Land	1977	ZUY/B/39-120
Expedition, Land	1978	ZUY/B/121-225
Expedition, Land	1979	ZUY/B/226-252
Expedition, Land	1980	ZUY/B/253-283
Expedition, Land	1983	ZUY/B/286-320
Expedition, Land	1986	ZUY/B/321-455
Expedition, Land	1987	ZUY/B/461-1570
Expedition, Land	1988	ZUY/B/1571-1709
Non-Expedition		ZUY/C
Maps, Plans, Illustrations		ZUY/D
<i>Zuytdorp</i> Model		ZUY/M
Artefacts		ZUY/Artefact Prefix

### Black and White Photographs ('MA' and 'W' numbers)

Aerial photography	MA538, 541, 882, 2526, 2981
Artefacts	W19, 26, 55, 59, 61, 90 MA317, 712, 716, 912, 935, 982-3, 2436-7, 2930, 2975, 3636-8
Artefact drawings	MA986, 2980
Clay pipes	MA736, 739-40
Coins	MA712, 716, 742-4, 912, 2437, 2972, 3517, 3519
Guns	MA935, 982-3, 1456, 3516-8, 3520, 3636
Map	W183
Site	W28, 99
Site	MA696, 725, 881-2, 1401, 1929, 2983-4
Site, expedition, 1987	MA3521-49
Site, expedition, 1988	MA3632, 3636
Underwater	MA662, 3541, 3632, 3636

### Film

As indicated earlier a colour and black and white film of the 1939 expedition has been obtained by Dr Playford as have copies of all film held in the local TV station archives. Other sources of photographs and film are being sought.

**(ii) Site Plans, sections, Orthophotographs, Aerial Photography  
Geoff Kimpton, Dept. of Land Administration**

Despite it being practically impossible to use tapes on the bottom except in the sort of exceptional conditions that we know do occur, but are yet to experience, Mr Kimpton was successful in the production of an accurate site plan of the bow and stern sections of the wreck. These have been combined with a series of orthophotographs based on aerial photography commissioned by the WA Museum, all conducted and produced gratis by the Department of Land Administration. The entire land and sea area surrounding the wreck appears at a scale of 1:1000 and 1: 500 with superimposed grids at 10 metre squares. Contour maps also appear as do sections through the cliffs and wreck itself. This work has enabled us to produce site plans extending from the land into the sea and for the first time to be able to claim any level of accuracy in illustrations of the site in plan, profile and section view. The part Mr Hewitt has played in this process is noted above. Mention also must be made of the vital part played by the Department of Land Administration and its various officers, notably Mr Phil Smythe, my chief contact there in this process.

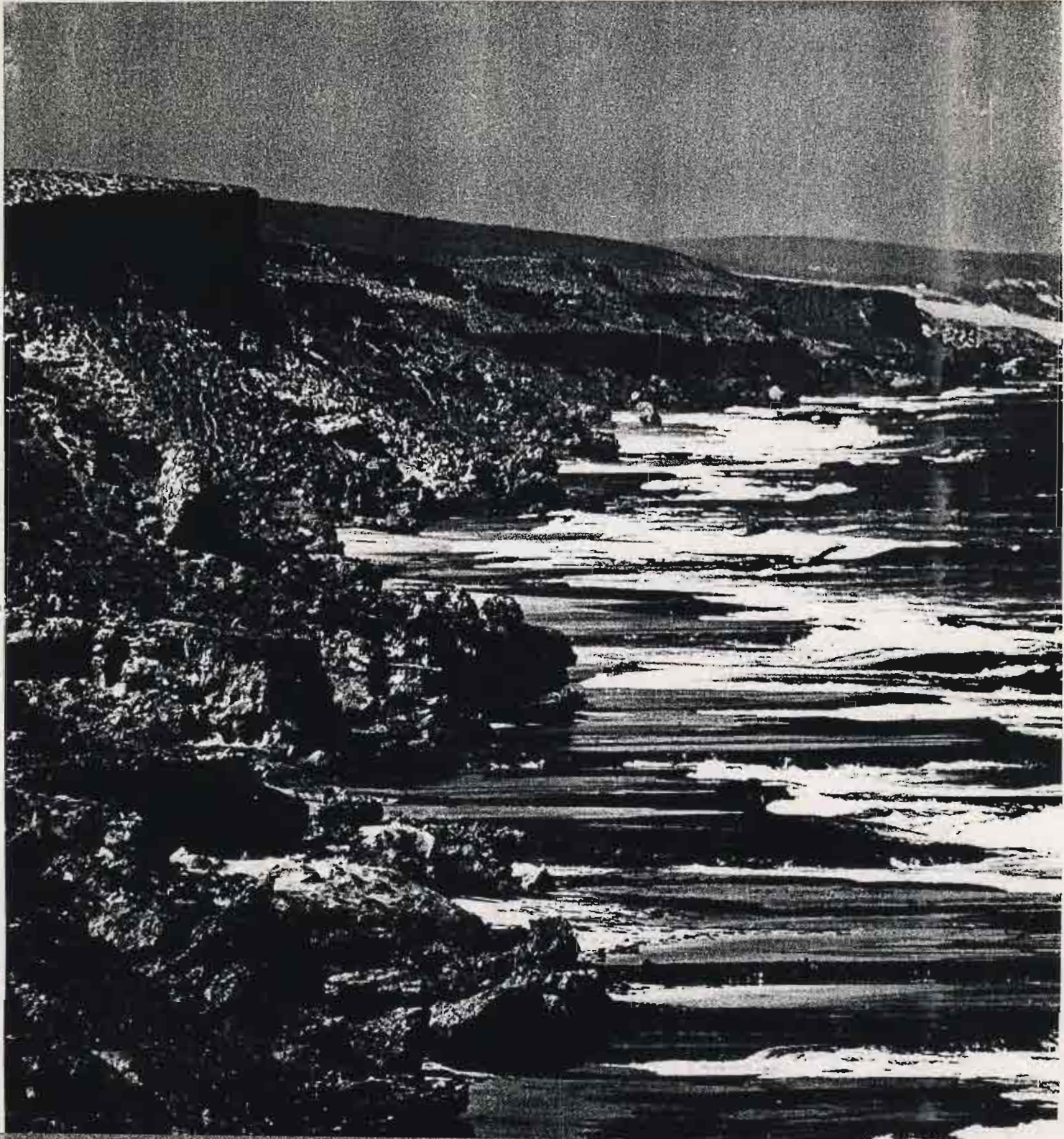
**Figure 6**

**Geoff Kimpton and Jon Carpenter examine the ornate glass recovered by Mr Kimpton**



These have been combined with a series of orthophotographs based on aerial photography commissioned by the WA Museum, all conducted and produced gratis by the Department of Land Administration. The entire land and sea area surrounding the wreck appears at a scale of 1:1000 and 1: 500 with superimposed grids at 10 metre squares. Contour maps also appear as do sections through the cliffs and wreck itself. This work has enabled us to produce site plans extending from the land into the sea and for the first time to be able to claim any level of accuracy in illustrations of the site in plan, profile and section view. The part Mr Hewitt has played in this process is noted above. Mention also must be made of the vital part played by the Department of Land Administration and its various officers, notably Mr Phil Smythe, my chief contact there in this process.

Figure 7  
The Zuytdorp Cliffs



## (B) STATUS OF ZUYTDORP ARTEFACT COLLECTION

Myra Stanbury

### Registration

All material recovered from the *Zuytdorp* wreck site and associated sites on shore (i.e. the 'breach block area' and 'cliff top area') have been registered in the field (i.e. working) register. The prefix ZT has been used for all artefacts with definite and/or known historical association with the wreck site. Some donated artefacts with dubious association (e.g. the Red Bluff lead ball) are registered in the *Zuytdorp* sequence but without the ZT prefix until their provenance and identity can be firmly ascertained.

Registered sequences of artefacts from 1986 are as follows:

Year	Underwater	Land
1986 [April - May]	ZT 3275 - 3307	ZT 3306 - 3307
1986 [July - Aug]	ZT 3308 - 3313	
1987 [March]	ZT 3314 - 3304	
1987 [June]	ZT 3341 - 3409	
1987 [April/May]		ZT 3410 - 3521 Breach block area
		ZT 3522 - 3524 Cooley Coll.
		ZT 3526 - 3907 Cliff top area
1987 [August]	ZT 3908 - 3923	Lamara Coll.
1988 [February]	ZT 3924 - 3925	Mitchell Coll
1988 [February]	ZT 3926 - 3972	
1988 [March]	ZT 3973 - 4102	
1988 [March]	ZT 4103 - 4117	From concretion
1988 [March]	ZT 4118 - 4119	Numbers not used
1988 [October]	ZT 4120	Zeck Coll.
1989	ZT 4121	

### Registration figures

Date	Number of entries	Number of items	Coins
Pre - 1986	113	240 + [Includes 4 objects in P Coll]	
1986 - 87 (May)	625 + suffixes		
1987 - 88 (3908 - 4102)	197 (3 w/ suffix incl)	1457 [approx - complete and/or sherds]	1449 + frags
1987 - 88			
1988 - 89 (4103 - 4121)	19	31	1325 deconcreted

### 1987/88

Total registrations to 1/7/88 = 943

Percentage acquisition in 1977/88 = 20.89% of total *Zuytdorp* collection

1988/89 Total registrations to 6/3/88 = 962

Percentage acquisition in 1988/89 = 1.97% of total *Zuytdorp* collection

### Cataloguing

All registrations up to the end of 1987 (i.e. ZT 3907) have been entered on artefact catalogue cards leaving 213 entries outstanding from the period 1988 - 89. Data is up-dated as artefacts are returned from the conservation laboratory. This information, together with photographic and conservation records, and display location data, will provide the basis of a relational database to be set up using Omnis 5. This computer management system will enable a number of linked files to be established for each shipwreck collection. A grant has been made available from DASETT to employ a database operator for three months during the coming financial year. As soon as the variables and file format for the new system have been worked out (Green & Stanbury), the position will be advertised and the computerisation of the *Zuytdorp* collection can be incorporated into the overall programme of historic shipwrecks registration/documentation work.

All *Zuytdorp* artefacts currently on display are recorded on an Omnis 3 relational database. Variables recorded include the object registration number, object description and material code, location (i.e. Museum and/or other location), gallery name, showcase number, and date placed on display.

### Notable acquisitions/donations

- ZT 3313 Bronze gun - removed from wreck site in 1982 by Simon Jones and recovered by Federal Police in 1986. Now on display but still requires conservation.
- ZT 3923 Human bone - found by Dom Lamara. [Being identified by Curator of Anthropology]
- ZT 3925 Small bronze gun muzzle - recovered from Toe Rock by Bob Mitchell.

### Objects registered but held in private collections

(see pre-1986 note)

ZT 980	Brass cannon ball calipers	(P.E. Playford)
ZT 1402	Copper alloy escutcheon plate	(P.E. Playford)
ZT 1403	Copper alloy right-angle bracket	(P.E. Playford)
ZT 1404	Brass 'tongue' with rivets - part of musket	(P.E. Playford)

## (C) Conservation

### (i) Organic Material in Conservation

Alan Kendrick

- Artefacts awaiting conservation. All are stored in deionised water plus panacide.
  - ZT 3973 Sword hilt concretion. Removed from the pewter plate (ZT 3973). This requires casting before final excavation
  - ZT 4089 Sword hilt concretion. This hilt is of a more intricate design than ZT 3973. This also requires casting. This concretion contains a variety of artefacts.
  - ZT 4023 concretion containing impressions of guns. Requires casting.
  - ZT 4027 Wood. Requires deconcreting.
  - ZT 4111 Horse hair matting.
  - ZT 3956 Rope fragments
  - ZT 4028 Leather fragments.
  - ZT 4048 Leather fragments.
- Artefacts currently in treatment

Percentage acquisition in 1988/89 = 1.97% of total *Zuytdorp* collection

## i) Wood

We have adopted a twin PEG 400/3350 impregnation treatment for waterlogged wood. This entails:

- a) approx. 1 year from 2% to 40% PEG 400
- b) approx. 1 year from 40% to 70% PEG 3350

This treatment varies in relation to the degree of wood degradation. No *Zuytdorp* artefacts are as yet in PEG 3350.

The following artefacts are in treatment:

- a) ZT 3370 Sheave 40% PEG 400
- b) ZT 3371, 4048 Wood 40% PEG 400
- c) ZT 3939 Tool handle 30% PEG 400
- d) ZT 3372 Net needle 30% PEG 400
- e) ZT 4086 Gun fragment 30% PEG 400
- f) ZT 3929 Gun fragment 30% PEG 400
- g) ZT 3317 Gun fragment 30% PEG 400
- h) ZT 3318 Gun fragment 30% PEG 400
- i) ZT 4010 Gun fragments 30% PEG 400 (5 pieces)
- j) ZT 4008 Gun fragments 30% PEG 400 (3 pieces)
- k) ZT 3965 Gun fragments 30% PEG 400 (23 pieces)
- l) ZT 3931 Gun fragments 30% PEG 400 (5 pieces)
- m) ZT 3930 Gun fragments 30% PEG 400 (3 pieces)
- n) ZT 4047 Gun fragments 20% PEG 400 (16 pieces)
- o) ZT 3965 Gun fragments 20% PEG 400 (17 pieces)
- p) ZT 3953 Gun fragments 20% PEG 400 (17 pieces)
- q) ZT 4090 Tampion 20 PEG 400
- r) ZT 4022 Gun fragments 10% PEG 400 (37 pieces)
- s) ZT 4047 Gun fragments 4% PEG 400 (26 pieces)

## ii) Wood/Iron

500 ppm  $\text{Na}_2\text{CO}_3$  added as corrosion inhibitor

- a) ZT 4010 Gun stock 30% PEG 400

## iii) Wood/Copper

250 ppm BTA added as corrosion inhibitor

- a) ZT 3938 Tool handle 30% PEG 400
- b) ZT 3950 Sword handle 30% PEG 400
- c) ZT 4006 Powder scoop 20% PEG 400
- d) ZT 4023 Sword handle 20% PEG 400
- e) ZT 4033 Sword handle 20% PEG 400
- f) ZT 4044 Tool handle 20% PEG 400
- g) ZT 3978 Powder scoop 10% PEG 400
- h) ZT 3337 Sword handle 4% PEG 400

## iv) Wood/Leather

- a) ZT 3973 Sword scabbards 20% PEG 400
- b) ZT 3320 Sword scabbards 20% PEG 400
- c) ZT 3335 Sword scabbards 20% PEG 400
- d) ZT 4036 Sword scabbards 20% PEG 400
- e) ZT 4064 Sword scabbards 20% PEG 400
- f) ZT 4011 Sword scabbards 20% PEG 400
- g) ZT 4012 Sword scabbards 20% PEG 400
- h) ZT 4062 Sword scabbards 20% PEG 400]
- i) ZT 4063 Sword scabbards 20% PEG 400
- j) ZT 3933 Wood/Leather fragments 20% PEG 400

- v) Leather
  - a) ZT 3320 Leather fragments           20% PEG 400
  - b) ZT 3335 Leather fragments           20% PEG 400
  - c) ZT 3319 Leather fragments           10% PEG 400

## (ii) Non-ferrous metals in conservation

### Vicki Richards

The conservation of the non-ferrous metal artefacts recovered from the *Zuytdorp* site have proposed a few problems. Staff initially responsible for the conservation of the artefacts have since departed and therefore there is discontinuity in the monitoring of the desalination and conservation of the artefacts. Attempting to interpret the imperspicuous reports on past conservation histories of the artefacts was difficult but has finally been completed with the assistance of Fairlie Sawday.

Most non-ferrous artefacts are undergoing some conservation process at this point in time.

#### 1. Conserved *Zuytdorp* artefacts

##### a) Silver

- ZT 3327 - 91 stuivers
- ZT 3328 - 54 schillingen
- ZT 3329 - 12 2R
- ZT 3330 - 16 4R
- ZT 3331 - 77 8R
- ZT 3332 - 1 ducaton
- ZT 3957 - 238 schillingen
- ZT 3958 - 16 ducatons
- ZT 3959 - 183 stuivers
- ZT 3960 - 80 8R
- ZT 3961 - 27 2R
- ZT 3962 - 34 4R

Total = 829 coins (Vicki Richards)

##### b) Copper and copper alloys

- ZT 3945 - 3 brass tacks
- ZT 3949 - 1 fragment of copper musket ball cylinder and concretion  
(Vicki Richards)

##### c) Pewter

- ZT 3973 - pewter plate
- ZT 3976 - pewter funnels
- ZT 4067 - pewter funnels  
(David Kelly)

These pewter artefacts have been previously conserved and repatinated by David Kelly. There are problems with patina stablization and the objects are being monitored for any surface changes such as patina discolouration or pitting corrosion, etc.

#### 2. Artefacts currently in treatment

##### a) Silver

- ZT 4069 - 267 schillingen
- ZT 4070 - 8 ducatons

##### v) Leather

ZT 4071 - 346 stuivers  
 ZT 4072 - 53 2R  
 ZT 4073 - 31 4R  
 ZT 4074 - 92 8R  
 ZT 3957 - ZT 3962

Total = 1131 coins

The silver coins are placed in a 10% (v/v) hydrochloric acid solution (usually 2-3 days) until the concretion softens, washed thoroughly with water and deconcreted manually utilizing dental tools. The coins are immersed in a 5% alkaline dithionite solution and sealed to the atmosphere to decrease the ingress of oxygen. The coins are gently agitated to ensure solution contact with all coin surfaces.

The coins are then removed after approximately two weeks and rinsed thoroughly with water until the wash solution is neutral. The finely divided grey silver deposits are removed by lightly burnishing the surface by scrubbing the coins with pumice powder and a toothbrush. The coins are dried quickly and lacquered with 1-2 coats of a proprietary surface protective coating (Incralac).

## b) Copper and cobby alloys

### (i) Chemical deconcretion

These artefacts, heavily concreted, were immersed in a 5% citric acid solution inhibited with 1% thiourea, (31 October 1988, Andrew Pinchen), to chemically soften the concretion. The tacks were removed (18 October 1989; Vicki Richards), and deconcreted mechanically utilizing dental tools. The objects were again immersed in an inhibited citric acid solution (19 October 1989; Vicki Richards), to remove any stubbornly adherent concretion.

ZT 3945 - 66 brass tacks and 5 fragments

ZT 4013 - 33 brass upholstery tacks, 1 copper sheathing tack

ZT 4042 - 26 brass tacks, 1 stuiver

### (ii) Desalination procedures

The release of salts from the metals is monitored by measuring the concentration of chlorides in the wash solutions.

#### Sodium Dithionite:

Artefacts of copper and copper alloy including lead, relatively free of concretion, were immersed in a 4% alkaline 5% sodium dithionite solution to remove salts. This desalination process is quick although it will darken the surface patina of the copper and copper alloy objects significantly. The artefacts listed below were placed in the reducing dithionite solutions on the dates and by the conservators indicated below:

ZT 3324 - brass pins; large round headed tacks  
 (25 October, Andrew Pinchen)

ZT 3953 - lead fragments and musket ball

ZT 4024 - 2 lead shot

ZT 4038 - musket balls

ZT 4043 - upholstery tacks

(27 October, 1988, Andrew Pinchen)

ZT 3368 - upholstery tacks

ZT 3406 - copper tacks

ZT 3953 - lead fragments and 1 musket ball

ZT 3968 - 1 brass buckle

ZT 4114 - Brass cylinder to hold ram rod

ZT 4071 - 346 stuivers

ZT 4072 - 53 2R

ZT 4073 - 31 4R

ZT 4074 - 92 8R

(25 January, 1989, Andrew Pinchen)

ZT 3367 - 22 brass pins and fragment  
 ZT 3967 - 2 brass pins  
 ZT 4037 - 2 pieces of pewter cap with thread  
 ZT 4098 - 4 brass pins

(27 October, 1988, Andrew Pinchen)

(removed, washed thoroughly and dried 31 October, 1989, Vicki Richards)

ZT 3969 - 1 copper tack  
 ZT 4013 - 1 brass tack  
 ZT 4041 - 1 brass tack  
 ZT 4043 - pieces of lead  
 ZT 4098 - 8 brass pins  
 ZT 4106 - 3 lead musket balls  
 ZT 4112 - 1 copper ferrule  
 (31 October, 1989, Vicki Richards)

#### Sesquicarbonate

Copper and copper alloy artefacts may be desalinated by 2% sesquicarbonate solution which will not change the nature of the surface patina of the object significantly. However, this process is very slow at extracting salts from within the metal matrix. The artefacts listed below were placed in sesquicarbonate solutions on the dates and by the conservators indicated below:

ZT 3365 - schillingen  
 ZT 3405  
 (18 November, 1988, Andrew Pinchen)

ZT 3975 - oval box base  
 ZT 3977 - brass box  
 (Date unknown, David Kelly)

ZT 3277 - 1 bronze gun trunnion  
 ZT 3925 - 1 small bronze gun muzzle  
 WR 726 - fragment of bronze gun  
 (December 1988, David Kelly)

#### c) Concretion

Concretions need to be desalinated for stabilization before storage. Concretions from iron artefacts are desalinated in 2% sodium hydroxide solutions.

ZT 4082 - 8 concretions from inside musket  
 ZT 4109 - 1 gun hammer concretion  
 (Date unknown, Fairlie Sawday)

#### 3. Concreted Artefacts

These objects are being deconcreted by Alan Kendrick and will be subsequently desalinated and conserved.

ZT 3358 - pewter bottle lid  
 ZT 3359)  
 ZT 3360) - pewter bottle lid or fragment  
 ZT 3361)  
 ZT 3362)  
 ZT 3914 - pewter lid

#### 4. Artefacts awaiting conservation

The objects are stored in the dry state

- a) ZT 3313 - bronze gun
- b) ZT 3357 - pewter plate and fragment

One day a week is spent on the conservation of these *Zuytdorp* non-ferrous metal artefacts and other non-ferrous objects from other shipwreck sites. Hence, it is understandable for the delay in what is usually assumed to be quick and easy conservation procedures.

## (D) SUMMARY OF FIELDWORK April 1986 TO MARCH 10, 1988

27/4/86-13/5/86

### Land Site

Preliminary surface assessment and recording, searches inland and in gullies to north and south of site.

### Sea Site

2 familiarization dives on snorkel from land small recovery of coin and other artefacts. Conditions marginal, undiveable on air.

Artefacts recovered: ZT 3275 - ZT 3313

Feasibility survey completed, report made and decision made in December 1986 to proceed further.

1987

22/2/87-26/2/87

NIL

Unsuccessful attempt to dive from land therefore undiveable.

1/3/87-3/3/87

NIL  
completely covered in sand

1 dive on air from land Site found to be  
with nothing visible.  
Conditions: marginal

10/3/87-14/3/87

Surface recording and examination of European and Aboriginal land sites and soaks adjacent to the site

4 dives completed on snorkel resulting in the recovery of coin, ceramics, leather and other materials. Site plan begun despite substantial sand cover. Conditions marginal.

Artefacts recovered ZT 3314 - ZT 3339

18/4/87-14/5/87

Excavation over 1 month of visible European land site and examination of nearby Aboriginal sites. Site(s)

1 dive on snorkel, finding the site clearing of sand with ingots becoming visible for the first time.

plans begun, further search for inland sites and beginning made on aerial mapping.

Conditions marginal

Artefacts recovered ZT 3410 - ZT 3907

-----21/5/87-26/5/87

NIL

To site by sea in 18' museum workboat accompanied by fishing boat *Jolly Roger*. Dive on site abandoned due to heavy swell and poor visibility. System proved workable however. Conditions undiveable.

-----29/5/87-4/6/87

NIL

(a) 1 dive on air from land. Moved 6 ingots to deeper water. Conditions marginal

(b) Recovered 13 ingots to a total weight of 1000 kg and secured same on LFB *Jolly Roger* whilst en route fishing grounds 50 nm north. Navigational dividers and concretions containing coin, timber, pewter and other material under the ingots over two dives conducted on air. Conditions marginal - reasonable.

Artefacts recovered ZT 3341 - ZT 3409 + ZT 3970 - ZT 3972

-----  
1988

1/2/88 - 5/2/88

NIL

2 dives on air from Museum 18' workboat with LFB *Thunder Bay* acting as escort over a 3 day period. The site was unfortunately covered in 2-3 metres of sand with nothing visible of the ingots, cannon, anchors etc. seen in April/May 1987 till day 2, when some cannon began to appear as sand levels dropped. Further work on site plans complete, inconclusive searches of the area to seaward of the site were conducted but severely hampered by the sand cover. Substantial recovery of material from stern section of wreck 1 cannon removed from site as the building swell prevented further work on the stern area.

Artefacts recovered ZT 3927 - ZT 3969 + ZT 4080 - ZT 4083

-----  
9/2/88-14/2/88

NIL

To site in 18' workboat. Undiveable on site, underwater electrochemical analysis conducted on gun removed to seaward of the site.

-----  
17/2/88-23/2/88

NIL

Sailed 36' museum workboat *Henrietta* from Fremantle to Kalbarri via the SS *Xantho* site.

on aerial mapping.

Artefacts recovered ZT 3410 - ZT 3907

-----21/5/87-26/5/87

NIL

To site by sea in 18' museum workboat

recovered and sent to Fremantle for conservation.  
Workboat retained on mooring at Kalbarri for  
future heavy lifts.

Artefact recovered ZT 3926

---

4/3/88-9/3/88

NIL

to site over 2 days in 18' workboat with LFB(s)  
*Thunder Bay and Waitara* on call. Sand cover  
dropping but ingots and most guns still not visible.  
Substantial recovery of material from stern  
sections some of a most fragile nature. Further  
work on site plan.

Artefacts recovered ZT 3973 - ZT 4031

---

14/3/88-22/3/88

NIL

To site LFB *Waitara* in company. Substantial  
recovery of material from armoury concretion.  
When swell began building moved to assess  
possibility of recovering anchor(s). Moved 1 of 3  
suitable in poor conditions to the deep water  
dump. Sailed up in 36' boat *Henrietta* and  
recovered same.

Artefacts recovered ZT 4035- ZT 4076

---

**Note :** On-site work concluded at this time due to damage to vessels and fatigue amongst the  
diving team. Gear and staff were then required in Fremantle for the Batavia program and the  
field aspects of the program were then put 'on hold' pending the completion of the Batavia  
program.

## CONCLUSION FROM THE RESULTS OBTAINED

The *Zuytdorp* is still a site rich in all its aspects and worthy of continued funding and effort in all the areas noted above. It is one of 104 VOC vessels lost of 4730 outward bound from Holland and of the 4 lost on these shores, and is unique on our shores in that it was lost without trace and like the *Vergulde Draeck* its coinage was not salvaged and that remaining is expected to still represent a broad cross section of the coinage carried.

The associated land and sea remains are then doubly of importance and worthy of more than the application of salvage methods and philosophies.

The results above confirm that. It is clear the assessment of the site as one of the worlds most difficult still holds however.

We now have the luxury of very fast and efficient sea transport and the backing of local fisherfolk however and these have been major factors in our success to date.

## UNCOMPLETED WORK

### Coin Rock and nearby Area:

The team has not completed the recovery of visible coin and buried artefacts around the 'coin rock' area. The area to the landward of this is also rich as is the area underneath the coin rock itself through which a gun projects for less than half of its length giving rise to the belief that it is buried in a potentially rich concretion.

### Recovery of ingots

The area to seaward of the coin rock (stem) and toe rock (bow) has not yet been fully assessed though the area is known to clear in the late May early June period thus placing the 80 or so ingots, concretions, coins etc. trapped underneath at risk.

These ingots are more easily available than the concreted coin as they can be easily hoisted aboard any fishing boat in good conditions when the sand overburden has gone.

### Sand Trench

This area lying between the coin rock and the reef platform against which the ingots lie appears to be quite rich and requires further assessment. A cannon for example lies totally buried up to the cascabel in the sand and appears to lie at an angle of around 60° to the horizontal, raising the question of what else lies buried in what appears to be a relatively deep bed of sand.

### Site Plan

Great progress has been made on the underwater site plan and this has been facilitated by Mr Kimpton's on site drawings and the production of 1:500 and 1:1,000 orthophotographs by the Department of Land Administration. Mr Hewitt's art work and skills in producing preliminary plans has been most useful.

### Video Record

This recording medium is undoubtedly of great working and archive value but despite the wealth of above water video coverage, there is still no video or film record of *Zuytdorp* underwater. In the light of the excellent above-water record to date and the possibilities of a fine documentary and display film, this is a major failing. An underwater video system is sorely needed and has been too long in the development stage. A new unit free of all the problems encountered in developing our own system must be purchased before the next stage in work on the *Zuytdorp* begins.

### Above Water

Work is progressing in this area and expeditions are planned for winter/spring 1990 with a view to plotting all past finds on the orthophotographs and in recording 'new finds'.

## RECOMMENDATIONS

- (i) That the project continue to the logical conclusion of the original conditions set by the W.A. Museum in the pre 1986 period, i.e. the recovery of visible attractive material in the coin rock area and elsewhere.
- (ii) That the general archaeological, public, site management, compilation of data and publication issues outlined above as aims for the post 1986 period continue to their logical conclusion.
- (iii) That an 'on call' facility involving the existing diving team be established as soon as Mr Kimpton can be freed from his responsibilities to the *Batavia* timber project. This will enable the team to respond to an exceptional run of good weather such as that experienced in February of this year and will enable them to conduct useful work despite the expected sand cover on the site in the summer period.
- (iv) That the group attempt to compile all it's work and complete the records, historical, diving, land excavations, early activities etc by the end of 1992 including the a further assessment of the land sites in September/October of 1990 and that this be prepared as an interim publication on the work from 1927-1992.
- (v) That the amnesty currently being sought by the W.A. Museum for those who hold shipwreck material illegally be vigorously pursued as it is of vital importance in the achievement of the aims set in the opening paragraphs above.