

Ephemeral Archaeology

Arqueología Efímera

Angel Morillo Cerdán,
Marcus Heinrich Hermanns,
Javier Salido Domínguez
(eds.)



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Ephemeral Archaeology

Products and perishable materials in the archaeological record of Roman times

Arqueología Efímera

Productos y materiales perecederos en el registro arqueológico de época romana

Angel Morillo Cerdán,
Marcus Heinrich Hermanns,
Javier Salido Domínguez
(eds.)



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La edición del presente Coloquio corrió a cargo del Proyecto de Investigación “Paisaje y territorio militarizado en la Hispania romana: movilidad y transferencia cultural (siglos II a. C.-IV d. C.)” (I+D HAR2017-85929-P), financiado por Ministerio de Ciencia, Innovación y Universidades, la Agencia Estatal de Investigación (AEI) y el Fondo Europeo de Desarrollo Regional (FEDER), cuyos investigadores principales son Ángel Morillo y Cruces Blázquez.

Asimismo la presente edición cuenta con el gran apoyo financiero del Departamento de Arqueología del Kanton Thurgau (Suiza), encabezado por Hansjörg Brem, institución responsable de todos los aspectos arqueológicos de este Cantón, desde la prospección hasta la puesta en valor y la divulgación de los contextos, así como la salvaguarda y el mantenimiento de los yacimientos arqueológicos. Dentro de este ámbito cabe destacar los numerosos yacimientos en los que los materiales orgánicos se han preservado en excelentes condiciones, que abarcan un abanico temporal desde la época neolítica hasta la Edad Media. El yacimiento más importante es, sin duda, el *vicus* romano de *Tasgetium* situado a orillas del río Rin, del cual se han dado a conocer en los últimos años una serie de hallazgos orgánicos extraordinariamente conservados.

Igualmente, hemos contado con la ayuda económica de la Diputación Foral de Gipuzkoa, institución que gestiona el Centro de Colecciones Patrimoniales de Gipuzkoa (Gordailua), que cuenta con un equipamiento avanzado para el tratamiento y conservación del patrimonio arqueológico orgánico y saturado de agua. También hemos recibido la ayuda económica del Proyecto Docemus (“Red digital para un milenio de documentación epigráfica en museos y archivos de la Comunidad de Madrid”, de la Comunidad de Madrid [S2015/HUM-3377]), dirigido por Isabel Velázquez, a través del Grupo de investigación UCM “Ciudades Romanas”.

A todos ellos queremos expresar nuestro agradecimiento por contribuir a la presente edición.

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This edition has also received great financial support from the Department of Archaeology of the Kanton Thurgau (Switzerland), headed by Hansjörg Brem, institution responsible for all the archaeological aspects of this Canton, from prospecting to the enhancement and dissemination of the contexts, as well as the safeguarding and maintenance of the archaeological sites. Within this area, it is worth mentioning the numerous sites in which organic materials have been preserved in excellent conditions, covering a range of time from the Neolithic period to the Middle Ages. The most important site is, undoubtedly, the Roman *vicus* of *Tasgetium* located on the banks of the river Rhine, which has released a series of extraordinarily preserved organic findings in recent years.

Likewise, this edition has counted on the financial support of the Provincial Council of Gipuzkoa, an institution that manages the Patrimonial Collections Center of Gipuzkoa (Gordailua), which has advanced equipment for the treatment and conservation of the organic and water-saturated archaeological finds. Finally, this edition has been made possible by a financial support from the Docemus Project (“Red digital para un milenio de documentación epigráfica en museos y archivos de la Comunidad de Madrid”, de la Comunidad de Madrid [S2015/HUM-3377]), directed by Isabel Velázquez, through the UCM Research Group “Roman Cities”.

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Fig. 1 Site of Oberwinterthur from E.



Fig. 2 Site of Eschenz from S.



Wodden Finds From the Roman Settlements of *Vitudurum* and *Tasgetium* (Switzerland)

Hansjörg Brem (Kanton Thurgau, Amt für Archäologie)¹

1. Introduction

The two *vici* of Eschenz (Benguerel 2014) and Oberwinterthur (Jauch 2014), or, to give them their Latin names, *Tasgetium* (also known as *Tasgaetium*) and *Vitudurum*, lie about 30 km apart in north-eastern Switzerland. From what we know of Roman provincial boundaries in the 2nd century AD, *Tasgetium* lay on the very eastern edge of the province of *Raetia* (there is written evidence both for the name of *Tasgetium* and for its status as a *vicus*), while *Vitudurum*, we are fairly certain, lay in the extreme west of the province of *Germania Superior*.

The two *vici* were probably linked by a road in Roman times, but they lay on two different arterial routes running parallel to each other from west to east. While the Roman settlement at Oberwinterthur lay on a gentle south-facing slope (Fig. 1), *Tasgetium* was a bridge settlement, lying mainly on the south bank of the river Rhine where it flows out of Lake Constance, with its street plan orientated towards a wooden bridge over the river. It possible that there were also some building development on the north bank, but up until now we know almost nothing about it (Fig. 2).

Compared to other sites in Switzerland, these two small municipal settlements have only recently been excavated. There were some initial investigations in the early 1900s, but systematic, large-scale excavations, employing modern methods, were begun only in 1977 in Oberwinterthur and even later in Eschenz. Without doubt, one can say today that the excavations at the *vicus* of *Vitudurum* are the first in Switzerland to have seen the systematic and professional documentation and salvage of Roman wetland finds and features, and, already, the completion and publication of an extraordinary amount of research. By contrast, the famous rubbish dump at *Vindonissa*, the third Roman site in today's Switzerland where wooden objects in a larger

number have been found, and, in terms of items, the most important, had the misfortune to be discovered and partially excavated very early on. A particular advantage of the more recent excavations at Oberwinterthur is that modern methods developed for documenting and conserving Switzerland's very important pile-dwelling remains could be directly transferred, for the first time and with great success, to Roman features. Not only was the existence of certain types of wooden structures and buildings proved, but they could even be dated by means of dendrochronology. The excavations at Eschenz began later and extended over a much smaller area, but in some cases the wetland preservation was even better than at Oberwinterthur, and, most importantly, it was possible to take advantage of the experience gained at Oberwinterthur – a great many people worked at both sites – and to adapt new methods specifically to the recovery and documentation of wooden finds and features. At both sites, these wooden finds and features have now not only been relatively well investigated, but also analysed and published. For this reason the work of Rudolf Fellmann on the wooden objects from *Vindonissa*, which has occupied him since 1958, has also been completed (Fellmann 2009). The exhibition project "Tabula Rasa" has also undoubtedly contributed to the advancement of the research, its catalogue becoming a real 'bestseller' which can now be downloaded for free from the Internet (Hedinger y Leuzinger 2002; 2003). The subjects in this article are not wooden structures and building timbers. – the subjects are wooden objects, which cannot always really be described as 'small finds'. An important thing to bear in mind is that most of the finds come not from intentional deposits or refuse dumps, as in *Vindolanda* or *Vindonissa*, but from infill layers or levels where organic material was deposited by chance. As in the case of building remains, whether or not wooden objects were pre-

served depended on groundwater levels and other local variables. Of course, at both sites, organic objects were particularly well preserved if they were deposited right from the start, in permanently waterlogged layers. This was the case with vertical building timbers, posts or piles, of course, but it was also especially true of wooden barrels which were sunk into the ground for use as storage ‘pits’.

2. An Overview of the Wooden Finds and Objects

Ninety-nine percent or more of the wooden material found at the two sites consisted of building timber or offcuts from building work (fig. 9). Particularly noteworthy is the large quantity of wood-processing waste, collectively termed “woodchips”. In addition to the thousands of wood species identifications carried out on the building timbers, most of which, incidentally, proved to be oak, samples of these woodchips were also submitted for testing, along with samples of branches, twigs, bark, etc. from the organic layers. The results again showed a predominance of oak, but amongst the woodchips, beech was also relatively frequent. Beech is hardly represented at all as a building material or as a material for the manufacture of objects, so its presence amongst the waste material suggests it may have been a source of firewood for the settlements.

Wooden objects are relatively rare and form a very small and not very representative group within the total aggregate of wooden

finds from the two settlements. Of course, defining boundaries between categories can be problematic: the fountain-basin from Eschenz made from a tree-trunk could be treated either as a construction element or as an item of furniture (Fig. 3). The mostly large-sized building timbers are, of course, far more important than the small objects as sources of information on forest husbandry, dating and climate. Thanks to the study of hundreds of tree-ring dates, for example, we now have a very precise picture of forest husbandry and wood utilisation, as well as of flora- and climate history, for the period from around 100 BC to AD 300 in central Europe.

Already so far, over 500 out of a total of around 600 wooden objects from the two *vici* have been published (Benguereel *et alii* 2012; Fellmann 1991). This is about a third of the total number recovered from the legionary camp of *Vindonissa*, but they represent a largely different set of object types.

2.1. Raw Material selected – import

2.1.1. Exotic wood

Of course, the use of “exotic” types of wood is particularly interesting and we must assume that the raw materials were directly imported with the objects they were made into. It is very appropriate to mention is Madrid’s own heraldic tree – the strawberry tree. *Arbutus unedo* was discovered to be the material used for brush heads in Oberwinterthur (and also in *Vindonissa*) and it certainly did not grow in the north. The bristles of these rare brushes are also made from an exotic material, namely astragalus or milkvetch (*Astragalus tragacantha* or *sempervirens*). The brushes appear to have been imports from the Mediterranean area. The same is true of esparto grass (*Lygeum spartum* or *Stipa tenecissima*) cord, found attached to barrel hoops in Eschenz. Quite possibly it was only the tough cord for tying the barrel hoops that was imported and not the whole barrel.

At least remains on both sites some little tap made of cork oak (*Quercus suber*), here we don’t know what was the exact use of this pieces.

Fig. 3 Wooden bassin, oak, dated 200 AD, Eschenz.



2.1.2. Boxwood

With these two examples we have already exhausted the clearly recognisable *exotica* from our sites – more exotic woods have been found at *Vindonissa* – but there is some controversy over the relatively well-represented boxwood (*buxus sempervirens*). Researchers do not agree about whether the boxwood objects frequently found in the north were imported or manufactured locally. Something which may be relevant is evidence suggesting that boxwood trunks were carried on Roman ships as cargo. Botanically it is almost certain that boxwood was already found in northern Europe before the Romans arrived and so the turned objects which were frequently made from beech were not necessarily imports. My view is that probably all assumptions are correct: there were imports of boxwood in the form of both complete objects and raw material, but objects were also manufactured locally from native boxwood. The dendrological study of boxwood has barely begun, and so we have no scientific results to help us. It must be stressed, however, that boxwood is a particularly hard material, which in certain circumstances can survive even in a dry environment, and – what is more important – it is much easier to detect than other types of wood in excavations carried out in damp, muddy environments. Boxwood objects are therefore certainly over-represented amongst the finds. As for the other types of wood used for manufacturing objects, they all grow north of the Alps and already did so in Roman times, and there is no evidence for their widespread import. For all the woods used, the same criteria applied for their use then as now.

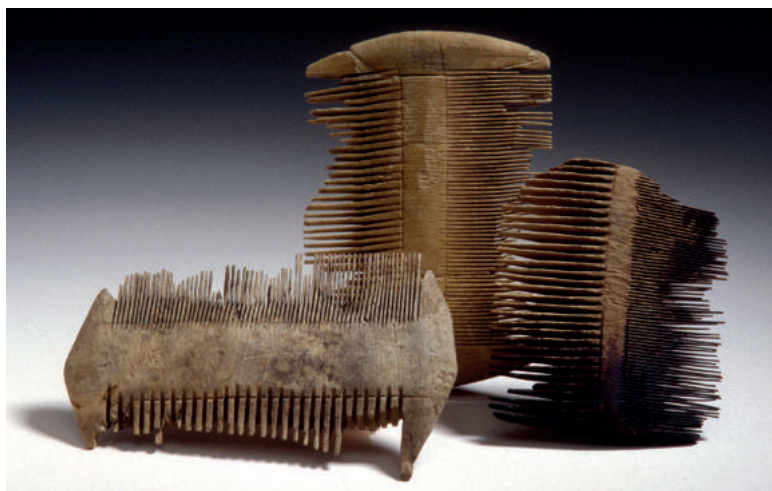
From the raw materials selected, we now come to the methods of processing them. Wood-turning was one of the typical wood-processing techniques of Roman times. We can assume that it was well-known throughout the Mediterranean region – having spread, probably, in parallel with the fast potter's wheel – though it is uncertain to what extent it was already known in the pre-Roman Iron Age of the north. It is interesting, however, to note that the production of most turned boxwood objects, such as

pyxides, i.e. boxes, followed a set of standard manufacturing procedures which are found throughout the entire Roman Empire, as demonstrated, for example, by Pugsley (Pugsley 2003). The turned objects also include some for which drilling machines were probably also used, such as the Eschenz pan-pipes. Drilling machines were stationary, so that the pieces to be worked had to be brought into contact with the drill, exercising careful control to produce even holes – in this case for the individual pipes. Amongst our group of objects as a whole, however, turned wooden objects are relatively rare. By far the most common wood-processing procedures can be described as follows: sawing or splitting, followed by planing or carving, followed by sanding and polishing – and, of course, drilling if required. Again, one small group of objects made by this method stands out – combs. Combs were also often, though not always, made of boxwood. As with the *pyxides*, the manufacturing method is so uniform that it again raises the question of centralised production, import, etc. Evidence for the combs being used for hair was provided by an example from Eschenz where there were still the remains of lice on the comb (fig. 4).

2.1.3. Composite objects

Of particular interest are objects which are made of more than one type of wood, or of wood plus another material. I will come to barrels a little later; other examples are chipwood boxes and stave-built vessels, which I will not go into here. A relatively well pre-

Fig. 4 Boxwood combs, Eschenz.



served section of a wooden sliding bolt was discovered at Eschenz, which, typically for such objects, also had iron components. Often when such composite objects are excavated, it is only the iron or non-ferrous metal parts which have survived. A very exciting group of objects are the so-called “brushes”, which have already been mentioned (fig. 5). These consist of brush heads, with bristles or similar material fixed into them. I have already mentioned the strawberry-tree brushes from Oberwinterthur. None of these were found at Eschenz, but instead we have a whole group of brush-like objects made with blackthorn spines. We strongly advise against using these to brush the dog, however – or your hair for that matter; they were probably intended for carding fibres for textile production.

Very typical “mass-produced” items, with a more-or-less standardised production method, are the *tabulae caeratae*. These are the typical wax writing tablets, which are known from many sites. They are, of course, important sources for epigraphic research, although the writing on most of them is poorly preserved. They are usually rectangular, made with soft-wood boards to a very uniform design (usually a diptych or a triptych). They were evidently prone to breaking down their central axis and ending up, so to speak, in the wastepaper basket. There were some exceptions to the essentially simple basic design. A small tablet or “pad” from Eschenz, for example, was made from a different material and was obviously intended for a special purpose. *A propos* the far greater quantities of wax tablets from Vindonissa: it

is immediately apparent that here, as at other sites, the proportion of tablets with writing on them to those without is considerably higher than at Eschenz. The reason, clearly, is that only tablets with visible writing have been preserved. Broken, discarded pieces are easy for an excavator to miss in muddy conditions.

2.2. Dating and restoration

Of course, wooden objects can be directly dated; although the radio-carbon method should not be the preferred one here for obvious reasons. Joking aside, most of the wooden objects from both sites are dated from the find context, which at Oberwinterthur encompasses the period from shortly before the birth of Christ to the early 2nd century AD. The context at Eschenz begins at roughly the same time but many of the objects may not have been lost until the first half of the 3rd century AD. In view of the small number of objects and the small typological deviations in certain find groups, there is little more to be learned from chronological determinations at the moment. Dendrochronological dating of the objects themselves seems promising, but it must be borne in mind that a certain number of tree-rings must be present for the method to be used at all. Non-invasive methods, such as X-ray examination, can also be employed. This method allowed us to date a statue found at Eschenz securely to the Roman epoch, even though typologically it could have been made in the late La Tène period.

I do not intend to go into questions of restoration here in any detail. The fact is that the conservation of water-logged wood has only really been successful in the period since the Second World War. Most of the objects from Oberwinterthur and Eschenz were conserved using a combination of PEG and freeze-drying. The results have been mixed, but we have lost hardly any objects since the excavation – although we must have lost quite a few (baskets, for instance) while the excavation was still in progress.

Fig. 5 Brush (oak and blackthorn spines, Eschenz.



3. Selected Groups of Finds

3.1. Special objects

Among the wooden objects, some of which are rather unprepossessing and many of which are fragments whose original purpose is uncertain, there are also some, which can be counted as rare finds. These include these Roman shoe lasts (fig. 6) from Oberwinterthur, items which were probably to be found in the tool kits of shoe-makers all over the Roman Empire but of which hardly any have ever survived. The pan-pipes from Eschenz do have a few more “siblings”, but they also belong to a group of objects – musical instruments – which are hardly ever found during archaeological excavations. The wooden figure from Eschenz, finally, suggests art objects; these have been found at several sites in Gaul. “Improvised” objects, like the chopping block and the stool from Eschenz are also interesting because they show that wood must have been the material of choice for all sorts of “ad hoc” purposes.

3.2. Object groups

3.2.1. Barrels

After this glance at the “highlights”, I would like to move on to a group of objects which are important for both sites and also in the international context, namely barrels (fig. 7). In fact, finds of Roman wooden barrels are not even so very rare; the two foremost researchers in the field, Tamerl and Marlière (2011; 2002), list many find sites, images and other source material. The importance, however, of the Eschenz and Oberwinterthur barrel finds – originating from well over 25 individual barrels – lies both in the body of inscriptions on wood which they provide (the second most important after the various types of *tabulae*), and in the opportunity to observe the details of the work of Roman coopers which their outstanding state of preservation allows. Other examples of containers made from organic material – in other words, typical “throw-away” items or “archeologia efimera” – include chipwood boxes, like those found at Oberwinterthur, and baskets etc.



Fig. 6 Shoe lasts, Oberwinterthur.

Most of the barrels, at both sites, have been cut in half, or had their tops removed, and were recycled for use as storage containers, tradesmen’s vats, and other such things. Recycling them in this way saved the flat ends, which were otherwise frequently discarded. Often barrels were reused as basins for fountains, in these cases, of course, these interesting parts are missing. Of course, inscriptions can be found on all parts of a barrel – including the tap – but the very best are found on what were intended to be the front ends. As well as branded and punched marks, there are also, of course, graffiti, and even ink inscriptions. All these marks are similar to the ‘layers’ in an excavation, documenting the different uses to which the barrels were put over time. Having so many of them can, of course, be a headache for epigraphers. The barrel inscriptions are of even more importance, moreover, because the individual barrels, or barrel

Fig. 7 Barrels from Eschenz.



parts, can be dendrochronologically dated. A note of caution, however: there are signs that some barrels had parts replaced or renewed. I won't linger any longer on this subject, save to mention a few peculiarities which may somewhat perplex us modern wine-lovers.

- Almost all the staves and lids of the barrels are made of white fir, in other words, soft wood
- All the barrels have wooden hoops; there are no instances of iron hoops being used
- All the barrels have, or have had, pitch or some other waterproofing material applied to the inside; it is not clear, however, whether it was there from the start.

I venture to doubt whether any of us would care for a glass of wine from such a barrel – or perhaps they did not contain wine at all? Wine-scale is said to have been found on barrels from Oberwinterthur; however, the relevant report has gone missing. There is evidence of olive oil on barrels from Eschenz; however this could also represent a secondary use. It is still reasonable to suppose that these must originally have been wine barrels. The most recent researcher to study the finds believes that the branded stamps are of wine merchants, not only from the type of names, but also from where they are placed, not least running right across the spigot. The brand-stamps appear on barrels from both Oberwinterthur and Eschenz and are remarkably similar at the two sites. At both sites, “ad hoc” graffiti referring to contents of the barrels are more recent in date, while the “fecit” inscriptions are older and, we think, refer to the cooper. The punched marks have been attributed, admittedly with

Fig. 8 Net Floats, Eschenz.



some uncertainty, to the wood merchants or producers of the barrel components, since they are found inside the barrels as well as outside.

It is possible to spend a lot more time on the inscriptions (Hartmann 2012), but I would just like to draw attention to a few technical details about the barrels. Although no complete examples have been preserved, we do have what are almost certainly complete half-barrels, and so we can tell that they were relatively large, with capacities of 700 to over 1,000 litres. They were somewhat taller, but less full-bellied, than our barriques, a circumstance which can be traced back to the use of wooden hoops, since these cannot exert as much pressure as metal ones. The barrel-making techniques, in particular the preparation and fitting together of the component parts, must have been similar to today's; apart from the pitch, no caulking with oakum, etc., was found on the inside, which means that the staves and barrel-heads were pre-cut to fit tightly together when assembled. The hoops, mostly of conifer or alder-wood, were held together with cord; this was where we found the esparto grass, but there were also bast twine and split willow twigs. A barrel made using this technique requires considerably more hoops than one with iron hoops. And yes, the oak-wood which is so much loved today is seldom found as barrel-making material. Since the barrels which have been dated all come from the 1st or 2nd century AD, and are all made from fir, we share Marlière's (Marlière 2002) opinion that oak as barrel material was probably a late invention. An indirect indication of why this might have been so could be the observation, made at both the *vici*, of a trend away from splitting wood to producing boards by sawing, perhaps as a result, amongst other things, of changes in woodland husbandry, where trees with increasingly thick diameters were being felled. We had hoped to be able to discover from the white fir wood of the barrels where the raw material originally came from. White fir is also found south of the Alps, in the Balkans and in the Apennines and Pyrenees. Unfortunately, it has not so far proved possible to tell the area of origin from dendrological and dendrochronological characteristics of the fir. It seems

most likely, however, that it came from areas north of the Alps.

3.2.2. Net floats

To conclude, I would like to present a group of objects which is found only in Eschenz: net floats made of poplar bark (fig. 8), which were used for thousands of years. Here, of course, the dating is derived from the archaeological context, but this type of net float had been in use, unaltered, since prehistoric times. For non-fishermen and -women, these buoyant objects were used along with their counterparts, the net-weights, to keep the net upright.

4. Summing Up and Questions for the Future

The barrels from the two sites show astonishing similarities and one wonders whether there were direct links; however, the body of material is too small to allow an interpretation to be made; in reality, despite their relative frequency at both sites, these wooden finds still represent a small, special group. As the title of the conference indicates, they show us what has already been lost all over the Roman world; they are evidence of the ephemeral.

It is in fact the case that even the finds conserved in our storerooms, or on display in the museums of Frauenfeld and Zurich, are not guaranteed to last. Even when stabilised, the wooden objects are extraordinarily fragile and highly susceptible to mechanical and climatic stress. Having actually been present when the Eschenz barrels were excavated, I can tell you that they looked their best as they were being recovered; afterwards one has to reconcile oneself to what remains. The only thing which will really last are detailed publications and we have therefore ascribed particular importance to this aspect of our work. Of course, wetland archaeology has gained recognition through the designation of over a hundred pile-dwelling sites around the Alps, from the Stone and Bronze Ages, as a Unesco World Heritage Site. Excavations, analyses and publications, apart from preserving them for as long as possible *in situ*, are the only way of saving such resources in



Fig. 9 Find situation, Eschenz.

the long term and ensuring their availability for research in the future.

To conclude: the wooden objects from *Tasgetium* and *Vitudurum* include both interesting individual items and whole groups of finds. They are evidence of the scope and technical capabilities of Roman wood processing and the way this raw material was exploited in the everyday life of small municipal settlements. Whether these assemblages of objects were typical and widespread, or whether they were peculiar to these sites we cannot say, because of the inadequacy of the sources and the small number of objects. Those wooden finds which bear inscriptions, however, are of special importance, and especially surprising are not so much the well-known *tabulae caeratae*, but the barrels and their heads.

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Endnote

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Abstracts

The Purple Color in Roman Times: Aspects of its Reality and Survival

Carmen Alfaro Giner

The old dye is product with short shelf life that easily deteriorates. Scarce remains of ancient dyes have been preserved. This has been possible depending on the conservation conditions that accompanied it throughout the centuries. We have seen, on the other hand, that the variety of possibilities of obtaining the color was immense, and that this also had a certain impact on the subject of its conservation. Especially in the colors made with dye plants the repetition of the dyeing of the fabrics was a necessity. Those of marine origin were the most appreciated and those who gave the wearer an appearance of special distinction. They were sold at a high price and the purple tones were highly prized by the Roman aristocracy. From the social point of view, therefore, the latter points out the social differences and even the power of the one who carried them: the highest representatives of power, the politicians close to it, women of high social status, etc. People who, on occasion, had to resort to the imitations of dark purple tones made with well-kept formulas and we know them thanks to two great collections of Roman papyri (Pfister 1934, Martinez 2016). New techniques of tissue analysis, as well as the image that ancient art transmits to us, are a source of information that inform us about color conservation.

Wooden Finds from the Roman Settlements of *Vitudurum* and *Tasgetium* (Switzerland)

Hansjörg Brem

The *vici Vitodurum* (Winterthur, Canton Zurich, Switzerland) and *Tasgetium* (Eschenz, Canton Thurgau, Switzerland) are two of the most important Roman sites in Central Europe that benefit from wetland preservation. This is due to the special preservation conditions for organic materials in waterlogged layers. In contrast to the woo-

den finds from refuse dumps in the legionary camp of Vindonissa nearby, which have been known for more than 100 years, the two *vici* were not systematically excavated until the mid-1970s and these excavations are still ongoing today.

Both *vici* were founded around the time of the Birth of Christ during the Roman conquest of the Alpine foothills and were not abandoned as settlements until the 4th century; in the Roman period they were located in the border regions of the provinces of Raetia (*Tasgetium*) and Germania Superior (*Vitudurum*) respectively.

Thanks to the topographical and stratigraphical situation at the site, the wetland features in Winterthur date mainly from the 1st century AD, whilst the same preservation conditions in Eschenz reached as high up as the layers of the advanced 3rd century AD.

Both sites play an important role in provincial Roman research, particularly with regard to the reconstruction of Roman wooden buildings on one hand and the development of dendrochronology and other areas of natural scientific research, for example climate history, on the other. Many of the wooden finds have been published in recent years; the post-excavation work, however, is still ongoing and different areas have progressed to various stages. So far, approximately 750 wooden objects have been recovered from both sites; a further group of finds include production waste and undetermined finds. It is, of course, sometimes difficult to distinguish between “architectural components” and “utensils”; we tend to adopt a pragmatic approach: roof shingles, beams, planks or joists, but also, for instance, a complete basin of a fountain, are dealt with as part of the theme ‘timber construction’; door locks and other similar items that only make sense in a constructional context, on the other hand, are termed ‘objects’.

Among these objects, a small number of wooden artefacts stand out at both sites because they were clearly imported or made from imported materials. Another special group is made up of products that consist

of boxwood (*buxus sempervirens*), most of which were turned on a lathe. The most numerous group of artefacts, however, are writing tablets (*tabulae ceratae*) and containers, barrels in particular. Barrels are particularly important sources of information, on one hand because they often bear writing (brands and punched marks; graffiti) and on the other because they offer the possibility of being directly dated by dendrochronological means. Due to their size, however, they pose quite a challenge from a conservation point of view. Whilst a small number of woodworking tools and production waste were found, neither site has so far yielded an actual workshop context.

Quite rarely preserved elsewhere, the wooden finds from the two vici are very important witnesses to the culture of the Early and Middle Imperial period, although their number is extremely small compared to other categories of finds such as metal objects or pottery. Further interesting finds can be expected to come to light in the coming years, at least at Tasgetium, which is located on the banks of the River Rhine.

Wood in Roman Civil Architecture: *Opus Craticium*

Rosalía-María Durán Cabello

This paper emphasizes the importance of the use of timber in Roman architecture, specifically in a constructive technique so-called *opus craticium*. This constructive system consists of a structure of wood, as a frame, whose intermediate spaces are filled with reeds or other plants linked with clay, earth, volcanic stone masonry, bricks, etc. The beams of the structure are arranged both vertically (*arrectaria*) and horizontal, and, occasionally, in an oblique way (*transversaria*), usually fit with holes and notches assembly and sometimes were reinforced with nailss. This system, documented for the first time in the Vesuvian Roman cities, has allowed to know the thickness of the beams used.

The vegetal materials like wood or reeds rarely are preserved in archaeological records. They have been documented in the northern regions of the Roman Empire

thanks to its higher humidity of the soils. But also appears also in another areas as the northern Spain or the Po valley.

The denomination is not original Latin. Vitruvius refers to this type of constructive technique as *craticii* (*De arch.* II, 8, 20) and mentions fast constructive implementation as well as its potential to create larger but also spaces indicates its high flammability. He speaks also about the Etruscan origins of technique. They have been documented archaeologically in Acquarossa Etruscan palace.

Roman evidences of *opus craticium* also are known in other places like Nîmes. In the ancient Hispania the archaeological evidences appears in places like Carthago Nova or Uxama in civil contexts. And also in military sites like Astorga or León, in which timber was used in the construction of defensive systems, internal structures and civil *vicus militares*.

Organic Materials in Archaeological Context: Problems of Preservation and Conservation Protocol

Ángel Gea García
Carmen Dávila Buitrón

In this article some ideas about the characteristics and problems of preservation of organic materials from archaeological excavations are developed, focusing on land environments. We also intend to establish a basic protocol with recommendations for the excavation of this kind of materials, both in dry and wet condition. Environmental control, packaging and early treatments are essential for the conservation of archaeological organic materials and also the presence of qualified conservator during excavation. Organic matter is characterized by a carbon-based chemical composition. It is derived from living beings and can be divided into two groups, according to their animal (bone, ivory, leather, feathers, wool, silk...) or plant (wood, papyrus, basketry, cotton, linen or hemp textiles, seeds, pollen...) origin. Organic materials from the animal world primarily consist of proteins, and plant-based ones, mainly of cellulose.