THE TEMPLE OF CASTOR AND POLLUX III

THE AUGUSTAN TEMPLE
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With contributions by Pia Guldager Bilde and Helen Dorey

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This is the third volume in the series "The Temple of Castor and Pollux". It deals with the Augustan version of the temple, and was scheduled to appear 14 years ago, as the editors' note in the first volume optimistically stated in 1992. For various reasons this did not happen. For the story of the publication we refer to the preface to Vol. II,1, written by Pia Guldager Bilde and Birte Poulsen. Though the difficulties mainly concerned the finds from the excavation, it was decided that the publication of the Augustan temple should wait in order to avoid too long intervals between the volumes. This does not mean that the manuscript has been waiting for publication unaltered since the beginning of the 1990s. In the meantime, the authors have taken several trips to Rome to study the temple, and every visit contributed to revisions of some of the opinions held previously – especially in the case of the podium, the story of which is very complicated. We have also profited from the published results of the researches of our colleagues. For instance, Christine Pinatel's publication of the casts of now lost fragments from the superstructure of the temple showed that our previously published reconstruction of the capitals was wrong, and that the more elaborate reconstructions of the 18th century English and French architects were closer to the original state.

The personal of the Soprintendenza Archeologica di Roma has carried out periodical revisions of the many fragments in the depots of the Forum Romanum and the Palatine area. During these revisions a few fragments from the temple of Castor and Pollux came to light. They have not been published in this catalogue. These new fragments belong to parts of the superstructure which were already well known – unfortunately, the whereabouts of the originals of the really important pieces published by Christine Pinatel are still a mystery.

Like the editors of the two first volumes we would like to express our thanks to a number of people: the then Soprintendente Adriano La Regina, Dott.essa Irene Iacopi, the architect Dott.essa Giovanna Tedone, the chief conservator, Dott. Elio Paparatti, Dott.essa Stefania Trevisan and Dott.essa Alessandra Capodiferro of the Soprintendenza Archeologica di Roma. We will also thank Bruno Angeli and Maurizio Rulli of the Soprintendenza for their friendliness and patience in helping us to search for negatives in the Soprintendenza's possession, and forwarding our requests for "just one more visit" to the temple area.

The architect Ernesto Monaco deserves special thanks. Before the Scandinavian excavation started, he had catalogued the marble fragments in the area of the temple, and his work has been an invaluable aid in the making of the catalogue of marble fragments in this volume. Christiane Pinatel deserves our thanks for her help with the now lost fragments, known only through plaster casts.

Finally we would like to thank the director of the Danish Institute in Rome, Erik Bach, who coordinated the whole project of publishing the last three volumes. Thanks are also due to Dott.essa M. Adelaide Zocchi, who, in her dealings with the editor, has helped to solve many of the practical problems which arise in connection with the publication of a book.

The publication of The Temple of Castor and Pollux II-III would not have been possible without financial aid from the Scandinavian countries. The institutions which have contributed are:

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We would like to thank the contributors for their generosity, which is an example of Scandinavian cooperation.

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Jan Zahle
Copenhagen
The visible remains of the Temple of Castor and Pollux on the Forum Romanum are formed by the remnants of the Augustan temple, inaugurated 6 AD, and the contiguous tribunal in its front. Like its two predecessors, it is oriented 25° NNE, but since the building measured 50.25 m by 31.75 m along the top of its podium crepidoma and comprised c. 1600 m² it was somewhat larger and seven/sixths of the size of the Metellan temple. The tribunal with the upper part of the frontal staircase, altogether 9 m deep, forms a peculiar part of the building. It is also peculiar that the temple proper has been placed on top of a podium, c. 6.8 m high, the three sides of which were provided with tabernae of both an official and a private nature. Beyond doubt, however, the building formed a visually satisfying whole: horizontally, it was bound together by both a bottom moulding and a continuous cornice that crowned the tops of both the tabernae and the tribunal front. Vertically, the level of the tribunal, almost exactly half-way up, formed the transition from the level of the podium crepidoma and up to the level of the temple crepidoma. Also the position of a taberna on both sides of the tribunal in continuation of the ones in the temple podium proper, as well as the arrangement of the entrances to the side staircases up to the tribunal, contributed to form a satisfying whole.

The present ground level on the east side is c. 13.30 m asl. The east crepidoma level is 13.40 m asl. The peristyle is situated 6.8 m higher up at 20.20 m asl, and the top surface of the marble entablature crowning the three Corinthian columns is 36.25 m asl (c. 23 m above ground level). Below the crepidoma the foundations reach c. 5.4 m down, about two metres into the virgin soil.

Altogether, the plan and dimensions of the building are well documented or easy to establish with certainty.

Within this overall framework, however, the state of preservation – and of our present knowledge of the Augustan edifice – is very uneven. In the Roman period the structure appears to have undergone certain rebuilding, which we know of from the written sources, or which can be established on the ruin itself. Most important is the complete rebuilding of the tribunal into a wide frontal staircase. Although the cult is attested in the 4th Century AD, the temple may already have been partly ruined, and up to the present century it has suffered from recurrent demolition and destruction. It underwent the usual scavenging of metals and building materials, and since the 19th Century it has been subject to several scholarly excavations and the subsequent attrition of the exposed surfaces due to weathering, air pollution, and – until c. 1980 – the constant flow of visitors. Also quite recently, in c. 1985 lightning damaged the columns.

The geology of the site, the setting of the ground towards the west and the north, has beyond doubt contributed to the instability and the destruction of the temple. The natural ground slopes down towards the Cloaca Maxima, which marks the lowest part of the Forum. This part of the drain was first covered in the 5th Century BC, perhaps coeval with the first temple. The present difference in ground level between the east and west sides of the temple is c. 0.70-0.90 m, which seems to correspond to the difference at the time of Augustus (fig. 1.0.1). This difference of level was compensated for by means of up to three additional crepidoma-steps on the west side. The whole building, however, has subsided towards both the west and the north. It now tilts 1.0-1.5 cm per metre, which means that the central part of the structure is situated 0.35-0.40 m lower to the west than to the east and further 0.1 m down in the NW, on line with the tribunal. The settling has also resulted in a conspicuous, oblique line of 'breaks' in the concrete through the whole building, which can be traced in the front (close to the centre), in the pronaos, and close to the SW corner of the cella podium. In the architectural discussion the
marked settling makes the comparison of levels asl little informative and even misleading. Therefore references to levels will currently be given to the courses – altogether twenty – of the foundation up to the underside of the column plinths.

The spoliation of building materials from the temple explains to a large extent the present character of the ruin – as it also does with (to mention only close neighbours) the temples of Divus Iulius, Saturnus, and Concordia on the Forum Romanum, buildings, which were not re-used in situ for a new purpose as was the Templum Antonini et Faustinae. The marble of almost the whole superstructure including the facing of the podium and the tribunal was either re-used directly or burnt to lime. The ashlars in Anio tuff that constituted the main part of both the foundations and – together with travertine – the c. 6.8 m high podium of the temple proper were also easily re-used. For unknown reasons, probably of accessibility, the courses I to VIII remain in situ and V-VIII are visible and exposed in the south and west. On the east side, though, blocks of courses XII, XIII and even XIV are preserved and exposed. Nobody cared about the concrete of the tribunal and temple podium, so this crude material was allowed to remain in situ and – together with the three columns – to establish the present visual appearance of the structure.

Whereas the actual state of preservation of the building is extremely varied, the preservation of marbles from the superstructure which are not in situ can be characterized only as very poor. On the east side, the three Corinthian columns, their foundations and the tabernae between them are the sole remnants of the thirty four external columns and the vertical face of the podium, which, however, can be safely reconstructed from the preserved marble ashlars. This compensates for the loss of all the other columns (except a few column drums and capitals) and of their foundations, which have been demolished sometimes even down below the present ground surface. Irretrievable, on the other hand, is the complete loss of the roofing, the cella walls, the pavements of the pronaos, peristyle and cella, and the whole inner arrangement of the cella including the base for the cult statues. However, the opus caementicium foundation testifies to the existence of the cult statues. Also crucial features of the tribunal that formed the front of the building are completely lost.

Besides the three columns, altogether c. 590
fragments are preserved of the marble superstructure. Certain details of the order, however, are missing. Fortunately, the temple through the centuries was considered a masterpiece of architecture to be studied and emulated by students all over Europe. It has therefore on several occasions been subject to plaster casting, one before the end of the 18th Century and others c. 1820 and 1870. These casts now form an important documentation of the features of the temple. The ones in the Sir John Soane Museum are published by Helen Dorey, below, Appendix 3. The other known group of casts has recently been published by Crisitane Pinatel.

Several visitors to the temple and its scaffolding during restoration and plaster casting took the opportunity to incise graffiti, see Pia Guldager Bilde, below, Appendix 2.

Since P. Rosa’s excavation from 1870 onwards that uncovered the west and north sides of the temple (as well as a part of the east side), Otto Richter’s investigations in 1896, and Giacomo Boni’s final freeing of the remaining SE part of the podium (1900-1903), the main features of the building above the foundations have been visible and accessible. It is clear, however, from Siri Sande’s discussion in TCP I, 1992, pp. 20-26, that the records made from the excavations (except Richter’s) are inadequate or missing, so the recurring discussions of various single features of the temple have rested on only samples of the complete preserved documentary evidence.

The foundations of the building, however, have never been subject to any scholarly investigation, although also its south side and about half of the east side were uncovered by Boni 1901-03. A part of the evidence was carefully recorded by Boni’s architect Rudolfo Morigi (see figs. 3.0.3-5) and the industrious visitors Thomas Ashby and Esther B. Van Deman made their notes, but the material was not published until much later. As a result, the construction methods of the temple have hardly entered the scholarly debate and then inadequately and with mistakes.

In 1941 the German architect E. Schmidt made a valuable study of the ruin with special regard to the building phases. It is most regrettable that no manuscript of his is preserved, and his most instructive analytical plan, elevations and sections were first published as late as in TCP I, 1992 pls. 7-9. His demonstration of ample remains of a rebuilding of the second (Metellan) temple was not vindicated by Inge Nielsen 1992 (See, however, Appendix 1).

The present publication aims at a full presentation of what is preserved in situ and a careful record of all architectural and sculptural pieces that have or may have belonged to the Augustan temple. The scant evidence for a rebuilding of the tribunal in the Late Roman period will moreover be presented. We hope by these means to establish a firm base for future discussions of the temple.

Whereas the state of preservation of the temple inevitably leads to an inadequate knowledge of important features, the very uneven preservation presents a rare opportunity to study the construction of the foundations and of the podium of the building proper step by step. The investigations around and within the structure provided a unique insight into the process of the building of a Roman temple. The twenty courses of the Anio tuff foundation are, for example, documented in courses I to III, V to XIV, and imprints of the courses XV to XX are visible in the vertical concrete faces of the podium. However, below the three preserved columns the courses IX-XX are completely preserved in travertine. In other places the absence of ashlars discloses features that would otherwise be hidden.

Another important result of the investigation, which cannot be separated from the way the Augustan temple was constructed, is the insight into how the builders treated the earlier temples on the site. The layout and planning of the temple in relation to the earlier buildings is interesting for religious and ideological reasons. But we are also able to study how the problem of building on the ruined site was approached: it can, as we shall see, be described as an uncompromising sense for both safe construction and good economy. If the local conditions for building in some way make the individual solutions peculiar, the whole complex of solutions is still important for the insight we get into the planning on a Roman building site.

The present volume is divided into several parts. In Chapter 2 aspects of the use of materials and techniques are dealt with in order to facilitate further reading. Ch. 3 treats the foundations below the ground and the ruin up to the present top surface of the podium, i.e. the preserved structure, with the exception of the elements in marble.
Ch. 5 - Ch. 7 treat the marble facing of the podium and the temple proper on its top, both the remains in situ and the hundreds of fragments that can be assigned to the building. In Ch. 4 and Ch. 8 - Ch. 11 the results are summed up and the temple is discussed as part of the Augustan building programme. The evidence for its chronology is summarized, as are the peculiarities of the construction and its art-historical setting.

1.1 Dictionary of structures and architectural elements, abbreviations

In the present volume several terms and abbreviations are used that are listed below.

Columns and tabernae (fig. 1.1.1) are designated by C and T, respectively. A capital letter establishes the side of the temple N, E, W, S. A numeral shows the exact position: TW4 is thus the fourth taberna from the north along the west side, CE9 the ninth column along the east side. The four columns in the pronaos are termed CN2 and CN7 + a numeral for position. CN7.3 is accordingly the pronaos column on line with the seventh front column and the third column along the flanks.

The coordinates of the measuring system are designated Y (oriented E-W) and X (oriented N-S) respectively (see p. 6). X 200 is the base line of the system on the N-S line of the edge of column foundations along the east side of the temple.

The podium and the temple building proper have to some extent been designed as 'separate' entities. A nomenclature for the elements and mouldings has for the sake of clarity been established (fig. 1.1.2): Podium crepidoma, having one step only on the east side.

Podium base, abbreviated LPB, see below.

Lower Podium face.

Upper Podium base, abbreviated UPB, see below.

Upper Podium face.

Temple crepidoma, having three steps, the uppermost the stylobate.

The following abbreviations are used in the
measured drawings to designate the building materials: M = marble, Tr = travertine, T = tuff, OC = opus caementicium.

In the present ruin of the Augustan temple two different kinds of opus caementicium walls are visible.

The shell-walls are built walls in the proper sense and delimit the foundation ditch of the temple (fig. 1.1.2).

The fill-walls are constituted by the fill that during the construction of the podium was laid down between the chopped-off sides of the earlier temple phases and the ashlar foundation courses of the cella walls and of the front columns. The fill carried no weight but formed part of the foundation of the cella and pronaos floors. Because of the disappearance of the ashlars, this fill now appears like walls along all sides of the temple proper.

The foundation ditch, more than 8 m wide and 5 m deep, for the columns and cella walls, was designated "sewer" by Van Deman, but the term is obviously misleading.

The architectural elements in marble are designated with capital letters.

Architectural members in situ or recorded on the site

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPB</td>
<td>Lower podium base</td>
</tr>
<tr>
<td>LPC</td>
<td>Lower podium cornice</td>
</tr>
<tr>
<td>K</td>
<td>Marble</td>
</tr>
<tr>
<td>A</td>
<td>Travertine</td>
</tr>
<tr>
<td>B</td>
<td>Anio tufa</td>
</tr>
<tr>
<td>C</td>
<td>Opus caementicium</td>
</tr>
<tr>
<td>D</td>
<td>Reconstructed</td>
</tr>
<tr>
<td>E</td>
<td>Cappellaccio</td>
</tr>
<tr>
<td>F</td>
<td>Opus caementicum 1 C BC</td>
</tr>
</tbody>
</table>

Fig. 1.1.2 Schematic section of the east side of the foundation showing the various walls and the building materials. A: the foundation ditch of the Augustan temple, B: the shell-wall, C: the fill-wall, D: the cella wall of the Metellan temple. E: the top of the Metellan cella wall and the inner wall in the cella. F: cappellaccio wall of the 1st temple.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPB</td>
<td>Upper podium base</td>
<td>ARC</td>
<td>Architrave</td>
</tr>
<tr>
<td>UPC</td>
<td>Upper podium cornice</td>
<td>FDC</td>
<td>Frieze, dentils and cyma reversa</td>
</tr>
<tr>
<td>COB</td>
<td>Column base</td>
<td>MOD</td>
<td>Modillion (+ coffer, cyma reversa). In one piece of marble together with Corona and Upper ovolo</td>
</tr>
<tr>
<td>COL</td>
<td>Column</td>
<td>COR</td>
<td>Corona</td>
</tr>
<tr>
<td>PIL</td>
<td>Pilaster of the cella wall</td>
<td>OVO</td>
<td>Upper ovolo</td>
</tr>
<tr>
<td>LBC</td>
<td>Lower block of the capital</td>
<td>TYM</td>
<td>Tympanum</td>
</tr>
<tr>
<td>UBC</td>
<td>Upper block of the capital</td>
<td>SIM</td>
<td>Sima</td>
</tr>
<tr>
<td>VOL</td>
<td>Fragments with volutes and helices</td>
<td>EXC</td>
<td>Fragments found during the excavation</td>
</tr>
<tr>
<td>ABA</td>
<td>Abacus fragments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABF</td>
<td>Abacus flower</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Augustan builders of the temple had a wide selection of materials, typical of the period, at their disposal: Anio tuff, travertine, Luni marble, concrete, bronze, iron, brick, wood, etc., and they chose each of them carefully for its specific purpose in the building according to its qualities — with regard to strength and to beauty. Characteristic of the whole preserved structure is the efficient and economical use of these materials.

Two examples show the careful selection of materials with regard to function. Anio tuff constituted the main part of the podium up to the crepidoma of the temple proper (20.20 m asl). Six of the eight front columns (as well as the four pronao columns) rested on this material alone, but the remaining 28 columns along the east, south and west flanks were founded on travertine ashlars. The foundations of the former columns were namely securely consolidated between the tribunal and the pronoa podia, whereas the foundations of the latter were 'semi-freestanding' along the outer edge of the building and moreover framed on two sides by the void of the tabernae. Another economical solution can be seen in the line of the cella front wall. The foundation for the threshold was in concrete, whereas Anio ashlars carried both the wall proper and the weight of the door-posts and the lintel.

In addition to the materials to be ordered for the building, the contractors had the debris of the earlier temples at their disposal (fig. 1.1.2). Primarily they had to cope with the ruin of the previous temple (II), which had burned, probably in 14 BC. The remaining parts of the superstructure were torn down and a foundation ditch, which was destined for the foundations of the outer columns, the pronoa columns and the cella walls was cut and excavated down through the old podium and along its three sides. In two places relatively narrow transverse 'corridors' were cut through the podium to accommodate the line of the front columns and the cella front wall. In the latter place, however, the existing threshold was preserved. Thereby, substantial parts of the substructure of the oldest temple (I and Ia) that had been preserved within the concrete podium of the second temple were encountered and removed. Together with residue of the superstructure of the second temple, these stones were smashed and re-used as caementa in the Augustan concrete, as was also other residue. This added to the variety of materials used, adding cappellaccio, reddish and a yellowish tuff as well as brick. This also explains why travertine — sometimes with traces of stucco — appears as caementa.

The relatively small size of the Anio ashlars of the three bottom courses of the Augustan foundation sets them apart from the rest of the Anio ashlars of the new temple. They may have formed a separate delivery or have been re-used from the second temple (see below, p. 25).

The building materials are listed below together with remarks on the evidence for their application and handling in the building. The order mirrors the sequence of their first use that corresponds to their increasing value and beauty.

Opus caementicium
Concrete (fig. 2.1) was used in several places that are always of minor importance inasmuch as it was neither entrusted to carry any substantial weight nor allowed to be visible. Its main function was as fill, with the exception of the shell-walls of the foundation ditch, the inside faces of which were faced by opus testaceum, see below p. 34. These walls were studied in several places. The outer wall in the Trenches A-C, O and V, besides in a few places in the SW and along the line of the front columns (below CN6 and the intercolumnia CN6-CN7-CN8 / CE1). The inner wall was encountered only in one area, in the SW corner of the cella podium.

Of the building proper only three elements rested on concrete: 1) the podium crepidoma on
Fig. 2.1 Isometric view, restored, of part of the foundation of the east side of the temple from the NE showing the parts of the construction.

the top surface of the outer shell-wall of the foundation ditch; 2) the threshold of the entrance to the cella (as mentioned above); 3) the temple crepidoma between the columns. Moreover, the foundation for the cult statues in the cella was cast in concrete.

Besides, concrete was used for the floors and ceilings of the tabernae (matching the courses IV-IX and XVII-XX, respectively) and merely as fill all around the building in the space of c. 1 m between the Anio foundations and the remains of the earlier temples. Both the remains of Anio ashlars and, more common, their imprints show that the concrete was laid at the same time as the ashlars were set in place. Horizontal casting lines every 0.6 m show that this was done course by course. Towards the inside, the concrete was cast against the remains of the earlier temples, whether cappellaccio, concrete\textsuperscript{17}, or earthen fill as in Trench E (fig. 3.1.3.5). In the artificial chamber in the west end of the tribunal the underside of the concrete course XIV now forms the ceiling\textsuperscript{18}. The fill that formed the bedding during the casting has been removed at some unknown period.

The concrete fill-walls constitute the present, irregular vertical façades of the cella podium, of a part of the pronaos podium, and of the surface of the tribunal. When the ruin was unearthed c. 1870 and 1900 the surface of the concrete was smooth and to varying degrees preserved the original surface, from the casting towards the successive courses of ashlars. The original surface is now preserved only in the outside of the outer shell-wall, where imprints of boards are preserved (see below). Moreover, the original, cast façade of the foundation of the tribunal front is preserved in Trench S.

In the tribunal the concrete formed the bedding for the staircases and covered the earlier remains. In the comparatively large area of the pronaos and cella another solution was employed. In the pronaos the Augustan concrete covers a part of
2. MATERIALS, TECHNIQUE AND BUILDING DEVICES

the Metellan temple front intercolumnium up to c. 18.00 m asl and nowhere protrudes above 18.15 m asl, which may match the floor level of the Metellan pronaos, almost 2 m below the Augustan floor of 20.20 m asl. Moreover, the concrete nowhere infringes upon the Metellan earthen fill inside the pronaos box. This holds true also in the cella, where the highest level preserved of the Augustan concrete is at 19.70 m along the east side, where it covers the latest pre-Augustan floor of 19.11 m asl. Most probably the bedding of the Augustan floors were laid on earth fill as were also the Metellan floors (see below, Ch. 3.2.2).

There is evidence for two different types of concrete, a greyish and a reddish one.

1) The use of the greyish concrete is restricted to the main part of the shell-wall faced with opus testaceum, corresponding to the ashlar courses IV-VIII (NE 12.78 m asl, SE 12.71 m asl, SW 12.22 m asl) (cf. fig. 3.1.2.10). The caementa are mainly Anio tuff with hardly any travertine.

2) The use of the reddish concrete is extensive: a) the crepidoma foundation on top of the shell-wall; b) the tabernae floors; c) the fill behind Anio courses VIII-XVIII, XX against the cella podium; d) the top of the threshold foundation (between 18.00 m and 19.34 m asl); e) the foundation for the base of the cult statues in the cella; f) the fill behind Anio courses against the pronaos podium; g) the sides and surface of the tribunal. The caementa are mainly Anio tuff, in places, however, with a lavish use of travertine. Both stones could very well originate from the Metellan temple. Two examples from the cella podium: 1) the east side near the south corner - in courses XIII-XVI only tuff, in course XVII mostly travertine, in course XVIII both tuff and travertine; 2) the cella front wall to the west of the threshold foundation (which contains no travertine) in courses IX-X no travertine, in course XI plenty of travertine, in courses XII-XIII little travertine, in course XIV plenty in the eastern half, only, in courses XV-XVII lots of travertine. The same pattern of the use of caementa is seen in the tribunal. The size of the caementa is usually about 10-15 cm², but smaller ones are often seen and even larger stones were also applied.

Besides, the following materials were used: yellowish tuff and cappellaccio (both originating from the previous temples), marble, basalt (only one piece noticed), brick (tiles, pottery). In the foundation for the cult statues, exposed in Trench M, there is a remarkable concentration of big cappellaccio pieces (fig. 3.3.2).

Throughout the building process the caementa at hand were used indiscriminately so it is impossible to distinguish or separate chronologically the concrete by appearance. Analyses moreover demonstrated that the concrete of the Metellan and that of the Augustan temple could not be distinguished from each other.

Brick

Opus testaceum was applied for the facing of both inner sides of the shell-walls of the foundation ditch. The triangular bricks are c. 4-4.5 cm thick, vary from 11 to 36 cm in length and from 8 to 12 cm in width. The material is red, reddish and yellow.

Wood

Branches and boards served as wood shuttering and framework boards during the casting of the outside of the shell-walls of the foundation ditch. There is, however, hardly evidence for posts, for which there is otherwise ample evidence in Roman opus caementicium. By this means the construction appears to be unique in Roman construction, where the concrete was built up or thrown against a wooden framework of posts at regular intervals with horizontal, contiguous boards. A fine example of this is furnished by the Augustan foundation ("Equus Tremuli") (fig. 3.1.2.21) to the north of the Castor temple, in front of the Temple of Caesar.

During Boni’s excavation ample remains of boards were uncovered along the south side of the temple – as noted by Artioli and Ashby and shown on the elevation of Morigi, (fig. 3.0.5). Decomposed wood was observed in Trenches A and V during the recent excavations.

Imprints show the boards to be up to 48 cm wide, c. 8-10 cm thick, and of varying lengths: Artioli shows one of about 4 metres. The tie beams (presumably formed by several boards, placed side by side) were very strong: some are 38 cm high and 18 cm in width, whereas the length can only have been c. 1 m.

In two other structures within the temple there are imprints of boards. An imprint of a single board is preserved on the south side of the upper threshold foundation. Scant imprints of boards are final-
ely preserved in the foundation of the statue base: they may have served to sustain the casting where the fill of the Metellan temple was lacking.

Wood was also used for the swallow-tail clamps that bound the Anio ashlars together. The cuttings measure: 11.6 cm in width, 12 cm in length, 5 cm deep, see below 28.

**Metals**

*Iron* was applied for clamps between tuff and travertine, in the travertine and in marble (ashlars, column drums). It has been robbed, but one intact clamp is preserved in CW0.

*Bronze* was almost certainly applied for the letters, the cuttings of which are preserved in two fragments of the architrave, see below p. 179 and figs. 6.5.8-9.

*Lead* is amply used with the dowels and clamps in the marble.

**Stones**

*Anio tuff*

Twenty courses of ashlars in Anio tuff constituted the main bulk of the foundations below ground (the courses I-IX) and of the podium (courses X-XX) up to the bottom level of the column plinths *in situ*. The courses were alternatively positioned as stretchers and headers. Their approximate height and width is two Roman feet (c. 59 cm), except for the three bottom courses (for which, see below, p. 25), course XIV being 0.55 cm, the courses XV-XVI c. 0.67 m (c. 2½ feet) and course XX 0.74 m high (2½ feet) high. The standard length is about 1.78 m (= 6 Roman feet) but other lengths 29 were applied where required, especially in the foundation for the cella walls on line with the tabernae, see below.

The ashlars were bonded together with clamps of swallowtail form on one, two, three or four sides, but there are several other cuttings and technical devices 30.

Fig. 2.2 shows an Anio ashlar 59 cm x 59 cm x 178 cm. It is evenly dressed all over. There is never anathyrosis, nor were dowels and Lewis-holes applied. Five different cuttings testify to the handling and use of the ashlar.

1) Lifting-holes. Close to the middle of the vertical long faces are two circular holes (dm. 5.7 cm) of different depths: a) 5 cm, b) 3 cm, c) 16 cm, d) 4.5 cm. The deepest, c), is for 10 cm open (deliberately) up to the top surface of the block.

2) Pry-bar cuttings or marks. On the bottom edge
of both short ends, oblique cuttings, 5-6 cm wide, 2.5 cm high, 5-6 cm deep. Evidence for this device as a rule exists only on the long sides of the ashlars (see above).

3) On the edge of the top surface and close to the left corner is a shallow cutting 6.5 cm long and 2-2.5 cm deep on the top surface and 15.5 cm high and 1 cm deep on the vertical side. Another one close to the right corner has been partly obliterated by a clamp. The cutting as a rule appears in pairs and only on one long side of an ashlar. The following observation may explain its use: on the opposite lower edge are as a rule pry-bar cuttings with corresponding pry-holes in the block below. Apparently therefore, these cuttings served a purpose during the placement of the blocks.

4) Clamps. On both long edges of the top surface are two swallowtail clamps: 11-6 cm in width, 13 cm in length, 5 cm deep. Their bottoms are plain without a hole (wooden clamps, see above). Clamps of the same form and with holes for metal clamps, however, were as a rule used to bond travertine and tuff ashlars together.

5) Pry-hole. On the top surface an irregular round hole, 13 x 6 cm, 1.5 cm deep. One side slopes more than the three others. Pry-holes are placed all over on top of the ashlars.

Very characteristic are incised lines, 12-20 and even c. 150 cm long, on the top surfaces of the ashlars: single lines, in L-shape, in ?-shape and ?-shaped. In the top surface of course VII, incised lines mark the centre of the columns CW2 and CW6-9 (c. 8 m higher up) and in course IX the centre of CE2 is marked by a +, and other lines in continuation of each other can be followed for several metres. The lines, therefore, served not only to indicate where the next course should be placed but also to secure the correct positioning of the superstructure in relation to the foundation and the podium. An area is documented in detail in fig. 2.3. The incised line A marks the centre of column CW9, in Y 41.18 (cf. p. 86). The line B marks the centre of taberna TW10 and the centre of the ubiquitous centre ashlar (cf. fig. 3.1.4.2a) in this place in course VIII above. The double line is probably due to a correction: the distance between the two lines is matched by the obliqueness of the adjacent ashlar (to the right). The line C is again double and certainly has to do with the placing of ashlars, as shown by the imprint (dotted line) of the short end of an ashlar and one in situ. The imprint lines beyond doubt show the position of ashlars, the distance between the spots 1) and 2) being 4.2 m. This matches the width of seven ashlars, several of which have left their trace. The incised +, D in the plan, we cannot explain.

The correction towards the north, just noted, was due to a mistake in this part of the building area, the ashlars of at least courses VI and VII having been laid too far to the south (cf. fig. 3.1.2.10). It was corrected as demonstrated and is also clearly seen in CW10 where the two preserved ashlars in course VIII (pl. 6) were positioned as much as c. 0.3 m further north than those in the course below.

However, all over the building there are deviations from the above, due to special requirements and to irregularities.

As a rule, the edges of the ashlars are plain. However, in the tabernae and in the tribunal front wall they are cut with oblique edges. On the façade of the two bottom courses of the tribunal front (VIII-X) a rough panel was allowed to remain, so the marble facing was apparently not meant to be contiguous.
The tribunal is also remarkable for an incised horizontal line marking the level of the top of the crepidoma along the front of the building (fig. 3.4.11, pl. 4.1).

**Travertine**

Travertine was used relatively sparingly in the Augustan building. The single podium crepidoma course or step along the east and south sides and the three ones along parts of both the west and north sides constituted the only visible application in the building from the outside. The top level of the crepidoma – on the east side 13.41 m asl and on the west side 13.05 m asl – matches the top level of ashlar course IX.

The second place of use was (as mentioned above) below the columns on the east, south and west sides in order to form a solid foundation. It is well documented in the walls of the tabernae TE6-7. On the east side it was applied in courses IX-XX, and on the west additionally in course VIII. This difference probably reflects that the builders took special precautions on the west side of the building, where the ground was rightly considered to be less solid.

In one place a lifting-boss remains from the building phase. In course XIV below column CE4, in the taberna TE4 (on the north side, H: 14 cm, W: 15 cm, D: 8 cm).

Travertine was finally also used for the pavement of the Via Sacra and its steps in front of the temple and along the northern part of the east side, contiguous to the Arch of Augustus.

**Marble**

The entire vertical and horizontal surface of the building above the podium crepidoma was revetted with white marble. It has never been analysed, but is generally and correctly supposed to be Luni marble. However, besides the three columns and their entablature and cornice, marble is only partially preserved *in situ* as a course just above the crepidoma: a plain, continuous course that forms the threshold of the tabernae TE2-8, TW1 and the bases of the pilaisters below the columns CE1, CE3-CE8 and CW5 (fig. 3.2.2.2). The rest of the whole marble facing of the podium is *ex situ* and largely missing. Fortunately, 24 larger blocks and 128 fragments testify to the appearance of the richly profiled façade of the podium, whereas 612 larger and smaller fragments come from the superstructure: the temple in the proper sense, see Chapter 5, below.

**Coloured marble**

There is only scant evidence – none *in situ* – for the use of coloured marbles from the cella, etc. Most of the fragments in coloured marble found during the excavation belong to types which were common in the Imperial period, such as *giallo* and *rosso antico*, *africano*, *pavonazetto* and green serpentine (see Chapter 7, below).

<table>
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<th></th>
<th>Tuff</th>
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<td>Yes</td>
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</tr>
<tr>
<td>Incised lines of levels</td>
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Fig. 2.4. Summary of technical stone devices of the Augustan temple.
The building of the new temple implied the tearing down of a great part of the former temple (II), already partly destroyed. Whereas that to a high degree had been laid on top of the cappellaccio ashlars of the first temple, the Augustan builders wanted to carry the new foundations right down into virgin soil. The outer part of the previous temples therefore gave way for a ditch, c. 8.3 m wide along the east, west and south sides and 3.6-4.2 m wide along the north side, designed for the foundations for the cella walls and the columns of the pronaos and the peristyle (cf. fig. 4.1). For the cella front wall they cut from both sides up to the existing threshold (see Appendix 1) that was heightened c. 2 m up to the new floor level.

The earlier walls were cut down fairly vertically. In the SW corner of the cella the line of the chopped-off cappellaccio ashlars of the first temple is situated exactly in the line of the chopped-off Metellan cella wall, 6 m higher up\(^35\). Also the profiles of the cut-off east-west running walls in the west side of the pronaos (pl. 2.2) are almost vertical. In the same plate are seen the chopped-off cappellaccio ashlars of the NW corner of the cella in Y 57.0, making the ditch 3.6 m wide. The cappellaccio in the NE corner of the cella was also cut in Y 57.0\(^37\). The width of the cella wall ditch from c. 12.5 m asl downwards was accordingly only 3.1 m. Higher up, however, the Metellan opus caementicum wall was cut in Y 57.0, making the ditch 3.6 m wide. The cappellaccio in the NE corner of the cella was also cut in Y 57.0\(^37\). However, the outlines of the Augustan fill-walls against the cella and the pronaos (see below Chapter 3.1.3) show the width of the ditch to be 4.1 m like the threshold foundation (north-south). Apparently, the Augustan builders had to improvise where they cut through the earlier structures (see below, p. 41).

The new floor level of 20.20 m asl of the peristyle surpassed the floors of both predecessors (at 19.11 m, c. 18.80 m and c. 15.75 m asl) by c. 1.2 and 4.5 m respectively. Accordingly, the new construction completely encapsulated the remains of the older ones.

Also the main part of the top of the tribunal was destroyed and both ends were shortened in order to make room for tabernae, for the ashlar foundations for the pillars CW0 and CE0 and for the staircases up to the floor of the tribunal. The remains were surrounded and heightened by means of concrete. However, conclusive evidence for the width of both the first and second temples, c. 27.5 m, was preserved. Together with other evidence (e.g. the intercolumnia) this is of paramount importance for the reconstruction of the temples\(^38\).

The width of the podium crepidoma of the new temple of 31.75 m exceeded the older ones by 2.1 m in each side. The new building was also longer, but how much so we cannot know, because there is no evidence for the reconstruction of the rear of the Metellan temple, whether the temple was peripteros or peripteros sine postico. Inge Nielsen favours the latter solution\(^39\), in which case the Metellan temple and tribunal would be about 40 m long, 10 m shorter than the Augustan one. In her view, the front of the new tribunal is situated c. 2.6 m north of the former, so the new temple would reach c. 7.5 m further south than its predecessor.

The preservation of the podium of the Metellan temple proper appears from the plan, pl. 6, and the section fig. 1.1.2.\(^40\) There were two ‘boxes’ in concrete, one of four sides for the cella, 14.5 m x 14.5 m inside, and one for the pronaos of \(\Pi\)-shape, the west and east side of which abutted on the cella box. The opus caementicum was laid in layers, and the fairly smooth vertical inner faces preserve the imprints of vertical and (mainly) horizontal boards. The thickness of only one of these walls, however, is known for sure: the north side of the cella box, which is 1.45 m wide. The other sides were chopped down by the Augustan builders and their original thickness(es) are unknown. Of the east and west sides only the width of 0.6-0.9 m remains, of the south side 1.25 m\(^41\).

The truncated west and east outsiders of the Metellan pronaos walls are at present exposed. The