



Fig. 8 The second batch of bread is ready. ■

Baking Bread in a Reconstructed Bread-Oven of the Late Iron Age

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● In 2003 and 2004 “Senas vides Darbnica” (Latvia) built a late Iron Age (9th -12th century AD) bread oven based on archaeological finds and test baked bread and traditional Latvian pastries.

The Team

“Senas vides darbnica” (Ancient Environment Workshop, AEW) was founded in Riga, Latvia, in 1999. It is a non-governmental self-financed organisation that functions as an experimental archaeology group. Our aim is to study and reconstruct the environment and everyday life of the ancient Balts at the turn of the first and second millennia AD. AEW studies the sources (reports from archaeological excavations, artefacts, their reconstructions, scientific research on ancient buildings, tools, costumes, food, etc.) and puts into practice the ancient knowledge and techniques in order to recreate the life of peasants and craftsmen in the Late Iron Age which in the Latvian territory corresponds to the 9th-12th centuries. AEW is in the process of reconstructing an encampment where for six summers the participants have tried to live like the ancient Balts. Four dwelling-houses and several household buildings have been constructed in the encampment. The total number of necessary household items has gradually increased and the experience gained has contributed to a better understanding of the living conditions of that particular time. One of the bigger projects in 2003 and 2004 was the building of a bread oven and baking our own bread. The team who contributed to the building of the stove consisted of 8 people, all professional craftsmen of different kinds, including two potters.

The Evidence

The construction of our stove was based on the research of the stoves from Salaspils Laukskola I and II settlement by archaeologist Anna Zarina. According to the information gathered from the archaeological excavations made in Latvian castle mounds and settlements of the Late Iron Age, ovens start to appear in the 10th century, and in the 11th and 12th centuries the proportion of open hearths and ovens is respectively 80% and 20%. A greater part of the ovens were constructed from stones and served to heat the houses, while clay stoves and stoves of mixed clay-stone structure were used also for food preparation, including for baking bread. Baked leavened bread appears as a consequence of a greater amount of grain available, as now not only wheat and barley, but also rye (introduced in the 9th-10th century) was used for making grits, porridge, flatbread and leavened bread.

The structure of various stoves differs a lot even within a single settlement, which suggests that they could have been used for different purposes. The stone pit ovens have usually been employed for heating the buildings that could have been used for dwellings, as bath-houses, and as threshing barns. The clay and clay-stone stoves are on the ground level or they have been slightly countersunk.

The Process of Building the Stove

Most of the stoves of the Late Iron Age appear to be 1 m × 1.5 m in size, so we covered a territory of 1.5 m × 2 m with smaller granite stones (**Fig. 1**). This served as the foundation of the stove, as well as extra pavement of the lawn around the stove to prevent grass from damaging it. As the main aim of our stove was to serve for baking bread, we built it on the ground, outside the existing buildings. Only later did we build a special structure of two walls and a roof around it for sheltering it from rain and snow.

We used clay from a local pit as a binder. Local clay appeared to have a high proportion of sand in it, so there was no need to add sand for building purposes. A little bit of hay and water was added to make the “pug” more cohesive and easier to apply.

The pug was densely spread on the foundation, and granite stones, starting with bigger ones, were laid on the foundation, making U-shaped walls of the stove (**Fig. 2**). The walls were made of 4 rows of stones and a lot of pug. According to the excavated stoves, two big stones (up to 50 cm) were often placed at the mouth of the stove. We also placed such stones there, but they later appeared to create an extra problem for the shaping of a perfect lid for shutting the stove while bread was being baked.

The next step was to cover the upper part of the stove. Although some archaeologists suggest that stoves of this period were flat, the opinion of experienced potters and extra evidence from the Jersika castle mound excavations by Antonija Vilcane allow for reconstructing the vault of the stove with the help of bent boughs. This was also done by our team (**Fig. 3**). Extra boughs were woven to create a stable



Fig. 1 Bed of the stove, made from small granite stones. ■



Fig. 2 Foundation of the U-shaped walls. ■



Fig. 6 After raking out of the fire. ■



Fig. 7 The first baking of bread. ■



Fig. 3 Building the vault from boughs. ■



Fig. 5 The lit stove. ■



Fig. 4 The finished construction. ■



Fig. 9 The second batch of bread being baked. ■

and compact construction. Afterwards the boughs were densely (8-10 cm) covered with pug (**Fig. 4**). The mouth of the stove became some 40 cm wide and 60 cm high. On the next day we made a small fire inside in order to speed up the drying process. Building was finished just two days before the end of the summer camp in 2003, so the stove did not manage to run completely dry. Therefore we covered it against rain and snow. In spring 2004 we built the wooden construction building around the stove.

The Process of Firing and Baking Bread

The stove was first lit during the next summer camp in July 2004 (**Fig. 5**). Altogether we baked bread three times, all successfully. It took a longer time to get the stove hot the first time it was stoked, as the second and third time it warmed up more quickly and the heat stayed in longer. The first time we stoked the stove for 2.5 hours and after raking out the fire (**Fig. 6**), it turned out that it was a little bit too cold. In order to check the temperature we used a method that was popular before WW II when farmers in Latvia normally baked bread at home. The idea is to throw a handful of flour into the stove. If the flour immediately burns to a black colour, the stove must be cooled (we had to do that the third time we baked). The stove has the right temperature for baking when the flour becomes brown in 5-6 seconds. As it took a couple of seconds more, we had to bake bread for 40 minutes and it was just ready (**Fig. 7**). A bread-shovel was used for putting the loaves in and out of the stove. While baking, the stove was shut with a lid and the fragrance of the ready bread could be smelled if one came close to the small gap between the lid and the vault. When the bread was removed from the stove, it was moistened with lukewarm water (**Fig. 8**), covered with linen cloth and allowed to cool.

The second time we stoked the stove for 3 hours and the bread was very much ready in 20 minutes (**Fig. 9**). This was of course influenced by the fact that the stove was dry (fired 3 days ago) and that the loaves of bread were made rather small (some 10 cm × 20 cm). Both times all the 14-15 loaves were of similar size and similar dough. The dough was made from milk, yeast, honey, and coarse wheat flour, fermented in a warm place for 2-2.5 hours.

On the day when the bread oven was used for the second time, we had also been dyeing wool with natural lichen dyes. According to the recipe, the yarn had to be stewed in the coloured water in a hot stove. As our stove was hot, we put the yarn inside, covered the stove mouth with the lid and left it there for the whole night. On the next morning the yarn had a noticeably more intensive colour than in the evening before. The stove however was rather humid inside and a couple of smaller clay parts fell from the walls and vault during the next day. This made us reconsider using our clay bread oven for improving the colour of the yarn next time.

The stove was stoked after a couple of days again, and as it had dried well, no further damage was done to it. The third time we baked three types of traditional Latvian pastries: bacon rolls, sweet bread with cottage cheese, and sweet bread with wild berries. This was to see if the bread oven of the Late Iron Age could cope with the traditional food of the 19th-21st centuries. The result was very good. Therefore

it might be argued that the construction of such a bread oven was advanced enough to make close to any type of home-made bread that was eaten by Latvian peasants for the next 700-900 years.

As our stove was covered for the winter and has a roof above it, we hope to use it again next year. We plan to bake bread for our own consumption, which means baking bread 3-4 times during the summer camp that lasts for 2 weeks. We also plan to finish another house of horizontal logs that is designed to have a stove in it. Our experience will allow us to avoid possible mistakes in the process of erecting it and compare the functioning of both stoves, when the second one is ready.

Bibliography

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Summary

Brotbacken in einem rekonstruierten Backofen der späten Eisenzeit

Der Bau eines Backofens mit dem daran anschließenden Brotbacken war eines der größeren Projekte von Senas vides darbnica (Lettland) in den Jahren 2003 und 2004. Der Backofen ist zu einem Typus zu rechnen, der in Lettland erstmals im 10. Jh. nachzuweisen ist; seine Konstruktionsweise variierte dabei sogar innerhalb einzelner Siedlungen. Das ausgewählte Modell wurde nach einem Befund aus der Siedlung von Salaspils Laukskola errichtet. Da seine Hauptaufgabe das Backen von Brot sein sollte, wurde er im Außenbereich gebaut und erst später mit einem Schutzdach versehen. Die Konstruktion bestand aus Steinen sowie aus Füllmaterial, das von lokal anstehendem sandigem Ton gewonnen wurde, der mit Wasser und Heu gemischt wurde. Auf Grundlage der Ergebnisse der Untersuchungen in der Burg von Jersika wurde der Ofen in gewölbter Form angelegt. Der eigentliche Bau der Anlage war am Ende der ersten Saison abgeschlossen, die Backversuche wurden im folgenden Jahr durchgeführt. Beim ersten Versuch dauerte es recht lange, den Ofen zu heißen; beim zweiten und dritten Mal erwärmte er sich jedoch schnell und blieb auch für längere Zeit heiß. Bei den ersten beiden Backversuchen wurde Brot gebacken, beim dritten Mal wurden traditionelle lettische Gebäcke hergestellt.

Cuisson du pain dans une réplique du four de l'Age du fer tardif

Dans les années 2003 et 2004, l'un des projets importants réalisés à Senas vides darbnica (Lettonie) a touché la construction du four à pain et la cuisson du pain. On a choisi le type du four qui apparaît en Lettonie depuis le 10^e siècle et dont les différentes réalisations varient considérablement, voir dans une même station. Le four a été construit d'après les traces découvertes sur le site de Salaspils Laaskola et, du fait que le but principal visait la cuisson du pain, en plein air. Plus tard, on a dressé un abri au-dessus. Le four a été réalisé en pierres et en torchis fait avec une argile sablo-glaiseuse locale, mélangée avec de l'eau et de la chaume. S'appuyant sur la documentation sur le château de Jersika, on a décidé de voûter le four. La réplique du four a été finie à la fin de la première saison et les expériences en cuisson ont eu lieu l'année suivante. La première fois, le chauffage du four a pris bien de temps, par contre, la deuxième et la troisième fois, le four s'est chauffé très vite et il a mieux retenu la chaleur. Dans les deux premiers cas, on a cuit le pain, dans le troisième, la pâtisserie traditionnelle lettone.