

NEWS letter

August 1990

INTERNATIONAL COMMITTEE OF GLASS MUSEUMS AND GLASS COLLECTIONS

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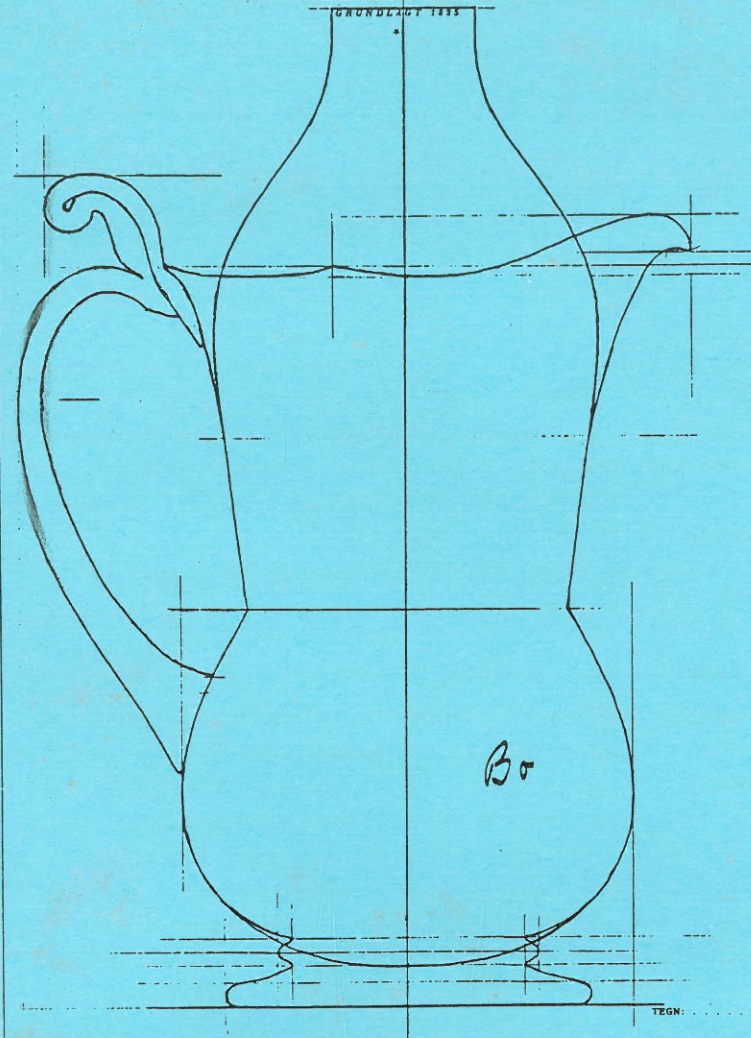
Questionnaire by Stanislav Ulitzka, Erlangen

Questionnaire about participation ICOM General Conference
in Canada 19 - 26 September 1992

HOLMEGAARDS GLASVÆRK

KØBENHAVN K · NYHAVN 12 · TLF. 4718 - 4719

GRUNDLAGT 1885



NR. 3206

Jacob E. Bang. Kande u. navn. 1934. Tegningen viser formen og kanden oprevet.
Holmegaards Glasværks arkiv.

Report of the ICOM Glass Committee meeting
held in Denmark, 13 - 20 May 1990

The meeting had the form of a travelling meeting, that enabled the participants to visit the most important glass centres in Denmark: Aalborg, Ebeltoft, Nykøbing, Naestved, Holmegaard, Dalby and Copenhagen.

Sunday 13 May

Arrival in Aalborg

Monday 14 May

The meeting was held at the Aalborg Historiske Museum.

Working Session I. Welcome by the director of the museum, Torben Witt, introduction to the meeting and the museum by Jan Kock, chairman. Subsequently followed a series of lectures:

Mogens Schlüter: The History of Danish Glassworks
(see manuscript)

Per Hadsund: Behind the Lookingglass (see summary)

Jørgen Hein: The Glass Inheritance by Frederic IV, included in the Glass Cabinet at Rosenborg Castle

J. Hein gave a very informative introduction to the inventory of non-venetian glasses in Rosenborg Castle and to the restored Glass-Chamber.

After lunch we studied the large collections of glass in the Historical Museum including many rare and interesting Danish glasses and continued with the lectures.

Ulla Lund-Hansen: Importierte Römische Gläser in Dänemark
(see manuscript)

Ulf Näsman: New Glass Finds from Merovingian Period and Viking Age (see summary)

Hugh Tait: The faking of early 'Renaissance' glasses with enamelled decoration.

H. Tait gave a summary about an exhibition about 'Fakes', held in the British Museum in Summer 1990. On this occasion he proposed to supply a list of fakes by the ICOM Glass Committee.

We spent the evening at the westcoast of Jutland to enjoy the sunset and had a walk at the seaside.

Tuesday 15 May

The day started with a visit in the manor house of Rosenholm, belonging to the family Rosenkranz since 1559. There has been found a considerable amount of Glass in the moat, including some laboratory utensils dating about 1600.

After lunch in a typical Danish and very charming little restaurant we left for Ebeltoft. There we visited the Glass-Museum, founded and built up by Finn Lynggard. It contains an international collection of contemporary glasses. Then we visited the atelier of Finn Lynggard and Thai Munch and finally observed in the Glass-Museums garden an experiment of making beads in prehistoric manner

Wednesday 16 May

Departure by ferry to the isle of Zealand. We arrived Nykøbing in the late morning, where we visited the Anneberg Collection, a large private collection of glasses including greek, roman, Renaissance and baroque glasses as well as interesting examples of historicism-period and modern imitations. After lunch followed a visit in the splendid manor house of Eriksholm. owned by Count Jørgen Ahlefeldt Laurvig, curator of the Anneberg Collection. The evening was spent in Naestved, in the Historical Museum with an interesting exhibition of Holmegaards glasses.

Thursday 17 May

Holmegaards Glassworks. After a warmly welcome and a visit in the really impressing museum of the factory, Mogens and Didde Schlüter gave us a guided tour through the factory to see the art-glassmaking as well as the machine made glass. We were allowed to visit the store rooms of the factory to study the samples from the 19th cent. until today's production. Lunch was offered in the former directors house on beautiful glass-laid tables.

Our next station was the Heering Glass Collection in Dalby, including many rare Danish drinking glasses, where Bent and Birgit Wolstrup welcomed us warmly.

Departure for Copenhagen, where the evening was spent in a typical Copenhagen-Gardenrestaurant.

Friday 18 May

The morning was spent in Rosenborg Castle guided by director Mogens Bencard and Jørgen Hein. We studied the splendid restored Glass-Chamber dating from 1716 with many very rare examples of venetian, german, bohemian and scandinavian glasses.

In the afternoon we had the unique chance to see the Royal Collection of European glass from the 17th to 19th centuries at Christiansborg Castle. These marvellous and representative drinking glasses have never been properly appraised until now and are not to be seen by the public normally. The visit was by special permission from Queen Margarete II of Denmark.

After an interesting visit in the Georg Jensen Museum with a good selection of Royal Copenhagens older productions we were invited by Birgit and Bent Wolstrup to spend the evening in their house. We enjoyed very much the charming atmosphere in a real collectors home.

Saturday 19 May

The day started with a visit in 'Glasvaerkstedet', the studio of Darryle Hinz and Anja Kjaer, where we saw modern Danish art glass and design. Lunch was friendly offered by the Kunstindustri-Museum of Denmark, where we continued and finished our meeting. After a welcome by director Kristian Jacobsen followed a guided tour by Jørgen Schou Christensen, who explained the marvellous collections and especially the glasses from middle ages to modern times and the studio glass.

In the afternoon followed the

Working Session II. with a series of short lectures:

Kaisa Koivisto: report about an exhibition of Finnish glass of the 80ties. Further she wants to have informations about contemporary industrial glassdesign of european factories.

Wendy Evans: report about activities in the London Museum, for example new finds of middle ages and venetian glasses.

Jørgen Schou Christensen: he referred about three glasses in the Kunstindustrimuseum of supposed scandinavian origin: 'Emanuel Cup. A group of Danish cups from about 1720'.

The working session was continued by the chairman Jan Kock. He announced some new members in the Glass Committee and proposed that the next meeting in 1991 should be held in Prague. Our colleague Olga Drahotová from CSFR agreed with that proposal as well as all the other members of the meeting. Finally we had a discussion about the XVI ICOM General Conference in Canada 1992. Because of the expenses it may be difficult to participate for many of us. For this reason you find enclosed a questionnaire which you are friendly asked to send back to the secretary.

postscriptum

concerning the participation in the ICOM GeneralConference in Canada 1992:

as Jan Kock has been told in the meantime at the Conference of ICOM in Paris, a post-congress tour of two or three days to Corning will be possible.

August 1990 - Margrit Bauer

THE HISTORY OF DANISH GLASSWORKS.

THE RENAISSANCE:

1536: The Danish Reformation.

15⁵62: The first glasshouse in eastern Jutland.

1580-1610: Glasshouses built by the King at Silkeborg.
The famous glassmaker Liborius Trebing
delivered in 1596:36.000 drinkingglasses
for the coronation of Christian IV.

ab. 1660 the glass-production ends in Denmark on
account of lack of fuel:wood.

NORWEGIAN GLASSWORKS.

1739: The foundation of "The Nordic Company" for the
purpose of using the minerals and other raw-
materials in Norway.

1741: The Company builds the first glassworks in
Norway: Nøstetangen, 1741-1777.

1779-1808: Hurdal works.

1808-1843: Gjøvig works.

1814: Denmark and Norway are seperated after having
been together since 1380.

FIRST GLASSWORKS IN DENMARK SINCE THE RENAISSANCE.

Holmegaards Glassworks, 1825 -

Founded by Countess Danneskiold-Samsøe
in order to use peat as fuel.
Production: Handmade bottles.

1835 started the production of tableware
in flint-glass.

Kastrup Glassworks was built by Holmegaard close to
Copenhagen for the production of more bottles, 1847.

1867: The works at Kastrup also starts a production of flint-glass.

1873: The Kastrup works is sold to a private company:
A/S Kastrup Glassworks.

NORTH JUTLAND.

Conradsminde, 1835-1857, built in Rold Forest for the production of bottles and tableware.

Mylenberg, 1853-1863, built close to Conradsminde and with the same production.

Aalborg, bottles 1853-1922
tableware 1866-1910
1908 a part of A/S Kastrup Glassworks.

OTHER WORKS JUST FOR BOTTLES.

Elsinore, 1849-1895.

Hellerup, 1875-1975. Since 1881 a part of Kastrup.
1912 instalation of the very first full-automatic bottle-machine in Denmark:Owens make.
1959-62 the Owens Machines are replaced by Roirant-machines.

Frederiksberg, 1882-1926.
Since 1907 a part of A/S Kastrup Glassworks.

THE UNITED GLASSWORKS

Fyen (Odense), 1874 -
Mixed production of bottles, opal glass, tableware and glass for lightning.

Aarhus, bottles 1898-1927
flint glass 1898-1902

1902 these two works was amalgamated together with a Swedish glassworks, Rosdala, to "The United Glassworks", which became a part of A/S Kastrup Glassworks in 1907.

A/S KASTRUP GLASSWORKS, 1907.

1907 all the works , except Holmegaard, were amalgamated to get sufficient capacity to get a fullautomatic bottlemachine, the Owens-machine, and the firm became a member of "Europäischer Verband der Flaschenfabriken", which had bought the patent from Owens the same year.

The works were: Kastrup, Hellerup, Frederiksberg, Fyen, Aarhus and Aalborg, all producing bottles by hand.

1912 the first Owens-machine was installed at Hellerup, 1913 the second one and the production of handmade bottles stopped within 1930.

THE TIME AFTER 1930

Just two firms was left:

A/S Kastrup Glassworks with 3 factories:

Kastrup: Tableware and
bottles on full- and semiautomatic machines.

Hellerup " " " " " "

Fyen (Odense): Bottles on semiautomatic machines
Pressware. These were both stopped 1964.
Opal glass for lamps and vases.

Holmegaards Glassworks.

A production of bottles on fullautomatic machines was started in 1935.

Semiautomatic bottles 1930-1968

Tableware and artglass, from 1924 designed by
known designers.

A/S KASTRUP & HOLMEGAARDS GLASSWORKS, 1965-1979.

The four glassworks mentioned above were amalgamated to one firm in 1965:

3 works making bottles and containers

2 works making handmade glasses

HOLMEGAARDS GLASSWORKS A/S

In 1975 the Hellerup works was closed and later on in 1979 the Kastrup works and the production of bottles and containers was moved to Holmegaard, which is the only glassworks in Denmark producing bottles and containers about 1,5 mill. units in 24 hours.

Of all the Danish glassfirms are just one left:

Holmegaard with its two departments:

The "K" department for tableware and artglass, including the Odense factory.

The "E" department for bottles and containers, including a factory for plast-bottles and the firm for reuse of bottles all over Denmark.

In 1985 Holmegaard became a part of the big amalgamation of Danish firms for applied art:

ROYAL COPENHAGEN A/S

including: Royal Copenhagen Porcelain
Georg Jensen Silver
Bing & Grøndahl (Porcelain)
Holmegaard Glassworks

STUDIO-GLASSWORKS

Since about 1970, during the last 20 years, Denmark has got about 20-25 studio-works spread all over the country.

Q u e s t i o n n a i r e

As you know - see report - the XVI ICOM General Conference will be held 1992 in Quebec, Canada, 19 - 26 September.

At the last ICOM Glass Committee meeting in Denmark the proposal was made to ask all members about the participation in the ICOM General Conference or (because of the expenses) about an alternative meeting in Europe (perhaps Venice).

Please let us know your opinion:

☐ Canada

☐ Europe

Name

Address.....

.....

.....

.....

Please send as soon as possible to:

Margrit Bauer
Museum für Kunsthandwerk

Schaumainkai 17

D 6000 Frankfurt am Main



C o m m e n t s a n d S u g g e s t i o n s :

Per Hadsund. Behind the Lookingglass (Summary)

The paper is about mirrors. Not about frames, only a bit about glass and most about the reflecting layer on the back of the glass. Until the 19th century mirrors of good quality and particularly large mirrors were very expensive, because it was difficult and timeconsuming to produce a sheet-glass of a sufficiently good quality. History of mirrors is closely connected with development of techniques used in the production of sheet-glass and the centres of production of mirrors are found in the same places as where sheet-glass was made.

In order to use glass as mirror the back has to be foiled with a reflecting layer of metal. Historically the most considerable kind of backing is amalgam and most mirrors kept in museums are amalgam-mirrors. An amalgam is an alloy of mercury and a varied number of other metals. The backing is nearly always composed of tin amalgam made of pure tin foil and mercury. Amalgam of other metals were sometimes used in making curved mirrors. One does not know, where and when the tin amalgam backing is invented, but the technique does only get its important influence when it is possible too, to make sheet-glass of good quality.

I think, Venice is the first important centre for the production of amalgam mirrors. Here in 1507 the brothers dal Gallo obtain a privileg for 20 years to produce lookingglass of crystal after a new technique. In the following four centuries the amalgam technique seems to be dominating as regards plane lookingglass.

Dated amalgam mirrors are often hazy, or there can be found large dark areas in the reflection. In both cases it is caused by corrosion of the amalgam. Restoration of decomposed amalgam is difficult if not impossible. Therefor I have examined the composition and the break down of the amalgam in order to enable preservation of the mirrors.

The making of amalgam mirrors and their special characteristics: In all descriptions are no considerable variations in the process of foiling. In order to test whether I really understood the old recipies, I made a series of small mirrors with amalgam backing, as described in the following:

- Usually a strong table with a top of either marble or sandstone was used as ground sheet. For the test it was only a small slab of marble.

A piece of tin foil is placed on the slab and then it is smoothed out. The tin foil has to be a little bit bigger than the mirror of which it will be the backing.

- A tiny mount of mercury is poured out on the foil
- carefully it is rubbed into tin surface
- until the surface is quite shiny. This has to be done in order to remove a thin layer of tin oxides from the foil's surface.
- Now the tin is covered with a layer of four or five mm of mercury (for a mirror of one square meter one has to apply about 50 kg)
- In the meantime the glass is carefully cleansed. A grease spot or just a fingerprint is enough to prevent the amalgam in sticking to the glass. Now the clean glass is pushed over the tin foil in an uninterrupted motion. The front edge of the glass must all the time be immersed in the mercury but it may not scrape the tin.
- Halfway the glass will begin to float on the much heavier mercury.
- The glass is pressed against the marble slab so that most of the extra mercury will run off.
- To get rid of more mercury the slab is tipped and
- at last the mirror is loaded with weights of metal or stone.
- The extra tin foil is removed from the glass.
- The mirror must now be left in 24 hours for hardening.
- The weights are removed, the finished mirror is carefully lifted from the slab and turned over with the back upwards. Still the amalgam layer is very soft. It has to dry ten days to a month, according to the size of the glass. During this time the mirror is slowly tipped and the last bit of extra mercury runs off.

Workers in the mirror-workshops were often seriously ill and one knew very well that mercury caused illness. Mercury attacks the central nervous system and causes both physiological and mental damages. Chronic mercury poisoning often leads to death.

During a long time attempts were made in finding new methods so that the dangerous mercury all together could be left out. Already in 1858 Justus Liebig invented a technique how to use silver backing on mirrors That is the technique which is still in use when it comes to ordinary mirrors. Never the less the first mirrors with silverbacking were not quite as durable and only at the turn of the century silver mirror took the place of the amalgam mirror.

The finished amalgam backing is composed of amalgam crystals and liquid mercury. The amalgam from a new made mirror, photographed in a scanning electronic microscope shows grey 'islands' of solid crystals, which contain about 80% of tin and about 20% of mercury. A liquid phase of of almost pure mercury can be observed between the crystals. Quite surprisingly I found liquid mercury in all the examined mirrors, even in the oldest ones which were more than 200 years old. The liquid mercury is necessary in order to create the reflecting surface. It fills in the gaps between the amalgam crystals and functions as a kind of glue between glass and backing. As temperature increases, the crystal growth will increase also. At the same time the crystals grow, very slowly the mercury evaporates from the liquid phase.

The sample of a twohundred years old mirror shows very big crystals. But they are also very flat and make an almost plane surface against the glass. The gaps have nearly disappeared. These changes in the structure have no consequences for the reflection.

In other cases there is no balance between the growth of crystals and the evaporation of mercury. Then small cavities can occur between glass and backing. In the reflection they appear as spots and stars. The processes which regulate the development of the amalgam structure is very complex. Therefore it is not possible to control and prevent that stars occur. But the process is slower, the cooler the mirror is kept (not warmer than 20 °C). A mirror should never hang directly facing the sun.

Corrosion of amalgam: they are always composed of simple tin oxides (mercury does not oxidize). The main reason is a too high humidity. Dust and Cobwebs are the other enemies of mirrors.

Dust contains salts and other corrosive substances and cobweb glues the dust firmly to the amalgam. It is possible all together to avoid corrosion by keeping the mirrors in a dry place. However it is necessary to pay attention to frames of wood and other organic materials. Relative humidity at about 50% could be a reasonable compromise. Amalgam ought to be protected against dust.

Mercury poisonousness: Therefor the mirror store of the National Museum and the mirror room of Rosenborg Castle were researched. In both places mercury could be observed in the air, but the concentration was far less than the allowance of mercury concentration in workshops. So staff and visitors in places with amalgam mirrors run no risk. But one should never forget that mirrors do contain mercury. When they have to be moved or preserved, they must be treated as any other material containig mercury.

As already mentioned old amalgam mirrors are often dim or dark because of corrosion. New and well preserved amalgam mirrors can be as clear as modern silver backed mirrors, but never the less a difference can be observed in both, colour and reflection. An amalgam mirror reflects less light than a silver mirror. The amalgam reflects only about 67% of the light, whereas a silver one reflects 93%. Tin amalgam has a blue colour, silver has a yellow tone. The colour of the glass may also have some effect. Old glass is normally quite dark, modern glass is brighter but nearly almost light green. The colour of the glass can most easily be observed from the edge of the mirror.

If one doubts wether a mirror has a silver or an amalgam backing, the best thing to do is to examine the back: in order to prevent corrosion the silver layer is always covered by paint. On the other hand the back of the amalgam has only very seldom been painted, and the metal grey uneven surface of the amalgam is easy to recognize.

In connection with mirror rooms the optical differences between silver and amalgam mirrors are of special interest because of the infinite reflection. The loss of light becomes more distinct in every reflection. In a room with silver mirrors nearly half of the light will remain after a beam of light has been reflected ten times. In a room with amalgam mirrors only two % of the light will remain after ten reflections.

Importierte Römische Gläser in Dänemark.

Alle Funde von Gläser in Dänemark aus der vorgeschichtliche Zeit (bis um 1000 n.Chr.) und vom Mittelalter bis 16. Jahrhundert ist importierte Gläser. Der erste dänische Glasherstellung ist im Vergleich mit andere Gebiete Europas, sehr spät. Der dänische Glasherstellung ist vermutlich im Laufe der 16. Jahrh. entstanden beinahe Glasperlen, die man jedenfalls vom 500 n.Chr. in Skandinavien produzieren konnte. Aber viele Perlen sind auch im Laufe der ganze Eisenzeit Import vom verschiedene Teile Europas und das Orient.

Während der Römische Kaiserzeit (1-400 n.Chr.) kommt bedeutungsvolle Mengen von Gläser nach der dänische Gebiet, die ausserhalb der Römische Reich liegt, aber doch nicht weit von die römische Provinzgrenze. In der Ältere Kaiserzeit (Chr.Geb.-Mitte 2. Jahrh.) ist der Menge der Gläser begrenzt, es ist besonders wohlbekannte Typen wie Rippenschalen und Gläser mit Schliff, die wir in die Gräber finden. Diese Gläser sind entweder im Mittelmeergebiet oder in die westliche Provinzen des Römerreiches hergestellt.

Während der Ältere Kaiserzeit erreicht die Gläser das freie germanische Gebiet in Verbindung mit eine System von Gabenaustausch zwischen Häuptlingezentren in der ganze freien Germanien. Nur sehr wenige Gläser wird von Dänemark weiter verbreitet zu anderen Skandinavischen Gebieten.

Aus der Jüngere Kaiserzeit (Mitte 2. Jahrh. bis 400 n.Chr.) haben wir in Dänemark eine der grösste Sammlungen von römische Gläser in der freie Germanien. Diese Gläser haben auch eine grosse Bedeutung wegen ihre Fundumstände; sie ist grösstenteils in reich ausgestattete Gräber gefunden und lässt sie deswegen gut datieren. Deshalb sind sie auch von grosse datierungsmässige Bedeutung für ganz Europa geworden.

Herstellungsgebiet für die jüngerkaiserzeitliche Gläser ist besonders Köln, dazu haben wir wenige aus der Trier-Gebiet. Dagegen findet man keine Gläser aus die westlichere Glaszentren wie Zentral- und Westfrankreich.

Wohlbekannte Glastypen aus diese Epoche ist besonders Cirkusbechern, Schlangenfadenpokalen- und Bechern, Glastrinkhörnern, geschliffene Bechern, Gläser mit optisches Ornamentik, Gläser mit Bodenrippen u.s.w.

Viele Gläser findet man in Dänemark als Satz, d.h.zwei oder drei vom ganz selbe Typ und bewusst als Satz hergestellt. Das bedeutet auch, das die Gläser jetzt direkt nach Dänemark kommt, nicht wie im Ältere Kaiserzeit durch viele Hände. Viele andere Züge der Import deutet eine direkte Handelsverbindung vom Rheinmündung nach Seeland in der Jüngere Kaiserzeit an. Diese Verbindung muss direkt und über See verlaufen habe, vermutlich wegen politische Ereignisse in der Grenzgebiet zwischen die Germanen und Römer. Es ist eine sehr unruhiges Zeit in ganz Mitteleuropa.

Später in diese Periode wird der Bedeutung Seelands niedriger, jetzt wird es Ostfünen und danach Jütland, die der Verbindungen beherrscht.

Aber vom Mitte der 3. Jahrh. n.Chr. sieht man dazu eine neue Handelsverbindung nach Skandinavien von der Schwarzes Meer Gebiet. Hier in diese Gebiet, ausserhalb der Römische Reich, d.h. nordost der Donau, gibst eine Glasproduktion von Mitte 3. Jahrh. bis in der Völkewanderungszeit (5. Jh.). Hier macht man Glas nach römische Vorbilder und hat eine Verstreueung durch Südosteuropa bis Dänemark, Schweden und Norwegen. Ganz wenige von diese Gläser ist innerhalb der Römische Reich gefunden. Diese Glasherstellung wird vermutlich gegründet wegen Schwierigkeiten Statussymbole wie Gläser zu schaffen aus die "alte" Glaszentren wegen Unruhe und Krieg zwischen die Germanen und Römern.

Im Laufe der ganze Kaiserzeit übt der dänische Gebiet eine Filterfunktion gegenüber dem übrigen Skandinavien aus, ähnlich wie das kontinentale Germanien in der ganze frühen Kaiserzeit eine Barriere gegen die nördlicheren germanischen Gebiete bildete. Darum finden wir viel mehr Glas in Dänemark als in die übrige Skandinavischen Gebieten, und dazu ist es deutlich, das die beste und am seltensten Gläser nicht weiter als Dänemark verbreitet wird.

Warum diese Mengen von römische Gläser ausserhalb der Römische Provinzen?

Es ist nicht nur Gläser aber auch römische Bronzegefässe und Waffen, die in grosse Mengen nach Dänemark kommt, und es ist eine ganz besondere Auswahl von römische Waren, die nach Dänemark und nach die übrige germanische Gebieten kommt. Es ist ganz klar eine besondere Auswahl von römische Waren, bestimmt von der Wunsch der Germanen, die nach die Häuptlingzentren des freien Germaniens kommt, sondern hätte wir in Stelle eine Menge von allgemeine Massenproduzierte römische Waren gehabt.

Gläser, Bronzegefässe, Silbergefässe und Waffen ist eine Kennzeichen hochstehende Personen in der germanische Gesellschaft, Häuptlingefamilien, Männer sowohl als Frauen. Die Gräber von sozial hochstehende Personen sind im freien Germanien nicht nur durch die Ausstattung mit importierte Waren gekennzeichnet, sondern auch durch Anzahl und Qualität der beigegebenen Gegenstände einheimischer Provenienz. Es ist nicht nur die Importwaren, die den Stand der Bestatteten deutlich macht, sondern eine Kombination mehrere Dinge.

Ulla Lund Hansen.

Ulf Näsman. Glass Finds from the Germanic Iron Age and Viking Age in South Scandinavia. (Summary)

In Danish terminology the periods covering the 5th to 11th centuries A.D. are called the Germanic Iron Age the Viking Age. In South Scandinavia almost no glass at all is found in graves after the 4th century. This was earlier interpreted as a shift in trade routes that now passed Denmark and that the import now went directly to Norway. Recent archaeological investigations can demonstrate that this certainly is a naive interpretation of the data derived from burials. - The glass import of Viking society is exhibited in Stockholm, with many complete vessels from the early town Birka. In the Danish Viking town Hedeby, that certainly held a much more prominent position in Viking trade than Birka did, only one single glass is found in a grave. Thus it is evident that Viking Age graves do not give an accurate picture of trade and trade routes; recent settlement excavations have corrected the picture.

Glass types found in Denmark and Scandinavia:

1. Migration Period, 5th - 6th C.

Bowls decorated with blue blobs - rare type

Beakers of thick green glass with cut and polished oval or facet decoration.

Production at the Black Sea or further to the East.

Tall green beakers with trailed decoration (Snartemo type)

Cone beakers, rare (Kempston type), origin Western Europe.

2. Merovingian Period, late 6th - 8th C. Completely new vessel types were imported to Scandinavia. Luxury import via exchange links to western Europe.

Claw beakers

Vessels with big black or red dots

Squat jars and bag beakers (from Gotland)

Palm cups (Central Sweden)

From the 7th - 10th C. the so called reticella decorated bowls and squat jars dominate the glass import to Scandinavia. No finds of reticella glass are known from graves in Denmark, but from settlements and trading places many finds of shards are known.

The most common vessel of the early Viking Age (10th C.) is the funnel beaker, certainly made in the Carolingian empire. In the mid Viking Period (10th C.) the Birka grave finds demonstrate a new change in the glass import. Funnel beakers disappear and squat jars become common. Glass metal is often devitrified and probably representing a new formula, the potash technology.

Summary: recent progress in settlement and urban archaeology has given a much richer material from the 5th - 11th C. than the grave material had earlier indicated and demonstrates that glass import was frequent also in Denmark and elsewhere in South Scandinavia where graves with imports are rare or absent. The most common vessel types seem to recur again and again in the finds, so that the main pattern of trade routes seem to be known today.

In Jutland no graves with glasses are known from 8th - 9th C., but excavations in Ribe (proto-urban layers) demonstrate that a broad sample of west European vessel were, in fact, imported. The same rule shall apply to the Baltic island Bornholm.

Part II: The glass bead workshop of the 8th C. in Ribe (Jutland)

Ribe is situated at the west coast, a river gives easy access to the North Sea. Here a gateway emporia was founded in the early 8th C. Excavations have revealed that the area along the river was divided into plots for trade and workshop activities. Here the remains of a sequence of glass bead workshops were excavated. There were found the remains of a sand floor of an open workshop and its fireplace. Hundreds of pieces of glass rods, broken beads and other types of glass waste was recorded, including two tools belonging to the workshop - a piece of a tong and a mortar stone. The cross-section shows four phases of glass bead production. A lot of fragments of raw glass were found, mainly of blue glass. Hundreds of tesserae, probably made in Italy, many of them with gold foil, were used for the decoration of the most common blue beads. Besides that there were many monochrome rods, especially for the decoration of beads. Polychrome rods are proof of a qualified production of beads with reticella and millefiori decoration.