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EDITORIAL

The success of the Second International Conference on Ancient Baths and the holding of the First General Meeting of our Association, both of which took place in Varna in April, confirmed the success of our enterprise and persuaded us all that the International Association for the Study of Ancient Baths is here to stay. A report on the conference and an account of the meeting are the highlights of this issue, which also includes the amended Constitution of the Association as ratified at the General Meeting.

The importance of Association as a body for expressing common concerns among those interested in ancient baths is well-illustrated in the continuing saga of the imperial thermae of Rome, much in the Italian newspapers these last months, for better and for worse. The worst happened last September, when a three metre, five tonne section of porphyry column was stolen one night from within the Baths of Caracalla. It was - amazingly - recovered in February from its place of concealment under two metres of earth (with a lorry parked on top!) in the outer suburbs of Rome, where it was waiting to be sliced into veneer sheets for the American market. It took four units of the fire brigade and a large crane to remove it from its hiding place - yet it was able to be lifted from the Baths without anyone noticing! The explanation was the reduced night security at the site since the departure of the Teatro dell'Opera; a most unfortunate repercussion from what is otherwise a move which we must all applaud, and in which the Association played its part. Despite attempts to reinstate the Teatro dell'Opera, it now appears that the Baths of Caracalla are finally safe from further damage on that count, and much of the scaffolding has since been removed from the inner part of the caldarium. But that clearly does not solve all the problems. We should be thankful that only last year all the decorated pieces of architectural sculpture were removed from display in the Baths, cleaned, and

placed in a special display and storage area in the subterranean areas under the precinct, otherwise they too may have disappeared overnight. It does however leave the site feeling rather bare for those who have known it in happier times, and the poor state of some of the fabric has led to more areas being closed off to the public than was necessary even five years ago. We can only hope that the spirit of the millennium may direct some extra funds towards resolving some of these problems, so that the Baths can once more be appreciated to the full. This is certainly the aim of the Italian authorities as far as the Baths of Diocletian are concerned, where once again there are plans afoot to remove the via Cernaia which cuts the western half of the central bathing block in two. This would have the advantage of uniting two sections of the west palaestra, allowing the spatial arrangement of the Baths to be better appreciated. The closure of the via Cernaia was first made possible in the early part of this century with the building of the parallel via Parigi; it was then strongly promoted in the 70s, promised in the 1980s, and now revived in the 1990s. Is it too much to hope for the millennium?

CONTENTS

Editorial	1
Libraries in Roman Baths?	2-4
2nd International Conference on Ancient Baths, Varna	5-7
Report of General Meeting of IASAB	7
Constitution of IASAB	8-9
Heating Debate - a reply to	9
Grassmann <i>Balnearia</i> 2.2 (1994), 4-7	
Glazed Windows in Bilbilis	10-11

Libraries in Roman Baths?

It is generally thought that at least some bathing establishments, and in particular the great imperial *thermae* in the City of Rome, included libraries among their various facilities. This idea, not a new one, is now a standard element in both histories of libraries and studies of baths. On the library side, Boyd (writing eighty years ago, and summing up what was known at that time) thought libraries were to be found in some baths,¹ and library historians since Boyd have generally agreed, for example Paolo Fedeli in his recent and careful survey of Roman libraries.² Meanwhile, scholars studying bath complexes have concluded that libraries were to be found in the imperial baths and perhaps others. Thus Nielsen: "Libraries were presumably found only in the large imperial *thermae* and in the bath-gymnasia;" and citing the inscription CIL 6.8679 as evidence for the existence of "a Greek library in a therm..., without doubt one of the imperial *thermae*."³ Scholars have even begun to speculate on the nature of the book collections in such bath libraries: we might suppose they consisted of non-specialist literature, the ancient equivalent of our light or popular reading.⁴

Given this growing consensus, this seems a useful time to examine the evidence for libraries in baths. The authors of this note are involved in a study of libraries in the Greek and Roman world, and are interested in making our study as complete and accurate as possible. We will thus review here the evidence for libraries in baths, note some of the limitations of that evidence, and appeal to the readers of *Balnearia* for help. Is there other evidence of which we are unaware? Are there other, perhaps clearer and more decisive, examples of such libraries than we have found so far?

Without going into all the problems or details of the available evidence, we will consider: the evidence from literature; the one relevant inscription; and the archaeological evidence we have located.

The evidence from literature

The only explicit reference in all of Latin literature to a library in a bathing establishment seems to be the one in the *Historia Augusta, Life of Probus* 2.1, in which the author claims to have used, among other sources, books "from the Ulpian Library," which, he says, were in his day in the Baths of Diocletian. The author then goes on to list several other sources he claims to have used. While this is clear enough, it causes problems, which have often been discussed.⁵ Among other things, we know that the "Bibliotheca Ulpia" continued in use well after the time at which the *Historia Augusta* was written,⁶ so it cannot be true that the Ulpian library ceased to exist and was replaced by a library in the Baths of Diocletian. Thus scholars have sometimes argued either that the books were transferred for an unknown period of time to the baths and then returned, or that the number of volumes in the Ulpian library grew too large for the available space and so some of its collection was taken off to form the start of a new collection in the baths.⁷ All of these are possible scenarios. If the baths served as temporary quarters for the collection, though, then this passage does not show that there was ever a library in the Baths of Diocletian, just that one or more rooms there were adapted to the storage of books for a time. Moreover, the whole passage arouses some distrust, since elsewhere in the *Historia Augusta* the Ulpian Library is referred to as open and accessible.⁸ Perhaps the passage can be taken as evidence that a Roman reader might not

be surprised to read about a library in a bath; but other elements in the same passage are problematic, and it is possible that the whole thing was meant to be absurd.⁹

One other passage in literature has occasionally been taken as evidence that libraries might be found in baths: Seneca the Younger, *De Tranquillitate Animi* 9.9.7.¹⁰ This text, however, clearly refers to private houses, and states simply that men in Seneca's day wanted to have houses that included not only balneae and *thermae* but also libraries; there is no reason to assume that Seneca meant libraries in baths, and this should not be used as evidence.¹¹

The inscription CIL 6.8679.

This is a sepulchral inscription, erected for a child by an imperial slave named Onesimus. The inscription gives Onesimus a title or titles, but it does not survive intact, and one has to make some restorations. In the past the relevant lines of the stone have been restored and read as follows:

Onesimus, Cae[s(aris) n(ostr)i sc. servus],
vilic(us) thermar(um)
bybliothec(ae) Gra[ec(ae)]...

and in this case we would take Onesimus as the *vilicus* (more or less = superintendent) of the Greek library in (some) baths. Since the stone is broken along its right edge, however, it is quite possible that the restorations should be different:

Onesimus, Cae[s(aris) n(ostr)i sc. servus],
vilic(us) thermar(um), [et a]
bybliothec(a) Gra[ec(a)]...¹²

If we accept this restoration, Onesimus was first superintendent of some bathing establishment, and then assigned to a Greek library. As Weaver has noted, freedmen do not ordinarily record, on their sepulchral inscriptions, their whole careers. Usually they identify themselves only by the last position they held. They might well, however, hold more than one post, and there are some clear examples of men who did hold two posts: see, e.g., CIL 6.278 and CIL 6.9005.¹³ The reading proposed here does away with the awkward Latin of the usual restoration, in which the reference to the library follows the name of the establishment in which the library was to be found; the usual order is the other way around, as for example on CIL 6.4435, *vilic(us) a bybliotheca Octaviae Latin(a)*.¹⁴ Our point is simply this: this stone is incomplete, and doubts about how to fill its lacunae preclude our use of it as proof of the existence of libraries in baths.

The archaeological evidence

1. The Baths of Trajan in the City of Rome. The most detailed account of the exedra that has often been taken as one of a pair of libraries, with complete citation of earlier studies, is that of K. de Fine Licht.¹⁵ Like others before him, de Fine Licht takes the space which he calls Exedra L as a library on the basis of various architectural features: it has two rows of niches built into the walls, one above the other, and we know other Roman libraries had niches into which book cabinets were set; the lower set of niches has a podium, 2 m wide, running around the base of the wall; the podium is reached by a series of three steps, each of which runs right around the room and is about 1 m wide, so that the room could also have served as a lecture hall. This exedra no doubt had a twin, since the baths are symmetrical, and the thesis is that one exedra housed books in Latin, the other in Greek.

All of this is of great interest, and the room may well

have been a library. There is, however, room for doubt. If it is true that there were twin libraries, they were on opposite sides of the baths, and thus some three hundred meters apart, an odd arrangement: most libraries known to us consist of one room or of two (or more) rooms close together. In addition, it is clear that there was a two-story colonnade running around the interior of the exedra and in front of the niches, but it is not at all clear how, or if, one had access to the upper level of the colonnade. (As we will see, the upper story of a similar colonnade in the Baths of Caracalla was probably not accessible at all.) The niches on the upper story, that is, might have been not for books, but for decorative statues. And, in general, the apsidal plan of the room is eminently suitable for lectures, but a lecture hall might just as well have statues as a collection of books. Do we then have any clear evidence that this was a library?¹⁶

2. The Baths of Caracalla in the City of Rome. In 1912 Ghislanzoni identified a large hall in the western part of the peripheral structures as a library, and scholars since have tended to accept his suggestion.¹⁷ The room survives in good part, and has been the subject of a recent survey.¹⁸ The hall measures 38.70 by 22.10 m; there are brick-faced concrete walls on three sides, the fourth side consisting of a screen of six or eight columns opening onto a portico. In the wall facing the entrance there is a large central apse, no doubt for a statue, and on each side of the apse are two rows of three rectangular niches, one row above the other. In the side walls are two rows of five rectangular niches, one above the other. The niches measure 1.80 m wide, 75 cm deep, and, at least on the ground floor, 4.10 m high. Close to the wall in the spaces between the niches were columns, and in front of the niches on the ground level are three steps, each 27 cm high.¹⁹ On the ground level, the niches begin at a level about 2m above the floor and 1.20 m above the top step. Thus this hall contains all of the elements usually thought to indicate the presence of a library: a main room opening onto a portico; rectangular niches about two feet deep into which the bookcases could be inserted; steps leading up to the niches on the ground level; and an apse for a statue. Piranomonte and Capodiferro also noted that this hall was protected against dampness by being surrounded by other rooms.²⁰

There are, however, problems in taking this room, or its eastern twin (no longer extant), as libraries; many of these problems have been noted by previous scholars.

Tonsberg pointed out that the niches begin 2-m above floor level, and that the three steps do not provide ready access to the middle and upper levels of the presumed bookcases.²¹ This is an important point. The niches, with their presumptive bookcases, begin about 4 ft above the highest step and continue to a height of some 6.1 m, or just about 20 ft, above the floor. Such an arrangement cannot be paralleled in other rooms that we know were libraries, and the position of columns close to and on both sides of the niches makes the use of ladders to reach these very high shelves difficult to imagine.

There are other problems with the design of this room, as well. Kinney noted that we do not know how, or even if, this large hall was roofed, although a system of wooden beams and rafters has been suggested and is possible, despite the width of the room.²² Yegül, studying both the positioning of the columns and a drawing of the room made when the columns were still in situ, noted that there was almost certainly no balcony on the upper level.²³ That means that there was no access to the

upper row of niches, which in turn means they must have been used not for bookcases but as decorative elements. And, if they were for decoration, one might well suggest the lower niches were too.²⁴

3. The Baths of Diocletian in the City of Rome. It has been thought, on the basis of the reference in the *Historia Augusta*, that these baths included a library, but we have seen above in Part A that that evidence must be used with caution. Various attempts have been made to identify some particular room, or pair of rooms, as the library.

Makowiecka argued that a semi-circular exedra which appears on plans and in a sixteenth-century engraving was the library.²⁵ This room appears from the engraving to have two superimposed rows of niches and a large central (statue) niche; she notes the similarity of this room to the exedra in the Baths of Trajan. The exedra in the Baths of Diocletian, however, no longer exists, so we cannot know details or dimensions.

Coarelli took two rectangular rooms between the great exedra (now Piazza della Repubblica) and the corner circular halls as probable library rooms.²⁶ They too do not exist. Whatever one may wish to believe, it is clear that there is no good archaeological support at present for the existence of libraries in the Baths of Diocletian.

4. Civitavecchia. A room in the complex known as the "Terme Taurine," 12.20 m long, with eleven niches of unknown height but 1.68 m wide and 60 cm deep, has been taken as a library.²⁷ The room opens through a row of columns onto a portico which in turn may surround an open area. The room does not have a podium or steps at the foot of the walls, nor is there a larger apsidal niche for a statue; both of these elements are often taken as characteristic of libraries. The absence of such elements does not make it impossible that this is a library, but there is no clear evidence that it is a library, either.

5. Como. In 1971, the foundations of two octagonal rooms were found outside the ancient city wall of Comum. The Italian excavator, Mirabella Roberti, identified the structure as the public baths, and the smaller of the two octagonal rooms as the library, donated to Comum by Pliny the Younger.²⁸ Mirabella Roberti pointed to the octagonal shape of the rooms as evidence for his identification of the complex as baths; but no other evidence, such as traces of heating or hydraulic systems, has been found to support that identification, and octagonal rooms are also associated with other types of building in Roman architecture. He also pointed to the supposed presence of libraries in the imperial thermae to support his contention that this structure represented both Pliny's baths and his library. We have no reason, however, to believe that Pliny's library was attached to his baths. The two structures were not apparently built at the same time: while Pliny donated the library about 96, the inscription which details Pliny's gifts (*CIL* 5.5262) indicates that the baths were still incomplete at the time of his death, around 111. The identification of the complex as Pliny's baths and library has not apparently won general acceptance.

Summary

At present the evidence for libraries in bathing complexes is weak at best. No literary evidence or inscription clearly proves that there were ever libraries in baths. No archaeological remains of rooms in baths can be shown definitely to have been libraries, and in fact there are persistent problems in the identification of particular rooms within baths as libraries. It is not the

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intent of this note to argue that we can be sure that no library ever existed in a bath complex. Instead, we simply wish to call attention to the weakness of the evidence as it is known to us and to solicit comments and further information. We can be reached by email and would be delighted to hear from the readers of this newsletter:

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Notes

1. C.E. Boyd, *Public Libraries and Literary Culture in Ancient Rome* (Chicago 1915) 63.
2. P. Fedeli, "Biblioteche private e pubbliche a Roma e nel mondo romano," in G. Cavallo ed., *Le biblioteche nel mondo antico e medievale* (Rome-Bari 1989) 51. Fedeli also cites earlier works, among them Callmer and Strocka, on libraries in baths.
3. I. Nielsen, *Thermae et Balnea*, Vol. I (Aarhus 1990) 165.
4. G. Cavallo, "Testo, libro, lettura," in G. Cavallo, P. Fedeli, A. Giardina, eds., *Lo Spazio Letterario di Roma Antica*, Vol. 2 (Rome n.d. [1989]) 338. In this Cavallo follows V. M. Strocka, "Römische Bibliotheken," *Gymnasium* 88 (1981) 315-16: libraries in baths probably had not just the classics such as Homer, Hesiod, Vergil, etc, but also, suggests Strocka, "triviale Schullektüre und Unterhaltungsliteratur." There is, however, no surviving reference to any particular text in any library in any bathing establishment, so that guessing at the nature of such collections is hazardous.
5. For a recent discussion of this passage in detail, and with citation of earlier work, see L.D. Bruce, "A Reappraisal of Roman Libraries in the *Scriptores Historiae Augustae*," *JLH* 16 (1981) 562-63. Bruce is inclined to believe that there was a library in the Baths of Diocletian, and that its first collection of books consisted of overflow from the Ulpian Library.
6. From Sidonius Apollinaris (*Epist. 9.3*, lines 27-28 in the poem) we learn that the Ulpian libraries were still in existence, or at least recognizable, in A.D. 455 (for this date, see the comment of W.B. Anderson in the Loeb edition, *Sidonius, Poems and Letters*, Vol. 2 [Cambridge MA - London 1965] 601, note 4). The *Historia Augusta* was probably written 50 to 60 years earlier: R. Syme, *Amianus and the Historia Augusta* (Oxford 1968) 220.
7. For references, see Bruce (above, note 5) with notes 57-60.
8. On this point, see T. Keith Dix, "'Public Libraries' in Ancient Rome: Ideology and Reality," *Libraries & Culture* 29 (1994) 282-96, with the evidence set out in n. 22. Dix also notes, p. 286, that the author of the *Life of Probus* may have got the idea for citing sources in libraries from Aulus Gellius, and if true, the author of the *Probus* might not have consulted any library at all.
9. The most obvious fiction in the list of "sources" cited by the author of the *Life of Probus* is the "journal" of his friend Turdulus Gallicanus. This man is "a joke, of willful perversity:" Syme (above, n. 6) 102. Turdulus does not appear in *PLRE* Volume 1, nor does the name Turdulus appear in the Index of *CIL* 6. Among the author's other "sources," one wonders what information the clerks in the Porticus Porphyretica (if they existed at all) might have been able to supply relevant to an emperor's life; and what exactly the *acta populi* were is not clear.
10. See, for example, Nielsen (above, n. 3) 1.165, although she noted that these libraries in baths were "perhaps in private houses;" also E. Ghislanzoni, in his report on what he took to be a library in the Baths of Caracalla ("Scavi nelle terme Antoniniane," *NSA* 9 (1912) 312, cited Seneca. In the library literature, see, for example, J. W. Thompson, *Ancient Libraries* (Berkeley 1940) 35 with note 91.
11. Most translators have seen that Seneca did not mean libraries in baths, but rather libraries as parallel to baths in being ornaments of houses. Thus, A. Marastoni, *Lucio Anneo Seneca. I dialoghi* (Milan 1979) 424; J.W. Basore, in the Loeb edition, is less exact.
12. The editors of *CIL* 6 note that we cannot tell if there were any letters to the right of the R in *thermar[um]*.
13. See P.R.C. Weaver, *Familia Caesaris. A Social Study of the Emperor's Freedmen and Slaves* (Cambridge 1972) 224 for a full discussion of these matters.
14. There are, however, at least two other cases where the library follows the name of the building or complex in which it was found: 6.2348 and 6.4433. Thus the traditional reading of this stone cannot quite be ruled out.
15. K. de Fine Licht, *Untersuchungen an den Trajansthermen* (Copenhagen 1974) 13-25.
16. Others too have had doubts, e.g. F. Coarelli, *Guida Archeologica di Roma* (Verona 1974) 204, although following de Fine Licht's study, Coarelli's 1983 guide seems to accept the identification (*Roma. Guide archeologiche Laterza* 6 [Rome-Bari 1983] 204).
17. Ghislanzoni, (above, note 10) 312. For later bibliography, see D. Kinney, "Spolia from the Baths of Caracalla in Sta. Maria in Trastevere," *Art Bulletin* 68 (1986) 384 n. 23.
18. See especially M. Piranomonte and A. Capodiferro, "Terme di Caracalla. Lo Scavo della Biblioteca Sud-Ovest," in *La ciutat en el món romà* (Tarragona 1994) 333-35; our dimensions for the hall and most of our description of it come from them. For recent work on the rooms surrounding this hall, see the pieces by I. Iacopi, by L. D'Elia, and by L. Avetta and A. Racheli in *Roma: Archeologia nel Centro II* (Rome 1985) pp. 578-82, 596f., and 598-600 respectively. Iacopi publishes a good plan of the room and surroundings, p. 581, and the other authors describe work in Room M, one of a series of rooms between the supposed library and the Piccolo Aventino. It is now certain that these rooms were not cisterns.
19. The dimensions of the niches and steps are given by Ghislanzoni (above, note 10) 311.
20. It has often been asserted that this is a characteristic of Roman libraries, both because Vitruvius was aware of the potential harm from dampness and because the Library of Celsus at Ephesus has been thought to have a design which included a space all around to protect the walls from dampness; e.g. R. Cagnat, *Les bibliothèques municipales dans l'empire romain* (Paris 1906) 13-14, accepting a suggestion of Heberdey. Recently, however, V.M. Strocka (above, note 4) 323 showed that this is a misinterpretation of the narrow alley around the library at Ephesus, which was in fact particularly damp. There is now no evidence that Roman libraries were ever surrounded by open spaces or rooms to protect them from damp.
21. J. Tonsberg, *Offentlige biblioteker i Romerriget* (Copenhagen 1976), 165-67, cited by F. Yegül, *Baths and Bathing in Classical Antiquity* (New York 1992) 448, n. 128.
22. Kinney (above, n. 17) 382 n. 23. Piranomonte and Capodiferro (above, n. 18) note the problem and suggest a roof with wooden beams and rafters. This hall was about 6 m, or nearly 20 ft, wider than the library in the Forum of Trajan.
23. Yegül (above, n. 21) 448 n. 128.
24. There has recently been discussion of the way(s) in which water entered the baths, not far from the supposed library room. See M. L. Conforto, "Terme di Caracalla. Dati acquisiti ed ipotesi di ricerca," in *Les Thermes romains* (Rome 1991) 45-46 for a suggestion that there was a nymphaeum in the south wall. This suggestion is not supported by the careful study of L. Lombardi and A. Corazza, *Le Terme di Caracalla* (Rome 1995) 63-71. Further work in the area may better clarify matters.
25. E. Makowiecka, *The Origin and Evolution of Architectural Form of Roman Library* (Warsaw 1978) 96-97.
26. Coarelli 1974, 231 and 1983, 257 (above n. 16).
27. W. Heinz, "Die 'Terme Taurine' von Civitavecchia—ein römisches Heilbad," *AntW* 17.4 (1986), 38. Heinz suggests also that two rooms flanking the library were connected with it functionally in some way. See also Yegül (above, n. 18), 112-17, who is inclined to accept Heinz's suggestion, though he does not discuss it.
28. M. Mirabelli Roberti, "L'urbanistica romana di Como e alcuni recenti scoperti," *Atti del Convegno celebrativo del Centenario della Rivista archeologica Comense* (Como 1974) 31-35; G. Cavalieri Manasse, G. Massari, and M.-P. Rossignani, *Piemonte, Valle d'Aosta, Liguria, Lombardia. Guide archeologiche Laterza* 1 (Rome - Bari 1980), s.v. Cosiddette terme (viale Lecco 13) 331. On Pliny's library, see T. Keith Dix, "Pliny's Library at Comum," forthcoming in *Libraries & Culture* 31 (1996).

The Second International Conference on Ancient Baths

Varna (Bulgaria) 22 - 27 April 1996

The Second International Conference on Ancient Baths was held at Varna, Bulgaria, from April 22 to 27, organised by Dr. Krasimira Vacheva in cooperation with Ivan Ivanov of the Museum of History at Varna. Kind hospitality was offered by the director of the Museum Dr. A. Mintschev, who hosted a splendid reception in the Odessos Hall of the Museum on the first evening and was a regular participant in the conference proceedings.

The variety of topics listed in the conference programme was promising, and the conference certainly met these expectations fully. Some 40 participants of 13 countries enjoyed a wonderful week and profited from fruitful debates and the comments of colleagues. The minor-scale character of this conference (at least, compared to most other archaeological conferences), just as the one at Bath four years ago, encouraged discussion and the exchange of information. Lectures were grouped in thematic sessions and divided over the first three days of the conference, followed by two days of excursions to various sites. Furthermore a visit the Imperial or Large Thermae and Small Baths of Varna, ancient Odessos, and a guided tour through the Museum were scheduled. A beautiful exhibition, "The Roman Baths in Bulgaria" was opened on occasion of the conference at Wednesday April 24.

A look at the programme immediately reveals some of the tendencies in current research. I prefer to discuss these trends rather than to give an enumerative description in "chronological" order of all papers given.

Greek baths

First of all, there is fortunately a growing interest in Greek baths, which have been much neglected after the extensive publication of R. Ginouvès in 1962. New discoveries and excavations, however, have made renewed attention for Greek public baths desirable, and this for their own merits, instead of regarding them only as forerunners or missing links in the development of Roman public baths.

This growing interest was reflected in the lectures given by A. Gill (The architectural design and practical function of the Greek circular bath in antiquity) and G. Ladstätter (Die Leonidaionthermen in Olympia - ein Zwischenbericht). Gill outlined the design and function of circular baths, focusing on 6 baths of this type ranging from the archaic period to the first century BC. Ladstätter discussed the Leonidaion-thermae at Olympia, a bath-building that was built at the end of the 3rd century BC and remained in use until the 5th century AD. The current lay-out belongs to the Roman period. The tubulation of the tepidarium deserves special attention. Instead of tegulae mammatae, used in the caldarium, this room is furnished with vertical rows of "pipes", made of "telescoped" amphorae-feet, ending in a horizontal chimney. This unique system seems to be the result of a local preference for recycling building materials.

Technology

Technical aspects were also illustrated and discussed in other contributions, for example that of L. Russeva-Slokoska, who lectured about the hypocaustum of a public bath in Pataulia, where two different systems have been used: arches of brick combined with cylinders of terracotta. This system of clay cylinders was also used in other Roman baths in Bulgaria, for example in the Imperial Thermae of Odessos, as we could observe during our visit, in the castellum-bath at Kabyle and in the baths of Dobrich. These last two baths were the subject of lectures which will be discussed below.

In general, instead of looking at the common features of Roman bath technology, more and more attention is being paid to local variants and explanations for their use.

The poster of K. Vacheva dealt with the chimney-system of the Imperial thermae of Odessos, which got an *in situ* explanation during our visit of these baths.

Private baths

A third tendency can be observed in the growing interest for private baths. J. Millereux-Lebechennec presented the preliminary results of a comprehensive study of private baths in the three Gauls. Her study covers more than 300 private baths, all of them within a rural context, for which she has made a classification based on their plans and their position in relation to other parts of the villa.

S. Hewitt reported about her research on domestic baths in North Africa, focusing on the baths at Volubilis, Morocco. Remarkably, five of the six baths of this site were accessible from the street, which questions the private character of these baths. C. Hansen discussed the rural private baths discovered during a multidisciplinary Danish-Tunisian survey in the Segermes valley in Northern Tunisia. The majority of them are separated from the habitation site, at varying distances but very often located near small rivers or streams. N. de Haan presented a paper about the significance of private baths for the development of Roman public baths, focusing on Central Italy in the second century BC. An examination of both literary sources and archaeological data, in particular a late second century hypocaust in a private bath at Vulci, North Latium, suggest that private baths took the lead in the diffusion of the hypocaust system, not only in Campania, but in Latium as well.

Military baths

Much attention was paid to military baths, in Novae, Carnuntum, Kabyle and Palestine. P. Dyczek presented a castellum-bath from the Flavian period at Novae (Bulgaria), which was destroyed in a later period, in order to create space for a valetudianarium. The complicated building history of the castellum-bath of Carnuntum was disentangled and elucidated by M. Philipp. This bath was discovered in 1977 and

excavated in 1991/1992. Philipp pointed out that the area of bathrooms was more and more reduced in the later period, a trend which can be observed in other (military) baths as well. The military bath at Kabyle was presented by N. Tancheva-Vassileva. This bath, dating from the 4th century AD was supplied with water from a spring that still provides modern Kabyle with water. T. Shacham offered an overview of 11 baths in Palestine which can all be connected with military installations.

The urban context

Baths related to their urban context was the subject of the lectures by J. DeLaine and G. Mazor. DeLaine discussed the relationship of imperial thermae with late-republican horti, a suggestion already made by P. Grimal, but now extended and corroborated with new arguments. Since more research on horti has been done in the last few years, the multi-functional and transitional (i.e. between city and country-side) character of them has been assessed. The imperial baths were partly rooted in the horti, which is for example reflected in their lavish decoration. DeLaine concluded that imperial baths physically replace the horti, and not only because they are located on the same spot. For the inhabitants of Rome they must have been a logical continuation of the horti without any caesura.

G. Mazor treated the recently excavated so-called East Bath of Beth She'an (ancient Nysa Skythopolis). This bath was surrounded by huge porticoes and lavishly decorated. Parallels are to be found in North Africa and Asia Minor. Mazor stressed two major points. First, the bath was very monumental and luxurious, despite its rebuilding in what was already the Byzantine period. Secondly, the city remained basically a Roman town in its outlook the use of public space and urban arrangements during the 5th and 6th centuries.

Closeley connected to this theme was the contribution of G. Schörner, dedicated to the foundation and exploitation of public baths in Greece during the hellenistic and imperial times, based on a survey of inscriptions and literary sources. An examination of the terminology revealed that the terms used are far from specific and few details about the building itself can be extracted, due to the aim of the inscription, which should emphasize the generosity of the euergetes, not details about the bath. This, however, is the case for foundations of all types of buildings, as Schörner pointed out. With only a few exceptions to the rule, baths are founded as isolated buildings, without being incorporated in larger urban complexes.

Site reports

Site-reports concentrated in particular on sites in Bulgaria. Their large number and, for the most part, well-preserved state were an eye-opener for most scholars from other parts of the world, who until some years ago, due to the course of history, were not able to study and value the heritage of Eastern-European countries. Two posters were devoted to Roman baths in Bulgaria: Die großen Thermen in Odessos: Funktionalbestimmung der Thermenräume

aufgrund der Kleinfunden by A. Haralampieva and Zwei Bäder aus der Römischen Epoche von dem oberen Strumatagebiet by V. Ljubenova. The large thermae of Augusta Traiana were treated in a lecture held by K. Kalchev, who convincingly proposed a new chronology of the various building periods. The contribution of S. Torbatov dealt with a bath building in Dobrich, possibly a villa bath, since it lies too far from the settlement to belong to it.

K. Vacheva discussed the latrines of two private and three public baths in present Bulgaria. Their location within the baths and the arrangements to flush the latrine, in all cases with water used in the baths first, were reported.

The only non-Roman bath was presented by J. Ananiev, who showed a Byzantine bath in modern Macedonia, that was used from the 7th until the 14th centuries.

Three other site-reports on Italy, focused on a region which is presumably not very well-known among balneologists, although it has a lot to offer. O. Menozzi showed some examples of bath-buildings in Samnium and Picenium, modern Abruzzo, where recent excavations have brought to light new data and new interpretations. M.C. Mancini concentrated on Alba Fucens, the first Roman colonia in Samnium (303 BC). The city required the status of municipium after the Social War and was provided shortly after with an aqueduct and bath-building. This bath was rebuilt several times, ultimately by Vibia Galla according to a mosaic inscription; she appears to be related to the emperors Gaius Vibius and Trebonianus Gallus. The poster of G. Martella showed the two preserved rooms belonging to a bath that was found underneath a medieval church at Atri, ancient Hatria Picena.

R. Merdjanova gave a paper entitled "On the presence of blacks in the Roman baths". She discussed a series of mosaics on which ithy-phallic or macro-phallic negroes are represented. She convincingly argued, that such representations must be regarded as protection against the evil-eye, a function which is known from other "media" in art and artefacts as well, and strengthened by their position on thresholds.

Excursions

Excursions were planned for April 26 and 27. The first took us to a Roman villa with two sets of baths at Madara, which would not have been out-of-place anywhere in the western empire, followed by the excavations of Pliska (the capital of the Second Bulgarian Kingdom), the museum of Shoumen and the impressive remains of Preslav (capital of the First Bulgarian Kingdom) and its museum, which houses a very beautiful collection. This day ended with a wine tasting at Preslav. For the second excursion we headed north to scenic Cape Kaliakra on the Black Sea, calling in on the way at the Museum of Kavarna, housed in what was once a Turkish bath house. There were also the late antique baths to see at the fortress of Acra at Kaliakra itself, and a leisurely lunch rounded off the tour nicely. On both excursions, we were all impressed - if not over-whelmed - by the

richness of the archaeology, and by the extraordinary degree of continuity in terms of bath buildings and technology between the Roman, late antique and Bulgarian Kingdoms periods.

In short...

If this conference has to be described in a few words, "openness" and "collegiality", reflect, I think, at best the feeling we all experienced. Since the principal aim of a conference is, or rather should be, exchange of information and practices, this conference certainly turned out to be very successful.

Thanks to the unrestrained efforts of Krassimira Vacheva and her colleagues, and the participation of many bath-specialists from all over the world, the conference was not only very successful, but also a joy for all who participated.

Nathalie de Haan

Report of the General Meeting of IASAB held on Thursday 25 April 1996, Museum of History, Varna

1. President's Report

The President reported that there are now new Regional Representatives for Austria (Dr Manfred Kandler) and Romania (Prof. A. Suceveanu), and that following the resignation of Dr J. Hoevenberg, Nathalie de Haan has been nominated to take over as Representative for Holland. Approaches have also been made to Dr A. Farrington, resident in Athens, to act as Representative for Greece. The need for Representatives in Jordan, Syria, Switzerland, Morocco, Tunisia and Algeria was also noted, and suggestions called for from members of the Association.

The President also reported on the taking of IASAB under the patronage of AIAC (Associazione Internazionale per l'Archeologia Classica), which was accepted in a letter from the President, Javier Arce, on 29 April 1994. AIAC also published a small presentation of IASAB in its own newsletter. There have also been presentations of the Association in various local journals and in Bretschneider's catalogue.

Finally, the President drew attention to IASAB's involvement in the attempt to remove the Teatro dell'Opera from the Baths of Caracalla in Rome to prevent further damage to the monument (for more details see editorial).

2. Ratification of the Constitution

A quorum of members being present, the amended Constitution was ratified unanimously without debate (see next page).

3. Election of Officers

The following officers were formally elected to the committee:

President: Inge Nielsen

General Secretary: Maura Medri

Membership Secretary and Treasurer: Janet DeLaine

Editor, *Balnearia*: Janet DeLaine

Bibliographer: Hubertus Manderscheid
Ordinary Member: Hans-Joachim Schalles

4. Treasurer's Report

As at the time of the first General Meeting, the Association had 169 subscribers.

Financial Statement

Although the Association was set up in 1992, with a generous donation of £100 from one of those attending the conference at Bath, the payment of a membership subscription was required only from 1994. In the first year of subscriptions (1994/1995), expenditure on *Balnearia* almost matched income, while in the second year (1995/1996) there was a substantial surplus due to increased subscription rate, more members paying subscriptions, and reduced printing costs for *Balnearia* made possible by a change in printers. There is still, however, postage to be paid for 1995/96.

Income and Expenditure:

1992 Donation £100

1994/95

Subscriptions £598.55

Interest £7.14

Balnearia 2.1 £272

Balnearia 2.2 £290

1995/96

Subscriptions £701.32

Interest £11.78

Balnearia 3.1 £132.69

Balnearia 3.2 £148.94

Balance at 28/4/96 = £475.36

Given the healthy state of the Association's finances, it was proposed that hat subscription fees for 1996/97 should be maintained at the present level, and a contribution of US\$200 should be made to the publication costs of the Proceedings of the 2nd International Conference on Ancient Baths, to appear as a Supplement to *Balnearia*.

5. Report of Editor, *Balnearia*

The Editor apologised for the sometimes erratic appearance of the newsletter, due in part to pressure of work and in part to difficulties in obtaining items. Members were once again exhorted to send in contributions. In the absence of the Bibliographer, the Editor also renewed requests for bibliographic information to be sent to Regional Representatives who were urged to take a more active part in this essential element of the Association's work by forwarding material to the Bibliographer. It was proposed and accepted that Nathalie de Haan be elected as an extra member of the Committee to assist the Editor.

6. Future Conferences

The GM accepted the proposal of the Representative for Spain, Prof. Martin Manuel-Bueno that the next conference be held in Zaragoza in 1999. The Representative for Israel, Tzvi Shacham, proposed that the fourth conference be held in Israel and Jordan together in the year 2002, and this was also accepted by the GM.

7. Any other business

Gaby Mazor suggested that a working party should be set up to create a multi-lingual dictionary of bath terms for the assistance of young scholars and to be used in popular publications, guide books, and for use at sites. The proposal was accepted, and Dr Mazor agreed to chair the working party.

INTERNATIONAL ASSOCIATION FOR THE STUDY OF ANCIENT BATHS

Constitution

1. NAME

The name of the Association shall be "INTERNATIONAL ASSOCIATION FOR THE STUDY OF ANCIENT BATHS" (hereafter "the Association").

2. PURPOSE

The purpose of the Association shall be the promotion of the study of baths and bathing customs in the ancient Greek and Roman worlds, their precursors, and their successors in the medieval, Byzantine and Islamic worlds, by facilitating communication between all relevant disciplines and by the dissemination of information through conferences and the publication of a bi-annual newsletter, to be known as "*Balnearia*".

3. MEMBERSHIP

(a) Ordinary membership shall be open to all persons interested in the purposes of the Association.

(b) Affiliated membership shall be open to organisations and libraries. Affiliated members may be represented at General Meetings (hereafter GM) by one member of their staff.

(c) Persons or organisations wishing to join the Association as Ordinary or Affiliate Members shall apply to the Membership Secretary and on admission shall receive an up-to-date copy of the Constitution of the Society.

(d) An annual subscription shall be payable on the first of April in each year by Ordinary and Affiliated Members and shall be at a rate proposed by the Committee and approved by the GM.

(e) The Committee may from time to time propose to a GM of the Association the election of Members *honoris causa* who shall pay no subscription.

(f) Members shall receive the newsletter of the Association and shall be entitled to vote at the GM.

(g) Members in arrears of dues for two years shall be excluded. Members may exceptionally be exempted from the payment of a subscription by approval of the Committee.

4. OFFICERS AND COMMITTEE

(a) The Committee of the Association shall consist of a President, a Secretary, a Treasurer, an Editor, a Bibliographer, and one ordinary Member, whose duties and terms of office shall be as prescribed below.

(b) Members of the Committee shall be elected at GMs of the Society and shall serve without pay for that interval between GMs which shall most closely approximate to five years. No officer shall serve in the same post for more than two consecutive terms of office unless under exceptional circumstances.

(c) Members of the Committee shall be elected at a GM, with nominations made in writing to the Secretary. Vacancies arising between GMs may be filled temporarily with the approval of the Committee until the next GM.

(d) The Committee may nominate sub-committees for special purposes.

5. DUTIES OF OFFICERS

(a) The President shall exercise general supervision of the welfare of the Association and may speak or write in the name of the Association. S/he shall preside at Committee Meetings and at GMs and shall present the report of the Committee to GM.

(b) The Secretary shall assist the President in the conduct of the Association's affairs and shall act on behalf of the President in his/her absence. S/he shall keep a proper record of Committee Meetings and of GMs of the Association. S/he shall where possible provide such assistance to the organiser of any conference of the Association as may be requested.

(c) The Treasurer shall have charge of the Society's funds. S/he shall prepare a statement of account for each GM of the Association and shall present it at the meeting together with a report on the financial affairs of the Society. S/he shall maintain an up-to-date list of the names and addresses of members of the Association.

(d) The Editor shall edit and circulate to all members the bi-annual newsletter *Balnearia* in June and December of every year. The newsletter shall act an organ of the Association in promoting its aims by the dissemination of information regarding the Association and other items of interest to its members. The Editor shall where possible provide such assistance with the publication of any conference proceedings as may be requested by the organiser.

(e) The Bibliographer shall prepare a bibliography of items relating to ancient baths and bathing published in the previous calendar year, and forward this to the Editor in time for publication in the December issue of *Balnearia*. Bibliographical up-dates shall also be prepared and published from time-to-time.

6. REGIONAL REPRESENTATIVES

(a) In addition to the Committee, there shall be Representatives in any region or country in which there are subscribing Members.

(b) The duties of the Representatives shall be as follows:

1) To promote the purposes of the Association in their region or country by acting as a liaison between members within their region or country and by representing the interests of their region or country to the Committee when necessary.

2) To bring to the notice of the Editor new discoveries or other items of interest from their region or country for publication in *Balnearia*.

3) To bring to the notice of the Bibliographer new publications originating from or relating to their region.

(c) The term of office and procedure for election of the Regional Representatives shall be the same as for

Officers, except that the limit on reappointment shall be waived where no other candidate is nominated.

(d) Regions or countries for which there is no Representative shall communicate directly with the relevant Officers as and when necessary.

7. CONFERENCES AND GENERAL MEETINGS

(a) Conferences of the Association for the exchange of views and the reading of papers shall be held usually at intervals of not more than five years.

(b) At every Conference there shall be a GM at which the following business shall be transacted:

- 1) Receive and approve the report of the Committee
- 2) Receive and approve the report of the Treasurer
- 3) Approve the rate of the annual subscription
- 4) Election of Officers and Regional Representatives
- 5) Any other business.

(c) Notice of a GM shall be sent in writing to all members of the Association at least one month before the date of the said meeting; a notice to this effect in the newsletter is accepted as sufficient to fulfil this condition. A final notice of the business to be transacted at a GM shall be displayed in a prominent and appropriate place at least twenty-four hours before the time appointed for the meeting.

(d) Members who wish to propose motions for discussion at a GM shall give notice to the secretary at least two months before the meeting.

(e) Decisions made by a GM of the Association shall be by a simple majority. In the event of an equality of votes the President shall have a casting vote in addition to an ordinary vote. Any decision shall be valid only if the total number of votes cast in person or in writing is not less than one twelfth of the membership of the Association.

8. AMENDMENT

This Constitution may be amended by a resolution (notified as in Article 7c) supported by a two-thirds majority of the members voting in person or in writing at a GM, provided that the total number of votes cast in person or in writing is not less than one twelfth of the membership of the Association. Amendments may also be proposed by mail ballot and shall be deemed valid if supported by a two-thirds majority of those members who have replied within two months of the issuing of a notice proposing such an amendment. Notice of the passing of any amendment shall be issued to all members within eighteen months of the event.

9. DISSOLUTION

Dissolution of the Association may be decided in the same manner as alterations to the Constitution in Article 8. The remaining property and assets of the Society may be given to any member institution interested in the promotion of the aims of the Association, at the discretion of the President in office at the time of the dissolution.

Stellungnahme

zum Aufsatz von Dipl.-Ing. Hans-Christian Grassmann, über "Wirkungsweise und Energieverbrauch der Römischen Thermen Weissenburg/Bay.", in *Balnearia* 1994, Vol. 2.2, 4-7.

Zunächst sei darauf hingewiesen, daß die zitierte Norm DIN 4701 für diesen Zweck nicht angewandt werden darf, da sie ausschließlich zur Berechnung des Wärmebedarfs von darin ausgewiesenen Gebäudearten und nicht zu Ermittlung des Brennstoffverbrauchs dient. Für die Gebäudeart, die hier vorliegt, eignet sich dieses Berechnungsverfahren nicht.

Dies nur als Randbemerkung. Höchst anfechtbar sind die Thesen über die Strömungsverhältnisse in tubulisierten Wänden von Hypokaustenheizungen. Herr Grassmann leitet Grundsätze über die Strömung in einem tubulisierten System her und zeigt ihren Verlauf in einer Hypokaustenanlage (Bild 6 in seiner Veröffentlichung) mit tubulisierten Wänden auf. Er beruft sich dabei u.a. auf eine Arbeit von Hüser auf der Saalburg (*SaalbJb* 1979). Das entbehrt jeder Grundlage und entspringt der freien Phantasie des Autors. Hüser fand Querverbindungen zwischen den Tubuli, behaupt aber an keiner Stelle seiner Veröffentlichung eine Tubuliströmung, wie sie in Bild 6 von Herrn Grassmann vorgegeben wird! Die in diesem

Bild angegebene Heizgassströmung ist nicht bewiesen und entbehrt jeder Grundlage. Dieses Bild findet sich auch nicht im genannten Aufsatz von Hüser.

Absurd ist dann einfach der Schluß des Aufsatzes von Herrn Grassmann, daß es nun möglich ist, nur noch aus in Grundmauern erhaltenen Thermen Rückschlüsse auf die Wärmeverhältnisse dieser Gebäude vorzunehmen. Auch die Messungen in Xanten, die Herr Grassmann am Ende seines Berichtes zitiert und die mir als VDI-Beiratsmitglied in einer Niederschrift vorliegen, belegen nicht seine Theorie, daß "jeweils zwei Tubuli mit Aufwärtsströmung zwischen Zweien mit Abwärtsströmung liegen". Auch das hat Hüser niemals in seiner meßtechnischen Untersuchung behauptet. Dort "wechseln jeweils in gleicher Höhe quer über die Wand wärmere mit kälteren Partien", dieses Vorhandensein von Querverbindungen -die ein Tubulistein hat - finden sich nicht in den Überlegungen des Autors. Die Bruchstücke von Herrn Grassmann sind daher wissenschaftlich nicht gesichert, was die Strömungsverhältnisse in den Tubuli betrifft.

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Vidrio de Ventana en *Bilbilis* (Una aportación al conocimiento arquitectónico)

“El tiempo invernal no me penetra, pero el sol me entra”.

Con ese juego de palabras *Symposius*¹ se refiere a una ventana de vidrio; las dos primeras líneas podrían aludir a cualquier objeto de este material, pero al final su enigma sobre *vitreum* desvela la interpretación, parece ser la descripción de un vano tapado con vidrio. Si hubiera que señalar el siguiente gran paso que se da en el trabajo del vidrio después del descubrimiento del soplado, haríamos referencia a la obtención de láminas planas de vidrio para cubrir vanos. Éstas constituyeron un factor innovador en la arquitectura. El vidrio plano para uso arquitectónico fue un invento romano. En occidente se conoce desde el siglo I d. C.² A partir de entonces se dio una producción “in crescendo”. Su empleo es propio del Imperio de occidente hasta el siglo IV, momento en que se documentan en oriente los primeros vestigios. Podemos tener una visión bastante fiel del papel que desempeñó el vidrio plano en el mundo romano, a través de las fuentes antiguas, por las aportaciones arqueológicas inmuebles y por los restos utilizados en la cubrición de vanos que nos han llegado. Se usó tanto para las ventanas como para revestir paredes, especialmente en edificios termales³.

El yacimiento de *Bilbilis* (Huérmeda-Calatayud, Zaragoza)⁴ ha aportado un lote de vidrios planos de sumo interés. Gracias a la minuciosa recogida de los fragmentos de vidrio y metódica labor arqueológica llevada a cabo en dicho yacimiento, hemos podido reconstruir parte de las placas y aportar datos sobre una de las aplicaciones del vidrio menos estudiada y más relegada. Los restos de vidrio plano proceden mayoritariamente de la parte posterior del foro (estancias artesanales). La concentración en una misma zona, se estima en al menos siete ventanas diferentes, tras ser agrupado todo el conjunto atendiendo a sus características físicas y en función también del número de ángulos aparecidos, es inusual. Esta agrupación pudo ser intencionada producto del desmantelamiento del material de construcción procedente de las termas, almacenado provisionalmente en otras dependencias. El saqueo de elementos arquitectónicos susceptibles de ser reaprovechados (téglulas, ímbrices, ventanas, que frecuentemente estaban ensambladas en marcos de madera y a veces de metal, en particular para los vanos de reducidas dimensiones, etc.) fue un fenómeno frecuente en el mundo antiguo⁵.

En España⁶ destacan los paralelos de Torre Llauder en donde se documenta la fabricación de vidrio de ventana; de este lugar hay piezas cuadradas desiguales, con unas medidas que oscilan entre los 30 y los 40 cm. También son significativos los hallazgos de Santa Coloma de Somoza (León). Una de las ventanas reconstruidas de *Bilbilis* mide 0'44 m. de lado, unidad de construcción que se relaciona claramente con la medida del pie itálico, equivaliendo a pie y medio. Correspondría a una lámina prácticamente cuadrada, dado que las pequeñas

irregularidades del perfil son debidas al propio proceso de fabricación; constituiría la ventana de mayores dimensiones constatadas que se ha exhumado, hasta la fecha, en *Hispania*.

El aspecto que más interés ha generado en torno al vidrio plano romano ha sido el método de manufactura, con polémica entre algunos sectores que dedican sus esfuerzos en este campo de investigación. Hoy es casi generalmente aceptado, que los vidrios planos altoimperiales se manufacturaron por fundido y que los bajoimperiales lo fueron por un sistema basado en el soplado de cilindros⁷; es lo que se había venido creyendo desde Kisa⁸ hasta que Harden⁹ desarrolló ciertos estudios relacionados con este supuesto. Este autor, mantiene que los métodos más corrientes y que se mantuvieron largo tiempo, fueron los de soplado de discos o coronas y el de soplado en cilindros.

Las investigaciones realizadas hasta la fecha, desprenden que el soplado de discos o coronas -más conocido como “crown glass”- se documenta, aproximadamente, desde el siglo IV d. C. Los hallazgos se ciñen al área oriental. El método más rudimentario para fabricar vidrio plano parece con cierta lógica que se refiere al laminado del vidrio, fundiéndolo en moldes horizontales limitados por un pequeño reborde. Sin embargo, los textos latinos no hablan de ello, ni tampoco contemplan el sistema de hacer láminas de vidrio por rodillos¹⁰.

El soplado en cilindros o manchones sí que es probable que lo conocieran los romanos. Ha podido documentarse en Gran Bretaña, Italia y Corinto antes de que llegara a ser costumbre el “crown glass”¹¹. Se desarrolló posteriormente en Renania y Lorena, siendo descrito detalladamente por el monje Teófilo Lombardo¹² en los siglos XII y XIII.

Los vidrios resultantes de los distintos procesos de fabricación no son iguales; hay diferencias basadas en las marcas dejadas por las herramientas utilizadas en cada caso, así como por las características de cada técnica. Según Dunn¹³ el vidrio de época altoimperial se distingue del bajoimperial en que el primero, obtenido por fundido, es bastante grueso y de superficie muy plana, con una cara basta y rugosa, a diferencia del otro lado brillante, pulido y ligeramente irregular.

La técnica de fundido sería con la que se fabricaron las ventanas de *Bilbilis*. En algunos de los casos hemos observado marcas relacionadas con el empleo de herramientas metálicas, ganchos y tenazas, situándose próximas a los ángulos que obedecen a la labor de estirado de la masa vítreas en estado viscoso, por su buen estado de conservación. En otros casos, la acción de los agentes atmosféricos, impide detectar estos detalles. Los vidrios se fundían en una superficie tosca y entonces se trabajaban en forma recta indicando el canto ondulado un trabajo de fundición¹⁴. Los fragmentos de vidrio son planos y de grosor no uniforme, con los cantos redondeados, pulidos al fuego. En muchos de los fragmentos recuperados, puede distinguirse sobre el reverso, la impronta de los corpúsculos de arena, como si la superficie estuviera picada. También hay huellas de las estrías de la madera con la que estaba en

contacto¹⁵. La dirección que llevan dichas estrías nos ha servido de indicio para orientar los fragmentos en la reconstrucción de las placas, así como el tipo de descomposición, etc.

El abanico cromático se reduce, en general, a colores "sucios" producto de impurezas químicas de una masa de vidrio no tratada escrupulosamente; ya que suponía un contacto indirecto de uso con el hombre. Los colores más generalizados fueron: jade - C. d'A. 211-, verde turquesa -C. d'A. 191-, beige -C. d'A. 403-, oliva claro -C. d'A. 245-, etc. En *Bilbilis* se distinguen placas de vidrio con distinta calidad de conservación. Pensamos que pudo obedecer a diferentes condiciones ambientales o de ubicación en que se encontrarían unas y otras. Quizás una habitación de mayor humedad y temperatura más elevada, próxima a alguna zona de combustión, sea la que albergaría una de las ventanas, que hemos reconstruido parcialmente, explicando la presencia de una superficie visiblemente alterada por un color marrón oscuro. Por el contrario, hay otros vidrios planos, que indicarían unas condiciones medioambientales normales; estos últimos pudieron estar en una estancia "seca". Estas supuestas asociaciones de determinadas salas de las termas con las características de los vidrios que formarían parte de su estructura arquitectónica, deberían de corroborarse realizando análisis de dichas capas de descomposición y del vidrio mismo para determinar si las diferencias son de fabricación (de composición) o de post-fabricación.

Un rasgo dominante que advertimos en la mayoría de los vidrios planos revisados y de cuantas informaciones hemos contrastado es el predominio del vidrio translúcido. Desconocemos si era debido a técnicas poco depuradas en su fabricación, al grosor del vidrio requerido, a las impurezas, a la degradación provocada por la acción de los agentes atmosféricos o si fue una imitación de otros sustitutos que hasta entonces se habían utilizado mayoritariamente¹⁶, ya que casi ninguna de aquellas sustancias era transparente. Broise¹⁷ dice que el vidrio antiguo era translúcido y no transparente, esto no es exactamente así ya que vidrio transparente de una gran pureza, pudiendo incluso confundirse con el cristal de roca, se sabe que se fabricó no solo por los textos escritos sino que se ha recuperado en las excavaciones. El vidrio transparente a parte de que ha podido ser alterado por la acción de los agentes atmosféricos y haber llegado a nosotros con aspecto deslustrado, también es cierto que sería especialmente obtenido para uso de mesa, principalmente; aplicando para el vidrio de ventana de grandes superficies un tratamiento más tosco y menos depurado, que no encarecería más el producto.

Las fuentes antiguas resaltan las excelencias que ofrecía este material. Lo más importante es destacar su inalterabilidad ante los rayos solares, su proclive comportamiento ante la radiación térmica y sus propiedades ópticas, como dispersante de la luz. Numerosos autores antiguos¹⁸: Séneca, Plinio el Joven, Luciano, etc., insisten sobre la luminosidad de las salas termales en el interior de las cuales el sol

penetraba abundantemente gracias a ventanas vítreas. Los dos primeros señalan que se podía disfrutar del paisaje circundante por las ventanas. En lo que respecta a las termas públicas el paisaje urbano no ofrecería muchas veces más que un interés limitado y las ventanas serían elevadas para dirigir la mirada. No obstante no se puede hablar de patrones únicos en este sentido y se observan edificios termales con una diversidad de medidas, alturas y disposición de las ventanas¹⁹.

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Notes

¹ *Symposius, Aen.*, 68.

² R.J. Forbes, *Glass, Studies in Ancient Technology* 5 (Leiden 1966) 187. C. Isings, *Roman Glass in Limburg* (Groningen 1971) 44.

³ Isings, op. cit., 95.

⁴ Es abundante la bibliografía general y específica referida a este yacimiento, citamos como ejemplo una publicación en donde a modo de resumen se aborda un estudio de las zonas monumentales del yacimiento: M. Martín-Bueno, "Bilbilis augusta (Calatud, Zaragoza)", *Stadtbild und Ideologie. Die Monumentalisierung hispanischer Städte zwischen und Kaiserzeit, Koll.* Madrid 1987, München, 1990, 119-239.

⁵ Podemos citar entre los ejemplos próximos los de la colonia de *Caesaraugusta* o la "Casa de los Delfines" de *Celsa* (Velilla de Ebro).

⁶ M. Ribas Bertran, *La villa romana de La Torre Llauder de Mataró*, *ExcArqEsp*, 47 (1966). Idem, "La villa romana de La Torre Llauder de Mataró", *Noticiario Arqueológico Hispánico*, Arqueología, 1 (1972) 115-180. M. Vigil Pascual, *El vidrio en el mundo antiguo* (Madrid 1969) 89.

⁷ G.C. Boon, "Roman Window Glass from Wales", *JGS* VIII (1966). Isings, op. cit., 44 y 95. G. Dunn, *Identifying Roman Glass* (Londres 1986) 6. Forbes, op. cit., 185.

⁸ A. Kisa, *Das Glas im Altertume*, 3 vols. (Leipzig 1908).

⁹ D.B. Harden, "New light on Roman and Early Medieval window-glass", *Glastechnische Berichte*, Heft VIII (1959), 8 y ss.

¹⁰ Parece que fue inventado hacia el siglo XVII en Francia y por lo tanto desconocido por los romanos Forbes, op. cit., 185.

¹¹ Forbes, op. cit., 185.

¹² Teofilo Lombardo, *Diversarum artium schedula*. La segunda parte está íntegramente dedicada al estudio del vidrio.

¹³ Dunn, op. cit., 6.

¹⁴ Isings, op. cit., 44, 55, 95-97 y 107.

¹⁵ Para confrontar la técnica de fabricación a molde y las características identificadas en vidrios de *Bilbilis* consultar el estudio del método realizado por Boon, op. cit., 42-45.

¹⁶ Forbes, op. cit., 184-185.

¹⁷ H. Broise "Vitrages et volets des fenêtres thermales à l'époque impériale", *Les Thermes Romains* (París 1991) p. 61.

¹⁸ Seneca, *Ep.*, 86, 8 y 11. Pliny, *Ep.*, 1, 3, 2, 17, 11, y 5, 6, 26. Stat., *Silv.*, 1, 5, 45. Luciano en sus descripciones de baños de Hippias.

¹⁹ Broise, op. cit., 61-78.

Items for the next issue of *Balnearia* should be sent to the Editor, to arrive before 1 December 1996, with the exception of bibliographic items which should be sent either to Regional Representatives or directly to Hubertus Manderscheid, C/o DAI, via Sardegna 79, I-00187 Roma, Italy. Longer items should if possible be on disk (IBM WordPerfect or Macintosh Word for preference); please leave formatting to a minimum. Many thanks.

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