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## Unreviewed Mixed Matters Article:

### Book Review: Die römische Armee im Experiment by Chr. Koepfer, F. W. Himmller & J. Löfft

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This book is a result of a long-term project, Legio XIII Gemina, situated at the Universität Augsburg, Germany, with the purpose of establishing experimental archaeology as an integrated part of the education program. Around 20 students took part in a seminar from 2009 to 2011 under the supervision of Professor Dr Gregor Weber and Christian Koepfer MA.

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The project is based on finds from Augsburg-Oberhausen from the time around the birth of Christ. When this material was not sufficient, contemporary material, including finds from well-known military sites as Haltern and Kalkriese, was used. Some of the experiments built on literary sources. The production and testing of copies of various Roman militaria formed the basis for a two-week and approximately 200 km long march along the Via Claudia Augusta. An integrated part of this project was to involve local schools and impart an understanding of both the Roman military and science in general. Here, an extra benefit was increasing the skills of the students in presenting their specific area of interest. Furthermore, a special exhibition on the subject took place at the Römisches Museum in Augsburg.

The book can roughly be divided in three parts. In the first, Koepfer (pages 15-21) and Sebastian Bernhard (pages 23-27) introduce the project, the different experiments, and their methodical basis. The second part comprises the students' own articles including thoughts on the value of the cooperation with schools. The third part is a collection of results from similar experiments carried out by Universität Regensburg, and a couple of more traditional scientific papers offering both a background and commenting on other aspects of Roman army life and organization.

The core of the publication is the 14 students' reports. Most of these are dealing with the production of various items to be used during the march. These include topics such as the blacksmiths' forging of weaponry and different tests on their use and function. Others have basis in the Roman individual, such as food consumption or most efficient uses of the Roman short sword, the Gladius. Two articles focus on different factors that influence the archaeological source material, both with a basis in the literary sources.

Rather than commenting on all the articles, I will focus on some of the articles that introduce interesting questions or relevant reflections on the subject at hand.

That Gaius Marius changed the rivets of the *pilum* from iron rivets to one of wood in order to make it a one-way weapon that could not be used by the enemy, has been stated by Plutarch and rejected by modern researchers. In Mischa Grab's article (pages 83-92) he concludes that there is no reason to doubt Plutarch, as his tests showed that the pilum would be unusable after only one throw. He suggests that, instead of a far-reaching reform, this should be understood in terms of a pragmatic solution in a specific situation. An issue that has caused grey hairs for many experimental archaeologists is the problem of fire arrows. Even after Florian Dörschel's experiments (pages 93-96) we still have not found a fool proof solution for

how to actually make sure they burn until impact. His reflections on his fire arrow's advantages in sieges, where the archer can seek cover, rather than having their primary use in battles are intriguing. The articles on the influence of moisture and rain on the shields' weight and durability are also of great interest (Koepfer, pages 113-118, Matthias Bofinger, pages 119-127 and Johann Schmalhofer, pages 129-136). But why only measure the shields? Why not include the shield covers in the experiments? And when it did not rain for days on the students' test march, like allegedly it did prior to the Varus battle in AD 9, why not make an artificial rain or let the shield (and cover) soak in water and then measure how much extra weight they gained in extreme conditions?

Army life is not only endless battle, and the Roman soldier should also be dressed and have food and drink. But how is drink transported? Two articles focus on water transportation in wooden and leather caskets respectively. Marcel Giloj's reconstruction of almost cylindrical water barrels turned out to be a huge success, provided that the containers did not dry out (pages 137-145). Similar conclusions were the result of Reinhard Niessner's experiments on leather containers (pages 147-156).

A number of articles offer an interesting perspective on the experiments from Universität Augsburg. Universität Regensburg tested third century equipment during two approximately 500 km long marches in 2004 and 2008. The conclusion of Florian Himmler (pages 193-219) that a legion of 5000 on march would lose over 100,000 shoe nails per month are especially interesting in regard to the find from Harzhorn, where shoe nails probably mark the escape route of Roman soldiers in the late third century AD.

In order to widen the perspective further, Michael Slaky (pages 225-245) includes the early third century Germanic soldier. A thorough and well-structured article, but why start with excluding northern Germany and southern Scandinavia, when the famous bog finds here are used extensively in the text?

Markus Handy's text on the legions in Pannonia (pages 247-266), military historian Ross Cowan's article on battle tactics (pages 267-285) and Meike Weber's reflections on the function of the Roman military in the hinterland (pages 287-305) are of great importance to anyone interested in the Roman military. I enjoyed reading them and will most certainly use them in the future, but perhaps they belong in a different context?

The high quality of these articles stresses the fact that this book is very diverse. Most of these short articles are more in the character of reports with a similar composition and a conclusion at the end. I would have loved the idea that the students not only were to be guided through the process of building a hypothesis, constructing and carrying out the experiments, and furthermore to be gently introduced to the publication of scientific papers. But the last part – the production of a scientific paper – is not quite satisfying. Many of the papers would have benefited from a supervisor's or editor's attention in terms of including all the relevant

information (measurements, time consumption, et cetera), sufficient references, more fluid writing, and not least actually carry out the experiment set forth in the introduction. On the other hand, it seems as if the majority have used the newest results available, relying heavily on the *Roman Military Equipment Conferences* (RoMEC) and their participants' work. And again: most students have a clear perception of what they will test, why they will test, and how they will test.

All in all, this book is recommendable to people interested both in the Roman army and in experimental archaeology. But it is even better if you already have background knowledge of these matters, because then you can gloss over the lack of experience from some of the writers and focus on the core issue: producing new knowledge and opening for new questions in the field of archaeological research.

## Book information:

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