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ARCHAEOLOGY AND ANTHROPOLOGY OF A MASSGRAVE IN TRANVIK, SUND, ÅLAND ISLANDS

Abstract

Investigations carried out at a massgrave site on eastern Åland revealed skeletal remains of 8 men aged 18–35 buried in simple wooden coffins. There were indications of some unknown burial ritual whereby a single small stone was placed on each of the coffin lids. Based on pedological, stratigraphical, historical, artefactual, and physical anthropological data it was concluded that the massgrave contained Russian soldiers that had probably died of camp fever during the summer of 1743, when the Russian fleet was camped near the site.

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INTRODUCTION

An unusual series of events led to the discovery of the Tranvik massgrave the summer of 1987. It all started with France's plans of raising a memorial to the French soldiers that had died on Åland during the Bomarsund conflict in 1854. When excavation had shown that the site traditionally identified as their final resting place held no burials, an intensive search for French graves was implemented with the help of local folk.

This was how information about the Tranvik site reached Ålands Museum. A slope where sand-quarrying had previously uncovered human bones was pointed out by the landowner, and a nearly complete human femur was soon collected from the disturbed surface. Subsequently test excavations produced a cranium *in situ* at the edge of the sandpit. Since it was precisely in Tranvik where French troops had first landed in 1854, further excavations were carried out to answer the questions of date and nationality of the burial. Soon it became obvious that we were dealing with a massgrave. The purpose of this paper is to describe the results of the investigation of the site and its skeletal material.

THE SITE

The massgrave is situated at the foot of the Tranvikbergen hill, about 900 m east of the Tranvik village. The site is traversed by the road leading from the village to the Fladan inlet (Figs. 1–2). The soil consists of well-sorted stone-free beach sand (Fig. 3), deposited when the shoreline lay 5–10 m higher than today some 1000–1500 years ago. The coarsest fractions ($\varnothing < 3$ mm) of the sediment were observed in thin horizons of fine gravel.

The site had been disturbed by roadworks in 1930, and a considerable part of it destroyed through by sand-quarrying in the 1960s. According to the villagers, human remains were observed then over an area of about 200 m². The investigated area lies at the edge of the sandpit, only a few metres north of the road embankment. Terrain irregularities and unusually rich vegetation immediately north of the excavated area suggest that graves may continue further in that direction.

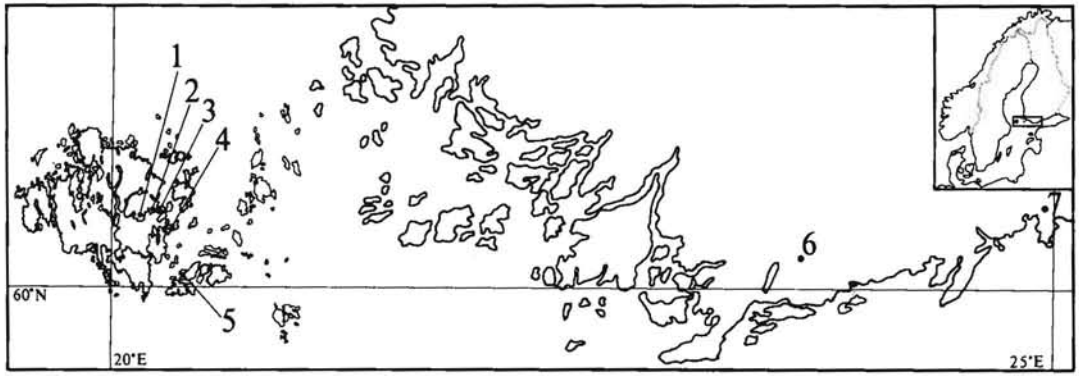


Fig. 1. General map showing the Åland Archipelago, Southwest Finland and the location of the sites mentioned in the text: (1) Tranvik; (2) Bomarsund; (3) Prästö; (4) Ångösund; (5) Degerby; (6) Karis; (7) Vanda. (Drawn by A.-M.Pitkänen-Darmark).

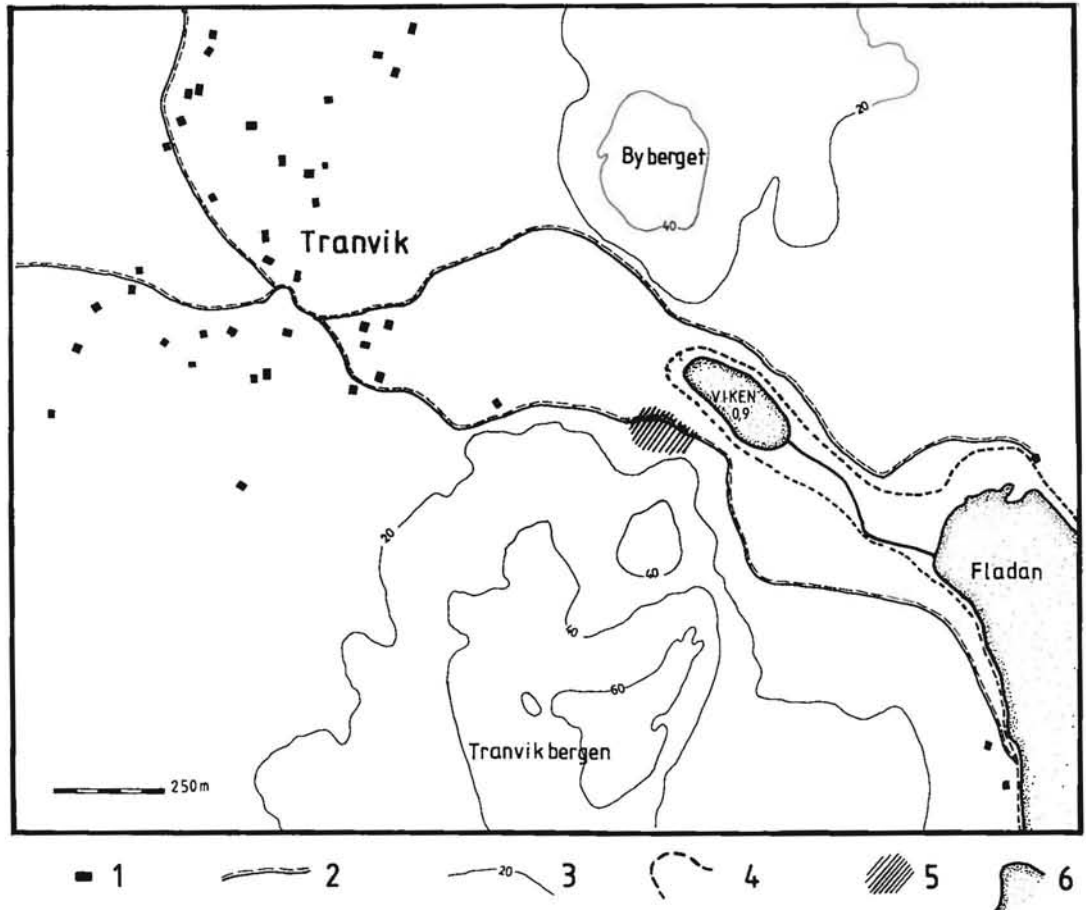


Fig. 2. Map of the Tranvik area: (1) village buildings; (2) roads; (3) contour lines; (4) shoreline around 1750 AD; (5) massgrave site; (6) water basins today. (Drawn by A.-M. Pitkänen-Darmark).

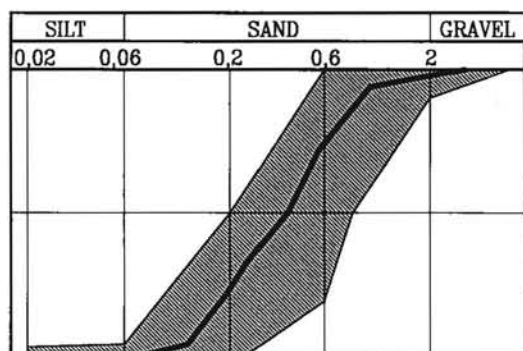


Fig. 3. Cumulative granulometric curve of the Tranvik sand. The shaded area represents the range of Finnish beach sands (cf. Aartolahti 1972; Nunez and Alhonen 1974).

FIELD AND LABORATORY PROCEDURES

An area of 3.5 x 2 metres, including both undisturbed and partially disturbed ground, was opened around the first skull find (Fig. 4H). The chosen area was excavated in artificial 10-cm lay-

ers until reaching levels with human remains. The excavated area was then divided in sectors, each containing either a grave or a bone concentration. These sectors were then carefully excavated in 1–5 cm artificial levels.

Bones as well as any other features of interest were photographed and sketched, and their coordinates recorded tri-dimensionally in order to obtain daily computer-drawn plans of the excavated levels (Fig. 4). Once excavated loose, bones were removed and placed in open bags labelled with burial and body side. Artefacts finds were treated in a similar manner. Crania were lodged upside-down in partially sand-filled labelled boxes. After sterile levels had been reached, the vertical sections of the excavated area were recorded in the same fashion as the excavation levels. Finally the bones that remained lodged in the excavation walls were removed.

The skeletal material was studied and measured with an osteometric board and calipers according to standard anthropometric procedures (Krogman 1962; McKern 1970; Brothwell 1972; El-Najjar and McWilliams 1978; Bass 1981). Some of the results have been summarized in Tables 1–5.

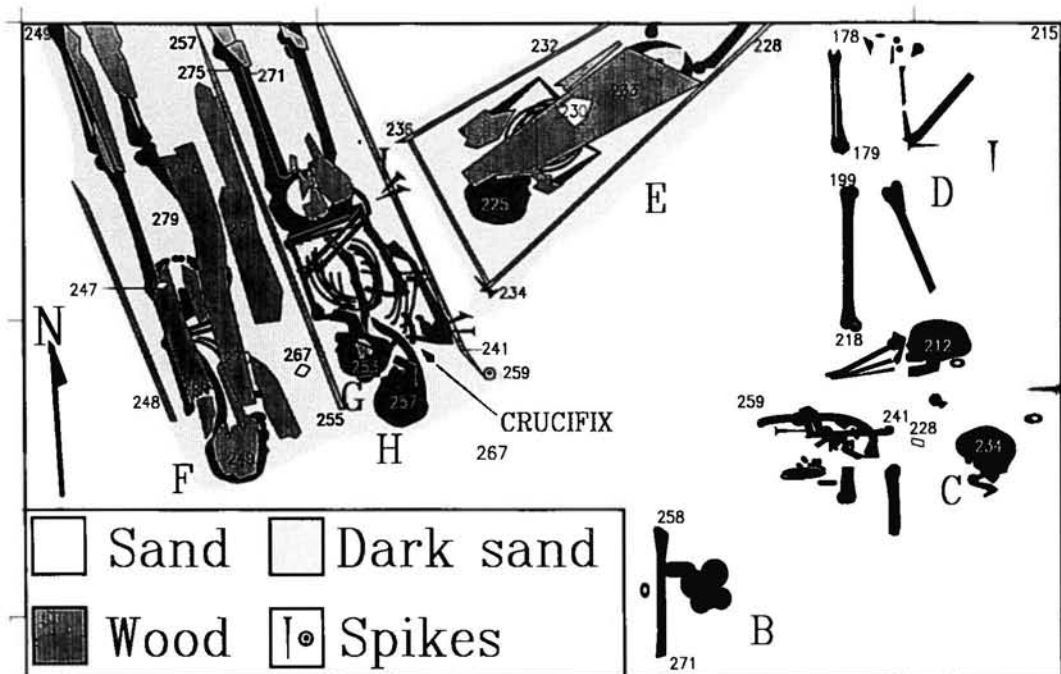


Fig. 4. Composite computer-drawn plan of the excavated area showing graves B–H with bones (in black), the crucifix, ritual stones (in white) and other features. The numbers represent depth in centimetres from a fixed-point c.6 m a.s.l.

BURIALS AND THEIR CONTENT

A total of eight disturbed or undisturbed graves belonging to men aged 18–35 were recorded. They had been buried in simple coffins of pine planks held together with 8–10 cm spikes. The coffins had been placed in a shelf-like cut dug about a metre down into the sandy slope and then covered with sand from higher up.

Aside from spikes and remnants of wooden coffins, the only artefact find was an Orthodox crucifix pendant in burial H. To this may be added six stones 5–12 cm across, each associated with one grave. Burials A–H are briefly described below (see Fig. 4).

Burial A is represented by the single femur found on the disturbed ground surface.

Burial B consists of a few inarticulated bones found in a small shallow pit in disturbed soil. They were probably reburied after being uncovered through sand-quarrying.

Burial C was represented by unarticulated bones that apparently were dislodged when the sandpit wall collapsed. Although no wood was found associated spikes suggest a coffin burial. A 5 cm granite stone was found in association with these bones.

Burial D consists of partially articulated bones displaced from their original position by a down-slide of the sandpit wall. Despite the disturbance it was possible to observe a S–N orien-

tation from the lower limb bones. A 9 cm stone was found together with the bones. Finds of spikes and a few wood bits indicate a coffin burial.

Burial E contains a complete W–E oriented skeleton in a wooden coffin with a 12 cm sandstone slab on its lid.

Burial F holds a nearly complete S–N oriented skeleton in a wooden coffin with a 5 cm stone on its lid. The northwest side of the grave had been damaged by quarrying.

Burial G contained a complete S–N oriented skeleton in a wooden coffin that had been stacked on top of coffin H. A 6 cm stone by its side suggests that it had been originally placed on the lid.

Burial H lay directly below G and contained also a complete skeleton oriented S–N with a 6 cm stone on the coffin lid. A crucifix pendant was found next to the head.

THE CRUCIFIX

The crucifix is made of brass with inlaid enamel and was found in a position that suggests it had hung from the neck of individual H at the time of burial (Fig. 4–5). The 32 x 20 mm pendant is of the so-called women's cross type, which is traditionally dated to the 18th century

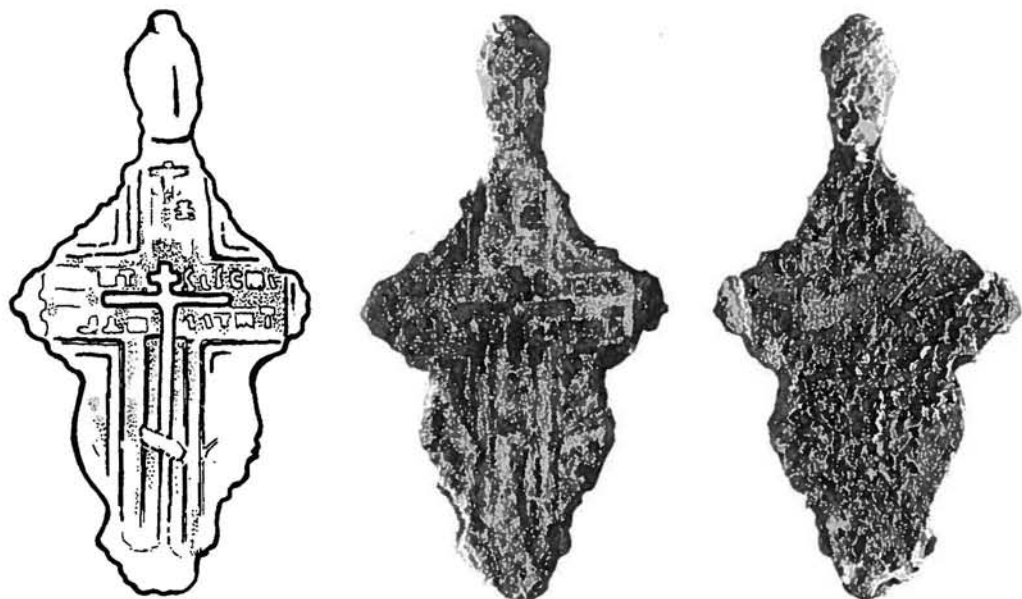


Fig. 5. The Tranvik crucifix (32 x 20 mm) with its cross and Cyrillic characters and textile remains on the back side. (Drawing: A.-M. Pitkänen Darmark; photo: A. Mendes).

(Dreijer 1962; ANBA n.d.). Although the metal is badly corroded, it is possible to discern an Orthodox cross and Cyrillic characters in brass against a light blue enamel background. It is not clear whether the backside held also an inscription because it is now hidden by textile fibres (Fig. 5).

The preservation of these fibres was due to penetration by copper salts from the crucifix. Textile conservator A.M. Rinne-West analyzed and described the textile remains as belonging to a tabby cloth made of Z-twisted unbleached flax thread. The same kind of cloth was observed in Russian military uniform items from the Notvik Tower of Bomarsund (Nunez 1989; Nunez and Darmark 1989; Rinne-West 1989). The Notvik finds are from 1854, but the chronological range of this kind of cloth is too broad for dating purposes.

BURIAL RITE

An interesting feature was the association of a single small stone with each of the best preserved graves (Figs. 4). There was nothing special about the stones, but their sharp edges make them intrusive in the beach deposits. From this and the fact that no other stones were observed in the excavated area follows that they were placed intentionally on each coffin lid. This is particularly clear from graves E, F and H, where the stones were found in situ; but it also applies to graves C,D and G, where the original position of the stones had probably been changed by post-burial disturbances.

All this strongly suggests an unknown form of burial rite, the possible nature or affiliation of which is not at all clear. Stones are employed in some forms of Jewish funeral traditions, but the connection seems too tenuous in this case; particularly when at least one of the graves (H) contained both a stone and a crucifix. The two features need not be mutually exclusive, however.

A survey of archaeological literature does not make us any wiser. Several 11th–14th century Christian graves from Finland and Carelia have been reported to contain one more large stones, which together with the occurrence of spears and knives piercing through the coffin lid, have been interpreted as attempts to hinder the dead from haunting the living (Pälsi 1938; Kronqvist 1938;

Cleve 1943, 1978; Keskitalo 1950). Further east, stone "pillows" were often placed in 14th–18th century Russian graves as a symbol of piety (Makarov 1981; Panova 1987), but this can hardly be the case here.

On the other hand, the lack of references may well be due to difficulties in distinguishing such ritual stones in soils that naturally contain stones. Only in stone-free deposits like the Tranvik sand would it have been possible to detect them. In fact, the first two stone finds (burials C,D) were simply recorded as natural stones. Not until a third stone was found in situ in grave E was there any thought about the possibility of stones being related to burials. The realization that stones may have been intentionally placed on coffins as part of burial rite came only after single stones continued to be found in association with each of the other burials (F–H).

The funeral ceremony performed within the Orthodox Church in Finland today include the placing of an icon and/or a flower on the deceased's chest; but there is an interesting description from rural Greece where these objects are substituted with a stone:

The priest makes the sign of the cross over a stone that has been previously placed on the breast of the deceased. Afterwards earth is strewn over the stone and wine is poured on it in cross form. Then the priest and all present throw earth over the still opened coffin and the priest says "From earth thou hast come, to earth shalt thou return". The coffin is closed. (Ambatsis 1966:93).

Regardless of whether or not there may be a connection between this Greek custom and the Tranvik stones, it is obvious that both rituals can be classified as marginal phenomena. As examples of marginal manifestations can be cited the filling of coffins with sweets as done in some Orthodox circles in the Soviet Union today; or covering the deceased's eyes with coins, which is apparently a relic of the belief that if a dead person saw living relatives he/she would then take them as companions to the grave (Holmberg 1964). Interestingly, this latter custom is still practiced in some Christian circles without any knowledge of its superstitious pagan origins. In the same manner, the placing of small stones in an 18th-century grave may constitute a forgotten symbolic gesture preserved from the time when ghosts were kept from wandering by placing heavy stones on graves.

DATING

Information about the possible date of the Tranvik massgrave can be obtained from the available pedological, stratigraphical, archaeological and historical data.

Soil formation

The existence of a thin but clearly visible podzol horizon above the graves suggests a certain degree of antiquity. In Sweden, visually distinct podzols develop within 500 years, but only under extremely favourable conditions do they form in less than 200 years (Tamm 1950; Bergqvist and Lindström 1971). In mainland Finland podzolization rates are somewhat slower, generally requiring around 500 years for visible horizons (Jauhainen 1972; Nunez 1977). This is corroborated by my own observations from southern Finland: A visually distinct podzol profile had developed in Karis since 790–660 bp, but it was not yet visible above three pits radiocarbon-dated to 420–300 bp in Vanda (Hel- 644,645, 670,671,794; Nunez 1978; Jungner 1979).

A reconnaissance of local soil profiles failed to show abnormally high podzolization rates. Although it is not clear whether disturbances caused by the massgrave could have an accelerating effect on soil processes, it seems unlikely that such a distinct podzol could have developed in less than 200 years.

The crucifix

The crucifix is not very helpful as a dating object. As mentioned earlier, the type is traditionally dated to the 18th century, but this simply means that this kind of pendant was fashionable among the Russian aristocracy during that time. The type may have survived among the lower classes into the 19th century. Moreover, the use of such a crucifix could have been further prolonged as a family relic.

On the basis of the crucifix and soil profiles the date of the massgrave should fall most likely within the 18th century or, possibly, the beginning of the 19th. But the nationality of the crucifix narrows the date of the Tranvik massgrave down to those instances when Russian troops were in the Åland Archipelago: The Great Northern War (1714–21), the "Little Wrath" (1741–43), and the period of Russian rule (1808–1917).

The Great Northern War

Although the Great Northern War broke out as early as 1700, it was only during 1714–1721 that Russian troops were in the archipelago. However, their operations were focused on western and southern Åland during this period. Furthermore, a 1714–1721 date may be too early for the crucifix, specially if we assume that the occupants of the massgrave are not likely to have been members of the aristocracy (Hausen 1930; Andersson 1954; Dreijer 1970; Hörfors 1985).

The Little Wrath

The Little Wrath raged between 1741 and 1743. The most likely instance for the massgrave during this short-lived conflict would be the summer of 1743, when the Russian fleet was camped at Ängösund, Vårdö. That the contingent was large is attested by a spy report listing 2 officers' tents, 411 huts, 10 bath-houses, 5 enfermeries, 101 ovens, 78 wells, and several piers (Andersson 1954). Due to local isostatic rebound, the sea level stood 1–1.5 m higher than today in the mid-18th century, forming an inlet that stretched all the way to the site (Fig. 2) – to the pond still called Viken (the inlet). In other words, the dead could have been easily transported to the site from the headquarters in Ängösund only 8–9 km away, and buried in the sandy slope (Fig. 1).

The Russian period

Regardless of how long the crucifix type could have lingered into the 19th century, it seems unlikely that the Russians would have used the Tranvik woods as burial grounds when the nearby Prästö cemetery was available; and according to Darmark (1988) the Old Orthodox graveyard at was already being used in the 1810s. This would imply that if the massgrave is from the Russian period, the burials must have taken place between shortly after 1808.

However, there are circumstances that speak against a Russian period date. According to the inquiry made by the local police after the first skulls were found at the site in 1930, the bones were uncovered when the road level had been lowered by 70 cm. From this follows that the massgrave is stratigraphically inferior to the road that traverses it. There is no exact date for the construction of the road, but two old property

maps indicate that it must have taken place between 1767 and 1844. On the one hand, it would seem highly improbable that the Russians would have buried their dead in an existing road; and on the other, it is difficult to believe that they would have built a road over known burial grounds. Since there were no breaks in the Russian occupation after 1808, it seems unlikely that the location of the burial site would have been forgotten in 36 years or less.

It should be mentioned that the same 1931 police inquiry tells that a 93-year-old lady from Tranvik claimed that Russians had buried their dead in the vicinity of the site in 1850. However, the already mentioned stratigraphic relationship between the graves and the road speaks strongly against her story. Particularly when she stated herself that the road had lain in the same place as long as she could remember. It is noteworthy that my Tranvik informants questioned the credibility of this lady, by commenting that it was not the first time she had spread erroneous information.

SKELETAL MATERIAL

Including the femur (A) found on the ground before excavation, the partial or complete skeletal remains of at least eight individuals were represented at the site. The bones were fairly well preserved considering that they had lain in sand; but they had become brittle and much damage had been done by tree roots.

Cranial features

The length and breadth of the six Tranvik crania were measured and their indices calculated (Table 1). Two skulls were mesocranic and the rest brachio-cranic. The mean cranial index was 81.2 which is within the brachio-cranial range. Photographs of the six crania are presented in Figs. 6-11.

The frequency and manner of occurrence of a number of nonmetric cranial traits were examined and recorded. Noteworthy was the retention of the metopic suture in cranium C, though it is impossible to assess the frequency of metopism in such a small population. The same applies to several other features, many of them observable in Figs. 6-11.

Table 1. Certain features of the Tranvik crania: Length, breadth, calculated indices and metopism.

Grave	Length	Breadth	Index	Metopism
C	181	140	77.3	+
D	175	145	82.9	-
E	174	144	82.8	-
F	169	146	86.4	-
G	180	139	77.2	trace
H	173	139	80.3	-
MEANS:	175.3	142.2	81.2	

Sex determination

The great majority of the traits of the Tranvik skeletons were clearly masculine. This particularly applies to the shape of hip bones (B,E,F,G,H) and and/or a several sex-related cranial nonmetric traits (C,D,E,F,G,H). Unfortunately, the sex of individual A cannot be determined with certainty on the basis of a single femur. Although its dimensions are most likely male, they still lie within a range where both sexes may overlap (Pearson 1919). On the other hand, there are no reason to suspect that the sex of individual A would have differed from that of the others, specially when in all probability the massgrave should contain soldiers.

Estimation of age

Ages were estimated according to various criteria. Five of the six crania had complete dentitions, only in one case (C) a single wisdom tooth remained unerupted. Enamel attrition was also used in age determination (Brothwell 1972). All the long-bone epiphyses that could be studied were fused, but little could be said from scapulae and clavicles due to poor preservation. For the same reason it was not possible to obtain any information from pubic symphises. Sacra were helpful on the other hand. The basilar suture was extremely useful because it was either open or closing in four skulls. Thanks to the young age of the Tranvik population it was not necessary put much weight on the other, less re-



Fig. 6. Tranvik cranium C. Note the occurrence of metopism. The mandible has undergone deformation after burial. (Photo: A.Mendes).



Fig. 7. Tranvik cranium D. The left side of the face has been damaged after burial. (Photo: A. Mendes).



E

Fig. 8. Tranvik cranium E. Observe the neurinoma in the left foramen ovale and compare the size of adjacent foramina with those on the right side and with those of the other Tranvik crania. (Photo: A. Mendes).



F

Fig. 9. Tranvik cranium F. (Photo: A. Mendes).



G

Fig. 10. Tranvik cranium G. Note uneven molar wear due to improper bite. (Photo: A. Mendes).



H

Fig. 11. Tranvik cranium H. (Photo: A. Mendes).

Table 2. Age of the Tranvik skeletons estimated on the basis of various methods (Krogman 1962; Brothwell 1972; El-Najjar & McWilliams 1978; Bass 1981). The final estimates are listed in the last column.

Burial	Dentition	Attrition	Epiphyses	Sutures	Sacrum	Age
A	—	—	> 17	—	—	> 17
B	—	—	> 17	—	18–25	18–25
C	18–21	17–25	> 17	18–21	18–25	18–21
D	> 20	17–25	> 17	18–21	18–25	18–21
E	> 20	25–35	> 17	26–30	25–30	25–30
F	> 20	17–25	> 17	18–21	18–25	18–21
G	> 20	25–35	> 17	26–30	> 30	25–35
H	> 20	17–25	> 17	18–25	18–25	18–25

liable sutures (cf. Eränkö and Kihlberg 1955). There was good agreement among the ages obtained through the different methods. Seven of the individuals studied (B–H) were young adults with ages within the 18–35 year range (Table 2). About femur A can only be said that it belonged to an individual over 17, but there is no reason to expect an age outside the mentioned range. The mean age of the seven Tranvik individuals (B–H) was c.23 years.

Estimation of stature

Statures were calculated according to the formulae recommended by Trotter and Gleser (1970), but Steele's (1970) methods were applied in the case of femur A. Statures were calculated on the basis of femora. An exception was individual F, where the humerus was used in the lack of complete femora. The mean stature obtained for the group was c.168 cm (Table 3).

Pathology

Since none of the Tranvik skeletons shows signs of violence one must conclude that these young men died of some illness. Soldiers living together in large numbers under poor hygienical conditions often fell victim of "camp fever". Although this was a general name for a number of contagious diseases, the most common form was bacillary dysentery. The disease was often fatal; for example, over 6% of c. 38000 German

soldiers died during 1870–71, and it is reported that during the American Civil War more men died of dysentery than of battle wounds (Burrows et al. 1963; Bergmark 1983; Stjernberg 1987). Otherwise, the skeletal material indicates that we are dealing with rather healthy individuals, though young age may be partly responsible for the overwhelming impression of good health.

Lipping or other signs of degenerative changes of the skeleton were virtually absent. On the other hand, periodontal disease in the form of moderate to medium recession of the alveolar bone was widespread. Light cases tooth malposition were observed (Figs.6–11).

Table 3. Some statistics of the Tranvik population.

Grave	Cranial Index	Stature	Age
A	—	164	> 17
B	—	169	18–25
C	77.3	168	18–21
D	82.9	160	18–21
E	82.8	165	25–30
F	86.4	174	18–21
G	77.2	165	25–35
H	80.3	178	18–25
MEANS:	81.2	167.9	22.8

Table 4. Tooth occurrence, attrition and pathological problems in individuals C-H from Tranvik: (+) present; (-) postmortem loss; (X) antemortem loss; (U) unerupted; (1-6) wear in Brothwell's (1972:69) scale; (O) occlusal caries; (M) mesial caries; (A) abscess; (P) perforated abscess; (C) dental calculus.

L	<=>	R	M3	M2	M1	P2	P1	C	I2	I1	I1	I2	C	P1	P2	M1	M2	M3
C	UPPER	Wear	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+
	Problem		1	2	3+											2+	2	1
D	UPPER	Wear	-	+	+	+	+	-	-	-	-	-	-	-	-	+	+	+
	Problem			1	2+											2+	1	1
E	UPPER	Wear	+	+	+	+	+	+	-	-	+	+	+	+	+	+	X	-
	Problem		2+	6	5+											4+	M	A
F	UPPER	Wear	+	+	+	+	+	+	-	-	-	-	+	+	+	+	+	+
	Problem		1	2	3											3	2	1
G	UPPER	Wear	+	+	+	+	+	+	-	-	-	-	-	+	+	+	+	+
	Problem		2	4	5		C	C	C					C	C	C	5+	4
H	UPPER	Wear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	Problem		0	C	M		C		C	C	C	C	C	C	C	C	C	0
H	UPPER	Wear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	Problem		1	1	2											2	1	1
H	UPPER	Wear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	Problem		1	2	3											3	2	1

Caries were rare, the great majority being incipient ones (< 0.3 mm) generally associated with the enamel chipping. There were, however, a couple of larger (0.5-0.8 mm) occlusal caries and two 2-3 mm mesial ones. Enamel attrition was common, specially in the first molars, reaching in some cases stage 5-6 in Brothwell's (1972) scale. There were two cases of antemortem tooth loss. One was the upper left canine of cranium G. The other in maxilar E, where abscesses had caused the loss of the left second molar and nearly completely destroyed the right one (Fig. 12). This last abscess had also resulted in a 3-mm perforation of the adjacent bone. Dental calculus was observed in mandible G.

The occurrence of these dental features is summarized in Table 4.

An unusual feature was a white carbonate-like substance in the form some sort of neurinoma obstructing the left foramen ovale of cranium E (Fig. 13). It is possible that the occlusion of the foramen ovale has lead to nerve/artery rerouting through the adjacent foramina, as suggested by the their relatively large size in comparison with those in the right side or in the other Tranvik skulls in general (Figs. 6-11). The poor condition of this individual's teeth may be also connected with the neurinoma (Fig. 12).

No other pathological features, not even fractures, were observed in the Tranvik skeletons.

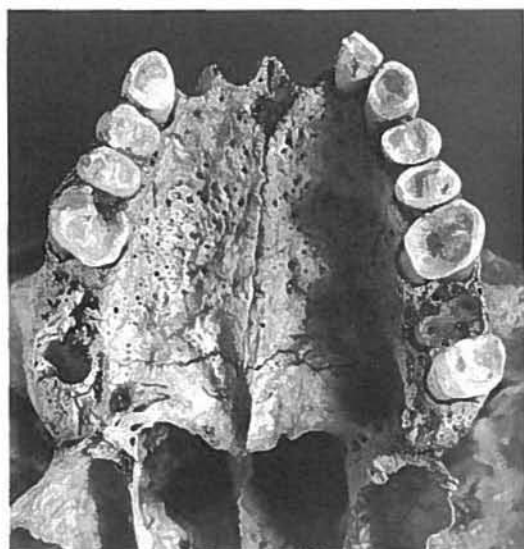


Fig. 12. Pathological features observable in upper dentition of individual E. There is considerable enamel wear, which is at least partly responsible for other problems. Note a major mesial caries on right M1. A similar condition on adjacent M2 has led to an abscess, lateral perforation of the maxillar bone and, ultimately to tooth loss. A slightly less advanced development is paralleled in left M2. (Photo: A.Mendes).



Fig. 13. The neurinoma obstructing the left foramen ovale of cranium E can be seen as a the white carbonate-like substance in the centre. (Photo: A. Mendes).

COMPARISON WITH OTHER POPULATIONS

The Tranvik material was compared against anthropological data from other Russian and Fennoscandian populations (Tables 5–6).

The best comparative population is that of Russekeila, which consists of 20 males aged 18–35 from a massgrave found in connection with the archaeological investigations of an 18th

century Russian hunting station on Spitsbergen. (Christiansson et al. 1967).

Another suitable sample is represented by the partial skeletons of 4–5 individuals found near Degerby, Föglö, Åland Islands. According to the field report a few skeletons had been partially destroyed when a mechanical scoop cut a ditch through a previously unknown massgrave. The site probably holds the corpses said to have been washed ashore after the naval battle of Flisö in 1720, when c.40 Russian galleys were sunk by Swedish warships. Alternately the grave may date from those instances when the Russian fleet was anchored at Degerby during the Great Northern War. (Andersson 1954; Dreijer 1970; Weber & Landin 1982; Nunez 1989).

Table 5. Comparison of the Tranvik material with other Russian populations from the 18th and 20th centuries. The latter is based on live anthropometric data. (Christiansson et al. 1967; Kajanoja 1971; Nunez 1989).

Population	n	Date	Stature		Cranial/head index	Mean
			Range	Mean		
TRANVIK	8/6	1743?	160–178	167.9	77.3–86.4	81.2
RUSSEKEILA	20	1700s	154–180	168.3	?	81.3
FÖGLÖ	4/3	1720?	163–175	169.0	79.5–85.5	83.2
NW RUSSIA	c.700	1950s	–	167.0	?	81.6

Table 6. Comparison of cranial/cephalic indices and statures of various populations from Sweden, Finland and Russia during the last two centuries. With the exception of the first three ones, the data come from measurements made on live populations. Sources: Christiansson et al. 1967 (1); Nunez 1989 (2); Kajanoja 1971 (3); Retzius 1902 (4); Lundborg & Linders 1926 (5); Arho 1934 (6); Eveleth & Tanner 1976 (7).

Population	Date	Stature	Index	Source
TRANVIK	1743?	167.4	81.2	
RUSSEKEILA	c.1750	168.3	81.3	1
FÖGLÖ	1720?	169.0	83.2	2
ÅLAND	1768–1805	168.6	–	3
W FINLAND	1768–1805	168.2	–	3
E FINLAND	1768–1805	167.2	–	3
SWEDEN	1897–1898	170.9	78.1	4
ÅLAND	1885–1892	170.3	78.8	3
W FINLAND	1885–1892	168.5	80.3	3
E FINLAND	1885–1892	165.5	81.8	3
SWEDEN	1922–1924	172.2	77.7	5
ÅLAND	1924–1932	174.2	78.9	6,3
W FINLAND	1924–1932	171.0	79.9	3
E FINLAND	1924–1932	167.2	81.9	3
SWEDEN	1970s	177.5	–	7
ÅLAND	1967–1968	177.0	78.1	3
W FINLAND	1967–1968	174.2	79.3	3
E FINLAND	1967–1968	171.9	80.9	3
NW RUSSIA	1955–1959	167.0	81.6	3

In addition to these populations, results of anthropological studies carried in Sweden, Åland, mainland Finland and the Soviet Union have been compiled from various authors (Retzius 1902; Lundborg and Linders 1926; Arho 1934; Kajanoja 1971).

Thanks to the crucifix of burial H, the national affiliation of the massgrave need not be determined on anthropological grounds alone. The former misuse of anthropometry has discredited the use of cranial measurements as a criteria for differentiating populations. Nevertheless, cranial indices appear to be a useful discriminant tool

for populations within northern Europe. Dolicephalism seems to be common to the west of mainland Finland whereas the incidence of brachiocephalism tends to increase towards the east. This is attested by a number of anthropometrical studies. As Kajanoja (1971) has convincingly shown, in Finland cephalic index values increase from west to east and there is a parallel decrease of stature in the same geographical direction. These features appear to have been stable for at least the last 200 years (Table 6; Kajanoja 1971; Nunez 1989).

Of the six Tranvik skulls four brachiocranial and two mesocranial with a mean are very close to those of other 18th-century Russian populations, particularly that of Russekeila. This together with the Orthodox crucifix of burial H strongly support the assumption that the Tranvik massgrave contains Russians.

SUMMARY

The test excavations of a small 7 m² area the apparently large massgrave site in Tranvik can be summarized as follows:

- (1) The site yielded the skeletal remains of eight men aged 18–35. They had been buried in simple S–N or W–E oriented coffins made of pine planks held together with spikes. Grave orientation is likely to have been influenced by restrictions of the available space.
- (2) Apparently a single small stone (Ø 5–12 cm) had been intentionally placed in at least six of the graves as part of some unknown funeral rite.
- (3) One of the burials yielded a brass-enamel Orthodox crucifix pendant with Cyrillic characters, suggesting that the massgrave is Russian and that it dates from those instances when Russian troops were on Åland soil during the 18th and early 19th centuries.
- (4) The most likely date for the burials would be the summer of 1743, when the Russian fleet was camped just 8–9 km away at Ångösund, Vårdö. At the time the sea formed an inlet that reached all the way to the site, and it would have been easy for Russian galleys to transport the dead to be buried in the sandy slope by the shore.

- (5) Comparisons of the Tranvik skeletal material with Russian populations from the 18th century and other anthropological data from northern Europe supports the idea of an 18th-century massgrave with Russian soldiers.
- (6) The clear indications of good health and the lack of signs of violence reflected by the Tranvik skeletons suggests that the men died of "camp fever".

The above interpretation of the Tranvik massgrave was reached through evaluation and elimination of the available pedological, stratigraphical, archaeological, historical and anthropological data. Obviously other possibilities cannot be excluded, but the following interpretation appears to be the most likely at this point. I would welcome any additional information concerning comparative anthropological populations or ethnohistorical data on the stone ritual and/or the date of the crucifix.

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